

Statutory Consultation 2022

Preliminary Environmental Information Report

Volume 2: Main Report

Chapter 10: Cultural Heritage

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10 CULTURAL HERITAGE

10.1 Introduction

10.1.1 This chapter presents the preliminary assessment of likely significant effects of the Proposed Development on Cultural Heritage.

10.1.2 The EIA Scoping Report set out the proposed scope for the assessment of Cultural Heritage. In summary, the following have been assessed in this PEIR:

- a. Designated cultural heritage assets, including scheduled monuments, listed buildings, registered parks and gardens and conservation areas.
- b. Non-designated cultural heritage assets including archaeological remains, historic buildings and the historic landscape.

10.1.3 This chapter aims to:

- a. Detail the requirements of principal legislation, policy and guidance relevant to this assessment.
- b. Document how information relating to the existing and future environment has been collected through desk-based research, field survey and stakeholder consultation.
- c. Describe the understanding of the existing and future baseline environment.
- d. Describe the potential effects of the Proposed Development on cultural heritage assets, and describe proportionate mitigation measures.

10.1.4 This chapter is supported by the following appendices provided in Volume 3 to this PEIR:

- a. **Appendix 10.1** Cultural Heritage Desk-based Assessment.
- b. **Appendix 10.2** Cultural Heritage Gazetteer.
- c. **Appendix 10.3:** Geophysical Survey Report (Ref. 10.1)
- d. **Appendix 10.4:** Geophysical Survey Report (Ref. 10.2).
- e. **Appendix 10.5:** Archaeological Trial Trench Evaluation Report (Ref. 10.3).
- f. **Appendix 10.6:** Draft Cultural Heritage Management Plan.

10.1.5 This chapter is also supported by **Figures 10.1 to 10.12** provided in Volume 4 to this PEIR.

10.1.6 The remainder of this chapter consists of:

- a. **Section 10.2** Legislation, policy and guidance relevant to the scope and methodology of the Cultural Heritage preliminary assessment;
- b. **Section 10.3** Scope of the assessment;
- c. **Section 10.4** Stakeholder engagement undertaken to inform the preliminary assessment;

- d. **Section 10.5** Methodology applied to the preliminary assessment;
- e. **Section 10.6** Assumptions and limitations at this stage of work;
- f. **Section 10.7** Baseline conditions;
- g. **Section 10.8** Embedded and good practice mitigation;
- h. **Section 10.9** Preliminary assessment;
- i. **Section 10.10** Additional mitigation;
- j. **Section 10.11** Residual effects;
- k. **Section 10.12** In-combination climate change;
- l. **Section 10.13** Monitoring;
- m. **Section 10.14** Assessment summary; and
- n. **Section 10.15** Completing the assessment - remaining work to complete the EIA for the Environmental Statement.

10.2 Legislation, policy and guidance

- 10.2.1 This section identifies the key legislation, policy and guidance relevant to the scope and methodology for the Cultural Heritage assessment and which may influence the type of mitigation measures that could be incorporated into the Proposed Development during construction or operation.
- 10.2.2 **Table 10.1** to **Table 10.4** provides a description of the relevant legislation, policy and guidance, and where each of these have been addressed in the PEIR.

Legislation

Table 10.1: Cultural Heritage legislation

Legislation	How and where addressed in PEIR
<p>The Ancient Monuments and Archaeological Areas Act 1979 (Ref. 10.4)</p> <p>Scheduled monuments are protected under the Ancient Monuments and Archaeological Areas Act 1979 (as amended) which imposes a requirement to obtain prior consent from the competent authority for any demolition, repair, and alteration works that might affect these nationally important assets.</p>	<p>There is one Scheduled Monument (Someries Castle NHLE 1008452) located within the 2km study area. This assessment includes a consideration of the impacts and effects of the Proposed Development on this asset, as reported in Section 10.9 of this chapter.</p>
<p>The Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref. 10.5)</p> <p>The Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended) is the principal statutory instrument which must be considered in the determination of any application affecting listed buildings and conservation areas.</p> <p>Under this legislation, local planning authorities and the Secretary of State are required to have special regard to the desirability of preserving a listed building, its setting, or any features of special architectural or historic interest that it possesses. It also places a duty on local planning authorities to publish proposals for their conservation areas and exercise their planning functions in a manner that</p>	<p>The effects of the Proposed Development on conservation areas, listed buildings and their settings have been considered as part of the assessment and are reported in Section 10.9 of this chapter.</p>

Legislation	How and where addressed in PEIR
gives regard to the desirability of preserving and enhancing the character or appearance of these areas.	

Policy

Table 10.2: Cultural Heritage policy

Policy	How and where addressed in PEIR
<p>National Planning Policy Framework (2021) (Ref. 10.6)</p> <p>The National Planning Policy Framework (NPPF) acknowledges the importance of assessing the significance of heritage assets potentially harmed or lost through alteration or destruction or through development within their setting. It also sets out the considerations that local planning authorities should have when determining applications.</p>	<p>The requirements of the NPPF have been accounted for in this assessment, with particular regard given to establishing the significance of designated and non-designated assets and their settings. The significance of heritage assets and their settings is discussed in Appendix 10.1 and an assessment of the impact of the Proposed Development on the significance of heritage assets is discussed in Section 10.9 of this chapter.</p>
<p>National Policy Statement for National Networks – December 2014 (NPSNN) (Ref. 10.7)</p> <p>The NPSNN sets out the need for, and Government’s policies to deliver, development of nationally significant infrastructure projects on the national road and rail networks in England. It provides planning guidance for promoters of nationally significant infrastructure projects (NSIP) on the road and rail networks. The provisions of the NPSNN relevant to environmental assessment broadly mirror those as outlined in the ANPS.</p>	<p>There are no elements of the Proposed Development that would be classified as a NSIP on the national road or rail network. However, the NPSNN remains a relevant consideration as works are proposed on the SRN at Junction 10 as part of the Proposed Development. As provisions relevant to environmental assessment broadly mirror those as outlined in the ANPS they have been appropriately considered in this preliminary assessment. Further consideration of the proposals against relevant NPSNN policies will take place following this consultation and in preparation of the DCO application.</p>
<p>Central Bedfordshire Local Plan 2015 – 2035 (Ref. 10.8)</p> <p>The <i>Central Bedfordshire Local Plan 2015 – 2035</i> was adopted on 21 July 2021. The policies of relevance to this chapter comprise Policy HE1 Archaeology and Scheduled Monuments, HE2 Historic Parks and Gardens and HE3 Built Heritage. The policies outline the</p>	<p>The Desk-based Assessment (Appendix 10.1) has assessed the significance of known and potential heritage assets, and a staged programme of investigation and protection of heritage assets are proposed in Section 10.10 of this chapter. The effects of the Proposed Development on heritage assets and their settings have been considered as part of the assessment</p>

Policy	How and where addressed in PEIR
<p>requirement for development proposals to describe the significance of heritage assets including consideration of any contribution made by their setting and will assess the level of impact that the development proposals will have on those assets. The policies also outline the Council's requirement for a programme of archaeological investigation where preservation in-situ cannot be achieved.</p>	<p>and are reported in Section 10.9 of this chapter.</p>
<p>The North Hertfordshire District Council Local Plan 2011 – 2031 (Ref. 10.9)</p> <p>The North Hertfordshire District Council Local Plan 2011 – 2031 proposed submission was submitted for examination in 2017. Policy HE4 states developers must submit an appropriate desk-based assessment and where justified, an archaeological field evaluation. They must demonstrate how archaeological remains will be preserved if <i>in-situ</i> preservation of important archaeological remains is considered preferable. Where the loss of the whole or material part of important archaeological remains is justified, appropriate conditions are applied to ensure that the archaeological recording, reporting, publication and archiving of the results of such archaeological work is undertaken.</p>	<p>Appendix 10.1 presents an appropriate Desk-based Assessment. Two phases of geophysical survey and a phase of archaeological trial trenching have been undertaken to further inform the archaeological potential of the Proposed Development Site, the results of which are summarised in Section 10.7 of this chapter.</p> <p>Mitigation proposals for the preservation of archaeological remains and preservation by record are set out in Section 10.10 of this chapter.</p>
<p>Luton Borough Council Local Plan 2011 – 2031 (Ref. 10.10)</p> <p>The Luton Borough Council Local Plan 2011 – 2031 was adopted in 2017. Policy LLP30 states that development proposals must take account of the character, setting and local distinctiveness of affected heritage assets of particular importance within the borough including registered parks and gardens such as Luton Hoo. Proposals affecting designated and non-designated heritage assets are required to set out the significance of heritage assets,</p>	<p>The Desk-based Assessment (Appendix 10.1) has assessed the significance of known and potential heritage assets, and mitigation proposals for the preservation of archaeological remains and preservation by record are set out in Section 10.10 of this chapter. The effects of the Proposed Development on heritage assets and their settings have been considered as part of the assessment and are reported in Section 10.9 of this chapter.</p>

Policy	How and where addressed in PEIR
<p>the impact of the proposed development on heritage assets and mitigation strategies, addressing the setting of the asset.</p>	

- 10.2.3 The Airports National Policy Statement (ANPS) (Ref. 10.11) does not have effect in relation to an application for development consent for an airport development not comprised of an application relating to the Heathrow Northwest Runway. Nevertheless, as set out within paragraph 1.41 of the ANPS, the Secretary of State considers that the contents of the ANPS will be both important and relevant considerations in the determination of such an application, particularly where it relates to London or the south east of England.
- 10.2.4 Accordingly, whilst the ANPS does not have effect in relation to the Proposed Development, it will be an important and relevant consideration in the determination of Luton Rising’s application for development consent. A summary of the relevant provisions for the Cultural Heritage assessment and where these have been addressed in this PEIR is provided within **Table 10.3**.

Table 10.3: How relevant Cultural Heritage requirements of ANPS are addressed in the PEIR

ANPS Section	How and where addressed in PEIR
<p>Paragraphs 5.193 to 5.195 state: <i>“As part of the environmental statement, the applicant should provide a description of the significance of the heritage assets affected by the proposed development, and the contribution of their setting to that significance. The level of detail should be proportionate to the asset’s importance, and no more than is sufficient to understand the potential impact of the proposal on the significance of the asset. Consideration will also need to be given to the possible impacts, including cumulative, on the wider historic environment. At a minimum, the relevant Historic Environment Record should be consulted and the heritage assets assessed using appropriate expertise. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, the applicant should include an appropriate desk-based assessment and, where necessary, a field evaluation. The applicant should ensure</i></p>	<p>A description of the significance of heritage assets, and their setting, is set out in Appendix 10.1 and in Section 10.9 of this chapter.</p> <p>A list of data sources consulted to inform the cultural heritage baseline conditions is set out in Section 10.5 of this chapter.</p> <p>Cumulative effects are discussed in Chapter 21 of this PEIR.</p> <p>The approach to the assessment of the likely significant effects is described in Section 10.9.</p>

ANPS Section	How and where addressed in PEIR
<i>that the extent of the impact of the proposed development on the significance of any heritage asset affected can be adequately understood from the application and supporting documents.”</i>	
Paragraph 5.198 considers the minimisation of impacts on the historic environment of the Proposed Development.	Section 10.8 includes how the design of the Proposed Development has considered the historic environment and Section 10.10 suggests mitigation measures in order to minimise any significant adverse effects.
Paragraphs 5.209 to 5.212 are concerned with the recording of heritage features and paragraph 5.210 states: <i>“Where the loss of the whole or part of a heritage asset’s significance is justified, the Secretary of State will require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part).”</i>	Recommendation to mitigate the loss of heritage significance (value) are set out in Section 10.10 , and would comprise a staged programme of archaeological investigation, and reporting.

Guidance

Table 10.4: Cultural Heritage guidance

Legislation	How and where addressed in PEIR
<p>Planning Practice Guidance (PPG) 2019 (Ref. 10.12)</p> <p>The PPG for the Historic Environment adds further context to the NPPF by advising on the conservation and enhancement of the historic environment. It clarifies that the assessment of the nature, extent and importance of the significance of heritage assets (and the contribution of their setting) is integral to understanding the potential effects or harm caused by development proposals.</p>	<p>This guidance has been considered by undertaking desk-based and site-based surveys to establish the baseline cultural heritage conditions (Appendix 10.1); applying best practice guidance to identify the potential loss or harm that could result from the Proposed Development (and the significance of any such effects); and identifying appropriate and proportionate mitigation measures.</p>
<p>Historic England Good Practice Advice Notes: GPA2 Managing Significance in Decision-taking (2015) (Ref. 10.13); GPA3 The Setting of Heritage Assets (2019) (Ref. 10.14); and Advice Note 12</p>	<p>The Desk-based Assessment (Appendix 10.1) has assessed significance of known and potential heritage assets. The effects of the Proposed Development on heritage assets and their settings have been considered as part of the assessment and</p>

Legislation	How and where addressed in PEIR
<p>Statements of Heritage Significance (2019) (Ref. 10.15)</p> <p>The Advice Notes set out a process for understanding the significance of heritage assets likely to be affected by proposed development and the contribution that setting may make to that significance. The Advice Notes also set out a process for assessing the impact of development proposals upon the significance and setting of heritage assets.</p>	<p>are reported in Section 10.9 of this chapter.</p>
<p>Chartered Institute for Archaeologists Standards and Guidance for Historic Environment Desk-based Assessments (2020) (Ref. 10.16)</p> <p>The ClfA Standards and Guidance for Historic Environment Desk-based Assessments provides good practice advice for the execution and reporting of desk-based assessment.</p>	<p>The Desk-based Assessment (Appendix 10.1) was undertaken in accordance with this guidance.</p>
<p>IEMA Principles of Cultural Heritage Impact Assessment in the UK (2021) (Ref. 10.17)</p> <p>The IEMA Principles of Cultural Heritage Impact Assessment in the UK is a guide to good practice in cultural heritage impact assessment. The document provides guidance on understanding cultural heritage assets and evaluating the consequences of change.</p>	<p>The Desk-based Assessment (Appendix 10.1) has assessed the significance of known and potential heritage assets, and a staged programme of investigation and protection of heritage assets are proposed in Section 10.10 of this chapter. The effects of the Proposed Development on heritage assets and their settings have been considered as part of the assessment and are reported in Section 10.9 of this chapter.</p>

10.3 Scope of the assessment

10.3.1 This section describes the scope of the Cultural Heritage assessment, including how the assessment has responded to the Scoping Opinion. The temporal and spatial scope, the relevant receptors, and matters scoped in and out are identified. A description of engagement undertaken with relevant technical stakeholders to develop and agree this scope is provided in **Section 10.4**.

Scoping Opinion

10.3.2 The EIA Scoping Report set out the proposed scope and assessment methodologies to be employed in the EIA and is provided in **Appendices 1.1 and 1.2** of **Volume 3** to this PEIR.

10.3.3 In response to that Scoping Report, a Scoping Opinion was received from the Planning Inspectorate on 9 May 2019 and is provided in **Appendix 1.3** in **Volume 3** of this PEIR.

10.3.4 **Table 10.5** describes the main matters highlighted by the Planning Inspectorate in the Scoping Opinion and how these have been addressed in this PEIR. Final responses to all comments received during Scoping will be provided in an appropriate format in the ES.

Table 10.5: Cultural Heritage Scoping Opinion comments

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
4.14.2	Section 19.2 sets out policies of four local planning authorities; however, Section 19.3 only describes stakeholder engagement and consultation with two of those authorities to date. A statement should be provided on which authorities act as agents for others in the matters of archaeology and cultural heritage, if relevant, to provide context.	The Proposed Development site falls within or adjacent to four local authorities: Luton Borough Council (LBC); Central Bedfordshire Council (CBC); North Hertfordshire District Council (NHDC) and Hertfordshire County Council (HCC). HCC acts on behalf of NHDC on matters related to archaeology. Consultation with the relevant officers of three local authorities (LBC, CBC and HCC) has now been undertaken as set out in Table 10.6 . In addition, consultation with Historic England (HE) has also been carried out.
4.14.3	The Inspectorate notes that the extended study area will be agreed 'in collaboration with the landscape architects to reflect the Zone of Theoretical Visibility (ZTV) developed for the LVIA. As the	The study area has been reviewed to reflect the semi-rural location of the Proposed Development site, the Highways Interventions that are located outside of the Main Application Site as well as the

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
	<p>parameters of the proposed development are not yet confirmed, and no ZTV is yet prepared, the review of the study area should not discount the possibility that the study area may need to be wider than 5km to assess relevant effects to the settings of heritage assets, including designated and non-designated assets. The assessment should include consideration of the effects of overflying aircraft which may also lead to impacts on tranquillity. The Applicant should make effort to agree the study area and the heritage assets to be included in the assessment with relevant consultation bodies.</p>	<p>increase in noise levels during the operation of the Proposed Development. As a result, three study areas have been identified in the PEIR (refer to Spatial Scope in Section 10.3 of this chapter). The 2km study area for designated heritage assets has been agreed with Historic England. The 1km study area for non-designated heritage assets has been agreed with CBC and HCC. The wider study area (beyond the 2km study area) has been informed by the noise contour data and the ZTV.</p>
4.14.4	<p>The Inspectorate notes that some on site archaeological evaluation has already commenced. Further evaluation may be required depending on the extent of works proposed in the application. The Inspectorate expects that the Applicant will make efforts to agree the extent of archaeological evaluations required with relevant consultation bodies, in order to establish baseline data and complete the assessment of likely significant effects.</p>	<p>Further consultation with the relevant stakeholders has been undertaken to agree the scope and nature of the additional evaluation that is required to fully establish a robust baseline (see Table 10.6).</p>
4.14.5	<p>The Inspectorate expects that the ES will assess and identify any likely significant effects on the Someries Castle Scheduled Monument. The assessment should acknowledge changes in air quality and vibration which may affect the fabric of the Scheduled Monument, where likely significant effects may occur. The Inspectorate also recommends that visual representations are provided to illustrate the impact on</p>	<p>A statement on the changes of air quality and noise and vibrations is included in Section 10.9 of this chapter. A number of visual representations that illustrate changes to the setting of Someries Castle are included in Appendix 14.7 in Volume 3 of this PEIR.</p>

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
	the setting of Someries Castle Scheduled Monument.	
4.14.6	The Inspectorate expects that the whole of Luton Hoo / Putteridge Bury RPG will be taken into account in the assessment. The Inspectorate recommends that visual representations are provided to illustrate the impact on the settings of Luton Hoo Mansion and RPG.	Luton Hoo and Putteridge Bury Registered Parks and Gardens (RPGs) fall partly within the 2km study area however, they have been considered in their entirety. It is unlikely that Putteridge Bury RPG would experience significant effects as a result of the Proposed Development, however it has been included in this PEIR. A number of visual representations that illustrate the impact on the settings of Luton Hoo Mansion and RPG are included in Appendix 14.7 of this PEIR.
4.14.7	The proposed assessment methodology uses standardised EIA matrices. The Inspectorate considers that the analysis of setting and the impact upon it is a matter of qualitative and expert judgement which cannot be achieved solely by use of systematic matrices or scoring systems. The Inspectorate therefore recommends that, if used, these matrices should be seen primarily as material supporting a clearly expressed and non-technical narrative argument using professional judgement. The ES should use the concepts of benefit, harm and loss (as set out in the National Planning Policy Framework) to set out 'what matters and why' in terms of the heritage assets' significance and setting, together with the effects of the development upon them.	This PEIR chapter uses standard EIA matrices; however, these matrices are used to support a clearly expressed and non-technical narrative argument using professional judgement. The PEIR uses the concepts of benefit, harm and loss (as set out in the NPPF) to set out 'what matters and why' in terms of the heritage assets' significance and setting, together with the effects of the Proposed Development upon them (refer to Section 10.9).
4.14.8	The Inspectorate advises that the assessment of heritage asset settings should be cross-referenced with other relevant ES aspect assessments, including air quality,	The setting assessment has been informed by a number of other topic assessments including Air Quality (Chapter 7), Noise and Vibration (Chapter 16), Landscape and Visual

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
	noise, lighting and landscape and visual effects.	Impact Assessment (Chapter 14), and the Lighting Assessment (Chapter 5). The assessment will be further updated as more detailed design information becomes available about the Proposed Development and as the assessment of this and other relevant topics progresses (refer to Section 10.15). The updated results will be presented in the ES.
4.14.9	The ES should set out how the Cultural Heritage Management Plan will be secured through the DCO. The Inspectorate considers that the approach to mitigation section should emphasise the need to preserve heritage assets in-situ, where possible and appropriate. The Applicant should also make effort to agree mitigation approaches with all relevant consultation bodies and take account of potential impacts that may result to other aspects, such as biodiversity and landscape.	Preliminary mitigation proposals are set out in Section 10.10 of this chapter and will also be included in the ES. A Draft Cultural Heritage Management Plan (CHMP) has been produced for this PEIR which sets out additional mitigation strategies for cultural heritage assets (Appendix 10.6). This will be discussed with relevant consultation bodies and submitted as a final version with the DCO application. The adoption and implementation of the CHMP will be a requirement of the DCO.
4.14.10	The ES should include figures which clearly depict the location of designated and non-designated heritage assets within the Zol.	Figures 10.6 to 10.9 in Volume 4 show the location of designated and non-designated heritage assets within the ZOI.

Spatial scope

- 10.3.5 Different study areas have been used for the assessment of impact to cultural heritage assets. The variation in study areas is due, in part, to the different type of cultural heritage receptor and their sensitivity to change, and the nature of the predicted impact arising from the Proposed Development. The definition of study area boundaries has also considered the potential for heritage assets to be affected by noise and vibration, air quality, and visual impacts including impacts from construction and operational lighting. The spatial scope of the assessment is illustrated in **Figures 10.1 to 10.9** in Volume 4 of this PEIR.

Study area

Designated Heritage Assets

2km study area

- 10.3.6 The study area for identifying the potential for impacts to designated heritage assets, caused by development within their settings, was defined as 2km from the Main Application Site. Cultural heritage assets within the 2km study area are illustrated on **Figures 10.1** and **10.2** in Volume 4 of this PEIR. The 2km study area is also sufficient for the identification of potential impacts to designated heritage assets arising from Off-site Car Parks and Off-site Planting. Off-site Highways Interventions that are located beyond the 2km study area are subject to a separate study area (refer to **Paragraph 10.3.7**).

250m study area

- 10.3.7 A reduced study area of 250m was used to assess impacts to designated heritage assets arising from Off-site Highways Interventions that are located beyond the 2km study area. The reduced study area reflects the localised nature of the potential impacts arising from highways interventions. Cultural heritage assets within the 250m study area are illustrated on **Figures 10.1** and **10.2** in Volume 4 of this PEIR.

Wider study area (beyond the 2km study area)

- 10.3.8 Designated heritage assets beyond the 2km study area have been included in the assessment where there is a potential for them to be affected by visual and/or aural intrusion. This wider study area has been informed by noise contour data, the ZTV, and the results of walkover surveys carried out as part of the baseline assessment. Cultural heritage assets within the wider study area are illustrated on **Figures 10.6** to **10.9** and **10.11** in Volume 4 of this PEIR.
- 10.3.9 The ZTV has been generated using terrain data only and is therefore limited in mapping visibility as it does not take account of other landscape components which affect visibility such as buildings, woodland and hedgerows. The ZTV map should be read together with the viewpoint photographs and selective photomontages included in **Appendices 14.6** and **14.7** in Volume 3 of this PEIR to understand the extent of visibility to the Proposed Development.

Non-designated Heritage Assets

1km study area

- 10.3.10 The study area for the collation of information on non-designated cultural heritage assets was defined as 1km from the Main Application Site. This distance has been judged as sufficient to provide the context of, and potential for, surviving archaeological remains within the Proposed Development site. Cultural heritage assets within the 1km study area are illustrated on **Figure 10.3** in Volume 4 of this PEIR.

Historic Landscape

- 10.3.11 The Historic Landscape Characterisation Project for Hertfordshire as well as information provided by the HER officer for CBC has been used to characterise the baseline historic landscape of the Proposed Development site and a 1km study area (**Appendix 10.1**) and is illustrated in **Figure 10.5** in Volume 4 of this PEIR.

Zone of influence (ZOI)

- 10.3.12 The ZOI for the cumulative assessment is defined as 2km from the Main Application Site boundary and also applies to cultural heritage assets that fall within the wider study area. The ZOI takes account of physical impacts on buried archaeology, and impacts arising from changes to the setting of heritage assets.

Temporal Scope

- 10.3.13 The Proposed Development will be delivered over two phases (Phase 1 and Phase 2 (assessed in two parts 2a and 2b), within which construction and operation may take place simultaneously. For the purposes of assessment, three assessment phases are considered, Phase 1, Phase 2a and Phase 2b, as described in **Chapter 5** Approach to the Assessment.
- 10.3.14 The Proposed Development has the potential to affect heritage assets during each phase of development, during which the airport will remain operational. As such, the Cultural Heritage assessment considers potential impacts to heritage assets that may arise during each phase of development.

Receptors

- 10.3.15 The cultural heritage receptors that have been assessed comprise designated and non-designated archaeological remains, historic buildings and historic landscapes.

Matters scoped in

- 10.3.16 All cultural heritage matters, comprising archaeology, built heritage and historic landscape, have been scoped into this assessment.

Matters scoped out

- 10.3.17 There are no matters scoped out of the cultural heritage assessment.

10.4 Stakeholder engagement and consultation

- 10.4.1 Engagement in relation to Cultural Heritage has been undertaken with a number of prescribed and non-prescribed stakeholders throughout the EIA process.
- 10.4.2 A Cultural Heritage working group was assembled comprising:
- Central Bedfordshire Council Archaeology;
 - Hertfordshire County Council Archaeology; and
 - Historic England.
- 10.4.3 The **2019 Statutory Consultation Feedback Report** contains a full account of the previous statutory consultation process and issues raised in feedback. Matters raised regarding the scope, method, or mitigation being considered as part of the Cultural Heritage assessment were then subject to further discussions directly with stakeholders during working group meetings. The main matters/themes raised during consultation considered relevant to the Cultural Heritage assessment were:
- the scope of archaeological evaluation to establish the extent and heritage significance of non-designated heritage assets, and the likely impact upon the assets arising from the Proposed Development;
 - changes to the settings of Someries Castle scheduled monument and Luton Hoo Grade II* RPG.
- 10.4.4 **Table 10.6** provides a summary of engagement relating to cultural heritage with relevant stakeholders, undertaken to inform the EIA to date, including the date and time of meetings and a summary of discussions to resolve matters raised.

Table 10.6: Stakeholder engagement relating to cultural heritage

Meeting name and date	Attendees (organisation)	Summary of discussion
An introductory stakeholder meeting for all the environmental disciplines was held on 26 February 2018 to brief consultees on the headline issues associated with the Proposed Development.	CBC archaeologist	This was attended by the CBC Archaeologist who agreed with the inclusive and proactive approach to the consultation process outlined at the meeting.
A teleconference was held on 27 February 2018 with the Historic England Inspector of Monuments during which areas of responsibility and arrangements for the provision of advice to the Project design team were discussed.	Historic England (HE) Inspector of Monuments	It was agreed that a technical meeting with the other key stakeholders would be desirable to achieve consensus. HE confirmed that its interests extend to Grade I and II* listed buildings and Scheduled Monuments and Registered Park and Gardens only. Designated sites of lower status

Meeting name and date	Attendees (organisation)	Summary of discussion
		and undesignated heritage assets would be left to the relevant LPAs to advise on.
A meeting with the Historic England Inspector of Monuments and the CBC Archaeologist was held on 28 March 2018.	HE Inspector of Monuments CBC archaeologist	The aim of the meeting was to provide an overview of the Proposed Development and to discuss with the stakeholders the proposed methodology of the assessment and initial views on potential impacts of the Proposed Development on Cultural Heritage. The meeting also gave stakeholders the opportunity to provide some initial advice and identify any issues that need to be taken into consideration.
A meeting with the CBC Archaeologists was held on 17 July 2018 to discuss the project and achieve consensus on the requirements for the evaluation of the land impacted by the Proposed Development within Bedfordshire	CBC archaeologists	It was agreed that the land immediately to the east of Wigmore Valley Park should be evaluated by archaeological trial trenching.
A meeting was held on 9 November 2018 with HCC Archaeologists to discuss the likely requirements for the evaluation of land impacted by the Proposed Development within Hertfordshire.	HCC archaeologists	The technical requirements for the geophysical survey of this area were discussed and HCC provided further detailed guidance on the preferred specifications in an email [dated 12 November 2018].
A meeting was held on 8 July 2019. The Conservation officers from LBC and CBC were present as well as the CBC and HCC Archaeologists.	HCC Archaeologist CBC Archaeologist CBC Conservation Officer LBC Conservation Officer	Aim of the meeting was to inform the stakeholders of the progress of the heritage research and assessment. This provided an opportunity for the stakeholders to comment on the methodology and raise any specific concerns. The CBC Conservation Officer requested details of how the Air Quality and Noise assessments would address concerns about potential impacts on Someries Castle.

Meeting name and date	Attendees (organisation)	Summary of discussion
Pre-application advice letter from HE dated 23 April 2020.	HE Inspector of Monuments	HE responded to the baseline by letter to request that Luton Hoo RPG was assessed in its entirety and to include further description of the settings of Luton Hoo and Someries Castle in the Desk-based Assessment.
Teleconference with CBC Archaeology Advisor on 5 November 2020 to advise of scheme re-start and discuss key changes and plans for field evaluation.	CBC Archaeologist	Scope of trial trenching was agreed including trenching to inform the ES and trenching to be deferred until 2021.
Teleconference with HCC Archaeology Advisor on 12 November 2020 to advise of scheme re-start and discuss key changes and plans for field evaluation.	HCC Archaeologist	Scope of trial trench evaluation was assessed. HCC archaeologist proposed changes which were accepted and have been incorporated into a WSI for trial trench evaluation. HCC Archaeologist requested design drawings showing earthworks and areas of cut and fill.
Comments received from CBC Archaeology Advisor on 4 May 2021 on draft WSI for trial trenching.	CBC Archaeologist	WSI updated in line with comments from CBC Archaeology Advisor and resubmitted for agreement.
Email from CBC Archaeology Advisor on 12 August 2021 confirming that the WSI for trial trenching had been agreed.	CBC Archaeologist	WSI scope and methodology agreed. Also agreed with CBC that, in order to futureproof the WSI, the appointed archaeological contractor would update the HER data as part of their method statement, which is written in response to the requirements of the WSI.

10.5 Methodology

Overview

10.5.1 This section outlines the methodology employed for assessing the likely significant effects on Cultural Heritage from the construction and operation of the Proposed Development.

Baseline methodology

10.5.2 This section presents the methodology for the baseline assessment including the data sources used in the compilation of the baseline assessment, and the criteria for determining the value of heritage assets.

10.5.3 The cultural heritage baseline (**Appendix 10.1** in Volume 3 of this PEIR), has been undertaken in accordance with guidance and regulations published by the Chartered Institute for Archaeologists (CIfA), specifically the Standard and Guidance for Historic Environment Desk-Based Assessment and guidance published by Historic England (refer to **Table 10.4**).

Data sources

10.5.4 The baseline conditions for cultural heritage assets, as reported in **Appendix 10.1**, has been developed through consultation of the following sources:

- a. Central Bedfordshire and Luton Historic Environment Record (HER) [Data acquired 25 November 2020] for information relating to non-designated heritage assets and previous fieldwork events.
- b. Hertfordshire HER [Data acquired 18 December 2020] for information relating to non-designated heritage assets, historic landscape characterisation, and previous fieldwork events.
- c. National Heritage List for England (Ref. 10.18) for data relating to designated heritage assets.
- d. National Record of the Historic Environment held by Historic England.
- e. Bedfordshire and Luton Archives and Records Service for historical maps, photographs and local history.
- f. Hertfordshire Archives and Local Studies for historical maps, photographs and local history.
- g. Local Authority websites for information about conservation areas (Ref. 10.19 and Ref 10.20).
- h. National Library of Scotland for Historic Ordnance Survey mapping (Ref. 10.21).
- i. British Geological Survey, Geology of Britain Viewer (Ref. 10.22).
- j. Aerial photographs viewed online via the National Collection for Aerial Photographs (Ref. 10.23) and Britain from Above (Ref. 10.24) websites.
- k. Archaeology Data Service (Ref. 10.25) for information on previous cultural heritage assessments and fieldwork surveys.

- I. LiDAR data viewed online via The Environment Agency online database (Ref. 10.26)

- 10.5.5 The baseline has been informed by visits to the Proposed Development site and study area, during summer and winter months of 2019, as part of the baseline setting assessment (**Appendix 10.1** in Volume 3 of this PEIR). Further site visits will be undertaken in order to inform the ES.
- 10.5.6 The approach to defining future baseline is described in **Section 5.4 of Chapter 5 Approach to the Assessment**. The future baseline considered for Cultural Heritage is described in **Section 10.7** of this chapter.

Construction and Operational assessment methodology

- 10.5.7 This section presents the methodology used for determining the magnitude of impact and significance of effect to heritage assets as a result of the construction and operation of the Proposed Development.
- 10.5.8 The principles of impact assessment methodology rest upon independently evaluating the value of the cultural heritage resource, and the magnitude of impact upon that value. By combining the value of the cultural heritage asset with the predicted magnitude of impact, the significance of the construction and operational effect can be determined. The effect can be beneficial or adverse.

Determining the value of heritage assets

- 10.5.9 The value of a heritage asset (its heritage significance) is guided by its designated status but is derived also from its heritage interest. The NPPF defines value as ‘the value of a heritage asset to this and future generations because of its heritage interest’, which comprises archaeological, architectural, artistic and historic interest. The value of a heritage asset can therefore be defined by the sum and understanding of its heritage interest.
- 10.5.10 Each identified heritage asset can be assigned a value in accordance with the criteria set out in **Table 10.7**. Professional judgement and the results of consultation also contribute to the assessment of value, and regional variations, contribution to regional research agenda, and individual qualities of assets are taken into account where applicable.

Table 10.7: Criteria for determining the value of heritage assets

Value	Guidelines
High	Assets of international importance, such as World Heritage Sites, Grade I and II* listed buildings, Grade I and II* registered historic parks and gardens, Registered battlefields, Scheduled monuments,

Value	Guidelines
	Non-designated archaeological assets of schedulable quality and importance.
Medium	Grade II listed buildings, Grade II listed registered historic parks and gardens, Conservation Areas, Locally listed buildings included within a Conservation Area Non-designated heritage assets of a regional resource value.
Low	Non-designated heritage assets of a local resource value as identified through consultation; Locally listed buildings.
Very Low	Non-designated heritage assets whose heritage values are compromised by poor preservation or damaged so that too little remains to justify inclusion into a higher grade.

Determining the magnitude of impact

- 10.5.11 The method for determining the magnitude of impact to heritage assets follows the same process for both construction and operational impacts and is set out in **Table 10.8**.
- 10.5.12 Impacts may arise during construction or operational activities and can be temporary or permanent. Permanent impacts could entail the removal of buried archaeological features; temporary impacts may comprise construction activities within the setting of a heritage asset. The magnitude of impact arising from construction and operational activities considers mitigation measures which have been embedded within the Proposed Development as part of the design development process.

Table 10.8: Criteria for determining the magnitude of impact on heritage assets

Magnitude of impact	Description of impact
High	Change such that the significance of the asset is totally altered or destroyed. Comprehensive change to setting affecting significance, resulting in a serious loss in our ability to understand and appreciate the asset.
Medium	Change such that the significance of the asset is affected. Noticeably different change to setting affecting significance,

Magnitude of impact	Description of impact
	resulting in erosion in our ability to understand and appreciate the asset.
Low	Change such that the significance of the asset is slightly affected. Slight change to setting affecting significance resulting in a change in our ability to understand and appreciate the asset.
Very Low	Changes to the asset that hardly affect significance. Minimal change to the setting of an asset that have little effect on significance resulting in no real change in our ability to understand and appreciate the asset

10.5.13 An assessment to classify the effect, having taken into consideration any embedded mitigation, is determined using the matrix at **Table 10.9**.

10.5.14 The effect is determined by cross-referencing the value of the heritage asset with the magnitude of impact. Major and moderate effects are considered to be significant in accordance with standard EIA practice; minor and negligible effects are considered to be not significant.

Table 10.9: Criteria for determining the significance of effect

Magnitude of impact	Value of heritage asset			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Very Low	Minor	Minor	Negligible	Negligible

10.5.15 If appropriate, additional mitigation would be proposed where significant effects have been identified. An assessment of the significance of effect made prior to, and following, the implementation of additional mitigation allows the residual effect to be recorded. It is noted that mitigation does not automatically reduce an effect, but may be used to offset or compensate for an adverse effect.

10.6 Assumptions and limitations

- 10.6.1 This section provides a description of the assumptions and limitations to the Cultural Heritage assessment.
- 10.6.2 Heritage data has been obtained from third party sources and the assessment of effects is based on the accuracy of this information. Although data from HERs and the NHLE are generally reliable, on occasion asset data may be omitted, incorrectly named, have incorrect coordinate data, or be out of date.
- 10.6.3 The HER data was cross-checked against the NHLE data as listed building data was included in both sets of data. The HER data identified that Listed Building Consent had been granted in 2018 for the demolition of Winch Hill Farmhouse (NHLE 1307881) and a cross check of the North Hertfordshire Council planning portal confirmed that the building had been demolished in 2019 (planning reference: 18/03263/LBC). The former farmhouse is still recorded on the NHLE dataset but has been omitted from the baseline and figures that form part of this PEIR.
- 10.6.4 Walkover surveys to assess the setting of heritage assets were undertaken in the summer and winter of 2019 to inform the baseline report (**Appendix 10.1**). Further walkover surveys will be carried out to inform the ES and to confirm baseline conditions for heritage assets.

Reasonable Worst Case

- 10.6.5 **Chapter 5** Approach to the Assessment describes the general approach adopted to ensure that a reasonable worst case is assumed in this assessment including the use of parameters, accounting for uncertainty, and incorporating flexibility in design and demand forecasts.
- 10.6.6 Further relevant assumptions on worst case specific to this assessment include:
- a. The worst-case construction scenario for heritage assets considers the construction methodologies that would result in the greatest magnitude of permanent physical change or temporary change to an asset's setting. It assumes that construction activities would be continuous from the commencement of Phase 1 to the completion of Phase 2 and would be carried out concurrent with the operational activities of the airport. Different impacts could occur to heritage assets during all three assessment phases and, as such, each phase is assessed where applicable to the asset.
 - b. The worst-case scenario during operation of the Proposed Development is measured by the level of change to the setting of heritage assets. The greatest magnitude of permanent change to an asset's setting would occur at the peak of the airport's operation, and is therefore defined as the operational airport in 2043 following completion of all development phases.

10.7 Baseline conditions

10.7.1 This section provides a description of the existing Cultural Heritage baseline. A detailed description of baseline conditions is set out in **Appendix 10.1** in Volume 3 of this PEIR, and a gazetteer of heritage assets is presented in **Appendix 10.2** in Volume 3 of this PEIR. **Figures 10.1 to 10.4** in Volume 4 to this PEIR show the location of heritage assets and previous archaeological investigations, that have been considered in this assessment; **Figure 10.5** shows the historic landscape character of the Proposed Development site and study area; **Figures 10.6 to 10.11** show the changes in noise contours for each assessment phase, and **Figure 10.12** shows designated heritage assets within the ZTV.

Existing conditions

10.7.2 There are no World Heritage Sites or registered battlefields within the Proposed Development site or study areas. The following heritage assets are located within the defined study areas.

Designated Heritage Assets

Designated heritage assets in the 2km study area

10.7.3 There is one scheduled monument that falls within the 2km study area, comprising Someries Castle (NHLE 1008452), located approximately 250m south of the Main Application Site. The scheduled monument includes foundation and upstanding remains of the late medieval gatehouse and chapel which formed the west wing of the brick-built structure, plus the earthwork remains of a formal garden to the south west.

10.7.4 Due to its proximity of the asset to the Proposed Development site, Someries Castle is included in the preliminary assessment.

10.7.5 There are two RPGs located partially within the 2km study area, comprising:

- a. Grade II* Luton Hoo RPG (Grade II*, NHLE 1000578), located approximately 200m south west of the Main Application Site. Luton Hoo is a landscaped park that was first enclosed in 1623 and enlarged and remodelled by Lancelot Brown in 1764-74.
- b. Grade II Putteridge Bury RPG (Grade II, NHLE 1000917) is located 4km north east of the centre of Luton and approximately 2km north of the Main Application Site. The landscaped park was laid out c 1820, subsequently extended southwards to its present boundaries by 1884.

10.7.6 Both RPGs are included in the preliminary assessment due to their proximity to the Proposed Development site.

10.7.7 There are six conservation areas within the 2km study area, comprising:

- a. High Town Road Conservation Area which is the core of Luton's earliest suburb.
- b. Luton Town Centre Conservation Area encompasses the historic core of the town with most of the historic buildings dating to the 19th century.

Residential, commercial and public buildings coexist, contributing to the vibrant character of the conservation area.

- c. Luton South Conservation Area which is located to the south of the centre of Luton town. The character of this conservation area is residential and includes a number of Victorian terraces along Stockwood Crescent and London Road as well as detached and semi-detached properties along West Hill Road. The conservation area encompasses Luton Hoo Memorial Park, to the south east.
- d. Plaiter's Lea Conservation Area on the northern fringes of Luton's commercial district.
- e. Luton Hoo (Hyde) Conservation Area which is located within the Luton Hoo RPG.
- f. Bendish Conservation Area which encompasses the historic core of the hamlet in the parish of St. Paul's Walden.

- 10.7.8 The settings of all of the conservation areas do not extend into the Proposed Development site with views beyond each settlement not possible from within each conservation area's boundary. In addition, significant noise levels arising from the construction and operation of the Proposed Development are not anticipated to change the character of the areas. As such, significant effects are unlikely to arise and these assets are not included in the preliminary assessment.
- 10.7.9 There are 87 listed buildings that fall within the 2km study area, four of which are Grade I listed and one of which is Grade II* listed. The remaining listed buildings are Grade II listed.
- 10.7.10 The four Grade I listed buildings are the Church of St. Mary (NHLE 1102475) in Kings Walden to the north east of the Main Application Site; the Parish Church of St. Mary (NHLE 1114615) in Luton to the west; and Luton Hoo house (NHLE 1321301) and the garden houses and walls associated with Luton Hoo (NHLE 1158944) which are located south west of the Main Application Site.
- 10.7.11 The baseline report presented in **Appendix 10.1 Cultural Heritage Desk-based Assessment** confirmed that the settings of the Church of St. Mary and the Parish Church of St. Mary in Luton do not extend into the Proposed Development site and were unlikely to experience change as a result of the Proposed Development. Luton Hoo house, garden houses and walls have been included in this PEIR as part of the assessment of Luton Hoo RPG.
- 10.7.12 The Grade II* listed building comprises the Old Homestead (NHLE 1176170), located to the east of the Main Application Site. This asset is included in the preliminary assessment due to potential changes within its setting. Luton Hoo Stables is a Grade II* building that falls outside of the 2km study area (NHLE 1114713), but has been included in the assessment due to its associative relationship with Luton Hoo house and RPG.
- 10.7.13 The Grade II listed buildings are dispersed across the 2km study area. The majority of Grade II listed buildings are located within existing settlement areas of Luton and Breachwood Green, whilst others comprise discrete buildings, or

small groups of buildings. Many of these buildings comprise farmhouses that are indicative of the agricultural heritage of the study area. Significant effects arising from changes within the settings of the majority of these assets are unlikely to arise as a result of the Proposed Development. The baseline report presented in the Desk-based Assessment, provided in **Appendix 10.1** in Volume 3 to this PEIR, concluded that Wigmore Hall Farmhouse (NHLE 1321368), Wandon End Farmhouse (NHLE 1102448) and Wandon End House (NHLE 1307874), all located east of the Main Application Site boundary, have the potential to experience impacts from the Proposed Development arising from changes within their setting. These assets are included in this preliminary assessment.

Designated heritage assets in the 250m study area

- 10.7.14 There are no scheduled monuments or RPGs located within the 250m study area of the Off-site Highways Interventions outside of the 2km study area.
- 10.7.15 There are two conservation areas, Hitchen Conservation Area and Hitchen Hill Path Conservation Area, and 124 listed buildings within the 250m study area for Off-site Highways Interventions that are located beyond the 2km study area. All of the listed buildings fall within the conservation areas and include one Grade I listed building and six Grade II* listed buildings. The minor works associated with the Off-site Highways Interventions are likely to result in temporary, barely perceptible change within the settings of heritage assets within the 250m study area, and significant effects are not anticipated.

Designated heritage assets in the wider study area (beyond the 2km study area)

- 10.7.16 All of the designated assets identified in the wider study area either fall within the ZTV and/or are located where noise contour data shows a change¹ between the existing and anticipated noise levels during the operation of the Proposed Development.
- 10.7.17 There are three scheduled monuments within the wider study area. Six Hills Roman barrows is located in Stevenage, over 10km north east of the Main Application Site, and falls within the noise contour data which shows the predicted changes in airborne noise. The remaining two scheduled monuments fall within the ZTV and are located close to the village of Lilley on the suburban outskirts of Luton. The scheduled monuments comprise:
- a. Six Hills Roman barrows (NHLE 1015579) consisting of earthwork features that form the largest surviving group of Roman burial mounds in England. The monument stands within an area of publicly accessible common land.
 - b. A Barrow at Telegraph Hill (NHLE 1012449), located approximately 6km north east of the Main Application Site.
 - c. A Neolithic enclosure known as Waulud's Bank (NHLE 1015558), approximately 6km north west of the Main Application Site, in the

¹ A significant increase in noise level is considered to be one higher than 3dB.

suburban outskirts of Luton. The surviving earthworks define a large D-shaped enclosure.

- 10.7.18 The baseline report presented in the Desk-based Assessment provided in **Appendix 10.1**, Volume 3 to this PEIR, concluded that the settings of the Barrow at Telegraph Hill and Waulud's Bank scheduled monuments do not extend into the Proposed Development site and significant effects to the assets as a result of the Proposed Development are unlikely. However, as Six Hills Roman barrows (NHLE 1015579) is located within the noise contour data, this is included in this PEIR to assess potential impacts arising from aural intrusion.
- 10.7.19 There are seven RPGs located in the wider study area. These include the Grade I St Paul's Walden Bury (NHLE 1000150), located approximately 4km to the east of the Main Application Site; the Grade II* Knebworth (NHLE 1000255) located approximately 8.5km east of the Main Application Site; the Grade II* Temple Dinsley (NHLE 1000919) located approximately 4km east of the Main Application Site; the Grade II* listed The Improvement Garden (NHLE 1468798) located approximately 2.5km south east of the Main Application Site; the Grade II Wardown Park (NHLE 1001445) located approximately 3km north west of the Main Application Site, the Grade II Ayot House (NHLE 1000905) which is located approximately 6.7 km south east of the Main Application Site and the Grade II The Hoo, Kimpton (NHLE 1000912) which is located approximately 4.5km east of the Main Application Site.
- 10.7.20 The majority of the RPGs in the wider study area would experience no change as a result of the Proposed Development. The Grade I St Paul's Walden Bury (NHLE 1000150), located approximately 4km to the east of the Main Application Site and the Grade II* listed The Improvement Garden (NHLE 1468798), are included in this PEIR as they fall within the noise contour data which shows a change between the existing and anticipated noise levels during the operation of the Proposed Development.
- 10.7.21 There are four Grade I and 22 Grade II* listed buildings within the wider study area. The majority of these buildings comprise churches located within existing areas of settlement. The baseline report presented in the Desk-based Assessment provided in **Appendix 10.1**, Volume 3 to this PEIR, concluded that the settings of these assets do not extend into the Proposed Development site. Significant effects as a result of the Proposed Development are unlikely and they are not assessed further in this PEIR.

Non-designated heritage assets

1km study area

- 10.7.22 There are 108 non-designated heritage assets located within the 1km study area; 25 of these are located within the Proposed Development site boundary.
- 10.7.23 19 out of the 25 non-designated heritage assets located within the Proposed Development site represent the locations of former assets that no longer survive, such as the site of the Hospital of St. Mary Magdalene (HER 362) and historic landscape features such as the site of former quarry pits (HER 6733). Asset HER 12422 was initially recorded as a potential archaeological feature;

however, subsequent field evaluation confirmed that the asset was in fact a geological anomaly which has no heritage value. Assets HER 12423 and HER 12424, which represent the locations of earthworks associated with WWII entrenchments, were identified from aerial photographs but are located in areas occupied by hardstanding. Development is likely to have removed the earthworks features and it is assumed that they are no longer extant.

- 10.7.24 The remaining six assets that are recorded on the HER as surviving within the Proposed Development site comprise:
- a. HER 10808, the site of Iron Age and Roman settlement-related activity.
 - b. HER 7358, the site of a possible Roman building.
 - c. HER 17218 and 17219, which comprise cropmarks which may relate to late prehistoric or Roman activity.
 - d. HER 20507, post-medieval to modern banked enclosure earthworks associated with Century Park.
 - e. HER 19823, 20th century Luton Airport Fire Station.
 - f. HER 17921, WWII Airfield Battle Headquarters to the rear of Wigmore Hall Hotel, the majority of which is located underground.
- 10.7.25 There are also three Areas of Archaeological Significance located within the 1km study area with two located within the Main Application Site boundary. Asset HER 7358, the site of a possible Roman building, is located within one of the areas.

Previous Archaeological Investigations

- 10.7.26 There have been nine archaeological investigations previously undertaken within the Proposed Development site and 15 archaeological investigations previously undertaken within the study area. These are illustrated on **Figure 10.4** in Volume 4 of this PEIR.
- 10.7.27 In 2018 and 2019, two phases of geophysical survey were undertaken for the Proposed Development on land to the east of Luton Airport. The 2018 survey was undertaken by SUMO (**Appendix 10.3** Volume 3 to this PEIR) on land within Bedfordshire which identified a small complex of ditches and pit-like anomalies that were interpreted as probably a component of a small Roman site and correlates with an enclosure recorded in the HER record (HER 10808). A possible pit alignment was also identified.
- 10.7.28 The 2019 geophysical survey was undertaken by TigerGeo (**Appendix 10.4** Volume 3 to this PEIR) on land within Hertfordshire which identified a small number of possible ditches across the surveyed area, but none forming groups or having diagnostic character.
- 10.7.29 In 2019, a trial trench evaluation was undertaken for the Proposed Development at land to the east of Luton Airport (**Appendix 10.5** Volume 3 to this PEIR). The scope of the trial trench evaluation was based on the results of the geophysical survey undertaken by SUMO in 2018 with trenches designed to target the possible Roman site and the possible pit alignment. The evaluation identified a

single pit of Neolithic date and confirmed the presence of Late Iron Age / Early Roman activity in the form of a number of ditches which seemingly formed an enclosure encompassing the remains of a small building (correlating with HER 10808) and a series of rubbish pits.

- 10.7.30 A further phase of trial trench evaluation is programmed to be undertaken in 2022, the scope of which has been agreed with the CBC Archaeologist and will be agreed with the HCC Archaeologist prior to commencement.

Historic Landscape

- 10.7.31 Historic Landscape Characterisation data has not been provided by Central Bedfordshire HER however information was supplied by the Historic Environment Information Officer for CBC.
- 10.7.32 Much of the Proposed Development site which lies within the county of Bedfordshire is largely 20th century and later development which includes Luton Airport and ancillary structures, part of Luton's built up area and industrial buildings in the vicinity of Luton Parkway Station, predominantly those of Vauxhall Motors. Luton Hoo registered park and garden is located to the south-west of the Main Application Site and land between the B653 (to the east of Luton Hoo) and the county boundary with Hertfordshire largely comprises post-19th century irregular enclosures. At the time of Domesday, this area formed part of the largest woodland recorded in the county. During the 12th and 13th centuries, this area was fundamentally an assart landscape with irregular enclosures and isolated farms, hamlets and woodland remnants. Today, the woods have been reshaped and the majority of hedgerows have been removed with the only surviving remnant of the medieval landscape being the farm sites and road pattern.
- 10.7.33 The Historic Landscape Characterisation data provided by Hertfordshire HER for the Proposed Development site and study area identified 11 broad-type categories of land-use which are illustrated on **Figure 10.5** in Volume 4 of this PEIR.
- 10.7.34 Within the Main Application Site, the land is largely characterised as 'Pre-18th century Irregular Enclosure' and 'Post-1950 Boundary Loss' with small areas of 'Ancient Woodland' and '18th – 20th century Woodland Plantation'. The 'Pre-18th century Irregular Enclosure' character area relates to the farm land associated with Winch Hill Farm and the 'Post-1950 Boundary Loss' relates to the rest of the farm land to the east of Winch Hill Farm which has undergone late 20th century alterations and the loss of hedgerows, as can be seen on historic Ordnance Survey maps dated from 1888 to 1949 which show this land divided into smaller parcels. The 'Ancient Woodland' character area relates to the remnants of Winch Hill Wood, which had been largely removed by the development of the runway for the current Luton Airport site. Winch Hill Wood is visible on historic Ordnance Survey maps dated from 1885 to 1949 with no visible change. The '18th – 20th century Woodland Plantation' character area relates to the small parcels of woodland to the north and south of Winch Hill Farm and these areas are not marked on the 1949 Ordnance Survey map.

- 10.7.35 The wider landscape within the Main Study Area is largely characterised as 'Pre-18th century Irregular Enclosure' and 'Post-1950 Boundary Loss' with small areas of 'Built-up Area – Urban Development' which represents the residential areas of Wandon End, Tea Green and Breachwood Green to the north and east of the Proposed Development site. The 'Leisure / Recreation' character area relates to the 20th century golf course at Wandon End and the 'Allotment' character area relates to the 20th century allotment at Breachwood Green.

Future baseline

- 10.7.36 The general approach to defining future baseline and the developments identified for consideration are described in **Section 5.4** of **Chapter 5** Approach to the Assessment. In the absence of the Proposed Development, there would be minor change to the baseline conditions of some cultural heritage assets.
- 10.7.37 Proposals to develop agricultural land at Land South And North West Of Cockernhoe And East Of Wigmore, would result in the loss of agricultural land to the west of Wandon End which contributes to the wider agricultural setting of Grade II listed buildings Wandon End farmhouse and Wandon House.
- 10.7.38 There are currently no proposals that would affect buried archaeological assets included in this PEIR and the future baseline conditions for these assets would remain the same.

10.8 Embedded and good practice mitigation measures

10.8.1 This section describes the embedded and good practice mitigation for Cultural Heritage that has been incorporated into the Proposed Development design or assumed to be in place before undertaking the assessment. A definition of these classifications of mitigation and how they are considered in the EIA is provided in **Chapter 5** Approach to the Assessment.

Embedded

10.8.2 The Proposed Development has evolved to take into consideration the heritage assets within the Proposed Development site boundary and to minimise any impacts on the historic environment. A number of mitigation measures have been incorporated into the design of the Proposed Development. During the preparation of the design proposals, a number of different options were assessed. These included alternative locations of the proposed buildings, car parks and other hard standing areas as well as variations in height of the new buildings. Areas that have been subject to previous disturbance, such as the landfill site and previously landscaped areas within the existing airport have been identified. The Proposed Development will utilise this previously disturbed area for multi-storey, block, and surface parking car parking, offices and hotel facilities, expansion of Terminal 2, and for extensions to the existing airfield. Utilising previously disturbed areas avoids the risk of physically impacting buried archaeological remains.

10.8.3 Archaeological evaluation which has been carried out to inform the impact assessment identified the remains of an Iron Age/ Roman enclosure (HER 10808) within the Proposed Development site. The remains are assessed to be of regional importance and of medium heritage value. The Proposed Development has avoided impacting the asset by incorporating the archaeological remains into embedded landscape design that will be established during Phase 1, preserving them in an area designated for meadow grassland and scrub.

10.8.4 The Proposed Development design seeks to enhance the historic landscape by including provision for the planting of hedgerows and hedgerow trees that are in-keeping with the historic landscape character of the area.

Good Practice

10.8.5 The Draft Code of Construction Practice (CoCP) sets out measures to minimise impacts to heritage assets during construction activities; including impacts arising from changes to the setting of heritage assets. These measures include minimising noise, dust and vibration during construction and the use of directional construction lighting that minimises light spill.

10.8.6 A draft Cultural Heritage Management Plan (CHMP) which sets out how the historic environment would be protected during all construction phases, in a consistent and integrated manner is presented at **Appendix 10.6** of this PEIR. The CHMP details the scope, guiding principles and methodology for the planning and implementation of archaeological mitigation that is required as a result of the construction of the Proposed Development.

10.9 Preliminary assessment

- 10.9.1 This section presents the results of the preliminary assessment of effects with the embedded and good practice mitigation measures, described in the previous section, in place.
- 10.9.2 A summary of the assessment of effects is provided on **Table 10.10** in **Section 10.14**. Effects are discussed in further detail in this section.
- 10.9.3 The baseline report presented in **Appendix 10.1** Cultural Heritage Desk-based Assessment has identified the known designated and non-designated heritage assets located within the Proposed Development Site and study areas. Only those assets where it is considered that there is the potential for impact are included in this section.
- 10.9.4 The remaining heritage assets identified in the baseline report (**Appendix 10.1**) are unlikely to experience impacts from the Proposed Development due to their distance from the Proposed Development and/or the nature of their setting. The rationale for scoping out these assets from the PEIR is included in the baseline report and summarised in the gazetteer in **Appendix 10.2** of this PEIR.
- 10.9.5 The designated heritage assets within the 2km study area that are included in the assessment comprise:
- a. Someries Castle scheduled monument (NHLE 1008452).
 - b. Luton Hoo Grade II* RPG (NHLE 1000578).
 - c. Putteridge Bury Grade II RPG (NHLE 1000917).
 - d. Old Homestead, Grade II* (NHLE 1176170).
 - e. Wigmore Hall Farmhouse, Grade II (NHLE 1321368).
 - f. Wandon End Farmhouse, Grade II (NHLE 1102448).
 - g. Wandon End House, Grade II (NHLE 1307874).
- 10.9.6 The designated heritage assets within the wider study area that are included in the assessment comprise:
- a. Six Hills Roman barrows, scheduled monument (NHLE 1015579).
 - b. St Paul's Walden Bury RPG, Grade I (NHLE 1000150).
 - c. The Improvement Garden, Grade II* (NHLE 1468798).
- 10.9.7 Non-designated assets considered in the assessment comprise:
- a. the site of Iron Age and Roman settlement-related activity, (HER 10808).
 - b. the site of a possible Roman building, (HER 7358).
 - c. cropmarks which may relate to late prehistoric or Roman activity, (HER 17218) and (HER 17219).
- 10.9.8 The assets and the predicted level of impact and effect are discussed below. The phases of development are included only where there is potential for different impacts to occur within each development phase.

- 10.9.9 The construction activities associated with the Off-site Highways Interventions would be carried out largely within the footprint of the existing highway and no buildings would be physically impacted by the proposed works. There would be no impact to the character and settings of Hitchen Conservation Area and Hitchen Hill Path Conservation Area, and no change to the settings of the conservation areas' listed buildings. As such, they are not considered further in this assessment.
- 10.9.10 In order to address stakeholder consultation responses, some effects that are not judged to be significant, are discussed in further detail in this section. A summary of the assessment of effects is provided in **Table 10.10**.

Construction Effects

Designated Heritage Assets

Someris Castle Scheduled Monument (NHLE 1008452)

- 10.9.11 Someris Castle is a scheduled monument of high value located approximately 250m south of the Main Application Site boundary. The asset comprises the ruins of a 15th century magnate's residence and comprises buried and upstanding remains, which include the gatehouse and chapel. The asset is of national importance as a survivor of a relatively rare building type, and is one of the earliest examples of brick building in medieval England.
- 10.9.12 The castle derives its heritage value from its historic, architectural and archaeological values. The presence of the castle articulates the status of late medieval society in this part of England and contributes to an understanding of how political power was organised and displayed. The setting of the castle is defined by the extent of its upstanding and buried remains. Historically, the castle would have had an aesthetic and functional relationship with the surrounding countryside, which would have been a predominantly assart landscape containing isolated farms and woodland remnants. The current landscape character is ostensibly post-medieval and modern, with planted woodland rather than assart, and large enclosed fields with fewer hedgerow boundaries. Although the landscape no longer contains components that are contemporary with the castle, and therefore does not contribute significantly to its heritage value, it provides a sympathetic and positive setting which doesn't detract from the ability to appreciate the asset. .
- 10.9.13 The visual setting of the castle is not extensive, and long-range views across the surrounding countryside do not form part of its setting. Views are impeded to the west and south west by woodland planting and to the north by a farmhouse, and large agricultural buildings, the latter of which dominate the castle's immediate environs and detract from its setting. Views of the western extent of the airport, comprising the runway and access road, are visible from the western edge of the asset. The proximity of the airport dominates the experience of the castle and detracts from the appreciation of the castle's setting.

Phase 1

- 10.9.14 As detailed in **Chapter 4** The Proposed Development, of this PEIR, activities carried out during Phase 1 assessment include earthworks to the east of the airport associated with landscaping and the construction of the aviation platform, changes to airfield layout and airside roads, enhancements to Terminal 1, amendments to existing car parks (Car Park P3, Car Park P4 and Car Park P5), and the creation of surface level car parking (Car Park P6 and Car Park P7). These construction activities may result in temporary changes to the setting of the castle arising from the introduction of new components into its visual setting.
- 10.9.15 Due to intervening vegetation and buildings, ground level construction activities associated with the construction of new surface car parking, Car Park P6 and Car Park P7 located on the south side of Car Park P6, would not be visible from the asset, resulting in no change to the asset's setting and as such would have no impact on its value.
- 10.9.16 In addition, amendments to existing car parks during Phase 1 construction would result in no change to the setting of the asset and as such would have no impact on its value.
- 10.9.17 Tall construction plant, such as the use of tower cranes during the north and south extension of Terminal 1 may be visible above the rooflines of the existing airport buildings to the north of the castle, and their presence would introduce a new component into the visual setting of the castle. This would have a minimal change on the asset's setting but would not affect its value. It is assessed that this would constitute a very low magnitude of impact and a temporary **minor** adverse effect, which is **not significant**.
- 10.9.18 The Phase 1 activities are located more than 1km from Someries Castle and are unlikely to result in impacts arising from noise and vibration. Construction activities within 1km of the castle include updates to the existing Engine Run-up Bay on the north side of the airfield, works associated with Terminal 1 extension, and amendments to Car Park 3, located approximately 680m north of the castle.
- 10.9.19 The predicted maximum construction noise level for Phase 1 assessment year has been assessed in **Chapter 16** Noise and Vibration. The predicted worst case construction noise level for the GR1 and GR2 locations at Someries Castle are assessed to be 51 and 45 dB, which are below the Lowest Observable Adverse Effect Level (LOAEL) noise contours arising from the Proposed Development and is assessed in **Chapter 16** to be **not significant**.

Phase 2a

- 10.9.20 Phase 2a construction activities, including the construction of Terminal 2 and the extensions to the airfield, may result in temporary changes to the setting of the castle arising from the introduction of new components into its setting.
- 10.9.21 Activities associated with the construction of Terminal 2 would likely be screened by intervening buildings and vegetation located to the north of the

castle, resulting in no change to the asset's setting and as such would have no impact on its value.

- 10.9.22 Construction activities associated with the western airfield extension may be visible from the western edge of the asset. This ground level activity would represent a temporary change to the asset's visual setting but would not affect its value. It is assessed that this would constitute a very low magnitude of impact and a temporary **minor** adverse effect, which is **not significant**.
- 10.9.23 The construction of a surface movement radar (SMR) tower to the south east of the existing runway is also proposed during Phase 2a. The SMR tower would comprise a steel lattice style structure, approximately 13m in height and would support a radar. The SMR tower would be surmounted by a red obstruction light and access from the existing airport perimeter road would be constructed for maintenance vehicles. The SMR tower would be located approximately 1.1km north east of Someries Castle and its construction is likely to be obscured by intervening vegetation and a slight rise in topography between the tower and the asset. The SMR tower construction traffic using the existing perimeter road, located approximately 270m north of Someries Castle, may introduce traffic into the visual setting of the asset. However, this would represent a minimal change that would not change the ability to understand the asset. This would constitute a very low impact, resulting in a temporary **minor** adverse effect, which is **not significant**.
- 10.9.24 The Phase 2a assessment activities within 1km of Someries Castle comprise airfield works, including a new runway access, apron, taxiways and a surface movement radar tower just over 1km east of the castle, construction of Terminal 2 and its west pier, located just over 1km north-west of the castle, amendments to Car Park 3 to the north of the runway, and the construction of a MSCP (Car Park 1) and surface level car park (Car Park 2) to the west of the runway, just over 1km west of the castle.
- 10.9.25 The closest construction activity to Someries Castle comprises the provision of new airfield equipment and access track, approximately 280m north-west of the castle, and would not result in noise or vibration impacts to the asset. Piling would be required for Terminal 2 infrastructure; however, due to the distances involved, the assessment in **Chapter 16** Noise and Vibration, concludes that piling induced vibration is unlikely to be perceptible at the castle's location and would result in no impact.
- 10.9.26 The reasonable worst-case construction noise levels for the GR1 and GR2 locations at Someries Castle are assessed to 55 and 49 dB which are below the LOAEL noise contours arising from the Proposed Development. The effect of construction noise and vibration is therefore assessed in **Chapter 16** of this PEIR to be **not significant**.

Phase 2b

- 10.9.27 The majority of Phase 2b construction activities, including the construction of the new apron, stands and taxiway, the extension to the earthworks platform and car parking, would be located to the east and north east, between 1 and 1.5km from Someries Castle. Phase 2b construction activities would likely be

screened by intervening buildings and vegetation located to the north of the castle, resulting in no change to the asset's setting and no impact on its value.

- 10.9.28 The element of Phase 2b construction that is nearest to Someries Castle comprises the fire training ground (FTG), located approximately 370m north east of the castle. The FTG would consist of several components, including storage units and welfare facilities with the tallest component comprising a 2-storey breathing apparatus chamber, which would be approximately 15m in height. Activities associated with the FTG construction would likely be visible in views to the north east. These temporary works would represent minimal change to the asset's setting and would not affect the castle's heritage value. The magnitude of impact is assessed to be very low, resulting in a **minor** adverse effect, which is **not significant**.
- 10.9.29 Construction of the FTG would not result in significant levels of construction noise at Someries Castle. Piling will take place in Phase 2b to support earthworks, New Century Park buildings and for Terminal 2 infrastructure. However, due to the distances involved, **Chapter 16** Noise and Vibration, concludes that piling induced vibration is unlikely to be perceptible at Someries Castle, resulting in no impact.
- 10.9.30 The reasonable worst-case construction noise levels for the GR1 and GR2 locations at Someries Castle for Phase 2b are assessed to be 58 and 47 dB which are below the LOAEL noise contours arising from the Proposed Development and as such, noise and vibration arising from construction activities are considered to be **not significant**.

Luton Hoo Grade II* RPG (NHLE 1000578)

- 10.9.31 Luton Hoo is a Grade II* listed landscaped park that was first enclosed in 1623 and enlarged and remodelled by Lancelot Brown in 1764-74.
- 10.9.32 Luton Hoo derives its value from its historic interest, and the architectural interest of its internal features, including Grade I listed Luton Hoo house (NHLE 1321301) and garden houses and retaining walls (NHLE 1158944); the Grade II* listed stables (NHLE 1114713); and the Grade II listed lodges (NHLE 1114715; NHLE 1114716), bridge (NHLE 1114717) and boathouse (NHLE 1159067) at the east entrance. Historic interest derives from the insight the park offers into the social and economic life of 18th and 19th century society, as well as the association with notable architects such as Robert Adam and Robert Smirke, and designers such as Lancelot Brown. Architectural and aesthetic interest derives from the appreciation of the design of the park, the careful location of its features, including the relationship between buildings, and planted trees and gardens. Architectural and aesthetic interest also derives from the careful positioning of the house on an elevated platform, with designed views to the east.
- 10.9.33 The park provides the aesthetic and functional setting for the listed buildings contained within, and the historical context and group value of these assets contributes to the heritage value of the park, which is assessed as high.

Phase 1

- 10.9.34 Phase 1 construction activities, including changes to airfield layout and airside roads, amendments to existing car parking (Car Park P3, Car Park P4 and Car Park P5), the creation of temporary surface car parking (Car Park P6 and Car Park P7) and enhancements to Terminal 1, may result in temporary changes to the setting of the RPG arising from the introduction of new components into its visual setting.
- 10.9.35 Due to intervening vegetation and buildings, ground level construction activities associated with the construction of new surface car parking, Car Park P6 and Car Park P7 located on the south side of Car Park P6, would not be visible from the asset, resulting in no change to the asset's setting and as such would have no impact on its value.
- 10.9.36 In addition, amendments to existing car parks during Phase 1 construction would result in no change to the setting of the asset and as such would have no impact on its value.

Phase 2a

- 10.9.37 The Off-site Car Parks P1 and P2 to the south west of the Main Application Site, constructed during Phase 2a, are located on the northern edge of Luton Hoo Grade II* RPG.
- 10.9.38 Car Park P1 (also known as the Tiered Car Park), would comprise a multi-storey building with a height of approximately 20.35m. Car Park P2 (also known as the Trailer Car Park), would comprise surface level parking. The setting of Luton Hoo RPG is characterised by the designed landscape, with views generally being inward looking, with internal views dominated and framed by banks of trees, and planted boundaries restricting long-range views out of the park in most directions apart from the east, where the view has been designed to look beyond the River Lea and towards George Wood and Hardingdell Wood.
- 10.9.39 Construction of Car Park P1 may be visible from elevated areas within the park, particularly if emerging from the woodland to the north of the house and following the internal road to the park's north access. The introduction of construction equipment into views from within the park would introduce a component that is incongruous with its predominantly rural setting. However, this would not impact the appreciation of the internal designed views or the long-range designed view to the east. Therefore, the impact would represent a slight change in the setting of the park, but it would not affect the ability to appreciate the asset or the importance of its designed space and internal views. This would constitute a low magnitude of impact, resulting in a temporary **moderate** adverse effect, which is **significant**.

Phase 2b

- 10.9.40 Works associated with the construction of Hangar A and B may be visible above the horizon in views from the parkland west of the Rover Lea towards the Proposed Development site. This temporary impact would represent a slight change in views but would not affect the heritage significance of the park or affect its heritage value. This would constitute a low magnitude of impact, resulting in a temporary **moderate** adverse effect, which is **significant**.

Putteridge Bury Grade II RPG (NHLE 1000917)

- 10.9.41 Putteridge Bury RPG is a Grade II listed park of medium value located approximately 2km to the north of the Main Application Site. The park is located partially inside of the 2km study area, but the larger proportion is located in the wider study area. The site walkover assessed the potential for changes to the park's setting as a result of visual intrusion during the construction phases of the Proposed Development. The site visit confirmed there would be no visibility with the Proposed Development site from within the park due to screening from intervening settlement and its tree-lined boundaries. As such, it is assessed there would be no impact to the park and no change to its setting as a result of the construction of the Proposed Development.

Old Homestead, Grade II* (NHLE 1176170)

Phase 1

- 10.9.42 The Old Homestead is a 17th century, medieval open-hall house, of timber-framed construction located in the village of Breachwood Green, approximately 1.5km east of the Main Application Site. The heritage significance of the house, which is high, derives from its architectural interest as a building that demonstrates the local vernacular style, and historical and archaeological interest relating to its method of construction and later phases of development and modification. The house's location within Breachwood Green village contributes to its setting but its position, set back from the road and from neighbouring houses, with a mature garden occupying the intervening space, results in an almost secluded setting and prevents the house being viewed and appreciated as part of the wider streetscape of the village. The house is located within the ZTV and the site visit confirmed that components of the Proposed Development may be visible in views to the west, from the rear of the property.
- 10.9.43 Phase 1 activities associated with amendments to existing car parks and the creation of surface level car parking to the north of the airport are unlikely to result in visual intrusion within the setting of the house. Activities comprising the movement of construction plant associated with landscaping and the construction of the aviation platform to the east of the airport may be visible in views from the rear of the property. The temporary introduction of construction plant and equipment into a previously rural space would represent a noticeable change in views from the house but would not affect the ability to appreciate the house within its immediate setting or impact its heritage significance. The impact would be very low, resulting in a temporary **minor** adverse effect which is **not significant**.

Phase 2a and 2b

- 10.9.44 Phase 2a and Phase 2b activities are unlikely to be noticeable from the house, resulting in no impact to the asset's setting.

Wandon End House (NHLE 1307874) and Wandon End Farmhouse (NHLE 1102448) Grade II listed buildings

- 10.9.45 Wandon End House and Wandon End Farmhouse are located just beyond the north-east of the Main Application Site on the north side of Darley Road. The buildings are both Grade II listed and are therefore of medium value. The buildings derive their value from their architectural interest, as examples of late medieval and post-medieval construction and design, and historic interest as they are indicative of the agricultural heritage of the area. The buildings derive some of their value from their agricultural surroundings, which provide the functional setting for both.
- 10.9.46 Construction activities associated with earthworks and remediation during all three construction phases would represent noticeable change to the predominantly rural setting of both buildings. This would constitute a medium magnitude of impact which would result in a temporary **moderate** adverse effect, which is **significant**.

Wigmore Hall Farmhouse Grade II listed building (NHLE 1321368)

- 10.9.47 Wigmore Hall Farmhouse is located just beyond the northern edge of the Main Application Site, on the south side of Eaton Green Road. The building is a 19th century former farmhouse which is used currently as Wigmore Hall Conference Centre. The heritage value of the former farmhouse lies in its historic interest as an early 19th century farmhouse and its association with the agricultural heritage of the area. Its architectural interest derives from the appreciation of its symmetrical façade and Georgian appearance. The setting of the former farmhouse has been eroded by housing development to the north and hardstanding car parking and development to the west and south. The agricultural farmland which would have provided the functional setting to the farmhouse has been lost, and although Wigmore Park to the south of the house does provide a semi-rural context, it is assessed that the asset's setting does not make a significant contribution to its value. As such, construction activities during all three construction phases would not change the setting of the asset and would have no impact on its value.

Non-designated heritage assets

- 10.9.48 The site of Iron Age and Roman settlement-related activity (HER 10808) is located within the Main Application Site to the east of Wigmore Park. The area was evaluated in 2019 and was characterised as the remains of Iron Age/ Early Roman to Roman settlement and enclosure, which included several pits and a Roman building. The building remains had been truncated by previous ploughing, but the retrieval of painted wall plaster, box flue and roof tile suggest the building may have been of some status. Despite the levels of disturbance, the asset has been assessed to be of medium heritage value due to the potential archaeological interest of the buried remains, and the contribution they could make to regional research. The asset is located within the area designed for landscape mitigation, comprising meadow grassland and scrub, which will be planted during Phase 1 construction but has the potential to be impacted during planting activities. Accidental impacts during construction are likely to

result in the loss of some archaeological remains associated with the site. This would affect the value of the remains and the magnitude of impact is therefore assessed to be medium, resulting in a **moderate** adverse effect, which is **significant**.

- 10.9.49 The site of a possible Roman building (HER 7358) is located to the east of Winch Hill. An archaeological watching brief associated with the installation of the Prax fuel pipeline identified significant quantities of Roman pottery and building material which suggested the presence of a building in the vicinity. If present, the asset has the potential to be of medium heritage value due to the archaeological interest of the buried remains, and the contribution they could make to regional research.
- 10.9.50 A fuel connection to the existing fuel pipeline and associated access road would be installed during Phase 2a construction. This has the potential to remove any archaeological remains present, resulting in a total loss of heritage value. The magnitude of impact is assessed to be high, resulting in a **major** adverse effect, which is **significant**.
- 10.9.51 Cropmarks which may relate to late prehistoric or Roman activity (HER 17218 and HER 17219) are located east of the Main Application Site, on either side of the lane that leads to Winch Hill. Both assets relate to cropmark evidence identified from aerial photographs, comprising linear and curvilinear features that may relate to late prehistoric or Roman activity, due to their proximity to known and potential remains. If the features are archaeological, they are likely to relate to enclosure or trackway features. Features of this type would have archaeological interest for contributing to the understanding of how people moved through and managed the landscape, but would have little evidential value. The value is therefore assessed to be low. The construction of earthworks associated with the infiltration basin and the construction of the fuel farm facility during Phase 2a could remove any archaeological remains present, resulting in a total loss of their heritage value. The magnitude of impact would be high, resulting in a **moderate** adverse effect, which is **significant**.
- 10.9.52 Potential archaeological assets identified from a review of aerial imagery, including LiDAR, have been identified in the fields to the east of the Main Application Site. The features resemble a series of small depressions and may represent former quarrying, which would be of very low archaeological interest and heritage value. Phase 1 earthworks activities to the east of the airport associated with landscaping and the construction of the aviation platform could result in the removal of these features. This would constitute a high magnitude of impact but, due to the very low value of the features, would result in a **minor** adverse effect, which is **not significant**.

Operational effects

- 10.9.53 This assessment considers the Proposed Development once operational and all effects are considered to be permanent. These include impacts on heritage assets due to changes in their setting arising from the presence of the Proposed Development. Those changes may arise from ground, airborne and surface noise associated with the operational development (refer to **Chapter 16** Noise and Vibration).
- 10.9.54 The potential for the greatest magnitude of impact to the assets discussed below occurs upon completion of Phase 2b, the operational airport following completion of all development phases. Completion of this phase represents the greatest amount of change arising from the presence of new structures within the asset's setting and peak operational activities.

Designated heritage assets

Somerles Castle Scheduled Monument (NHLE 1008452)

- 10.9.55 Somerles Castle is located approximately 250m south of the airport. Operational activities from the existing airport form part of its current setting, with views of the western edge of the runway visible from the western edge of the asset.
- 10.9.56 Views from the castle to the north and north-east (refer to **Representative Viewpoint 24** in **Appendix 14.7**, Volume 3 to this PEIR) towards the airport are restricted by intervening buildings and planting. Due to the existing screening, the introduction of new built form is unlikely to be visible from the asset, and would not change the asset's visual setting. Views of the operational airport in views to the west would continue, with a perceptible increase in the use of the runway. This would not be incongruous with the asset's current experience, and current visual setting, and would not affect the asset's architectural, archaeological or historic interest. The increase in aircraft movements as a result of the operation of the Proposed Development would represent a minimal change in views from the castle, but would not affect any of the heritage interests that contribute to its value. The magnitude of impact is assessed to be very low, resulting in a **minor** adverse effect, which is **not significant**.
- 10.9.57 Components of the Development would be visible in views towards Somerles Castle which may influence how the asset is appreciated. **Representative Viewpoint 25**, in **Appendix 14.7**, Volume 3 to this PEIR, demonstrates that the FTG would be partially visible in the middle-distance. This would be viewed alongside existing modern structures, including farm buildings and an earthen bund and would further emphasise the proximity of the airport. The presence of the FTG in the view would not affect the castle's heritage value, and would represent minimal change to the asset's setting. The magnitude of impact is assessed to be very low, resulting in a **minor** adverse effect, which is **not significant**.
- 10.9.58 The increase in aircraft movements has the potential to affect air pollution levels, resulting in damage to the historic fabric of the castle. The Air Quality preliminary assessment (**Chapter 7**) has predicted there would be negligible

change in pollutant concentrations at 476 out of 477 receptors, with a slight adverse effect at one receptor. The Air Quality preliminary assessment predicted there would be no significant effects as a result of the Proposed Development and as such, the operational Development is unlikely to result in significant effects to the castle as a result of poor air quality.

Six Hills Roman barrows Scheduled Monument (NHLE 1015579)

- 10.9.59 Six Hills comprises the site of six Roman barrows in Stevenage, over 10km north east of the Main Application Site. The heritage value of the barrows, which is high, derives from their archaeological and historical interest and the potential for archaeological evidence to contribute to knowledge relating to Roman burial tradition, construction methods and religious beliefs. The setting of the barrows is not extensive and is defined by the extent of their buried and above ground remains. They are bordered on all sides by large-scale buildings which preclude views to contemporary landscapes or features in the wider area.
- 10.9.60 The barrows are located on the eastern edge of the illustrated noise contour data (**Figures 10.6 to 10.11**) which demonstrate that although air noise levels would be audible, there would be no significant increase in noise levels during the operation of the Proposed Development. It is assessed there would be no impact to the setting of the scheduled monument as a result of the operational Development.

Luton Hoo Grade II* RPG (NHLE 1000578)

- 10.9.61 The setting of Luton Hoo RPG is predominantly rural and characterised by its designed landscape, with views generally framed and formed by the park's internal features. The operational airport would introduce new built form into views from within the RPG, including views of Car Park P1 and Hangar A and B (refer to **Representative Viewpoints 18 and 19** in **Appendix 14.7**, Volume 3 to this PEIR). The presence of these structures would introduce new components of the Proposed Development into the visual setting of the RPG. The new components are not prominent features in views from the RPG but would further detract from its parkland character. This is assessed to represent a low magnitude of impact, resulting in a **moderate** adverse effect, which is **significant**.
- 10.9.62 The Noise and Vibration preliminary assessment (**Chapter 16** of this PEIR) describes how baseline sound surveys were undertaken at locations surrounding the Proposed Development at receptors classed as 'sensitive' due to their proximity to the site. The survey locations included a representative location at Luton Hoo house. Daytime noise in year 2043 scenario, which represents the worst-case year for noise levels, is predicted to increase from 51.1 dB to 53.1 dB, with night-time noise levels increasing from 46.7 dB to 48.1 dB. This represents a low magnitude of impact in line with the criteria set out in **Table 16.13** of **Chapter 16** Noise and Vibration.
- 10.9.63 The increase in noise levels would detract further from the park's rural character and would represent a slight change to the setting of the park. This would constitute a low magnitude of impact resulting in a **moderate** adverse effect which is **significant**.

St. Paul's Walden Bury, Grade I RPG (NHLE 1000150)

- 10.9.64 St. Pauls Walden Bury is a Grade I park and garden of high value, located approximately 4km to the east of the Main Application Site. The park falls outside of the ZTV but is included in the wider study area as it falls within the noise contour data (**Figures 10.6 to 10.11**). The noise data show that whilst air noise levels would be audible, there would be no significant increase in noise levels during the operation of the Proposed Development; the park's setting would be unlikely to experience levels of change that would affect its heritage value. This would represent a very low magnitude of impact resulting in a **minor** adverse effect which is **not significant**.

The Improvement Garden, Grade II* RPG (NHLE 1468798)

- 10.9.65 The Improvement Garden is a Grade II* listed park of high value located approximately 2.5km south east of the Main Application Site. The park falls partially within the ZTV (**Figure 10.12**) and also within the noise contour data (**Figures 10.6 to 10.11**). The park comprises a 20th century sculpture garden located entirely within the estate of Stockwood Park. The site visit confirmed that the areas of the park that fall within the ZTV would have no visibility with the Proposed Development site due to screening from the tree-bordered, open spaces that characterise Stockwood Park.
- 10.9.66 The noise data show that whilst air noise levels would be audible within the park, there would be no significant increase in noise levels during the operation of the Proposed Development and the park's setting would be unlikely to experience levels of change that would affect its heritage value. This would represent a very low magnitude of impact resulting in a **minor** adverse effect which is **not significant**.

Non-designated heritage assets

- 10.9.67 During the operation of the Proposed Development, no further ground works are anticipated, and as such there would be no further physical impacts to non-designated heritage assets.

Sensitivity Analysis

- 10.9.68 None of the scenarios or risks considered for sensitivity analysis, as described in **Chapter 5** Approach to the Assessment, would influence the conclusions of the core Cultural Heritage impact assessment reported in this section.

10.10 Additional mitigation

10.10.1 This section describes the mitigation measures identified as a result of the assessment process, that are proposed in addition to those already considered to be in place as described in **Section 10.8** Embedded and good practice mitigation measures. These are proposed to reduce or mitigate the effects on Cultural Heritage as a result of the construction and operation of the Proposed Development.

Design

10.10.2 A programme of additional archaeological evaluation has been agreed with HCC and will confirm the extent and significance of assets HER 17218 and HER 17219, which may be associated with known and potential Iron Age and Roman activity. The results of this investigation will allow an appropriate mitigation response to be designed and set out in the final CHMP to be submitted with the DCO application.

10.10.3 Avoidance by design of the site of a possible Roman building, asset HER 7358, is proposed. A programme of additional archaeological evaluation has been agreed with HCC and will confirm the presence/ absence, extent, character and heritage value of archaeological remains. The location of the fuel connection pipeline and associated access road can be designed to avoid significant archaeological remains, thereby preserving them in situ. As stated in the draft CHMP (**Appendix 10.6** in Volume 3 of this PEIR) the archaeological remains would be fenced off during construction of the fuel connection pipeline and associated access road to avoid accidental impacts during construction.

Construction

10.10.4 Preservation of archaeological remains during all phases of construction will be undertaken; specifically, asset (HER 10808) which comprises the site of Iron Age and Roman settlement-related activity. Preservation of archaeological remains could include protective fencing to avoid unintentional damage during construction and preservation beneath suitable fill material to ensure archaeological remains are not disturbed during construction and are preserved for future generations.

10.10.5 The results of the programmed archaeological evaluation would inform a proportionate programme of archaeological investigation to mitigate the impacts arising from the construction of the Proposed Development which may include preservation of archaeological remains, detailed excavation and archaeological monitoring.

10.10.6 The methodology for all additional mitigation measures is outlined in the Draft CHMP (**Appendix 10.6** in Volume 3 of this PEIR).

Operation

10.10.7 No additional mitigation is proposed for the operational phases of the Proposed Development.

10.11 Residual effects

Construction effects

- 10.11.1 Potential direct impacts on buried archaeological remains would be managed by either a programme of archaeological investigation, or preservation in situ.
- 10.11.2 The site of Iron Age and Roman settlement-related activity (HER 10808) would be protected during construction activities in order to preserve the archaeological remains. The successful preservation of the archaeological remains during construction would result in no impact to the asset.
- 10.11.3 The results of additional archaeological trial trench evaluation (to be undertaken in 2022) would confirm the presence, absence, extent and heritage value of archaeological remains in the area of the proposed fuel connection pipeline and access road, specifically asset (HER 7358) which represents the site of a possible Roman building. The final design of the connection pipeline and access road would avoid significant archaeological remains that may be present, resulting in no impact to the asset.
- 10.11.4 Impacts to potential late prehistoric and Roman remains, including asset (HER 17218) and asset (HER 17219) would be mitigated by a programme of archaeological investigation and recording, as set out in the Draft CHMP. The recording would not minimise the impact to the assets, as the archaeological evidence would still be removed, but would compensate for their loss by preserving them by record. The residual effect would be **moderate** adverse, which is **significant**.

Operational effects

- 10.11.5 No mitigation has been proposed or is practicable with respect to operational effects. As such the effects would be as reported in **Section 10.9**.

10.12 In-combination climate change effects

- 10.12.1 The construction and operation of the Proposed Development would not result in effects to cultural heritage assets that would worsen as a result of climate change. As such, there would be no in-combination climate change effects to the cultural heritage resource.

10.13 Monitoring

Construction monitoring

- 10.13.1 It is anticipated that the majority of archaeological mitigation works, as specified in this PEIR, would be carried out in advance of construction activities and in accordance with the Draft CHMP (**Appendix 10.6**, Volume 3 to this PEIR) and subsequent versions of the CHMP that will be agreed with the local authority archaeology officers and Historic England. The monitoring of cultural heritage assets during construction, for example in areas of the Proposed Development site where the preservation of archaeological remains is planned, will be carried out in accordance with the requirements set out in the CHMP.

Operational monitoring

- 10.13.2 Monitoring of cultural heritage assets is not required during the operation of the Proposed Development.

10.14 Preliminary assessment summary

- 10.14.1 **Table 10.10** provides a summary of the identified impacts, mitigation and likely effects of the Proposed Development on Cultural Heritage.
- 10.14.2 Additional mitigation and how it will be secured are described, and its efficacy shown by the reported residual effect.

Table 10.10: Cultural Heritage preliminary assessment summary

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Construction						
<i>Somerles Castle Scheduled Monument</i>						
Phase 1: Minimal change to asset's setting during expansion of Terminal 1	None proposed	Very low	High	Temporary minor adverse	None proposed	Minor adverse (not significant)
Phase 2a: Minimal change to asset's setting during construction of western airfield extension	None proposed	Very low	High	Temporary minor adverse	None proposed	Minor adverse (not significant)
Phase 2b: Minimal change to the asset's setting during construction of FTG	None proposed	Very low	High	Temporary minor adverse	None proposed	Minor adverse (not significant)
<i>Luton Hoo Grade II* RPG</i>						
Phase 2a: Slight change to setting of park during construction of Car Park P1	None proposed	Low	High	Temporary moderate adverse	None proposed as effect is temporary	Moderate adverse (significant)
Phase 2b: Slight change to setting of park during	None proposed	Low	High	Temporary moderate adverse	None proposed as effect is temporary	Moderate adverse (significant)

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
construction of Hangar A and B						
<i>Old Homestead Grade II* Listed Building</i>						
Phases 1: Construction activities associated with earthworks and construction of the aviation platform would introduce change into the building's setting	None proposed	Very Low	High	Temporary minor adverse	None proposed	Minor adverse (not significant)
<i>Wandon End House and Wandon End Farmhouse Grade II Listed Buildings</i>						
Phases 1, 2a and 2b: Construction activities associated with earthworks and remediation during all three construction phases would represent noticeable change into the predominantly rural setting of both buildings	None proposed	Medium	Medium	Temporary moderate adverse	None proposed	Moderate adverse (significant)
<i>Asset HER 10808</i> (the site of Iron Age and Roman settlement-related activity)						
Phase 1: Physical impacts as a result of landscaping.	Proposed Development has avoided impacting	Medium	Medium	Permanent moderate adverse	Protection of asset during all three construction phases,	No impact

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
	the asset by incorporating the archaeological remains into embedded landscape design, thereby preserving in situ in an area designated for meadow grassland and scrub.				in accordance with a methodology set out in the agreed CHMP.	
Asset HER 7358 (the site of a possible Roman building)						
Phase 2a: Physical impacts as a result of the installation of the fuel connection pipeline	None proposed.	High	Medium	Permanent major adverse	The location of Asset HER 7358 the site of a possible Roman building would be protected by temporary fencing during construction works to avoid accidental damage. This is set out in the draft CHMP and will be confirmed in the final CHMP which will be submitted with the DCO.	No impact
Assets HER 17218 and HER 17219 (cropmarks which may relate to late prehistoric or Roman activity)						

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Phase 2a: Physical impacts as a result of the construction of earthworks and fuel farm facility	None proposed	High	Low	Permanent moderate adverse	Archaeological evaluation and investigation in advance of construction and in accordance with a methodology set out in the Draft CHMP. The results of this will allow an appropriate mitigation response to be designed and set out in the final CHMP.	Minor adverse (not significant)
<i>Potential archaeological assets identified from baseline assessment</i>						
Phase 1 earthworks activities to the east of the airport associated with landscaping and the construction of the aviation platform could result in the removal of these features	None proposed	High	Very Low	Minor adverse	None proposed	Minor adverse (not significant)
Operation						
<i>Somerles Castle Scheduled Monument</i> The increase in aircraft movements and views of FTG as a	None proposed	Very Low	High	Minor adverse	None proposed	Minor adverse (not significant)

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
<p>result of the operational Development would represent a minimal change in views from and towards the castle. This would emphasise the proximity of the airport but would not affect any of the heritage interests that contribute to its value</p>						
<p>Luton Hoo Grade II* RPG Operational Development would introduce new built components into the visual setting of the RPG. The new components are not prominent features in views from the RPG but would further detract from its parkland character. The increase in noise levels would detract further from the park's</p>	None proposed	Low	High	Moderate adverse	None proposed	Moderate adverse (significant)

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
rural character and would represent a slight change to the setting of the park.						

10.15 Completing the assessment

10.15.1 The following activities will be undertaken to complete the assessment, the results of which will be presented in the ES:

- a. Further archaeological evaluation of the land included within the Proposed Development site boundary that lies in Hertfordshire and Bedfordshire, towards the east of the Proposed Development site, that will be impacted by the Proposed Development, will be carried out. The extent of the area to be evaluated has been agreed following consultation with the HCC and CBC archaeologists. The programme for the fieldwork is still to be determined. The results of the evaluation would confirm the value of archaeological assets that may be present and inform the assessment of potential impacts presented in the ES.
- b. Additional walkover surveys of the Proposed Development site including a setting assessment is programmed to be undertaken in Winter 2021/2022 whilst the vegetation coverage is lowest and visibility across the landscape towards and from heritage assets is at optimal levels. The results of the walkover survey will confirm the baseline setting of heritage assets and the predicted magnitude of change to their setting as a result of the construction and operation of the Proposed Development.
- c. Stakeholder engagement will continue as the Proposed Development progresses in order to discuss the assessment findings and a proportionate scope of mitigation. The agreed scope of mitigation will be documented in the final CHMP.

COMPETENT EXPERTS

Topic	Role	Company	Qualifications/competencies/experience of author
Cultural Heritage	Author	AECOM	BA Archaeology. Five years professional experience as an archaeologist with three years as an Heritage Consultant/specialist in cultural heritage baseline assessment, impact assessment, fieldwork design and fieldwork management.
Cultural Heritage	Checker	AECOM	Diploma HE in Archaeology. 25 years in the heritage sector, 15 of those in consultancy. Lead author for EIA and DCO schemes including HS2 Phase 2b, Net Zero Carbon Capture and renewable energies.
Cultural Heritage	Approver	AECOM	MA Archaeology of Buildings. Member of the Chartered Institute for Archaeologists. 20 years' experience in the heritage sector.

GLOSSARY AND ABBREVIATIONS

Term	Definition
ANPS	Airports National Policy Statement
CBC	Central Bedfordshire Council
CHMP	Cultural Heritage Management Plan
CifA	Chartered Institute for Archaeologists
CoCP	Code of Construction Practice
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
FTG	Fire Training Ground
HCC	Hertfordshire County Council
HE	Historic England
HER	Historic Environment Record
LOAEL	Lowest Observable Adverse Effect Level
MPPA	Million passengers per annum
NHLE	National Heritage List for England
NPPF	National Planning Policy Framework
RPG	Registered Park and Garden
SMR	Surface Movement Radar
WSI	Written Scheme of Investigation
ZOI	Zone of Influence
ZTV	Zone of Theoretical Visibility

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- Ref 10.21 National Library of Scotland Website
- Ref 10.22 British Geological Survey, GeoIndex (Onshore): Map viewer Website
- Ref 10.23 The National Collection of Aerial Photography Website
- Ref 10.24 Britain From Above Website
- Ref 10.25 Archaeology Data Service Website
- Ref 10.26 Environment Agency Survey Open Data Catalogues Web Application