

February 2023

London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

Volume 5 Environmental Statement and Related Documents
5.01 Chapter 14: Landscape and Visual

Application Document Ref: TR020001/APP/5.01

APFP Regulation: 5(2)(a)

The Planning Act 2008

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

**London Luton Airport Expansion Development Consent
Order 202x**

**5.01 ENVIRONMENTAL STATEMENT CHAPTER 14: LANDSCAPE
AND VISUAL**

Regulation number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference:	TR020001
Document Reference:	TR020001/APP/5.01
Author:	Luton Rising

Version	Date	Status of Version
Issue 1	February 2023	Application issue

Contents

	Page
14 Landscape and visual	1
14.1 Introduction	1
14.2 Legislation, policy and guidance	2
14.3 Scope of the assessment	8
14.4 Stakeholder engagement and consultation	20
14.5 Methodology	27
14.6 Assumptions and limitations	31
14.7 Baseline conditions	35
14.8 Embedded and good practice mitigation measures	45
14.9 Assessment	50
14.10 Additional mitigation	64
14.11 Residual effects	67
14.12 In-combination climate change effects	72
14.13 Monitoring	74
14.14 Assessment summary	75
Competent Experts	76
Glossary and Abbreviations	77
References	82

Tables

Table 14.1: Landscape and visual legislation

Table 14.2: Landscape and visual policy

Table 14.3: How relevant landscape and visual requirements of ANPS are addressed in the ES

Table 14.4: LVIA guidance

Table 14.5: Landscape and visual Scoping Opinion comments

Table 14.6: Stakeholder engagement relating to landscape and visual impacts

Table 14.7: Qualitative sensitivity analysis

Table 14.8: Landscape and visual in-combination climate change impacts

14 LANDSCAPE AND VISUAL

14.1 Introduction

- 14.1.1 This chapter presents the assessment of likely significant effects of the Proposed Development on landscape and visual receptors, including:
- a. the elements that make up the landscape;
 - b. the specific aesthetic or perceptual qualities of the landscape;
 - c. the character of the landscape; and
 - d. people who would be affected by changes in views or visual amenity.
- 14.1.2 The assessment methodology adopted for the Landscape and Visual Impact Assessment (LVIA) is described in **Appendix 14.1** of this Environmental Statement (ES) [TR020001/APP/5.02]. The principles and approaches set out in the third edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA3) (Ref. 14.1) and associated clarifications published by the GLVIA Panel are followed.
- 14.1.3 The remainder of this chapter consists of:
- a. **Section 14.2** Legislation, policy and guidance relevant to the scope and methodology of the landscape and visual impact assessment;
 - b. **Section 14.3** Scope of the assessment;
 - c. **Section 14.4** Stakeholder engagement undertaken to inform the assessment;
 - d. **Section 14.5** Methodology applied to the assessment;
 - e. **Section 14.6** Assumptions and limitations;
 - f. **Section 14.7** Baseline conditions;
 - g. **Section 14.8** Embedded and good practice mitigation;
 - h. **Section 14.9** Assessment;
 - i. **Section 14.10** Additional mitigation;
 - j. **Section 14.11** Residual effects;
 - k. **Section 14.12** In-combination climate change;
 - l. **Section 14.13** Monitoring; and
 - m. **Section 14.14** Assessment summary.

14.2 Legislation, policy and guidance

- 14.2.1 This section identifies the legislation, policy and guidance relevant to the scope and methodology for the LVIA and which may influence the type of mitigation measures applied.
- 14.2.2 **Table 14.1** to **Table 14.4** provide a description of the relevant legislation, policy and guidance, and identify how and where each of these have been addressed in the ES.
- 14.2.3 Published documentation that has informed the landscape baseline is also set out in **Section 14.7**.

Legislation

Table 14.1: Landscape and visual legislation

Legislation	How and where addressed in ES
<p>The European Landscape Convention (ELC) of the Council of Europe promotes the protection, management and planning of the landscapes and organises international co-operation on landscape issues. The ELC was signed by the UK government in 2006 and established in March 2007.</p> <p>Article 1 of the ELC provides a definition of 'landscape' (Ref. 14.2). A key tenet of the ELC is that all landscapes should be considered. The ELC applies to outstanding, every day and degraded landscapes.</p>	<p>This LVIA adopts the definition of landscape set out at Article 1 of the ELC: <i>“an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”</i> (Ref. 14.2).</p> <p>The LVIA recognises also the integral value of all landscapes and the LVIA methodology, detailed in Appendix 14.1 of this ES [TR020001/APP/5.02], defines value based on a landscape’s qualities and condition, rather than designations alone.</p>
<p>Countryside and Rights of Way Act 2000 (Ref. 14.3). This gives a public right of access to land mapped as ‘open country’ (mountain, moor, heath and down) or registered common land. These areas are known as ‘open access land’.</p>	<p>The LVIA considered open access land when identifying the receptors potentially sensitive to change from the Proposed Development as set out in Section 14.9.</p> <p>The receptors considered within this LVIA have been agreed with the LVIA Working Group comprising of the following people: Senior Landscape and Ecology Officer, Luton Borough Council (LBC); Landscape Officer, North Herts District Council (NHDC); Building Futures and Landscape Team Leader, Hertfordshire County Council (HCC); Landscape Planner/Public Art Officer, Central Bedfordshire Council (CBC); and Greenspace Manager, LBC.</p>

Policy

Table 14.2: Landscape and visual policy

Policy	How and where addressed in ES
<p>National Planning Policy Framework (NPPF), July 2021 (Ref. 14.4).</p> <p>Paragraph 174 of the NPPF states (amongst other things) that planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes; and recognising the intrinsic character and beauty of the countryside.</p>	<p>Section 14.7 provides a description of the baseline conditions within the site and study area, noting particularly valued landscapes and scenic quality. Section 14.9 draws on this baseline to inform judgements on the value of a landscape or visual receptor and the magnitude of impact on that landscape or visual receptor.</p>
<p>National Policy Statement for National Networks – December 2014 (NPSNN) (Ref. 14.5)</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 in their own right. However, the NPSNN remains an important and relevant consideration, particularly as works are proposed on the Strategic Road Network (SRN) at Junction 10 of the M1 as part of the Proposed Development. The relevant policies of the NPSNN are consistent with the relevant policies of the Airports National Policy Statement (ANPS) and have not been repeated here. Table 14.3 provides the necessary policy response.</p>
<p>Luton Local Plan 2011-2031 (adopted November 2017) (Ref. 14.6).</p> <p>Policy LLP6 specifically provides for development within and adjoining the airport. The policy sets out several design criteria for development in this area, some of which are related to contributors to landscape value (e.g. “biodiversity should be enhanced and improved”, “proposals should fully assess the impacts upon heritage assets and their setting” etc.)</p> <p>Part F of the policy sets out development criteria for the wider airport Strategic Allocation including:</p> <p><i>“appropriate strategic landscaping to be provided both on and off site, which shall have regard to the potential for significant visual prominence within the wider area of</i></p>	<p>The Chilterns Area of Outstanding Natural Beauty (AONB), Area of Great Landscape Value (AGLV), Area of Local Landscape Value (ALLV) and other contributors to landscape value are identified in Section 14.7 and are used in Section 14.9 to inform judgements on the value of a landscape receptor and the magnitude of impact on a landscape receptor. Sections 14.8 and 14.10 describe the proposed embedded and additional measures to mitigate significant adverse landscape and visual effects.</p> <p>The study area for the LVIA includes for the purpose of considering impacts on tranquillity, as a contributor to landscape value, land within the Chilterns AONB where aircraft would be below 7,000 ft.</p>

Policy	How and where addressed in ES
<p><i>built development at New Century Park and which does not increase risk to aviation operations;</i>”</p> <p>and:</p> <p><i>“the height and design of buildings will reflect the site’s rural fringe setting, its high visibility from surrounding countryside and its proximity to London Luton Airport”</i></p> <p>Policy LLP29 affords protection to national landscape areas, for example Chilterns Area of Outstanding Natural Beauty (AONB), Registered Parks and Gardens and local landscape areas. The latter comprise Areas of Great Landscape Value (AGLV) and Areas of Local Landscape Value (ALLV). This policy also provides for the protection or enhancement of the Public Rights of Way (PRoW) network and access to the countryside.</p>	<p>above mean sea level (AMSL), as identified on Figures 14.14 to 14.17 of this ES [TR020001/APP/5.03].</p> <p>This assessment refers to relevant landscape character and green infrastructure studies as a means of assessing the landscape effects of the Proposed Development in Section 14.9 and when determining embedded and additional mitigation measures in Sections 14.8 and 14.10.</p>
<p>North Hertfordshire District Local Plan 2011-2031 (November 2022) (Ref. 14.7). Chapter 11 of the Draft Plan contains various policies on the Natural Environment.</p> <p>Policy SP12 sets out objectives to protect and enhance the natural environment including landscape character and locally sensitive features notably the Chilterns AONB.</p> <p>Policy NE2 (Landscape) essentially states that development should respect landscape features and the landscape character of immediate surroundings and wider area.</p> <p>Policy NE3 (The Chilterns AONB) sets out several criteria for development within or affecting the setting of the Chilterns AONB. The Draft Plan also contains several policies which relate to contributors to landscape value (e.g. Policy NE4 affords protection to biodiversity sites).</p>	<p>The Chilterns AONB and other contributors to landscape value are identified in Section 14.7 and are used in Section 14.9 to inform judgements on the value of a landscape receptor and the magnitude of impact on a landscape receptor.</p> <p>The study area for the LVIA includes, for the purpose of considering impacts on tranquillity, land within the Chilterns AONB where aircraft would be below 7,000 ft. (AMSL), as identified on Figures 14.14 to 14.17 of this ES [TR020001/APP/5.03].</p> <p>This assessment refers to relevant landscape character and green infrastructure studies as a means of assessing the landscape effects of the Proposed Development in Section 14.9 and when determining embedded and additional mitigation measures in Sections 14.8 and 14.10.</p>
<p>Central Bedfordshire Local Plan 2015 - 2035 (July 2021) (Ref. 14.8). Chapter 15 of the Central Bedfordshire Local Plan 2015 - 2035 contains various landscape related policies which are</p>	<p>Areas of landscape that are highly valued locally and/or protected by a local landscape/visual designation are identified in Section 14.7 and are used in Section 14.9 to inform judgements on the value of</p>

Policy	How and where addressed in ES
<p>relevant to the Main Application Site and the Proposed Development.</p> <p>Policy EE5 (Landscape Character and Value) emphasises that development must consider the key characteristics, sensitivities and setting of the site and should respect, retain and enhance the character and distinctiveness of the local landscape.</p> <p>Policy EE12 (PRoW) explains that developments should protect, enhance and promote the PRoW network within Central Bedfordshire.</p> <p>There are also several policies which relate to contributors to landscape value for instance Policy EE2 (Enhancing Biodiversity), Policy EE4 which affords protection to trees, woodlands and hedgerows and Policy HE2 which affords protection to Historic Parks and Gardens or their settings.</p>	<p>a landscape receptor and the magnitude of impact on a landscape receptor.</p> <p>This assessment refers to relevant landscape character and green infrastructure studies as a means of assessing the landscape effects of the Proposed Development in Section 14.9 and when determining embedded and additional mitigation measures in Sections 14.8 and 14.10.</p>
<p>Dacorum Borough Council Core Strategy 2006-2031(Ref. 14.9).</p> <p>Policy CS25 explains that proposals will be assessed for their impact on landscape features to ensure that they conserve or improve the prevailing landscape quality, character and condition.</p>	<p>This assessment considers the impact of the Proposed Development on landscape features in Section 14.9 and when determining embedded and additional mitigation measures in Sections 14.8 and 14.10</p>

- 14.2.4 The Airports National Policy Statement (ANPS) (Ref. 14.10) 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 are both important and relevant considerations in the determination of such an application, particularly where it relates to London or the south east of England. In particular, the ANPS makes clear that, alongside the provision of a new Northwest Runway at Heathrow, the government supports other airports making best use of their existing runways as set out in Beyond the Horizon: Making best use of existing runways (Ref. 14.11), which is the specific policy context for this application.
- 14.2.5 In addition, whilst the ANPS does not have effect in relation to the Proposed Development, it sets out a number of principles for environmental impact assessment and compliance and these will be an important and relevant consideration in the determination of the application for development consent. A

summary of the relevant provisions for the LVIA and how and where these have been addressed in this ES is provided within **Table 14.3**.

Table 14.3: How relevant landscape and visual requirements of ANPS are addressed in the ES

ANPS Section	How and where addressed in ES
<p>Paragraph 5.213 advises that for airport development, landscape and visual effects also include tranquillity effects, which would affect people’s enjoyment of the natural environment and recreational facilities.</p>	<p>The LVIA considers tranquillity when undertaking the assessment of effects on landscape receptors (specifically where identifying the value of a landscape receptor and when considering the magnitude of landscape impacts on that receptor) as presented in Section 14.9.</p>
<p>Paragraph 5.214 confirms the requirement for landscape and visual impacts to be assessed as part of EIA. Paragraph 5.214 also confirms that the LVIA should reference any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the preferred scheme.</p>	<p>An assessment of the likely landscape and visual effects of the Proposed Development is presented in Section 14.9. This assessment refers to relevant landscape character and green infrastructure studies as a means of assessing the landscape effects.</p>
<p>Paragraphs 5.215 and 5.216 confirm the requirement for significant landscape and visual effects during both the construction and the operation of the scheme to be assessed.</p>	<p>An assessment of the likely landscape and visual effects of the Proposed Development during both the construction and operational periods is presented in Section 14.9.</p>
<p>Paragraph 5.217 notes that adverse landscape and visual mitigation measures may be minimised through appropriate design and landscape schemes.</p>	<p>Sections 14.8 and 14.10 describe the proposed embedded and additional measures to mitigate significant adverse landscape and visual effects.</p>
<p>Paragraph 5.222 emphasises the duty to have regard to the purposes of nationally designated areas when considering projects outside the boundaries of nationally designated areas which may have impacts within them.</p>	<p>The Chilterns AONB is located approximately 3km north and 5km west of the airport. The Study Area for the LVIA includes, for the purpose of considering impacts on tranquillity, land within the Chilterns AONB where aircraft would be below 7,000 ft. (AMSL). The Chilterns AONB is identified in Section 14.7 and is used in Section 14.9 to inform judgements on the value of a landscape receptor and the magnitude of impact on a landscape receptor. Officers from The Chilterns Conservation Board (CCB) were consulted on the Proposed Development pre-statutory consultation, as summarised in Section 14.4.</p>

ANPS Section	How and where addressed in ES
<p>Paragraphs 5.223 to 5.224 highlight the need to consider landscapes and townscapes that are highly valued locally and may be protected by local designation. Noting also that where a local development document in England has policies based on landscape character assessment, these should be given consideration.</p>	<p>Areas of landscape that are highly valued locally and/or protected by a local landscape/visual designation are identified in Section 14.7 and are used in Section 14.9 to inform judgements on the value of a landscape receptor and the magnitude of impact on a landscape receptor.</p>

Guidance

Table 14.4: LVIA guidance

Guidance	How and where addressed in ES
<p>The Landscape Institute and The Institute of Environmental Management and Assessment (IEMA) published the third edition of the ‘Guidelines for Landscape and Visual Impact Assessment – GLVIA3’ (17 April 2013). This is a primary resource for landscape professionals, which advises the framework and approach to be taken when carrying out landscape and visual impact assessments.</p>	<p>The LVIA methodology detailed in Appendix 14.1 of this ES [TR020001/APP/5.02] follows the principles and approaches set out in the third edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA3) and associated clarifications published by the GLVIA Panel. The methodology has however been adapted to relate to the specific characteristics and nature of the Proposed Development.</p>
<p>CAP 1616: Airspace change: Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information. This sets out considerations for any changes to routes and/or traffic patterns that may affect either an AONB or a National Park, with specific regard to impacts upon tranquillity.</p>	<p>The LVIA methodology detailed in Appendix 14.1 of this ES [TR020001/APP/5.02] follows the guidance set out in CAP1616 (Ref. 14.12) and includes within its study area for the purposes of considering impacts on tranquillity land within the Chilterns AONB where aircraft would be below 7,000 ft. (AMSL), as identified on Figures 14.14 to 14.17 of this ES [TR020001/APP/5.03].</p>

14.3 Scope of the assessment

14.3.1 This section describes the scope of the LVIA, 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 14.4**.

Scoping Opinion

14.3.2 The EIA Scoping Report set out the proposed scope and assessment methodologies to be employed in the EIA and is provided in **Appendix 1.1** of this ES [TR020001/APP/5.05].

14.3.3 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** of this ES [TR020001/APP/5.05].

14.3.4 **Table 14.5** describes the main matters highlighted by the Planning Inspectorate in the Scoping Opinion and how these have been addressed in this ES. A response to all comments received during Scoping is provided in **Appendix 1.4** of this ES [TR020001/APP/5.02].

Table 14.5: Landscape and visual Scoping Opinion comments

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
4.13.1	<p>Private views from residential properties</p> <p>The Planning Inspectorate commented that the assessment of effects on private views from residential property should not be scoped out of the assessment. The Inspectorate considered that where access to private property is not available for the purposes of the assessment then professional judgement should be used to assess the potential effect to those visual receptors, and an appropriate statement to that effect made.</p>	<p>The LVIA takes into consideration effects on people within residential properties that are potentially susceptible to the type of change proposed. Professional judgement was used to assess the potential effect to those visual receptors. The visual receptors assessed in the LVIA were discussed and agreed with the LVIA Working Group (as defined in Section 14.4 of this chapter).</p> <p>A Non-EIA Residential Visual Amenity Appraisal has also been prepared to support the application and is included as Appendix 14.8 of this ES [TR020001/APP/5.02].</p>
4.13.2	<p>Off-site highway works</p> <p>The Planning Inspectorate commented that the landscape and visual impact of off-site highway works should be included</p>	<p>The landscape and visual impacts of the Off-site Highway Interventions in the Proposed Development, as described in Chapter 4 of this ES [TR020001/APP/5.01], have been</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	<p>within the scope of the assessment</p>	<p>considered within the assessment reported in Section 14.9. A cumulative landscape and visual impact assessment (CLVIA) has been considered within Chapter 21 In-Combination and Cumulative Effects Assessment of this ES [TR020001/APP/5.01].</p>
<p>4.13.3</p>	<p>Existing features – Visual Screening The Planning Inspectorate commented that the report refers to retention of a ridgeline and trees to provide visual screening and the protection of ancient woodland as key considerations in selecting the current preferred option. The locations of these features should be made clear on a suitably annotated figure and any reliance placed on this for the conclusions of the assessment of landscape and visual impacts should be adequately secured.</p>	<p>The ridgeline, trees and ancient woodland that were key considerations in selecting the preferred option are described in Section 14.7 and are identified in Figure 14.5 of this ES [TR020001/APP/5.03]. They are also shown as being retained within Figures 14.9 and 14.10 of this ES [TR020001/APP/5.03].</p>
<p>4.13.4</p>	<p>Assessment of the impact on lighting The Planning Inspectorate commented that it is not clear from the Scoping Report where the lighting assessment will be located within the ES. The lighting assessment should be clearly signposted from the relevant aspect chapters of the ES and should include the assessment of impact to the Chilterns AONB and effects on dark night skies. Having regard to the intrinsic links between lighting and visual impacts it is logical that the assessment forms part of the Landscape and Visual Chapter, but the Inspectorate expects that other aspect assessments are informed by the findings, including</p>	<p>A Light Obtrusion Assessment is provided as Appendix 5.2 of this ES [TR020001/APP/5.02]. The assessment undertaken at Section 14.9 draws on its judgements when considering the sensitivity and value of landscape receptors, when considering the value of views experienced by visual receptors, and when determining the magnitude of impact on landscape and visual receptors. The Light Obtrusion Assessment does not expressly assess impacts to the Chilterns AONB but demonstrates that the Proposed Development is substantially below the acceptable limits set out for Upward Flux Ratio (sky glow) and nuisance caused by the lighting installation, in line with the recommendations within ILP Guidance Note 1 (Ref. 14.13). It can therefore be</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	biodiversity and the setting of heritage assets.	demonstrated that the visible effects of obtrusive light within the Chilterns AONB resulting from the Proposed Development, would not be noticeable in the context of wider sky glow observed during the time of survey.
4.13.5	<p>Chilterns AONB</p> <p>The Planning Inspectorate commented that the boundary of the Chilterns AONB is the subject of a request for its extension, made by CCB to Natural England (NE). The assessment in the ES should take into account the proposed designation and any significant effects that may occur.</p>	<p>Although the application to extend the AONB is at a very early stage, a sensitivity test of the proposed boundary extension to the AONB is included at Appendix 14.9 of this ES [TR020001/APP/5.02]. The sensitivity test is based on the 'search area' extents shown in the CCB application to NE.</p>
4.13.6	<p>Study Area</p> <p>The Planning Inspectorate commented that a 5km study area is proposed, which will be reviewed and confirmed as part of the landscape and visual impact assessment once the parameters for the Proposed Development have been further developed and a Zone of Theoretical Visibility (ZTV) has been prepared. As the parameters of the Proposed Development are not yet confirmed, and no ZTV is yet present, 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 landscape and visual effects, including the Chilterns AONB. The Applicant should make effort to agree the study area with the relevant consultation bodies.</p>	<p>A ZTV of the Proposed Development is shown in Figure 14.2 of this ES [TR020001/APP/5.03].</p> <p>The ZTV has been generated using terrain data only and is therefore limited to means of 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 of this ES [TR020001/APP/5.02] to understand the extent of visibility to the Proposed Development.</p> <p>The Chilterns AONB is located approximately 3km north and 5km west of the Main Application Site. The study area for the LVIA includes, for the purpose of considering impacts on tranquillity, land within the Chilterns AONB where aircraft would be below 7,000 ft. (AMSL).</p> <p>The study area has been agreed with the LVIA Working Group.</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
4.13.7	<p>ZTV</p> <p>The Planning Inspectorate commented that a clear methodology and statement of any assumptions made should be provided to the production of the proposed ZTV. The Applicant should seek to agree the methodology for preparing the ZTV with relevant consultation bodies.</p>	<p>The methodology for generating the ZTV is provided in Appendix 14.1 of this ES [TR020001/APP/5.02].</p> <p>The methodology for generating the ZTV has been agreed with the LVIA Working Group.</p>
4.13.8	<p>Existing Landscape Character Assessments</p> <p>The Planning Inspectorate commented that it is expected that reference should also be made to relevant National Character Area profiles published by NE, and the East of England Landscape Typology.</p>	<p>Relevant National Character Area profiles and the East of England Landscape Typology are referenced in Section 14.7.</p>
4.13.9	<p>Assessment methodology</p> <p>The Planning Inspectorate commented that they welcome the use of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) as the basis of the methodology for the assessment. The Planning Inspectorate expects effort to be made to agree the methodology for the proposed assessment with relevant consultation bodies. The Planning Inspectorate notes that matrices are proposed to be used in the assessment, but also expects that there should be an emphasis on narrative text describing the landscape and visual effects and the judgements made about their significance. Tables and matrices should be used to support and summarise the descriptive text, not to replace it.</p>	<p>A summary of the likely significant landscape and visual effects resulting from the Proposed Development is provided in Sections 14.9 and 14.11, with a summary of effect on all landscape and visual receptors given in Appendices 14.4 and 14.5 of this ES [TR020001/APP/5.02]. The assessments draw upon tables and matrices identified in Appendix 14.1 of this ES [TR020001/APP/5.02] but use narrative text to describe and explain the landscape and visual effects and the judgements made.</p> <p>Further explanation of the judgements is detailed in Appendices 14.4 and 14.5 of this ES [TR020001/APP/5.02].</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
4.13.10	<p>Assessment methodology</p> <p>The Planning Inspectorate commented that the assessment years 2020, 2024, 2029, 2039 and 2050 do not tie-in with dates given at Paragraph 3.6.2 of the Scoping Report, which state Phase 1 opening in 2027 and Phase 2 opening in 2036.</p>	<p>The assessment stages considered in this ES have been adjusted to reflect the duration of the Proposed Development assessment phases set out in Table 5.3 in Chapter 5 of this ES [TR020001/APP/5.01] and interim aircraft movement effects.</p> <p>The assessment stages identified in Section 14.9 have been agreed with the LVIA Working Group.</p>
4.13.11	<p>Methodology - Value of Landscape Receptors</p> <p>The Planning Inspectorate commented that Table 18.2 shows National Parks and AONBs as typical examples of both Very High and High Value landscape receptors. Judgements made on the value of landscape receptors should be consistent and clearly explained and justified in the ES.</p>	<p>A detailed explanation of the LVIA methodology is provided in Appendix 14.1 of this ES [TR020001/APP/5.02].</p> <p>Judgements made on the value of landscape receptors are detailed in Appendix 14.4 of this ES [TR020001/APP/5.02].</p>
4.13.12	<p>Methodology - Value of Views</p> <p>The Planning Inspectorate commented that text at 18.5.14 of the EIA Scoping Report refers to the value of a visual receptor but Table 18.4 appears to relate to the value of particular views. It is assumed that this relates to Paragraph 6.37 of GLVIA3. A clear distinction in the assessment should be made between the susceptibility of visual receptors as set out in Table 18.3 and the value of any particular views as set out in Table 18.4.</p>	<p>As identified within GLVIA3, the susceptibility of visual receptors is mainly a function of a) the occupation or activity of people experiencing the view at particular locations; and b) the extent to which their attention or interest may be focussed on views and the visual amenity they experience at particular locations.</p> <p>The value of views experienced by visual receptors is informed by the criteria set out in Table 1.7 in Appendix 14.1 of this ES [TR020001/APP/5.02].</p> <p>Judgements on the value of views experienced by visual receptors are detailed in Appendix 14.5 of this ES [TR020001/APP/5.02].</p>
4.13.13	<p>Methodology - Significance of Landscape Effect</p> <p>The Planning Inspectorate commented that Typical Criteria Descriptors are denoted by bullet points and it is not clear if only</p>	<p>The bullet points used to denote significance criteria have been replaced with descriptive text to define each category of significance as set out at Table 1.10 in Appendix 14.1 of this ES [TR020001/APP/5.02].</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	<p>one or all of the Typical Criteria need to be met if a categorisation of Significance is to be adopted in the assessment. The assessment methodology needs to be clearly defined and consistently applied in the ES.</p>	
<p>4.13.14</p>	<p>Tranquillity The Planning Inspectorate commented that the Scoping Report sets out the intention to conduct an assessment of impacts to tranquillity (as it relates to character of the landscape) and makes reference to Campaign to Save Rural England’s Tranquillity Mapping in this regard. In addition to acknowledging tranquillity as a key factor in landscape character area sensitivity assessments the ES should also include consideration of significant effects on tranquillity from overflying aircraft, (including visual effects where significant effects are likely). The Applicant should also ensure that an assessment of impacts to tranquillity relevant to other aspects is assessed in the relevant ES chapters. The assessment of impacts to tranquillity should include consideration of effects to the Chilterns AONB.</p>	<p>There is no agreed methodology for assessing effects on tranquillity. An outline of how tranquillity is assessed in the ES is provided in Chapter 5 and Section 16.5 of Chapter 16 of this ES [TR020001/APP/5.01]. The LVIA regards tranquillity when undertaking the assessment of effects on landscape receptors (specifically where identifying the value of a landscape receptor and when considering the magnitude of landscape impacts on that receptor), further detail on this is provided in Appendix 14.1 of this ES [TR020001/APP/5.02]. The Chilterns AONB is located approximately 3km north and 5km west of the airport. The study area for the LVIA includes, for the purpose of considering impacts on tranquillity, land within the Chilterns AONB where aircraft would be below 7,000 ft. (AMSL) as identified on Figures 14.14 to 14.17 of this ES [TR020001/APP/5.03]. The approach to considering tranquillity with regards to landscape and visual effects and the study area has been agreed with the LVIA Working Group.</p>
<p>4.13.15</p>	<p>Identification of receptors, construction phase The Planning Inspectorate commented that receptors that may be affected during the construction phase are listed. Full consideration of potential receptors should be made when the parameters of the scheme design are fixed, and effort should</p>	<p>The assessment in Section 14.9 lists receptors that may be affected during construction, taking into consideration effects resulting from all elements of the Proposed Development; including off and on-site infrastructure required. The receptors considered within this LVIA have been agreed with the LVIA Working Group.</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	be made to agree these with relevant consultation bodies. The potential significant landscape and visual effects resulting from all elements of the Proposed Development should be taken into account, including off and on-site infrastructure required.	
4.13.16	<p>Identification of receptors and effects, operational phase</p> <p>The Planning Inspectorate commented that whilst there may be effects relevant to some receptors during the construction and operational phases, the potential for some receptors to be affected during the operational phase only should not be discounted. Effort should be made to agree these with relevant consultation bodies.</p>	The possibility that some receptors may be affected during the operational phase only was considered when identifying the receptors potentially sensitive to change from the Proposed Development as set out in Section 14.9 . The receptors considered within this LVIA have been agreed with the LVIA Working Group.
4.13.17	<p>Cumulative effects</p> <p>The Planning Inspectorate expects effort to be made to agree the study area for the cumulative assessment with relevant consultation bodies.</p>	A CLVIA has been carried out to determine the likely significant cumulative landscape and visual effects arising during the construction or operation of the Proposed Development and is reported within Chapter 21 of this ES [TR020001/APP/5.01]. The CLVIA study area is the same as the LVIA study area.
4.13.18	<p>Residential Visual Amenity Assessment</p> <p>The Planning Inspectorate commented that if the Applicant wishes to prepare a Residential Visual Amenity Assessment the Inspectorate expects that it should form part of the landscape and visual impact assessment aspect chapter in the ES. The Inspectorate draws attention to Landscape Institute Technical Guidance Note 02/2019 on Residential Visual Amenity</p>	<p>A Residential Visual Amenity Appraisal (RVAA) is provided as Appendix 14.8 of this ES [TR020001/APP/5.02].</p> <p>The methodology for undertaking the RVAA follows guidance set out within Landscape Institute Technical Guidance Note 02/2019.</p> <p>The methodology and residential properties considered within the RVAA have been agreed with the LVIA Working Group.</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	Assessment, published in March 2019.	
4.13.19	<p>Mitigation measures</p> <p>The Planning Inspectorate commented that the Applicant should ensure that the effectiveness of any proposed mitigation measures is thoroughly assessed in the ES, describing the likely significant effects of the Proposed Development both prior to mitigation and residually so that it is possible to understand the efficacy of proposed mitigation measures. The ES should also explain how measures proposed to mitigate landscape and visual effects, such as planting, may relate to other aspects, for instance impacts on ecological receptors. Appropriate cross-reference should be made between related aspects in the ES, such as Biodiversity, and Historic Environment.</p>	<p>The LVIA considers in Section 14.9 the landscape and visual effects of the Proposed Development with embedded and good practice mitigation in place. Section 14.11 subsequently considers the effects after additional mitigation (the residual effects) therefore clearly showing the efficacy of the additional mitigation.</p> <p>Describing the likely significant effects prior to embedded and good practice mitigation is not considered good practice as the embedded mitigation forms part of the Proposed Development.</p>
4.13.20	<p>Proposed assessment viewpoints</p> <p>The Planning Inspectorate commented that it was premature, in advance of the adoption of the parameters of the scheme design, to determine assessment viewpoints, and advised that they would expect efforts to be made to agree the locations of assessment viewpoints with relevant consultation bodies.</p> <p>The Planning Inspectorate commented also that viewpoints should be determined in consideration of sensitive cultural heritage receptors and to inform the cultural heritage assessment.</p>	<p>Viewpoint locations to be considered within the LVIA and to inform the cultural heritage assessment were coordinated with the assessors of cultural heritage and were agreed with the LVIA Working Group.</p> <p>Assessment viewpoint locations are mapped in Figure 14.8 of this ES [TR020001/APP/5.03] and information regarding the direction and area covered is recorded beneath each of the viewpoint photographs included in Appendix 14.6 of this ES [TR020001/APP/5.02].</p> <p>How information is presented on the viewpoint photograph sheets has been agreed with the LVIA Working Group.</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	<p>They also comment that viewpoint locations should be clearly mapped, with the direction and area covered by the view recorded and information should be sufficient to enable the viewpoints to be located on site.</p>	
<p>4.13.21</p>	<p>Photomontages The Planning Inspectorate commented that it is unclear from the Scoping Report whether the Applicant intends to produce any photomontages to support the landscape and visual impact assessment. The ES should include photomontages of both the baseline view and the view incorporating the Proposed Development, which should be numbered and cross-referenced to accurately plotted locations on an OS map of appropriate scale, which should also show the angles of the views. The Applicant should make effort to agree the methodology, the viewpoint locations, the assessment years and other scenarios which are to be portrayed with relevant consultation bodies</p>	<p>Selective wireline or block model photomontages (or Accurate Visual Representations), included in Appendix 14.7 of this ES [TR020001/APP/5.02], have been produced to support the LVIA. These photomontages show both the baseline view and the view incorporating the Proposed Development.</p> <p>The photomontages have been produced from viewpoint locations mapped on Figure 14.8 of this ES [TR020001/APP/5.03].</p> <p>The Applicant has included in Appendix 14.7 of this ES [TR020001/APP/5.02] photomontages from three viewpoint locations that show the effectiveness of proposed landscape mitigation ahead of assessment Phase 2a and at the year of maximum passenger capacity. The three locations where landscape mitigation has been portrayed were selected because of their ability to demonstrate the effectiveness of these measures and because they are representative of views experienced by potentially sensitive visual receptors. The methodology, locations, assessment years and viewpoint locations portrayed in the photomontages have been agreed with the LVIA Working Group.</p>

Spatial scope

Study Area

- 14.3.5 The Study Area for assessing the landscape and visual effects of the Proposed Development extends 5km from the perimeter of the Main Application Site as described in **Chapter 2** of this ES [TR020001/APP/5.01] and shown in **Figure 14.1** of this ES [TR020001/APP/5.03]. It also includes the full extent of any character areas that may be affected within that envelope; land in Hitchin within 250m of Work No. 6e(k), (l), and (m) (as described in **Chapter 4** of this ES [TR020001/APP/5.01]); and, for considering effects on tranquillity, additional land within the Chilterns AONB where aircraft would be below 7,000 ft.
- 14.3.6 The Study Area was defined through a survey of the pattern of existing land use, landform and land cover within the landscape surrounding the Application Site. Bare earth Zone of Theoretical Visibility (ZTV) mapping was also prepared to assist in defining the Study Area as shown on **Figure 14.2** of this ES [TR020001/APP/5.03]. The Study Area was further refined through field survey activities to take into consideration visual screening such as vegetation and built form.
- 14.3.7 It is important to note that the boundary of the Study Area does not define the area beyond which there would be no effects, rather it contains the area within which the likely significant landscape and visual effects are predicted to occur.
- 14.3.8 Receptors within this Study Area are described in **Section 14.7** of this chapter.

Temporal Scope

- 14.3.9 The Proposed Development would be delivered incrementally in response to forecast passenger demand. For the purposes of assessment three assessment phases are considered (assessment Phase 1, assessment Phase 2a and assessment Phase 2b as described in **Chapter 4** Proposed Development of this ES [TR020001/APP/5.01]), within which construction and operation may take place simultaneously. Assessment years for each assessment phase are described in **Chapter 5** Approach to the Assessment of this ES [TR020001/APP/5.01].
- 14.3.10 The LVIA considers effects during each of the three assessment phases to design capacity, to understand the effectiveness of proposed mitigation measures and changes to land management objectives during this period; at the year of maximum passenger capacity; and at the design year for the purposes of landscape-based mitigation, 15 years beyond the end of construction.
- 14.3.11 The LVIA combines construction effects and aircraft movement increases associated with each assessment phase and makes judgements based on the likely reasonable worst case scenario in each of these assessment periods.
- 14.3.12 The assessment periods considered in this LVIA are:
- a. Construction assessment Phase 1 and interim aircraft movement effects (c.2025 - 2032).

- b. Construction assessment Phase 2a and interim aircraft movement effects (c. 2033 - 2036).
- c. Construction assessment Phase 2b and interim aircraft movement effects (c. 2037 - 2042).
- d. Operation effects (year of maximum passenger capacity – c.2043).
- e. Operation effects (design year - c.2056).

14.3.13 The assessment periods at assessment Phases 1 and 2b differ to those set out in **Chapters 4 and 5** of this ES [TR020001/APP/5.01], in order to understand the effectiveness of proposed landscape-based mitigation measures and changes to land management objectives on landscape receptors and in screening impacts from development on visual receptors. These assessment periods include additionally the interim periods between construction in assessment Phase 1 ending in 2027 and construction in assessment Phase 2a commencing in 2033; and between construction activities ceasing in 2041 and the maximum passenger capacity being reached in 2043. The design year of 2056 represents a period 15 years after the assessment Phase 2b construction activities are scheduled to end in 2041 and has been selected to allow for the establishment of mitigation planting implemented during this period.

Receptors

14.3.14 The assessment considers effects on landscape and visual receptors that were agreed with the LVIA Working Group, as described in **Section 14.4**, including:

- a. the elements that make up the landscape;
- b. the specific aesthetic or perceptual qualities of the landscape;
- c. the character of the landscape; and
- d. people who would be affected by changes in views or visual amenity.

Matters scoped in

14.3.15 The LVIA provides an assessment of the likely significant effects of the Proposed Development on landscape and visual receptors, including:

- a. the constituent elements of the landscape;
- b. the specific aesthetic or perceptual qualities of the landscape;
- c. the character of the landscape; and
- d. people who would be affected by changes in views or visual amenity.

Tranquillity

14.3.16 The overarching approach to considering tranquillity in this ES is outlined in **Chapter 5** Approach to Assessment and **Chapter 16** Noise and Vibration of this ES [TR020001/APP/5.01]. This LVIA considers tranquillity as part of the assessment of effects on landscape receptors (specifically where identifying the value of a landscape receptor and when considering the magnitude of landscape impacts on that receptor). This includes considering tranquillity in

areas within the Chilterns AONB where aircraft would be below 7,000 ft. (AMSL), as shown in **Figures 14.14 to 14.17** of this ES **[TR020001/APP/5.03]**

Off-site highway works

- 14.3.17 The landscape and visual impact of the Off-site Highway Works included in the Proposed Development have been considered within the scope of the assessment. The CLVIA considers the impact of the other highway works identified in the cumulative assessment reported in **Chapter 21** of this ES **[TR020001/APP/5.01]**.

Views from residential properties

- 14.3.18 This LVIA includes an assessment of effects on people within residential properties that are potentially susceptible to the type of change proposed. Professional judgement was used to assess the potential effect on those visual receptors.

Matters scoped out

- 14.3.19 No matters have been scoped out of this LVIA.

14.4 Stakeholder engagement and consultation

- 14.4.1 Engagement in relation to the LVIA has been undertaken with a number of prescribed and non-prescribed stakeholders throughout the EIA process.
- 14.4.2 An LVIA Working Group was assembled comprising of:
- a. Senior Landscape and Ecology Officer, LBC;
 - b. Landscape Officer, NHDC;
 - c. Building Futures and Landscape Team Leader, HCC;
 - d. Landscape Planner / Public Art Officer, CBC; and
 - e. Greenspace Manager, LBC.
- 14.4.3 The LVIA Working Group convened on four occasions before the 2019 statutory consultation and regularly following that consultation, to discuss consultation feedback and to agree principles for the assessment and mitigation.
- 14.4.4 Discussions were also held with a representative from CCB before the 2019 statutory consultation and with the Countryside and Public Rights of Way officer at HCC and representatives from the Highways Development team at LBC during the 2019 statutory consultation period.
- 14.4.5 Several further meetings were also undertaken with the LVIA Working Group ahead of the 2022 statutory consultation, to close out residual matters and discuss the evolving design; and after that consultation to again confirm the suitability of proposed mitigation and the agreed principles for assessment.
- 14.4.6 The **Consultation Report** submitted as part of the application for development consent [TR020001/APP/6.01] and [TR020001/APP/6.02] contains a full account of the statutory consultation process and issues raised in feedback. Matters raised regarding the scope, methodology, mitigation or compensation considered as part of the LVIA 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 LVIA assessment were:
- a. the definition of the LVIA Study Area;
 - b. the layout and specification of embedded landscape mitigation measures, particularly the arrangement of proposed planting within the Replacement Open Space (Work No. 5b(02));
 - c. the landscape and visual receptors to be considered in the LVIA;
 - d. the assessment stages to be considered in the LVIA;
 - e. the location of assessment viewpoints and the methodology for undertaking verified view photography and preparing accurate visual representation photomontages;
 - f. the approach to considering changes in tranquillity, lighting and night-time effects within the LVIA;
 - g. the methodology for preparing ZTV mapping information;

- h. the methodology for determining the sensitivity of visual receptors, particularly users of PRow;
- i. the assumptions for growth rates of landscape based mitigation measures;
- j. the status of the proposed extension to the Chilterns AONB and Glover Report (Ref. 14.14); and
- k. the approach to monitoring proposed landscape-based mitigation measures, to ensure compliance with targets set out in this LVIA.

14.4.7 **Table 14.6** provides a summary of engagement with relevant stakeholders, undertaken to inform the EIA and this ES, including the date and time of meetings and a summary of discussions to resolve matters raised.

14.4.8 No engagement on landscape and visual matters was undertaken with Dacorum Borough Council or St. Albans City and District Council due to the appreciable distance and screening elements between the Main Application Site and these administrative areas.

Table 14.6: Stakeholder engagement relating to landscape and visual impacts

Meeting name and date	Attendees (organisation)	Summary of discussion
Pre statutory consultation		
Pre-Scoping Meeting 10 April 2018	The Applicant and officers from LBC, NHDC and CBC. Apologies: Officers from HCC and the CCB	This meeting explained the content of the LVIA section of the Scoping Report as drafted at that time and discussed the assessment viewpoint locations that were being considered for inclusion in the LVIA and items proposed to be scoped out. It was considered by those in attendance that effects of private views could be scoped out and it was agreed that a Non-Statutory RVAA would be beneficial to support the LVIA. The assessment viewpoints were also discussed and considered suitable in principle.
Pre-scoping Meeting and Site Visit 26 February 2019	The Applicant and officers from LBC, NHDC, CBC, HCC and CCB	This meeting and site visit provided an update on the Proposed Development and on formal stakeholder feedback received through the Non-Statutory Consultation process. It also identified any proposed changes to the approach or methodology in response to design evolution or stakeholder feedback. Feedback was received on potential receptors and it was discussed that additional viewpoints should be included to inform judgements about the impact at Caddington

Meeting name and date	Attendees (organisation)	Summary of discussion
		and from within the Chilterns AONB to the west of the Application Site.
Post Scoping/ES Meeting 07 October 2019	The Applicant and officers from LBC, NHDC, CBC and HCC	Officers were informed about the forthcoming Statutory Consultation and Scoping responses were also discussed. The key findings and conclusions of the landscape and visual impact section of the ES were discussed. Officers raised the recently published Glover Report in respect of potential impacts on the Chilterns AONB.
Post Scoping / ES Meeting 08 October 2019	The Applicant and the CCB planning officer	The planning officer was informed about the forthcoming Statutory Consultation on the proposals and Scoping responses were also discussed. The key findings and conclusions of the landscape and visual impact section of the ES were discussed. The planning Officer emphasised the importance of considering the proposed extension to the Chilterns AONB, particularly in context of the recently published Glover Report. The planning officer reiterated the importance of considering the effects of the Proposed Development on tranquillity.
2019 statutory consultation		
PFP Meeting 19 November 2019	LBC Property and Construction, Pilkington Farms Partnership (PFP) and the Applicant	The meeting discussed the need to mitigate significant landscape, visual and biodiversity effects and the potential need to provide and maintain additional landscape-based mitigation on PFP land holdings.
LBC Highways Meeting 06 December 2019	The Applicant, LBC Highways	The meeting reviewed the definitive map of PRow within Luton Borough, to ascertain the correct footpath and bridleway references, and discussed principles for the stopping up of FP38 and BW37 to facilitate construction.
Post 2019 statutory consultation		
PFP Meeting 14 January 2020	The Applicant, PFP, LBC Property and Construction and Arup Ecology.	The meeting discussed specification and management aims for landscape and biodiversity mitigation on PFP's and the Applicant's land holdings.

Meeting name and date	Attendees (organisation)	Summary of discussion
<p>LVIA Open Space Stakeholder Meeting 04 February 2020</p>	<p>The Applicant, LBC Parks and officers from LBC, NHDC, CBC and HCC.</p>	<p>The meeting set out the strategy for responding to comments raised by the Host Authorities in the WSP report prepared on their behalf in response to Statutory Consultation and the ES and sought clarifications on some of the comments.</p> <p>The meeting also reviewed and discussed comments raised in the WSP report concerning additional receptors, viewpoints, proposed mitigation, phasing and growth rates.</p> <p>The meeting also agreed a need for monitoring of landscape mitigation and the principle that this should be set out within the Outline Landscape and Biodiversity Management Plan (LBMP).</p>
<p>HCC PRoW Stakeholder Meeting 05 February 2020</p>	<p>The Applicant and HCC Countryside and Rights of Way Officer</p>	<p>The meeting explained that the development proposals would impact the management of existing countryside and alignment of PRoW in HCC.</p> <p>The officer explained what information would be required to support changes to the surfacing and/or alignment of PRoW and put forward potentially suitable forms of mitigation for consideration.</p> <p>The officer also suggested changes to the growth rates assumed within the LVIA and advised the use of UK grown plants.</p>
<p>LVIA Open Space Stakeholder Meeting 03 March 2020</p>	<p>The Applicant, LBC Parks and officers from LBC, NHDC, CBC and HCC.</p>	<p>The meeting agreed viewpoint and photomontage locations and, based on the layout put forward at statutory consultation, the receptors to be considered in the LVIA.</p> <p>The meeting also discussed several technical matters and agreed, based on the layout put forward at statutory consultation, the LVIA study area, the suitability and use of published Landscape Character Areas (LCAs), the methodology and receptors to be considered in the RVAA, the use of the light obstruction report to inform judgements on night-time effects, the use of professional judgement to</p>

Meeting name and date	Attendees (organisation)	Summary of discussion
		<p>determine the effectiveness of proposed mitigation.</p> <p>The meeting additionally discussed and agreed principles for changes to the Provision of Open Space (Work No. 5b).</p>
<p>LVIA Open Space Stakeholder Meeting 20 April 2020</p>	<p>The Applicant, LBC Parks and officers from LBC, CBC and HCC. Apologies: officer from NHDC</p>	<p>The meeting agreed further principles for the design of the Provision of Open Space (Work No. 5b) and embedded landscape mitigation; and agreed principles for the consideration of tranquillity; the methodology for undertaking the ZTV; and requirements for landscape monitoring.</p> <p>The meeting also agreed changes to the assessment phases and years to be considered in the LVIA and discussed the legal status of the Glover report and Chilterns AONB boundary extension.</p> <p>The meeting identified Luton Rising's intention to include within the ES a sensitivity test explaining the potential change to effects from an expanded Chiltern AONB boundary, based on the 'search area' extents included in the CCB application</p>
<p>LVIA Open Space Stakeholder Meeting 07 October 2020</p>	<p>The Applicant, LBC Parks and officers from LBC, NHDC and HCC. Apologies: officer from CBC</p>	<p>The meeting provided an update on the Proposed Development changes following statutory consultation and reaffirmed agreements reached previously.</p> <p>The meeting agreed the inclusion of 3 additional visual receptors and 5 additional viewpoint locations, following the inclusion of the Airport Access Road (AAR) in full; and agreed changes to the assessment phases to be considered in the LVIA.</p> <p>The meeting also set out and discussed proposed changes to the Replacement Open Space (Work No. 5b(02)) and embedded landscape mitigation.</p>
<p>LVIA Open Space Stakeholder Meeting 09 December 2020</p>	<p>The Applicant and officers from LBC and HCC. Apologies: Officers from CBC, NHDC and LBC Parks.</p>	<p>The meeting agreed the approach to presenting verified view and photomontage information, confirmed agreement to the approach to considering tranquillity, agreed the principle that not all users of PRoW should necessarily be considered of high sensitivity, and agreed the principle that the visual assessment does not need to consider effects</p>

Meeting name and date	Attendees (organisation)	Summary of discussion
		on users of PRoW that are to be stopped up in the period when public access along that route would not be feasible.
LVIA Open Space Stakeholder Meeting 24 March 2021	The Applicant and officers from LBC, CBC and NHDC. Apologies: Officers from HCC and LBC Parks.	The meeting agreed that the setting of the Chiltern's AONB was not either a landscape or visual receptor and that the LVIA could not therefore assess effects on the setting of an AONB.
LVIA Open Space Stakeholder Meeting 16 September 2021	The Applicant and officers from LBC, LBC Parks and HCC. Apologies: Officers from HNDC and CBC.	<p>The meeting provided an update on the Proposed Development following the scheme changes, notably adjustments to the assessment years, landscape mitigation measures and proposed Off-Site Highway Interventions (as defined in Chapter 2, with individual works (Work No. 6e) described in Chapter 4 of this ES [TR020001/APP/5.01]) within Luton.</p> <p>The meeting agreed that the proposed Off-Site Highway Interventions within Luton would be unlikely to lead to any significant landscape or visual effects but recognised that those within Hitchin may and that accordingly the LVIA Study Area should be extended to include additionally land within 250m of Work Nos. 6e(k), (l), and (m); and that the assessment provided in Section 14.9 should consider as a further landscape receptor effects on the townscape of Hitchin in this Study Area.</p> <p>The meeting also agreed the adjustments to proposed assessment periods as identified in Section 14.5 and the inclusion of photomontages within the ES showing the establishment of proposed landscape mitigation at years 2032 (ahead of assessment Phase 2a) and 2043 (year of maximum passenger capacity).</p>
2022 statutory consultation		
Bloor Homes Limited Meeting 14 March 2022	The Applicant and representatives of Bloor Homes	The meeting discussed concerns raised by Bloor Homes Limited regarding land to the east of Luton that is included within the Order Limits for landscape mitigation purposes, which Bloor Homes has an interest in, and which is identified as a strategic housing

Meeting name and date	Attendees (organisation)	Summary of discussion
		<p>allocation in the North Hertfordshire draft Local Plan 2011-2031.</p> <p>The meeting clarified that landscape mitigation would not be delivered or maintained to establishment should housing growth on this land be forthcoming.</p>
Post 2022 statutory consultation		
<p>LVIA Open Space Stakeholder Meeting 7 June 2022</p>	<p>The Applicant and officers from LBC, HCC, NHDC and CBC.</p>	<p>The meeting reviewed comments provided in feedback following the 2022 statutory consultation, set out how Luton Rising proposed to address comments raised and, where necessary, agreed changes to the assessment approach.</p> <p>This meeting clarified concerns and reaffirmed agreements about the LVIA Study Area, assessment methodology, assessment information, suitability of landscape mitigation and approach to presenting supportive figures and viewpoint information. The meeting also agreed an approach to verifying the baseline through additional fieldwork and agreed changes to the assumptions identified in Section 14.6 regarding mitigation planting stock sizes.</p>
<p>Central Bedfordshire Council Meeting 9 September 2022</p>	<p>The Applicant and the landscape officer from CBC.</p>	<p>The meeting discussed the Off-Site Highway Interventions proposed near to Junction 10 of the M1 and agreed the inclusion of two additional visual receptors.</p>

14.5 Methodology

Overview

- 14.5.1 This section outlines the methodology for assessing the likely significant landscape and visual effects from the construction and operation of the Proposed Development. Full details of the methodology can be found in **Appendix 14.1** of this ES [TR020001/APP/5.02].
- 14.5.2 The LVIA has assessed the Proposed Development, as described in **Chapter 4** of this ES [TR020001/APP/5.01]. The assessment employed a parameters-based approach which allows a degree of uncertainty and flexibility to be taken into account as described in **Section 5.4** in **Chapter 5** of this ES [TR020001/APP/5.01].
- 14.5.3 The assessment methodology adopted for the LVIA follows the principles and approaches set out in GLVIA3 and associated clarifications published by the GLVIA Panel.
- 14.5.4 Landscape and visual assessments are separate, although linked, procedures. The landscape baseline, its analysis and the assessment of landscape effects all contribute to the baseline for visual assessment studies.
- 14.5.5 To understand the effectiveness of proposed landscape-based mitigation measures and changes to land management objectives the LVIA considers effects during each of the three assessment phases to design capacity, at the year of maximum passenger capacity, and at the design year for the purposes of landscape-based mitigation, 15 years beyond when construction activities are anticipated to end in 2041 (refer to Outline Programme given in **Chapter 4** of this ES [TR020001/APP/5.01]).
- 14.5.6 The assessment periods considered in this LVIA are defined in paragraph 14.3.12.
- 14.5.7 GLVIA3 recognises a clear distinction between the ‘impact,’ as the action that is being taken, and the ‘effect,’ as the change resulting from that action, and advises that the term ‘impact’ should not be used to mean a combination of several effects. To be consistent with terminology used throughout this assessment, ‘magnitude of impact,’ is referred to when describing changes/actions including combinations.
- 14.5.8 The assessment process comprises the following key stages:
- a. establishing a study area for assessing landscape and visual effects;
 - b. establishing the landscape and visual baseline conditions;
 - c. identifying potential landscape and visual receptors to an environmental effect;
 - d. considering the value, susceptibility and sensitivity of these receptors to the type of change proposed;
 - e. determining the magnitude of change that would be experienced by those or at those receptors; and

- f. applying professional judgement to advise the significance that should be attributed that effect.

Baseline methodology

- 14.5.9 Establishing the baseline conditions involves the following:
- a. the review of published Landscape Character Assessments (National and Local Authority Character Assessments) followed by verification in the field to determine the character of the site and study area;
 - b. describing the existing landscape elements that contribute to landscape character (landscape elements include geology, soils, landform, drainage and waterbodies, existing vegetation and land/field patterns, settlements and buildings, PRow, land use and other characteristic elements of the existing local landscape);
 - c. defining the area within which the Proposed Development may be visible;
 - d. identifying the different groups of people within the study area who may experience views of the Proposed Development; and
 - e. identifying specific viewpoints and describing the nature of views at the viewpoints.
- 14.5.10 Tranquillity is a particular consideration when undertaking landscape and visual impact assessments for airport related development. The ANPS advises that '(the assessment of) landscape and visual effects (should) also include tranquillity effects.'
- 14.5.11 In keeping with guidance set out in the GLVIA3, and the ANPS, it is interpreted that tranquillity should be regarded when undertaking the assessment of effects on landscape receptors (specifically where identifying the value of a landscape receptor and when considering the magnitude of landscape impacts on that receptor) and not assessed as a separate topic area alongside the assessment of landscape and visual effects.

Identifying receptors

- 14.5.12 This step involves identifying the components of the landscape and the people that are likely to be affected by the Proposed Development. These are defined as landscape receptors and visual receptors respectively and include the physical landscape, aesthetic or perceptual qualities of the landscape, the character of the landscape and the views experienced by people.

Sensitivity of receptors

- 14.5.13 For each of the landscape and visual receptors identified, the susceptibility of the receptor to a specific change is judged, as is the value of the receptor. These two judgements are combined to determine the sensitivity of the receptor.
- 14.5.14 Judgements about the susceptibility of a receptor and about the value of a visual receptor are recorded as being high, medium or low. Judgements about the value of a landscape receptor are recorded as being very high, high,

medium, low or very low. The criteria for these judgements are set out in **Table 1.1, Table 1.2, Table 1.6** and **Table 1.7** in **Appendix 14.1** of this ES [TR020001/APP/5.02].

Evaluating the magnitude of impact

- 14.5.15 The magnitude of impact on a receptor is assessed in terms of its:
- size or scale – the extent to which the removal or addition of landscape elements and features alter the existing landscape character or view;
 - geographical extent of the area over which the effect is evident;
 - duration of the effect - (short 0-5yrs/ medium 5-10yrs / long-term 10-25yrs); and
 - reversibility – (i.e. temporary or permanent).
- 14.5.16 For the purpose of this assessment, impacts that would be considered permanent are those typically occurring over the long-term, such as the construction of buildings and reprofiling of land as these cannot practicably be reversed. Vegetation removal is also considered to be permanent where it cannot be planted in the same location and reach maturity over the short or medium-term. Mitigation planting has the potential to compensate for the loss of existing vegetation if similar types and species are planted and could provide similar benefits over the medium to long-term. There are instances where mitigation planting could not compensate for the loss of existing vegetation for example the removal of ancient woodland but such instances are not applicable to the Proposed Development.
- 14.5.17 Temporary effects would typically occur over a short to medium term duration and would mainly occur during the construction period. Development that may result in temporary effects would typically include, for example, the introduction of temporary site security fencing, temporary hard standing areas, construction machinery, temporary buildings and compounds, haul roads, earthmoving and stockpiles, or lighting.
- 14.5.18 Judgements about the magnitude of impact on receptors identify whether the impact would be negative (adverse) or positive (beneficial), are described with embedded mitigation in place, and are recorded as being high, medium, low, very low or no change, based on the criteria set out in **Table 1.3** and **Table 1.8** in **Appendix 14.1** of this ES [TR020001/APP/5.02].

Evaluating the significance of impact

- 14.5.19 The significance of a landscape or visual effect is assessed through professional judgement, combining the sensitivity of the receptor with the magnitude of impact, as summarised in **Table 14.7**.

Table 14.7: Determining significance of effect

MAGNITUDE OF IMPACT (Beneficial or Adverse)						
SENSITIVITY OF RECEPTOR		No Change	Very Low	Low	Medium	High
	High	No Effect	Minor	Minor/ Moderate	Moderate/ Major	Major
	Medium	No Effect	Negligible/ Minor	Minor	Moderate	Moderate/ Major
	Low	No Effect	Negligible/ Minor	Negligible/ Minor	Minor	Minor/ Moderate

14.5.20 Major and Moderate environmental effects are considered ‘significant’ for the purposes of this ES, whilst Minor and Negligible are considered ‘not significant.’ It should be noted that professional judgement has been used when deciding on the significance and, in line with clause 3.34 of the GLVIA3, effects assessed to be not significant for the purposes of this ES are not totally disregarded.

14.6 Assumptions and limitations

14.6.1 This section provides a description of the assumptions and limitations to this LVIA. The following assumptions have been made in undertaking this LVIA:

- a. All existing vegetation, unaffected by the Proposed Development, would be retained unless otherwise identified for removal or impacted as a consequence of proposed woodland enhancements listed in the LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02].
- b. Luton Borough public footpaths FP29 and FP38 and public bridleways BW28 and BW37, which follow along the eastern edge of the existing airfield and south east boundary of Wigmore Valley Park, would remain accessible during construction for assessment Phase 1. These footpaths and bridleways are identified on **Figure 14.6** of this ES [TR020001/APP/5.03].
- c. The vertical alignment of the Airport Access Road (Work No. 6a) is assumed to be the same as that consented as part of the Green Horizons Park application (LBC Application reference 17/02300/EIA), subject to a limit of deviation of +/-2m;
- d. Proposed improvements to Wigmore Valley Park consented as part of the Green Horizons Park application (LBC Application reference 17/02300/EIA) - notably the improvements to Wigmore Pavilion, installation of new play facilities and construction of a new skate park) - alongside the removal of any existing vegetation necessary to facilitate these works, would be undertaken under that planning permission alongside or in advance of works to enhance the existing Wigmore Valley Park (Work No. 5b(01)) or deliver the Replacement Open Space (Work No. 5b(02)) during construction for assessment Phase 1.
- e. Work Nos. 5b(01) and 5b(02) are assumed to be undertaken during construction for assessment Phase 1, with areas made available for use by the public before the end of 2026.
- f. Luton Borough public footpaths FP29 and FP38 and public bridleways BW28 and BW37 would be stopped-up to facilitate the Proposed Development during construction for assessment Phase 2a.
- g. A surfaced path (Work No. 5b(03)) would be delivered within the Replacement Open Space in assessment Phase 1, between Luton Borough footpath FP38 and the junction with public footpath Kings Walden 043, west of the mature hedgerow on the ridgeline of Winch Hill and would be formally adopted as a public footpath during construction for assessment Phase 2a.
- h. A section of public footpath Kings Walden 041 would be upgraded to a multi-user track within the Replacement Open Space (part of Work No. 5b(02)) during construction for assessment Phase 1, between the junction with public footpath Kings Walden 043 and the existing field entrance off Darley Road (south of Green Acres) and would be formally adopted as a public bridleway during construction for assessment Phase

- 2b. The section between Winch Hill Road and the field entrance off Darley Road (south of Green Acres) remaining as a public footpath.
- i. A surfaced path (Work No. 5b(04)), located east of the coniferous plantation woodland and leading south from public footpath Kings Walden 043 to the edge of the Replacement Open Space, would be constructed as a multi-user track within the Replacement Open Space during construction for assessment Phase 1, and would be formally adopted as a public bridleway during construction for assessment Phase 2b.
 - j. A section of public footpath Kings Walden 043 within the Replacement Open Space (part of Work No. 5b(02)), between the junction with public footpath Kings Walden 041 and the proposed multi-user track to be delivered east of the coniferous plantation woodland, would be upgraded to a multi-user track during construction for assessment Phase 1 and formally adopted as a public bridleway during construction for assessment Phase 2b.
 - k. A new multi-user track (Work No. 5b(04)) would be delivered between the Replacement Open Space and Winch Hill Road, to the east of the proposed Fuel Storage Facility (Work No. 4c(01)) and Water Treatment Plant (Work No. 4d) and west of Winch Hill Wood, during construction for assessment Phase 2b, and would be afforded bridleway status.
 - l. Work No. 5c(02) would restore the landform in the area of excavated land to the west of Winch Hill Road during construction for assessment Phase 2b and before operation at maximum passenger capacity.
 - m. Winch Hill Wood would be enclosed by deer proof fencing for biodiversity enhancement purposes in assessment Phase 1, in accordance with the LBMP provided at **Appendix 8.2** of this ES **[TR020001/APP/5.02]**.
 - n. Agricultural land to the west of junction 10 of the M1 would be restored to its original condition following Work No. 6e(n) but would remain stripped following Work No. 6e(o) and be restored only upon completion of Work No. 6e(p).
 - o. Existing hedgerow and woodland vegetation affected during Work No. 6e(n), to the west of junction 10 of the M1, would be reinstated in assessment Phase 2b following completion of Work No. 6e(p).

14.6.2 It is assumed additionally that:

- a. Heavy Standard trees would be planted in the public realm locations identified at Work Types 3 and 4 (as defined in **Chapter 4** of this ES **[TR020001/APP/5.01]**) and in replacement for light standard trees within proposed hedgerows and woodland in the existing Wigmore Valley Park (Work No. 5b(01)) and Replacement Open Space (Work No. 5b(02)).
- b. Hedgerows would be planted using 1.5-1.8m feathered trees within the public realm locations at Work Types 3 and 4, in the existing Wigmore Valley Park (Work No. 5b(01)) and in the Replacement Open Space (Work No. 5b(02)).

- c. Light standard trees would punctuate all restored hedgerows at an average of 20m spacings (25m from existing trees) and would constitute 20% of proposed woodland planting.
- d. Feathered trees would constitute 30% of proposed woodland planting.

14.6.3 The following growth rates are assumed for proposed planting, based on recommendations provided by the HCC Countryside and Rights of Way Officer, and have been agreed with the LVIA Working Group:

- a. Hedgerows planted with transplants (0.6-0.8m height) are assumed to be maintained at a height of at least 2.1m within 8 years.
- b. Hedgerows planted using 1.5-1.8m feathered trees are assumed to be maintained at a height of 2.1m within 5 years.
- c. Woodland comprising transplants (0.6-0.8m height), feathered trees (circa 1.5-2m height) and light standards (2.5-3.5m height) is assumed to achieve an estimated height of 2-3.5m after 8 years, 4-5.5m after 15 years, 6-7.5m after 20 years and at least 8-10m after 25 years.
- d. Scrub vegetation planted with shrubs and transplants (0.3-0.8m height) is assumed to achieve a height of 2-3m within 5-10 years.
- e. Heavy standard trees (3.5-4.25m) are assumed to achieve heights of between 6-7m after 5 years, 8-9m after 10 years and 10m+ after 15 years.
- f. Light standard trees (2.5-3m) are assumed to achieve heights of 5m after 8 years, 7-8m after 15 years, 9-10m after 25 years.

14.6.4 Landscape mitigation planting is assumed to have been implemented by the following assessment phases, and is anticipated to establish in accordance with the assumptions set out above and in **Appendix 14.10** of this ES **[TR020001/APP/5.02]**:

- a. Landscape mitigation to be delivered in assessment Phase 1, as shown within **Figure 14.11** of this ES **[TR020001/APP/5.03]**, would be planted by December 2026.
- b. Landscape mitigation to be delivered in assessment Phase 2a, as shown within **Figure 14.12** of this ES **[TR020001/APP/5.03]**, would be planted by December 2036.
- c. Landscape mitigation to be delivered in assessment Phase 2b, as shown within **Figure 14.13** of this ES **[TR020001/APP/5.03]**, would be planted by December 2041.

14.6.5 Proposed hedgerow, scrub and woodland planting would be protected during its establishment with either 1.8m height deer proof fencing (comprising 75x75mm mesh alongside hexagonal mesh rabbit fencing to a height of at least 600mm, buried 250mm beneath ground level and turned out 150mm horizontally) or with 1.8m height deer proof individual tree guards. Heavy standard trees and hedgerows planted with feathered trees would be protected for a period of 5 years and all other proposed planting would be protected for a period of 8 years.

- 14.6.6 In accordance with the findings set out in the Light Obtrusion Assessment provided as **Appendix 5.2** of this ES [TR020001/APP/5.02], it is assumed that the predicted impact of sitewide construction and operational lighting to be delivered by the Proposed Development on views from the surrounding area would be **negligible**. It is understood additionally that, in comparison to sitewide lighting, the transient and dynamic impact of lower powered vehicular headlights and/or aircraft lights would not have a significant impact on dark skies.

Reasonable worst case

- 14.6.7 The LVIA combines for the purposes of assessment construction stage effects and aircraft movement increases and makes judgements based on the likely reasonable worst-case scenario in each of the assessment phases. The LVIA also assesses operational effects at the year of maximum passenger capacity, with the corresponding highest number of aircraft movements. The LVIA has employed a parameters-based approach which allows a degree of uncertainty and flexibility to be taken into account as described in **Section 5.4** of this ES.

14.7 Baseline conditions

14.7.1 This section provides a description of the existing conditions in the Study Area.

Existing landscape conditions

14.7.2 This section describes the baseline landscape conditions within the Main Application Site and the surrounding area, including the Off-site Car Parks and Off-site Highway Intervention areas, as defined in **Chapter 2** of this ES **[TR020001/APP/5.01]** including:

- a. landform, geology, hydrology and soils;
- b. land cover, vegetation and land use;
- c. public access and transport routes;
- d. cultural patterns and historic features; and
- e. aesthetic or perceptual qualities (including tranquillity).

14.7.3 This section describes landscape features in these areas that would be likely impacted by the Proposed Development to the extent that it may lead to significant landscape effects.

14.7.4 The baseline landscape and visual conditions have been determined via a desk-based review of relevant published documentation and by visiting the Application Site and Study Area between June 2018 and May 2019. Landscape conditions were also verified through fieldwork conducted in June 2022. Local Landscape Character Areas are shown on **Figure 14.3** of this ES **[TR020001/APP/5.03]**.

14.7.5 The published documentation that has informed the landscape baseline includes:

- a. East of England Landscape Typology, published by Landscape East 2011 (Ref. 14.15).
- b. National Character Area Profile:110 Chilterns, published by NE in February 2013 (Ref. 14.16).
- c. The 'Luton Borough Landscape Character Assessment', prepared by The Greensand Trust on behalf of LBC and published June 2014 (LBLCA) (Ref. 14.17).
- d. The 'Central Bedfordshire Landscape Character Assessment', prepared by Land Use Consultants for CBC and published in January 2015 (CBDLCA) (Ref. 14.18).
- e. The 'North Herts Landscape Study (Character, Sensitivity and Capacity)', which was based on the original Landscape Character Assessment work carried out by the Babbie Group in 2004 and the subsequent Sensitivity and Capacity work carried out by The Landscape Partnership in 2011 and agreed as background evidence to support the North Herts LDF in 2011 (HLCA) (Ref. 14.19).

- f. 'A Green Infrastructure Plan for Luton', produced by The Greensand Trust on behalf of LBC and published March 2015 (Ref. 14.20).
- g. The 'Green Space Strategy Review', produced by The Greensand Trust on behalf of LBC and published October 2015 (Ref. 14.21).
- h. The 'North Hertfordshire Open Space Review and Standards', published by NHDC 2016 (Ref. 14.22).
- i. The 'Nature Conservation Strategy', produced by LBC and published December 1992 (Ref. 14.23).
- j. The 'Proposed Local Landscape Designations for Luton', produced by The Greensand Trust on behalf of LBC and published June 2014 (Ref. 14.24).
- k. The 'Review of Environmental Sensitivity Study to inform Potential Growth Areas around Luton', produced by The Landscape Partnership and published July 2009 (Ref. 14.25).
- l. The 'North Hertfordshire District Green Infrastructure Plan' produced by Land Use Consultants and published August 2009 (Ref. 14.26).
- m. The 'North Hertfordshire Design Supplementary Planning Document', produced by NHDC and published July 2011 (Ref. 14.27).
- n. 'Design in Central Bedfordshire', produced by CBC and published September 2014 (Ref. 14.28).
- o. The 'Bedfordshire and Luton Strategic Green Infrastructure Plan', produced by the Bedfordshire and Luton Green Infrastructure Consortium and published February 2007 (Ref. 14.29).
- p. The 'Luton and Southern Bedfordshire Green Infrastructure Plan', produced by The Greensand Trust on behalf of Luton and Southern Bedfordshire Joint Technical Unit and published July 2009 (Ref. 14.30).
- q. The 'Chilterns Area of Outstanding Natural Beauty Management Plan 2014-2019', produced by CCB and adopted April 2014 (Ref. 14.31).
- r. 'Development Affecting the Setting of the Chilterns AONB', a position statement produced by CCB and adopted June 2011(Ref. 14.32).
- s. The 'Tranquillity Map' for Bedfordshire and Hertfordshire, produced by the Campaign to Protect Rural England and published March 2007 (Ref. 14.33).
- t. 'The Chilterns AONB Management Plan 2019 – 2024: Caring for the Chilterns forever and for everyone,' produced by CCB and adopted February 2019 (Ref. 14.34).

14.7.6 The Application Site and Study Area falls entirely within the extents covered by National Character Area profile 110 Chilterns, and the Study Area includes East of England Landscape Types:

- a. Wooded Chalk Valleys, which are characterised by their steep sided, wooded valleys that penetrate the surrounding upland plateau, becoming shallower with only seasonal watercourses in their upper parts; and

- b. Wooded Plateau Farmlands, which comprise settled, early enclosed landscapes with frequent ancient woods, associated with a rolling, in places undulating glacial plateau, dissected by numerous shallow valleys.

Landform, geology, hydrology and soils

- 14.7.7 The Main Application Site is located to the south east of Luton and at the north eastern end of the Chiltern Hills. The Chiltern Hills are characterised by elevated chalk dip-slope plateaus interspersed by parallel branching valleys gently shelving to the south east towards the London Basin.
- 14.7.8 The landform within the Main Application Site is distinctly varied, with its western part, which includes the existing airport, positioned on top of a very flat and wide-open dip-slope plateau and its eastern part comprising a series of gently rolling dry valleys and ridgelines. The landform within the Study Area is shown in **Figure 14.4** of this ES [TR020001/APP/5.03].
- 14.7.9 There are various man-made topographical elements within and adjoining the Main Application Site, most notably a former landfill site which underlies the western part of Wigmore Valley Park and the long-stay car park to the east of the airport. There are also other areas of made ground, notably around the business park to the west and north west of the airport and at the ends of the runway.
- 14.7.10 The land to the west of the Main Application Site, at the edge of the dip-slope, descends steeply down a man-made escarpment into the Lea Valley, before rising to the north west at Hart Hill and west at Farley Hill. The land to the north of the Main Application Site rises gradually to Warden Hill and the land to the east rises gradually to form another wide dip-slope plateau, which extends beyond Breachwood Green. The dip-slope plateau and dry valleys that characterise the Main Application Site continue in a south easterly direction from the Main Application Site. The River Lea to the south west of the airport, and the River Mimram to the east of the airport are the only watercourses within the Study Area.
- 14.7.11 The bedrock geology within the Study Area is comprised of Upper Chalks (Lewes Nodular Chalk Formation and Seaford Chalk Formation) and Middle Chalk (Holywell Nodular Chalk Formation and New Pit Chalk Formation) and the predominant superficial deposits within the Main Application Site and the surrounding area is 'clay-with-flints' (Ref. 14.35). The soils within the Main Application Site are considered 'slightly acid loamy and clayey soils with impeded drainage.' (Ref. 14.36).

Land use

- 14.7.12 The Main Application Site is located on the urban fringe of Luton. Land cover to the north and west of the Main Application Site (including the existing airport) comprises the developed area of Luton, whilst land to the east and south is largely undeveloped. **Figure 14.5** of this ES [TR020001/APP/5.03] shows the site in the context of the urban area of Luton and the wider countryside.

- 14.7.13 The land use within the western part of the Main Application Site is principally aviation based but also includes other land uses related to the airport (e.g. hotels, commercial, office, light industrial and car parking).
- 14.7.14 The land use within the eastern part of the Main Application Site is principally arable but includes also Wigmore Valley Park, which is a designated District Park and area of public open space. Wigmore Valley Park is recognised to form part of the Luton Green Infrastructure Network, is popular for dog walking and recreation, and includes mown open grassland, scrub grassland, woodland, allotments, a playpark, skate park, car park and a disused pavilion building.
- 14.7.15 The land use to the north of the Main Application Site is principally residential, comprising a mixture of largely post-war suburban and post-1980s development; land use to the west is principally industrial, associated with the Vauxhall plant; and land use to the south and east is principally arable. Luton Hoo, a hotel and spa set within parkland, is located to the south west of the Main Application Site.
- 14.7.16 To the west and north west of the airport is steep chalk scarp land known as Dairyborn Escarpment. Off-site car parking is currently provided to the west of the airport, close to this Escarpment.
- 14.7.17 The areas of land proposed for the Off-site Car Parks is located to the south west of the airport, adjacent to either side of the Midlands Mainline. The larger of the two sites is located to the north of the Midlands Mainline and is used as a trailer park. The smaller site, located to the south of Midlands Mainline, is a disused area of hardstanding which was previously used as a car park. The sites are located in a commercial area dominated by existing transport infrastructure. Each site contains a border of trees and scrub.
- 14.7.18 The areas of land proposed for the Off-site Highway Interventions fall entirely within the highway limits, in all locations other than an area of land to the west of junction 10 of the M1 and immediately to the north of Half Moon Lane. Land use in this location comprises arable farmland and scrub woodland. Land use in Hitchin comprises principally residential streets and road corridors but is typically well vegetated with several mature trees.

Vegetation cover

- 14.7.19 Vegetation cover within the airfield is restricted to featureless short grassland for operational reasons.
- 14.7.20 The land around the airport includes semi-natural habitat containing ruderal vegetation, scrub, scattered trees and more densely wooded blocks to its north. Within the developed land adjoining the airport (e.g. adjoining Percival Way), vegetation coverage is more structured and generally comprises broadleaved tree species in amongst introduced shrub or amenity grassland.
- 14.7.21 The eastern part of the site is predominantly arable with some broadleaved woodland and an area of coniferous plantation woodland. Hedgerows with hedgerow trees delineate some field boundaries however several of the enclosures appear sparse and fragmented or have been lost completely due to farming practices.

- 14.7.22 The southern part of Wigmore Valley Park is a designated County Wildlife Site, noted for its mosaic habitat that includes calcareous and neutral semi-improved grassland, tall ruderal herb, and scrub. These habitats support a diverse invertebrate fauna as well as providing a valuable resource for various species, most notably bats, birds and reptiles. This area is also noted to contain at least four species of orchid. Further information on the biodiversity value of this habitat is provided in **Chapter 8 Biodiversity** of this ES [TR020001/APP/5.01].
- 14.7.23 Tree surveys for most of the site have been undertaken. For areas of the site where tree surveys have not been undertaken, desk-based assessments of these areas have been carried out. The surveys are provided within the Arboricultural Impact Assessment as **Appendix 14.3** of this ES [TR020001/APP/5.02] and **Appendix 14.2** of this ES [TR020001/APP/5.02]. The surveys establish that:
- a. there is an area of designated ancient woodland (tree survey ref. G250) within the Main Application Site;
 - b. an area of woodland (tree survey ref. G169), is located along the ridge of Winch Hill and is assumed to be at least 200 years old;
 - c. two trees within the Main Application Site are considered ‘veterans’ (tree survey refs. T63 and T173);
 - d. three trees within the Main Application Site are considered ‘ancient’ (tree survey refs. T163, T168 and T1310);
 - e. two trees and one tree group within the Main Application Site are considered ‘ancient or veteran’ (tree survey refs. T174, T343 and G156);
 - f. one tree (tree survey ref. T703), near the northern boundary of Wigmore Valley Park, is protected by a Tree Preservation Order;
 - g. the hedgerow along the south east boundary of Wigmore Valley Park and extending along the boundary of the airfield is described to be ancient (Ref. 14.37); and
 - h. other vegetation in Wigmore Valley Park and the woodland on the ridgeline of Winch Hill (tree survey ref. G169), is considered to provide important screening of the existing airport.
- 14.7.24 The tree survey also identifies two ‘ancient or veteran’ trees (tree survey refs. T740 and T773) in the land to the east of the Main Application Site.
- 14.7.25 Vegetation cover in the land to the east and south of the Main Application Site is principally arable but with occasional blocks of broadleaved woodland, some of which are considered ancient. Some hedgerows and hedgerow trees remain within this area, but most are either fragmented or completely absent due to farming practices.
- 14.7.26 Vegetation cover on the land proposed for the Off-site Car Parks comprises principally scrub with self-seeded Sycamore, Ash and Buddleia trees, most of which are surveyed to be in poor condition.
- 14.7.27 The areas of land proposed for the Off-site Highway Interventions were not included in the tree survey extents. A desk-based review of aerial mapping

however indicates that several of these works areas do not contain any vegetation.

14.7.28 Cover on junctions that do contain vegetation typically comprises managed grassland with occasional low-level tree and/or shrub vegetation of limited landscape or biodiversity value. Notable exceptions to this being the mature trees present on the roundabout at the junction of Wigmore Lane and Crawley Green Road in Luton (Work No. 6e(l)); those to the south of the A505 Upper Tilehouse Street and surrounding its junction with the A602 Park Way (Work No. 6e(k)); those in the land surrounding the junction of the A602 Park Way and Stevenage Road (Work No. 6e(m), several of which are located within the Hitchin Conservation Area; and an area of scrub woodland to the west of junction 10 of the M1 (Work No. 6e(n).

14.7.29 An aerial photograph showing the existing vegetation cover within the Main Application Site and its surroundings is shown on **Figure 14.5** of this ES **[TR020001/APP/5.03]**.

Public access and transport routes

14.7.30 The key highway infrastructure within the Study Area is shown on **Figure 18.2** of this ES **[TR020001/APP/5.03]** and comprises:

- a. the M1, located 4km west of the airport, which connects London to Leeds;
- b. the A1081 (New Airport Way), which connects Junction 10 of the M1 to Airport Way and Terminal 1 (T1); and
- c. the A505 (Vauxhall Way), which connects New Airport Way to Hitchin.

14.7.31 Secondary roads within the vicinity of the Main Application Site also include:

- a. Percival Way and President Way, which connect the roundabout of the A1081 and Airport Way to the Airport Long Stay Car Park;
- b. Eaton Green Road, which connects Vauxhall Way to Darley Road;
- c. Darley Road, which connects Eaton Green Road with The Heath;
- d. Winch Hill Road, which connects Darley Road with Dane Street; and
- e. Kimpton Road, which connects Windmill Road to the Roundabout adjoining the A1081, Airport Way and Vauxhall Way.

14.7.32 Key Cycle routes within the Study Area include:

- a. the Chiltern Way Cycle Route, which connects immediately to the east of the Main Application Site, between Lilley in the north and Harpenden in the south; and
- b. the Upper Lea Valley Cycle Route, which connects Leagrave in the north west of Luton to Harpenden.

14.7.33 There are also several PRoW located within the Main Application Site as shown on **Figure 14.6** in of this ES **[TR020001/APP/5.03]** and described as follows:

- a. public bridleway Kings Walden 052, which connects between Coleman's Road (near Breachwood Green) and Eaton Green Road, and partially serves as a section of the Chiltern Way long distance footpath;
- b. public footpath Kings Walden 041, which borders Darley Road and Eaton Green Road, and also partially serves as a section of the Chiltern Way long distance footpath;
- c. public footpath Kings Walden 043, which crosses the ridgeline of Winch Hill and connects between Eaton Green Road and Winch Hill Road; and
- d. public footpaths FP29 and FP38 and public bridleways BW28 and BW37, which follow the mature hedgerow to the south east of Wigmore Valley Park and east of the airfield between Eaton Green Road and Winch Hill Road.

14.7.34 Beyond the Main Application Site there is also a wide network of PRoW within the surrounding area, particularly to the east and south. Public bridleway Slip End BW1 also adjoins the Order Limits, to the west of junction 10 of the M1.

Cultural patterns and historic features

14.7.35 The landscape to the south and east of the Main Application Site is largely rural, but includes several small villages including Tea Green, Breachwood Green, Bendish, Chilterns Green and Peter's Green, and occasional scattered dwellings.

14.7.36 To the north the townscape is characterised by post-war suburban residential development, comprising predominantly semi-detached dwellings and wide streets, and to the west by industrial land uses associated with the Vauxhall works.

14.7.37 Within the existing airport development has been constructed incrementally and for varying uses, resulting in a townscape of mixed character and appearance.

14.7.38 There are no statutorily designated heritage assets within the Main Application Site, however the following undesignated assets are to be found:

- a. a WWII airfield battle headquarters and pillbox located north of the airport near Wigmore Pavilion and to the east of Wigmore Hall Farmhouse; and
- b. a site of Iron Age and Roman settlement-related activity located within the field immediately to the south east of Wigmore Valley Park.

14.7.39 There are also several designated heritage assets within the Study Area. These are shown on **Figure 14.7** of this ES [TR020001/APP/5.03] and include:

- a. Someries Castle, which is a Scheduled Monument located approximately 250m south west of the Main Application Site boundary;
- b. Luton Hoo, which is a Grade I listed Mansion and set within 475 hectares of a Registered Historic Park and Garden;
- c. Wigmore Hall Farmhouse, which is a Grade II listed building located immediately to the north of the Main Application Site;

- d. Wandon End Farmhouse, which is a Grade II listed building located approximately 70m east of the Main Application site; and
- e. Wandon End House, which is a Grade II listed building located approximately 90m east of the Main Application site.

- 14.7.40 The land proposed for Off-Site Highway Interventions in Hitchin is located within a Conservation Area (Hitchin Conservation Area). Trees within this area are protected under this designation.
- 14.7.41 Further information on cultural patterns and historic features within the study areas applied to that aspect is provided in **Chapter 10 Cultural Heritage** of this ES [TR020001/APP/5.01].

Aesthetic and perceptual qualities

- 14.7.42 The aesthetic qualities of the landscape surrounding the Main Application Site vary but are generally reflective of land use, with the more scenic areas in the rolling arable areas to the east and south, away from the urban edge of Luton.
- 14.7.43 The areas of plateau dip-slopes east and south of the airport are less visible than the area that encompasses the airport. The lower-lying valley areas are also visually contained and offer a greater sense of remoteness.
- 14.7.44 Tranquillity mapping prepared by the Council for the Protection of Rural England (CPRE) (Ref. 14.33) suggests the area immediately surrounding the airport to be amongst the least tranquil of places within the United Kingdom. This judgement is assumed to be reflective of the following factors:
- a. the likelihood that users would encounter other people within this area;
 - b. the likelihood that users may have visibility of roads, urban development or other signs of human impact;
 - c. the likelihood that users may experience road, train, aircraft and urban area noise; and
 - d. the likelihood that users may experience night-time light pollution.
- 14.7.45 It is considered by the assessors that a sense of moderate tranquillity can be experienced in some locations immediately to the east and south of the airport between aircraft movements.
- 14.7.46 It is considered additionally that although areas beneath flight paths, in proximity to urban centres and in proximity to the M1 corridor do experience diminished levels of tranquillity, levels throughout the Study Area generally increase with distance from the airport and rise further within the more rural parts of the Chilterns AONB.

Existing visual conditions

- 14.7.47 The existing airport is a prominent and visually intrusive feature within the Main Application Site and can be identified in views from:
- a. the north at the residential edge of Wigmore;

- b. Eaton Green Road and Stopsley Common;
- c. the east at Breachwood Green and the Heath and in glimpsed views from Tea Green and Ley Green;
- d. the south in glimpsed views from Chiltern Green Road and at the approach to Someries Castle;
- e. the west at Capability Green and the Park Town residential area; and
- f. the north west in distant views from Winsdon Hill and from the Hart Hill residential area.

- 14.7.48 The existing airport is also evident in views from some PRow, particularly those to the east and south, and in distant views from within the Chilterns AONB, at Warden Hill and Stipers Hill.
- 14.7.49 The open space and agricultural land to the east of the Main Application Site is however enclosed visually compared to the airport, with only glimpsed views possible in longer distance views from the Breachwood Plateau to the east, and principally to the mature hedgerow vegetation which is located along the ridgeline of Winch Hill and the south east boundary of Wigmore Valley Park.
- 14.7.50 As noted in the Light Obtrusion Assessment provided as **Appendix 5.2** of this ES [TR020001/APP/5.02], there is presently a significant source of light obtrusion emanating from the Main Application Site when viewed from all directions and skyglow from Luton town is clearly visible across the surrounding environment of the Study Area.
- 14.7.51 Representative views of the Main Application Site and Off-Site Car Parks from within the Study Area have been identified to understand its relationship with the surrounding landscape. The viewpoint locations have been discussed and agreed with the LVIA Working Group and are shown in **Figure 14.8** of this ES [TR020001/APP/5.03]. The representative viewpoint photographs are contained in **Appendix 14.6** of this ES [TR020001/APP/5.02].
- 14.7.52 Most of the Off-site Highway Interventions would be contained entirely within the highway boundary and are considered unlikely to lead to significant visual effects. The LVIA does not therefore include representative views to these locations. An exception to this is however the land to the west of junction 10 of the M1 and immediately to the north of Half Moon Lane, which is discernible in glimpsed views experienced by users of the M1 motorway and northbound off-slip road, in glimpsed views through a field gate by users of Half Moon Lane and in partial views - obscured by foreground vegetation - experienced by users of public bridleway Slip End BW1.

Future baseline

- 14.7.53 In the absence of the Proposed Development, there is likely to be a change to the future baseline conditions as a result of other factors and developments in proximity to the airport. These are the conditions that would prevail 'Without the Proposed Development' in place. The 'Without the Proposed Development' scenario is used, where appropriate, as a comparator for the assessed case, to

show the effect of the Proposed Development against an appropriate reference point.

- 14.7.54 For the purposes of this LVIA it is assumed that the other developments which would be in place by 2025, as they're currently under construction, include the Luton DART, Napier Park, Airport Spoil and Bartlett Square, as described in **Table 5.2 of Chapter 5** of this ES **[TR020001/APP/5.01]**. Changes that would be brought about by these other developments are recorded within the viewpoint assessment sheets included at **Appendix 14.6** of this ES **[TR020001/APP/5.02]**.

14.8 Embedded and good practice mitigation measures

14.8.1 This section describes the embedded and good practice mitigation for landscape and visual impact 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 **Section 5.4** in **Chapter 5** of this ES [TR020001/APP/5.01].

Embedded

14.8.2 Embedded landscape-based mitigation measures are shown on **Figure 14.9** of this ES [TR020001/APP/5.03] and are described below.

Development Design

14.8.3 The design of the Proposed Development has evolved to avoid impacting on ancient woodland at Winch Hill Wood, to retain mature woodland/hedgerow vegetation and coniferous plantation woodland along the ridgeline of Winch Hill, to retain an area of mature woodland to the north of Dairyborn Escarpment, and to retain (in part) hedgerow vegetation on the retained northern part of Wigmore Valley Park. Existing vegetation impacted by the Proposed Development would also only be removed when necessary to facilitate works for construction in a specific assessment phase.

14.8.4 The design of the Proposed Development has evolved also to avoid excavation on the ridgeline of Winch Hill or in land occupied by a site of Iron Age and Roman settlement-related activity, located within the field immediately to the south east of Wigmore Valley Park.

14.8.5 The design additionally retains the existing entrance and eastern part of Wigmore Valley Park and integrates it into the proposed enhancement work (Work No. 5b(01)), to be provided in the retained northern part of the existing park.

Provision of Open Space (Work No. 5b)

14.8.6 The Replacement Open Space (Work No. 5b(02)) is an integral part of the Proposed Development, which, in line with policy, is needed to replace existing public open space that would be lost to development in the western part of Wigmore Valley Park. The Replacement Open Space (Work No. 5b(02)) would be provided as part of assessment Phase 1 and has been designed to include the following landscape features to avoid, minimise, replicate and/or replace landscape and visual effects:

- a. the restoration of boundary hedgerows where necessary adjoining Darley Road and Winch Hill Road;
- b. the planting of screening hedgerows and woodland to the south west of PRoW Kings Walden 041, where forming part of the Chiltern Way;
- c. the planting of boundary hedgerows and hedgerow trees for screening purposes, adjoining future excavation areas on the south west boundary of the Replacement Open Space (Work No. 5b(02));

- d. the planting of woodland on the ridgeline of Winch Hill, between the retained mature woodland/hedgerow vegetation and coniferous plantation and the retained hedgerow vegetation on the south east boundary of the existing Wigmore Valley Park, to provide screening and improve connectivity (Work No. 5b(02));
- e. the planting of hedgerow trees within restored and screening hedgerows at regular spacings; and
- f. the creation of improved meadow and mown grassland within the area of replacement parkland.

14.8.7 In delivering the enhancements to the existing Wigmore Valley Park (Work No. 5b(01)) and in setting out the Replacement Open Space (Work No. 5b(02)), the Proposed Development would also ensure:

- a. the functionality of the PRow network is protected throughout construction, to enable users to continue to exercise their rights whilst also protecting them from construction traffic;
- b. parkland areas are made secure through the excavation of ditches and/or creation of hedge banks adjoining Winch Hill Road and Darley Road and through the installation of gates and/or hardwood timber bollards at entrance points;
- c. street furniture elements are agreed with relevant stakeholders and have a coordinated appearance that is appropriate to the surroundings;
- d. circulation routes are agreed with relevant stakeholders and make provision for a range of users (including cyclists, horse riders and pedestrians); and
- e. an area at least as large as may be affected by the proposed works is retained and made available for use by the public ahead of any site clearance activities that would impact existing public open space and construction operations (not associated with Work No. 5b(01)) commencing within the area of existing open space.

Other mitigation measures

14.8.8 The following landform mitigation measures are embedded into the Proposed Development:

- a. an earth bund to be formed on the south west boundary of the retained part of Wigmore Valley Park during construction for assessment Phase 1, using fill material considered unsuitable for constructing the aviation platform (Work No. 5b(01));
- b. land overlying the existing play area at Wigmore Valley Park would be re-graded during construction for assessment Phase 1, using fill material considered unsuitable for constructing the aviation platform, to provide a more gradual transition for park users at the edge of the landfill (Work No. 5b(01)); and
- c. excavated material considered unsuitable for use beneath the aviation platform would be used during construction for assessment Phase 2b to

restore the landform in the excavated area to the west of Winch Hill Road and overlying the proposed infiltration tank to the east of Winch Hill Road (Work No. 5c(02)).

14.8.9 Other mitigation measures to be delivered include:

- a. restoration during construction for assessment Phase 2b of connectivity between public footpath FP38 and public bridleway BW37 through the Replacement Open Space (Work No. 5b(04)), as detailed in **Section 14.6**;
- b. the use of muted surface finishes on proposed building elevations and, where feasible, airfield equipment;
- c. re-coppicing and translocation to another area of the site T343; and
- d. the following measures to deliver planting for landscape restoration and screening purposes:
 - i. the restoration of boundary hedgerows and planting of hedgerow trees where necessary adjoining Winch Hill Road during construction for assessment Phase 1 (Work No. 5c(01));
 - ii. hedgerow and woodland vegetation to be planted on the proposed earth bund to be formed on the south west boundary of the retained part of Wigmore Valley Park during construction for assessment Phase 1 (Work No. 5b(01));
 - iii. reinstatement of grassland vegetation on the engineered slope of Dairyborn Escarpment and the planting of scrub vegetation and creation of exposed chalk areas on the shallower adjoining slopes, following construction of the Airport Access Road (Work No. 6a(02)) during construction for assessment Phase 2a (Work No. 5a);
 - iv. pastoral grassland to be established on restored land either side of Winch Hill Road during construction for assessment Phase 2b (Work No. 5c(02));
 - v. woodland vegetation to be planted between the proposed multi-user track and Fuel Storage Facility (Work No. 4c(01)) and Water Treatment Plant (Work No. 4d) during construction for assessment Phase 2b (Work No. 5c(02));
 - vi. woodland vegetation to be planted on the re-profiled slope to the west of Work No. 6b(03), during construction for assessment Phase 2b (Work No. 5c(02)); and
 - vii. public realm landscaping, to include:
 - i. specimen trees, ornamental shrub and clipped hedgerow planting aligning the main approach road leading to Terminal 2 (Work No. 6b);
 - ii. street trees and shrub vegetation to provide screening to the T2 multi-storey car park (Work No. 4r);
 - iii. street trees and ornamental shrub planting at the building approach and within parking areas for the hotel (Work No. 4a);

- iv. street trees and ornamental shrub and amenity grass adjoining secondary airport public roads (Work No. 6b);
- v. amenity grass adjoining the Airport Access Road (Work No. 6a) and on proposed road junctions and crossings where feasible; and
- vi. native shrubs and trees planted adjoining proposed terminal associated buildings (Works in type 3) and airport support buildings (Works in type 4) where appropriate.

Good Practice

- 14.8.10 Good practice mitigation measures to protect the landscape and visual amenity during construction are set out and explained in the Code of Construction Practice (CoCP) provided in **Appendix 4.2** of this ES [TR020001/APP/5.01]. A summary of these measures is set out below.
- 14.8.11 The lead contractors would be required to employ appropriate measures to protect the landscape from construction activities, to manage and maintain landscape works provided as part of the Proposed Development and to protect visual amenity.
- 14.8.12 Construction-related impacts on landscape and visual amenity would be controlled through the following:
- a. protection of existing elements of the landscape that are to be retained;
 - b. careful design and management of temporary construction components in response to landscape character and visual amenity;
 - c. the effective implementation of operational design measures, as early as reasonably practicable during the construction programme, which have a role in mitigating landscape and visual impacts; and
 - d. relevant local authorities, NE, CCB, other interested bodies and adjacent landowners would be consulted, as appropriate, regarding the landscape and planting proposals.
- 14.8.13 The lead contractors will employ a specialist arboricultural consultant to oversee works relating to the management and protection of trees.
- 14.8.14 Works to trees to be carried out in accordance with the Arboricultural Impact Assessment provided as **Appendix 14.3** of this ES [TR020001/APP/5.02]. Measures to protect retained trees would be discussed with the relevant local authority prior to implementation.
- 14.8.15 Soil handling to be carried out in accordance with the Outline Soils Management Plan (SMP) provided as **Appendix 6.6** of this ES [TR020001/APP/5.02], to be finalised as part of the CoCP which is secured by Requirement of the development consent.
- 14.8.16 All landscape-based mitigation to be managed and maintained in accordance with the Outline LBMP contained in **Appendix 8.2** of this ES [TR020001/APP/5.02], to be finalised as a Requirement of the development consent.

- 14.8.17 All landscape-based mitigation to be monitored in accordance with the principles set out in the Outline LBMP contained in **Appendix 8.2** of this ES **[TR020001/APP/5.02]**.
- 14.8.18 Site hoarding would be erected at the perimeter of construction working areas. The lead contractors would ensure that the construction sites are thoroughly cleared of all construction related machinery, facilities, structures, and materials and waste upon completion of works.
- 14.8.19 Measures to control ground and air noise as far as reasonably practicable during the operational period are proposed. These measures are covered in the Operational Noise Management (Explanatory Note) provided as **Appendix 16.2** of this ES **[TR020001/APP/5.02]**.

14.9 Assessment

- 14.9.1 This section presents the results of the assessment of likely significant effects with the embedded and good practice mitigation measures, described in the previous section, in place. Judgements regarding the establishment and appearance of embedded landscape mitigation planting are based on the assumptions set out in the Landscape Mitigation Establishment Schedule provided as **Appendix 14.10** of this ES [TR020001/APP/5.02].
- 14.9.2 The information presented in this ES is sufficient to enable robust judgements to be made about the landscape and visual effects of the Proposed Development.
- 14.9.3 Detailed assessments of the landscape and visual effects of the Proposed Development, alongside summary tables, are provided as **Appendices 14.4** and **14.5** of this ES [TR020001/APP/5.02] respectively. The detailed assessments explain how judgements of susceptibility to change and value have been combined to ascertain receptor sensitivity, how magnitude of impact has been determined, and how these judgements have been combined for each receptor to evaluate the significance of effect. Embedded and good practice landscape and visual mitigation measures are described in **Section 14.8**. Additional mitigation measures are described in **Section 14.10**. Significant effects are summarised in this section.

Landscape effects

- 14.9.4 Landscape receptors identified as potentially sensitive to change from the Proposed Development during construction and/or operation are as follows:
- a. the landform east of the airport;
 - b. the mixed deciduous and plantation woodlands east of the airport;
 - c. the mature remnant hedgerows and hedgerow trees east of the airport;
 - d. the irregular - predominantly large - arable field patterns, with smaller fields on sloping ground east of the airport;
 - e. the parkland of Wigmore Valley Park;
 - f. the narrow winding lanes and associated hedge banks east of the airport;
 - g. the outlying cottages and scattered farmsteads east of the airport;
 - h. the network of PRoW east of the airport;
 - i. Luton Borough Landscape Character Assessment (LBLCA) Area 4c – Lea Valley Lower;
 - j. LBLCA Area 13 – Wigmore Rural;
 - k. LBLCA Area 14 – Luton Airport;
 - l. LBLCA Area 16 – Luton South Industrial;
 - m. LBLCA Area 22 – Stockwood Park;
 - n. Hertfordshire Landscape Character Assessment (HLCA) Area 200 – Peters Green Plateau (This incorporates the areas of Central Bedfordshire District Landscape Character Assessment (CBDLCA) Area

11D – Luton Airport / Chiltern Green Chalk Dipslope and LBLCA Area 15 – Dane Street and Someries Farm which occupy the same geographic location);

- o. HLCA Area 201 – Kimpton and Whiteway Bottom;
- p. HLCA Area 202 – Breachwood Green Ridge;
- q. HLCA Area 203 – Whitwell Valley;
- r. HLCA Area 211 – Offley and St. Paul’s Walden;
- s. CBDLCA Area 11B – Caddington / Slip End Chalk Dipslope;
- t. CBDLCA Area 11C – Luton Hoo Chalk Dipslope;
- u. CBDLCA Area 12C – Slip End Chalk Valley;
- v. CBDLCA Area 12D – Lea Chalk Valley;
- w. the townscape of Hitchin; and
- x. the aesthetic or perceptual characteristics of the landscape within the Chilterns AONB.

Construction effects

Construction assessment Phase 1 and interim aircraft movement effects (c.2025 - 2032)

- 14.9.5 The following receptors are assessed to experience likely significant landscape effects in this assessment Phase 1 period:
- a. the mixed deciduous and plantation woodland east of the airport;
 - b. the parkland of Wigmore Valley Park; and
 - c. LBLCA Area 13 – Wigmore Rural.
- 14.9.6 The mixed deciduous and plantation woodlands to the east of the airport is a high sensitivity receptor, which is judged to experience an impact of low to medium adverse magnitude in this assessment Phase 1 period. This judgement principally reflects a permanent reduction in woodland coverage, as a consequence of site clearance activities required to deliver temporary car parking (Work No. 4l(01) and 4m(01)); at a stage when proposed woodland planting, embedded into the Proposed Development, would still be at an early stage of establishment. This is assessed as being a **moderate adverse** effect which is **significant**.
- 14.9.7 The parkland of Wigmore Valley Park is a medium to high sensitivity receptor, which is judged to experience an impact of medium to high adverse magnitude in this assessment Phase 1 period. This judgement reflects a perceived reduction in the quality of open space during this period, following the short duration and temporary introduction of works and detracting activities necessary to enhance the existing Wigmore Valley Park (Work No. 5b(01)) and deliver the Replacement Open Space (Work No. 5b(02)) and other aspects of the Proposed Development beyond its boundary; and the comparatively immature condition of embedded landscape mitigation measures to be provided, against

that lost from the existing parkland during this stage. This is assessed as being a **major adverse** effect which is **significant**.

- 14.9.8 LBLCA Area 13 – Wigmore Rural is a medium to high sensitivity receptor, which is judged to experience an impact of medium to high adverse magnitude in this assessment Phase 1 period. This judgement reflects the introduction of uncharacteristic features and elements, some of which would be permanent and of medium or long-term duration - notably site clearance activities and the introduction of surface car parking - into a large proportion of this character area, which are considered to result in partial loss and locally noticeable damage to this area's characteristics. This is assessed as being a **moderate adverse** effect which is **significant**.

Construction assessment Phase 2a and interim aircraft movement effects (c.2033 - 2036)

- 14.9.9 The following landscape receptors are assessed to experience likely significant effects in this assessment Phase 2a period:
- a. the landform east of the airport;
 - b. the mixed deciduous and plantation woodlands east of the airport;
 - c. the parkland of Wigmore Valley Park;
 - d. the network of PRow east of the airport;
 - e. LBLCA Area 13 – Wigmore Rural;
 - f. LBLCA Area 16 – Luton South Industrial;
 - g. HLCA Area 200 – Peters Green Plateau; and
 - h. the townscape of Hitchin.
- 14.9.10 The landform east of the airport is a medium to high sensitivity receptor, which is judged to experience an impact of medium adverse magnitude in this assessment Phase 2a period. This is due principally to introduced permanent changes to the natural profile of the landform, associated with proposed earthworks activities and the storage of excavated materials. This is assessed as being a **moderate adverse** effect, which is **significant**.
- 14.9.11 The mixed deciduous and plantation woodlands east of the airport is a high sensitivity receptor, which is judged to experience an impact of medium magnitude in this assessment Phase 2a period. This judgement reflecting the residual and furthered permanent loss to woodland coverage that would remain evident during this stage of expansion, despite establishment of proposed embedded woodland landscape mitigation. This is assessed as being a **moderate adverse** effect, which is **significant**.
- 14.9.12 The parkland of Wigmore Valley Park is a medium to high sensitivity receptor, which is judged to experience an impact of medium adverse magnitude in this assessment Phase 2a period. This judgement is reduced from those experienced during the assessment Phase 1 period, reflecting the cessation of construction activities associated with the Provision of Open Space (Work No. 5b) itself and the establishment of embedded landscape mitigation measures;

but acknowledges also the more evident presence of uncharacteristic temporary construction activities beyond the boundary of parkland, notably features associated with the landfill remediation (Work No. 1b) and construction of the new terminal. This is assessed as being a **moderate adverse** effect, which is **significant**.

- 14.9.13 The network of PRow east of the airport is a medium to high sensitivity receptor, which is judged to experience an impact of low to medium adverse magnitude in this assessment Phase 2a period. This judgement is principally resultant of the permanent stopping-up of the Luton Borough rights of way FP29, FP38, BW28 and BW37, to the south east of Wigmore Valley Park and to the east of the existing airfield, which is judged to damage connectivity in this period. This is assessed as being a **moderate adverse** effect, which is **significant**.
- 14.9.14 LBLCA Area 13 – Wigmore Rural is a medium to high sensitivity receptor, which is judged again to experience an impact of medium to high adverse magnitude in this assessment Phase 2a period. This judgement reflects the further introduction of uncharacteristic features and elements - notably landfill remediation, construction activities and built form - into the same part of the character area affected in the assessment Phase 1 period but that is thought to be noticeable over a greater extent than in this earlier phase. This is assessed as being a **major adverse** effect, which is **significant**.
- 14.9.15 LBLCA Area 16 – Luton South Industrial is a low to medium sensitivity receptor, which is judged to experience an impact of medium adverse magnitude in this assessment Phase 2a period. This judgement reflects the introduction of uncharacteristic features and elements, some of which would remain permanent and long-term - notably the clearance of vegetation and construction of a new Airport Access Road (Work No. 6a(02)) - that would noticeably damage this area's characteristics. Acknowledging also that affecting Dairyborn Escarpment this change would impact a particularly valued part of this character area however, the effect on LBLCA Area 16 is assessed as being **moderate adverse**, which is **significant**.
- 14.9.16 HLCA Area 200 – Peters Green Plateau is a medium to high sensitivity receptor, which is judged to experience an impact of low to medium adverse magnitude in this assessment Phase 2a period. This judgement principally reflects the introduction of earthworks, construction activities, surface car parking and built form into its northernmost part, which would noticeably damage valued features and permanently reduce its extent. This is assessed as being a **moderate adverse** effect, which is **significant**.
- 14.9.17 The townscape of Hitchin is a medium to high sensitivity receptor, which is judged to experience an impact of low to medium adverse magnitude in this assessment Phase 2a period. This judgement principally reflects the potential for Off-site Highway works (Work Nos. 6e(k), 6e(l) and 6e(m)) to result in permanent losses to valued trees, some of which fall within the Hitchin Conservation Area. This is assessed as being a **moderate adverse** effect, which is **significant**.

Construction assessment Phase 2b and interim aircraft movement effects (c.2037 - 2042)

- 14.9.18 The following landscape receptors are assessed to experience likely significant effects in this assessment Phase 2b period:
- a. the landform east of the airport;
 - b. the mixed deciduous and plantation woodlands east of the airport;
 - c. the parkland of Wigmore Valley Park;
 - d. the network of PRow east of the airport;
 - e. LBLCA Area 13 – Wigmore Rural;
 - f. HLCA Area 200 – Peters Green Plateau;
 - g. the townscape of Hitchin; and
 - h. the aesthetic and perceptual characteristics of the landscape within the Chilterns AONB.
- 14.9.19 Most of these receptors are assessed to experience a likely significant adverse landscape effect in this period for similar reasons to those noted in paragraphs 14.9.9 to 14.9.17 above for assessment Phase 2a, or for impacts remaining in assessment Phase 2b.
- 14.9.20 The aesthetic and perceptual characteristics of the landscape within the Chilterns AONB, which is a high sensitivity receptor, is judged to experience an impact of low adverse magnitude in this assessment Phase 2b period. This is principally due to the noticeable increase in aircraft movements that are anticipated to pass over the AONB below 7,000 ft (AMSL) during this period, associated with an increase from 21.5mppa to 32mppa. and as identified on **Figures 14.14 to 14.17** of this ES [TR020001/APP/5.03], which is judged to permanently deteriorate the sense of tranquillity perceived by those recreating within the AONB. This is assessed as being a **moderate adverse** effect, which is **significant**.

Operational effects

Operation effects (year of maximum passenger capacity – c.2043)

- 14.9.21 The following landscape receptors are assessed to experience likely significant effects at the year of maximum passenger capacity:
- a. the landform east of the airport;
 - b. LBLCA Area 13 – Wigmore Rural;
 - c. HLCA Area 200 – Peters Green Plateau;
 - d. the townscape of Hitchin; and
 - e. the aesthetic and perceptual characteristics of the landscape within the Chilterns AONB.
- 14.9.22 These receptors are assessed to experience **moderate adverse**, likely **significant**, effects principally due to the permanent lasting impacts resulting

from works undertaken during construction, or due to residual impacts on perceptual characteristics (notably tranquillity) resulting from the increase in aircraft movements.

Operation effects (design year - c.2056)

- 14.9.23 All landscape receptors assessed to experience moderate, likely significant, adverse effects at the year of maximum passenger capacity are again assessed to experience likely significant effects at the design year, for similar reasons to those explained above.

Visual effects

- 14.9.24 Judgements regarding the magnitude of impact and significance of effect have been informed by considering and describing the anticipated change experienced from the representative viewpoints contained in **Appendix 14.6** of this ES [TR020001/APP/5.02]. Several verified view photomontages, shown in **Appendix 14.7** of this ES [TR020001/APP/5.02], have also been used to help inform these judgements.

- 14.9.25 The visual receptors considered potentially sensitive to change from the Proposed Development during construction and/or operation are as follows:

- a. visitors to Wigmore Valley Park;
- b. visitors to Someries Castle and grounds;
- c. users of Winsdon Hill (including users of Wellhouse Close);
- d. visitors to Luton Hoo Memorial Park;
- e. users of Raynham Recreation Ground and Community Centre;
- f. users of the area of greenspace next to Polzeath Close;
- g. users of Powdrills Field;
- h. users of Stockwood Park;
- i. users of Stopsley Common;
- j. users of Luton Hoo Hotel and Parkland;
- k. residents of Wandon End (including Ivy Cottages and Greenacres);
- l. residents of Winch Hill House;
- m. residents of Winch Hill Cottages;
- n. people in South Wigmore;
- o. people in Darleyhall (including visitors to the Fox Inn public house);
- p. people in Breachwood Green, The Heath and Lye Hill;
- q. people in Tea Green;
- r. users of Wigmore Hall Conference Centre;
- s. users of the Chiltern Way Cycle Route;
- t. users of Darley Road;

- u. users of Eaton Green Road;
- v. users of Winch Hill Road;
- w. users of Vauxhall Way;
- x. users of Kimpton Road and Airport Way;
- y. users of New Airport Way;
- z. users of Luton Borough public footpath FP39 to the east of Wigmore;
- aa. users of Luton Borough public footpaths FP29 and FP38 and public
bridleways BW28 and BW37 to the southeast of Wigmore Valley Park
and to the east of the existing airfield;
- bb. users of the Chiltern Way long distance footpath (specifically users of
footpaths and bridleways Offley 002; Kings Walden 004; Kings Walden
006; Kings Walden 041; Kings Walden 052);
- cc. users of PRoW to the west of Breachwood Green (specifically users of
footpaths and bridleways Kings Walden 007; Kings Walden 008; Kings
Walden 009; and, where not forming part of the Chiltern Way, Kings
Walden 052);
- dd. users of footpaths Kings Walden 041, where not forming part of the
Chiltern Way, and Kings Walden 043, which pass through the Main
Application Site;
- ee. users of footpaths near Lye Hill (including users of footpaths Kings
Walden 003; Kings Walden 005; and Kings Walden 051);
- ff. users of footpaths near Ley Green (specifically users of footpaths Kings
Walden 012 and Kings Walden 022);
- gg. users of PRoW south of the airport (including bridleways Hyde 2 and
Hyde 3; and footpaths Hyde 4, east of Someries Castle, and Hyde 5);
- hh. users of public footpath Hyde 4, west of Someries Castle;
- ii. users of the Lea Valley Cycle Route, nr. Park Street;
- jj. users of footpath Offley 026, west of Cockernhoe;
- kk. users of footpath St Pauls Walden 024, nr. Bendish;
- ll. users of footpath Offley 003, west of Tea Green;
- mm. users of footpaths east of Tea Green (including users of footpaths
Offley 004; Offley 005; and Offley 006);
- nn. users of footpath Kings Walden 010;
- oo. users of PRoW on or adjoining the flight path east of Breachwood Green;
- pp. users of PRoW on or adjoining the flight path near Caddington;
- qq. users of PRoW within the Chilterns AONB;
- rr. users of the car park east of Vauxhall Way;
- ss. people in south east Hart Hill and south west Wigmore;
- tt. users of Capability Green Business Park;

- uu. users of bridleway Slip End BW1; and
- vv. users of Half Moon Lane.

Construction

Construction assessment Phase 1 and interim aircraft movement effects (c.2025 - 2032)

- 14.9.26 The following visual receptors are assessed to experience likely significant effects on visual amenity in this assessment Phase 1 period:
- a. visitors to Wigmore Valley Park;
 - b. users of New Airport Way;
 - c. users of bridleway Slip End BW1; and
 - d. users of Half Moon Lane.
- 14.9.27 Visitors to Wigmore Valley Park are considered to be of medium to high sensitivity and are judged to experience an impact of medium adverse magnitude in this assessment Phase 1 period. This judgement principally reflects a deterioration to the overall scene experienced because of temporary site clearance activities, earthworks, and construction activities associated with delivering the enhancements to the existing Wigmore Valley Park (Work No. 5b(01)) and the Replacement Open Space (Work No. 5b(02)), airfield support operations (Work No. 2a and 2e) and temporary surface car parking (Work No. 4l(01) and 4m(01)); and the permanent losses to vegetation and increased prominence of surface car parking, which would remain apparent in views experienced by this receptor in the middle-term. This effect is assessed to be **moderate adverse**, which is **significant**.
- 14.9.28 Users of New Airport Way are considered to be of low to medium sensitivity and are judged to experience an impact of medium adverse magnitude in this assessment Phase 1 period. This judgement principally reflects a temporary and short-term deterioration to the overall scene experienced because of works within the confines of the highway boundary (Work Nos. 6e(b), 6e(g) and 6e(n)); and works to create the Airport Access Road and Link Road (Work No. 6a(01)). This effect is assessed to be **moderate adverse**, which is **significant**.
- 14.9.29 Users of bridleway Slip End BW1 are considered to be of high sensitivity and are judged to experience an impact of low magnitude in this assessment Phase 1 period; and users of Half Moon Lane are considered to be of medium sensitivity and are judged to experience an impact of medium magnitude in this assessment Phase 1 period. These judgements principally reflecting a temporary deterioration to the scene, of short duration, associated with the introduction of a site compound within an area of arable land to the west of junction 10 of the M1 and to the north of Half Moon Lane (Work No. 6e(n)), which would be perceptible in glimpsed views from the bridleway and evident in views experienced by those passing along Half Moon Lane. These effects are assessed to be **moderate adverse**, which is **significant**.

Construction assessment Phase 2a and interim aircraft movement effects (c.2033 - 2036)

14.9.30 The following visual receptors are assessed to experience likely significant effects on visual amenity in this assessment Phase 2a period:

- a. visitors to Wigmore Valley Park;
- b. users of the area of greenspace next to Polzeath Close;
- c. people in South Wigmore;
- d. people in Darleyhall;
- e. people in Breachwood Green, The Heath and Lye Hill;
- f. users of Wigmore Hall Conference Centre;
- g. users of the Chiltern Way Cycle Route;
- h. users of Darley Road;
- i. users of Eaton Green Road;
- j. users of Winch Hill Lane;
- k. users of Kimpton Road and Airport Way;
- l. users of New Airport Way;
- m. users of the Chiltern Way long distance footpath;
- n. users of PRow to the west of Breachwood Green;
- o. users of footpaths Kings Walden 041, where not forming part of the Chiltern Way, and Kings Walden 043, which pass through the Main Application Site;
- p. users of footpaths near Lye Hill;
- q. users of PRow south of the airport;
- r. users of public footpath Hyde 4B, west of Someries Castle;
- s. users of the Lea Valley Cycle Route nr. Park Street;
- t. users of footpath Offley 003, west of Tea Green;
- u. users of footpaths Offley 004, 005 and 006, east of Tea Green;
- v. users of footpath Kings Walden 010;
- w. users of the car park east of Vauxhall Way;
- x. users of bridleway Slip End BW1; and
- y. users of Half Moon Lane.

14.9.31 The visual effect on each of these receptors is assessed to be **moderate adverse**, which is **significant**.

14.9.32 In several cases these receptors are users or user groups judged to be of medium sensitivity or higher that would be engaged in active recreation, living or moving through the landscape to the east of the Main Application Site and whose visual amenity would be deteriorated by a combination of:

- a. site clearance activities, particularly where the permanent removal of existing trees would increase user's visibility to the airport, apron and/or buildings;
- b. earthworks activities, notably temporary landfill remediation activities (Work No. 1b) and permanent works to create new apron for stands and taxiways (Work No. 2b); and
- c. temporary construction activities, notably those associated with delivering the new terminal building (Work No. 3b(01)), western pier (Work No. 3c(01)), Engine Run Up Bay (ERUB) (Work No. 2f) and other associated developments that are prominent and readily noticeable above proposed embedded and existing intervening vegetation, particularly in longer-distance views.

14.9.33 Other notable factors affecting receptors to the north, west and south west of the airport in this assessment Phase 2a period being the Airport Access Road (Work no. 6a(02)) and the delivery of Work No. 4f; and, in the case of users of bridleway Slip End BW1 and users of Half Moon Lane, the reinstatement of the compound area within the arable land to the west of junction 10 of the M1 and to the north of Half Moon Lane.

14.9.34 Effects on the users of Luton Borough public footpaths FP29 and FP38 and public bridleways BW28 and BW37 to the south east of Wigmore Valley Park and to the east of the existing airfield receptor was not assessed in this period as these PRow are assumed to be stopped up and would not therefore be accessible for use by the public.

Construction assessment Phase 2b and interim aircraft movement effects (c.2037 - 2042)

14.9.35 The following visual receptors are assessed to experience likely significant effects on visual amenity in this assessment Phase 2b period:

- a. visitors to Wigmore Valley Park;
- b. users of Raynham Recreation Ground and Community Centre;
- c. people in South Wigmore;
- d. people in Darleyhall;
- e. people in Breachwood Green, The Heath and Lye Hill;
- f. people in Tea Green;
- g. users of Wigmore Hall Conference Centre;
- h. users of the Chiltern Way Cycle Route;
- i. users of Darley Road;
- j. users of Eaton Green Road;
- k. users of Winch Hill Road;
- l. users of the Chiltern Way long distance footpath;
- m. users of PRow to the west of Breachwood Green;

- n. users of footpaths Kings Walden 041, where not forming part of the Chiltern Way, and Kings Walden 043, which pass through the Main Application Site;
- o. users of footpaths near Lye Hill;
- p. users of PRow south of the airport;
- q. users of the Lea Valley Cycle Route nr. Park Street;
- r. users of footpath Offley 003, west of Tea Green;
- s. users of footpaths Offley 004, 005 and 006, east of Tea Green;
- t. users of footpath Kings Walden 010;
- u. users of the car park east of Vauxhall Way;
- v. users of bridleway Slip End BW1; and
- w. users of Half Moon Lane.

14.9.36 The visual effect on each of these receptors is assessed to be **moderate adverse**, which is **significant**.

14.9.37 These receptors are generally determined to experience significant adverse effects on their visual amenity for similar reasons to those identified in the assessment Phase 2a period (see paragraphs 14.29.29 to 14.9.33 above). Notable additional factors impacting on views experienced by these user groups being:

- a. the Terminal 2 extension (Work No. 3b(02)) and new east pier (Work No. 3c(02));
- b. relocation of the ERUB (Work No. 2g);
- c. erection of hangars A and B, to the south of Presidents Way (Work No. 4b);
- d. relocation of the fire training ground (Work No. 2d); and
- e. erection of a new hotel (Work No. 4a).

14.9.38 The effect on the users of Luton Borough public footpaths FP29 and FP38 and public bridleways BW28 and BW37 to the south east of Wigmore Valley Park and to the east of the existing airfield receptor was again not assessed in this period as these PRow are assumed to be stopped up and would not therefore be accessible for use by the public.

Visual operation effects

Operation effects (year of maximum passenger capacity – c.2043)

14.9.39 The Proposed Development would result in permanent impacts, most notably new built form, that would, alongside an increase in operational activity, remain as visible changes to those living, engaged in active recreation or moving through the surrounding landscape after the construction period has come to an end.

- 14.9.40 The following visual receptors are assessed to experience likely significant adverse effects on visual amenity at the year of maximum passenger capacity:
- a. visitors to Wigmore Valley Park;
 - b. users of Raynham Recreation Ground and Community Centre;
 - c. people in Darleyhall;
 - d. people in Breachwood Green, The Heath and Lye Hill;
 - e. users of Wigmore Hall Conference Centre;
 - f. users of the Chiltern Way Cycle Route;
 - g. users of Darley Road;
 - h. users of Luton Borough public footpaths FP29 and FP38 and public bridleways BW28 and BW37 to the southeast of Wigmore Valley Park and to the east of the existing airfield;
 - i. users of the Chiltern Way long distance footpath;
 - j. users of PRow to the west of Breachwood Green;
 - k. users of PRow south of the airport;
 - l. users of the Lea Valley Cycle Route nr. Park Street;
 - m. users of footpath Offley 003, west of Tea Green;
 - n. users of footpaths Offley 004, 005 and 006, east of Tea Green;
 - o. users of footpath Kings Walden 010; and
 - p. users of the car park east of Vauxhall Way.
- 14.9.41 The visual effect on all of these receptors is assessed to be **moderate adverse**, which is **significant**.
- 14.9.42 Receptors considered to experience a significant adverse effect in the assessment Phase 2b period but which have a reduced impact at maximum passenger capacity, which results in a **not significant** effect, include:
- a. people in South Wigmore, people in Tea Green and users of Eaton Green Road, all of whom it is determined would experience views containing fewer detracting features once construction activities have ceased; and
 - b. users of Winch Hill Road, whom it is assessed would experience fewer detracting features following the restoration of landform and establishment of embedded landscape mitigation measures (Work No. 5c(02)).
- 14.9.43 The significance of visual effect on users of Luton Borough public footpaths FP29 and FP38 and public bridleways BW28 and BW37 to the south east of Wigmore Valley Park and to the east of the existing airport is assessed as **moderate adverse**, which is **significant** at the year of maximum passenger capacity based on the redirected alignment described in **Section 14.8**.

Operation effects (design year - c.2056)

- 14.9.44 It is assessed that the further establishment of embedded mitigation, would reduce the magnitude of impact experienced by the following receptors to an extent where they are assessed to reduce to **minor** or **negligible** adverse and are therefore no longer likely to experience significant effects on visual amenity at the design year:
- a. people in Darleyhall.
 - b. users of Wigmore Hall Conference Centre; and
 - c. users of the car park east of Vauxhall Way.
- 14.9.45 It is however assessed that the further establishment of embedded mitigation would not reduce the magnitude of impact on the following receptors:
- a. visitors to Wigmore Valley Park;
 - b. users of Raynham Recreation Ground and Community Centre;
 - c. people in Breachwood Green, The Heath and Lye Hill;
 - d. users of the Chiltern Way Cycle Route;
 - e. users of Darley Road;
 - f. users of the Chiltern Way long distance footpath;
 - g. users of PRow to the west of Breachwood Green;
 - h. users of PRow south of the airport;
 - i. users of the Lea Valley Cycle Route nr. Park Street;
 - j. users of footpath Offley 003, west of Tea Green;
 - k. users of footpaths Offley 004, 005 and 006, east of Tea Green; and
 - l. users of footpath Kings Walden 010.
- 14.9.46 These visual receptors are assessed accordingly to experience **moderate adverse** effects, which is **significant**, on visual amenity without additional mitigation measures at this stage.

Sensitivity analysis

- 14.9.47 There are certain known scenarios or risks that may occur that could influence the conclusions of the core assessment. These scenarios and the general approach to considering them in this assessment are described in **Section 5.4 of Chapter 5** Approach to the Assessment of this ES [TR020001/APP/5.01].
- 14.9.48 **Table 14.7** provides a qualitative assessment of any likely changes to the conclusions of the assessment reported in this chapter, in the event that that scenario or risk is realised.

Table 14.7: Qualitative sensitivity analysis

Sensitivity scenario	Potential impact and change	Likely effect
1. 19 mppa Application	An increase in the assumed baseline capacity from 18 to 19 mppa is considered not to change the assessed impacts on landscape and visual amenity.	No change
2. Faster growth	A rise in passenger demand and higher passenger throughput quicker than predicted is considered not to change the assessed impacts on landscape and visual amenity.	No change
3. Slower growth	A lower rate of forecast passenger demand and passenger throughput being achieved later than predicted is considered not to change the assessed impacts on landscape and visual amenity.	No change
4. Next generation aircraft	The alternative long term fleet mix which takes into account the next generation of aircraft which would have better environmental performance is considered not to change the assessed impacts on landscape and visual amenity.	No change
5. J10 without National Highways Smart Motorway upgrade (hard shoulder running scheme)	All lane running not being delivered and the M1 continuing to operate as predicted is considered not to change the assessed impacts on landscape and visual amenity.	No change
6. Changes to airspace	Different runway mode splits and distributions of aircraft along the existing flight paths is considered not to change the assessed impacts on landscape and visual amenity.	No change

14.10 Additional mitigation

14.10.1 This section describes the mitigation measures identified as a result of the assessment process, that are proposed in addition to those already considered as in place as described in **Section 14.8** embedded and good practice. These are proposed to reduce or mitigate the effects on landscape and visual receptors as a result of the construction and operation of the Proposed Development.

Design

14.10.2 Additional landscape-based mitigation measures are identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**, are assumed to be delivered during construction for assessment Phase 1 and are described as follows:

- a. Hedgerow and hedgerow tree planting / restoration to the north side of public footpaths Hyde FP4 and FP5, and to the north side of public bridleway Hyde BW3, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- b. Hedgerow and hedgerow tree planting / restoration to the south side of public footpath Kings Walden 006, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- c. Hedgerow and hedgerow tree planting / restoration to the west side of public footpath Kings Walden 007, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- d. Hedgerow and hedgerow tree planting / restoration to the south side of public footpath Kings Walden 008, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- e. Hedgerow and hedgerow tree planting / restoration to the south side of public footpath Kings Walden 009, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- f. Hedgerow and hedgerow tree planting / restoration to the south side of public footpath Kings Walden 010, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- g. Hedgerow and hedgerow tree planting / restoration to the west side of public footpath Kings Walden 011, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- h. Hedgerow and hedgerow tree planting / restoration to the south side of public footpath Offley 001, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- i. Hedgerow and hedgerow tree planting / restoration to the south side of public footpath Offley 002, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.
- j. Hedgerow and hedgerow tree planting / restoration to the south side of public footpath Offley 003, where identified in **Figure 14.10** of this ES **[TR020001/APP/5.03]**.

- k. Hedgerow and hedgerow tree planting to the south side of the track leading into Tankards Farm and public footpath Offley 004, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- l. Hedgerow and hedgerow tree planting / restoration to the south side of public footpaths Offley 005 and 006, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- m. Restoration of existing hedgerow and planting of hedgerow trees to the south side of Brick Kiln Lane, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- n. Hedgerow and hedgerow tree planting / restoration to the west side of Brownings Lane, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- o. Hedgerow and hedgerow tree planting / restoration to the east side of Darley Road, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- p. Hedgerow and hedgerow tree planting / restoration to the west side of public bridleway Kings Walden 052, near Brownings Lane and where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- q. Hedgerow and hedgerow tree planting / restoration to the north and south sides of public bridleway Kings Walden 052, where forming part of the Chiltern Way long distance footpath and where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- r. Hedgerow and hedgerow tree planting / restoration to field boundaries on land within the Applicant's ownership east of Darley Road and Winch Hill Road, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- s. Restoration of hedge banks on land within the Applicant's land ownership east of Darley Road and Winch Hill Road;
- t. Creation of broadleaved woodland on land within the Applicant's ownership east of Darley Road and Winch Hill Road, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- u. Creation of meadow and pastoral grassland on land within the Applicant's ownership east of Darley Road and Winch Hill Road, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- v. Creation of a wildlife pond on land within the Applicant's ownership east of Darley Road and Winch Hill Road, where identified in **Figure 14.10** of this ES [TR020001/APP/5.03].
- w. Upgrading of bridleway Kings Walden 052 to a multi-user track between Darley Road and Colmore Road (part of Work No. 5b(02)).

14.10.3 It is assumed that additional hedgerow and hedgerow tree planting/restoration to the south side of public footpaths Offley 001, 002 and 003, identified in **Figure 14.10** of this ES [TR020001/APP/5.03], would not be delivered or maintained to establishment should housing growth promoted for delivery under Policy SP8 of the NHDC Local Plan 2011-2031 be forthcoming, as the

development of this land is judged to screen the Proposed Development in views experienced by users of these PRow.

Construction

- 14.10.4 Additional good practice mitigation measures included in the CoCP, provided as **Appendix 4.2** of this ES [TR020001/APP/5.02], are as follows:
- a. functionality of the PRow network to be protected throughout the delivery of off-site works to enable users to continue to exercise their rights whilst also protecting them from construction traffic; and
 - b. functionality of the PRow network to be protected in the design of gated field entrances and metalled roads for grazier operations.

Operation

- 14.10.5 All landscape-based mitigation during the operational period is to be managed, maintained and monitored in accordance with the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02].
- 14.10.6 Ground and air noise would be managed as far as reasonably practicable during the operational period in accordance with the principles set out in the Operational Noise Management (Explanatory Note) provided as **Appendix 16.2** of this ES [TR020001/APP/5.02].

14.11 Residual effects

14.11.1 Whilst efforts have been made to mitigate significant effects on landscape or visual receptors as far as reasonably practical, it is not always feasible to entirely mitigate significant environmental effects. This section describes the assessment of the effects after additional mitigation measures are considered to be in place.

Landscape

Residual landscape construction effects

Construction assessment Phase 1 and interim aircraft movement effects (c.2025 - 2032)

14.11.2 The additional mitigation measures described in **Section 14.10** are assessed to result in a **moderate beneficial** effect on the network of PRoW east of Luton in this assessment Phase 1 period, which is **significant**.

14.11.3 All other landscape receptors would continue to experience the effects as assessed and reported in **Section 14.9** (paragraphs 14.9 to 14.22) and **Appendix 14.4** of this ES [TR020001/APP/5.02].

Construction assessment Phase 2a and interim aircraft movement effects (c.2033 - 2036)

14.11.4 The additional mitigation measures described in **Section 14.10** are assessed to reduce to **minor adverse** the effect on the network of PRoW east of Luton in this assessment Phase 2a period, which is **not significant**.

14.11.5 The additional mitigation measures described in **Section 14.10** are also assessed to result in a **minor beneficial** effect on the mature remnant hedgerows and hedgerow trees east of the airport and on HLCA Area 202 – Breachwood Green Ridge in this assessment Phase 2a period, which is **not significant**.

14.11.6 All other landscape receptors assessed and reported in **Section 14.9** and **Appendix 14.4** of this ES [TR020001/APP/5.02] to experience a likely significant landscape effect during this assessment Phase 2a period would continue to do so.

Construction assessment Phase 2b and interim aircraft movement effects (c.2037 - 2042)

14.11.7 The additional mitigation measures described in **Section 14.10** are assessed to reduce to **minor adverse** the effect on mixed deciduous and plantation woodlands east of the airport and on the network of PRoW east of Luton in this assessment Phase 2b period, which is **not significant**.

14.11.8 The additional mitigation measures described in **Section 14.10** are also assessed to result in a **minor beneficial** effect, which is **not significant**, on the mature remnant hedgerows and hedgerow trees east of the airport and on

HLCA Area 202 – Breachwood Green Ridge in this assessment Phase 2b period.

- 14.11.9 All other landscape receptors assessed and reported in **Section 14.9** and **Appendix 14.4** of this ES [TR020001/APP/5.02] to experience a likely significant landscape effect during this assessment Phase 2b period would continue to do so.

Residual landscape operation effects

Operation effects (year of maximum passenger capacity – c.2043)

- 14.11.10 The additional mitigation measures described in **Section 14.10** are assessed to result in a **moderate beneficial** effect on the network of PRow east of the airport at the year of maximum passenger capacity, which is **significant**.
- 14.11.11 The additional mitigation measures described in **Section 14.10** are also assessed to result in a **minor beneficial** effect, which is **not significant**, on the following landscape receptors at the year of maximum passenger capacity:
- a. mixed deciduous and plantation woodlands east of the airport;
 - b. HLCA Area 201 – Kimpton and Whiteway Bottom; and
 - c. HLCA Area 202 – Breachwood Green Ridge.
- 14.11.12 All other landscape receptors assessed and reported in **Section 14.9** and **Appendix 14.4** of this ES [TR020001/APP/5.02] to experience a likely significant landscape effect at the year of maximum passenger capacity would continue to do so.

Operation effects (design year - c.2056)

- 14.11.13 The additional mitigation measures described in **Section 14.10** are assessed to result in a **moderate beneficial** effect on the network of PRow east of the Main Application Site at the design year, which is **significant**.
- 14.11.14 The additional mitigation measures described in **Section 14.10** are also assessed to reduce to **negligible adverse** the effect on LBLCA Area 14 – Luton Airport at the design year; and result in a **minor beneficial** effect, which is **not significant**, on the following landscape receptors:
- a. mixed deciduous and plantation woodlands east of the Main Application Site;
 - b. HLCA Area 201 – Kimpton and Whiteway Bottom; and
 - c. HLCA Area 202 – Breachwood Green Ridge.
- 14.11.15 All other landscape receptors assessed and reported in **Section 14.9** and **Appendix 14.4** of this ES [TR020001/APP/5.02] to experience a likely significant landscape effect during this period would continue to do so.

Visual effects

Residual visual construction effects

Construction assessment Phase 1 and interim aircraft movement effects (c.2025 - 2032)

- 14.11.16 The additional mitigation measures described in **Section 14.10** are assessed not to reduce the significance of effect of any visual receptors in this assessment Phase 1 period.

Construction assessment Phase 2a and interim aircraft movement effects (c.2033 - 2036)

- 14.11.17 The additional mitigation measures described in **Section 14.10** are assessed to reduce to **minor adverse** the effect on the following visual receptors in this assessment Phase 2a period, which is **not significant**:

- a. people in Breachwood Green, The Heath and Lye Hill;
- b. users of the Chiltern Way Cycle Route;
- c. users of Darley Road;
- d. users of the Chiltern Way long distance footpath;
- e. users of PRow to the west of Breachwood Green;
- f. users of footpaths near Lye Hill
- g. users of PRow south of the airport;
- h. users of footpath Offley 003, west of Tea Green; and
- i. users of footpaths Offley 004, 005 and 006, east of Tea Green.

- 14.11.18 All other visual receptors assessed and reported in **Section 14.9** and **Appendix 14.5** of this ES [TR020001/APP/5.02] to experience a likely significant visual effect during this assessment Phase 2a period would continue to do so.

Construction assessment Phase 2b and interim aircraft movement effects (c.2037 - 2042)

- 14.11.19 The additional mitigation measures described in **Section 14.10** are assessed to reduce to **minor adverse** the effect on the following visual receptors in this assessment Phase 2b period, which is **not significant**:

- a. people in Breachwood Green, The Heath and Lye Hill;
- b. people in Tea Green;
- c. users of the Chiltern Way Cycle Route;
- d. users of Darley Road;
- e. users of the Chiltern Way long distance footpath;
- f. users of PRow to the west of Breachwood Green;
- g. users of footpaths near Lye Hill;

- h. users of PRoW south of the airport;
- i. users of footpath Offley 003, west of Tea Green; and
- j. users of footpaths Offley 004, 005 and 006, east of Tea Green.

14.11.20 All other visual receptors assessed and reported in **Section 14.9** and **Appendix 14.5** of this ES [TR020001/APP/5.02] to experience a likely significant visual effect during this assessment Phase 2b period would continue to do so.

Residual visual operation effects

Operation effects (year of maximum passenger capacity – c.2043)

14.11.21 The additional mitigation measures described in **Section 14.10** are assessed to reduce to **minor adverse** the effect on the following visual receptors at the year of maximum passenger capacity, which is **not significant**:

- a. people in Darleyhall;
- b. users of the Chiltern Way Cycle Route;
- c. users of Darley Road;
- d. users of the Chiltern Way long distance footpath;
- e. users of PRoW south of the airport;
- f. users of footpath Offley 003, west of Tea Green;
- g. users of footpaths Offley 004, 005 and 006, east of Tea Green; and
- h. users of footpath Kings Walden 010.

14.11.22 The additional mitigation measures described in **Section 14.10** are also assessed to result in a **negligible beneficial** effect on people in Breachwood Green, The Heath and Lye Hill, and a **minor beneficial** effect on users of PRoW to the west of Breachwood Green at the year of maximum passenger capacity, which is **not significant**.

14.11.23 All other visual receptors assessed and reported in **Section 14.9** and **Appendix 14.5** of this ES [TR020001/APP/5.02] to experience a likely significant visual effect at the year of maximum passenger capacity would continue to do so.

Operation effects (design year - c.2056)

14.11.24 The additional mitigation measures described in **Section 14.10** are assessed to reduce to **minor adverse** the effect on the following visual receptors at the design year, which is **not significant**:

- a. users of the Chiltern Way long distance footpath;
- b. users of PRoW to the west of Breachwood Green;
- c. users of PRoW south of the airport;
- d. users of footpath Offley 003, west of Tea Green;
- e. users of footpaths Offley 004, 005 and 006, east of Tea Green; and
- f. users of footpath Kings Walden 010.

- 14.11.25 The additional mitigation measures described in **Section 14.10** are also assessed to result in a **negligible beneficial** effect on people in Breachwood Green, The Heath and Lye Hill at the year of maximum passenger capacity, which is **not significant**; and in a **minor beneficial** effect on the following visual receptors:
- a. users of the Chiltern Way Cycle Route;
 - b. users of Darley Road; and
 - c. users of the PRoW to the west of Breachwood Green.
- 14.11.26 All other visual receptors assessed and reported in **Section 14.9** and **Appendix 14.5** of this ES **[TR020001/APP/5.02]** to experience a likely significant visual effect at the design year would continue to do so.

14.12 In-combination climate change effects

- 14.12.1 This section provides an assessment of potential changes to the findings of this LVIA, taking into account the predicted future conditions as a result of climate change, known as In-combination Climate Change Impacts (ICCI).
- 14.12.2 This assessment has been undertaken using the methodology and climate change predictions described in **Chapter 9** Climate Change Resilience of this ES [TR020001/APP/5.01]. The results are reported in **Table 14.8**.

Table 14.8: Landscape and visual in-combination climate change impacts

Climate hazard	Likelihood of climate hazard occurring	Likely ICCI Identified	Embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of ICCI effects
Increased occurrence of heatwaves and droughts	Frequent	Reduction in the growth rates of plant material	Landscape species to be selected and maintained in accordance with the Outline LBMP provided as Appendix 8.2 of this ES [TR020001/APP/5.02] and the detail specification for the soil growing medium to be in accordance with the Outline SMP provided as Appendix 6.6 of this ES [TR020001/APP/5.02].	Remote	Low	Minor. Not significant
As above	Frequent	Increase to the likelihood of plant failure	Planting areas to be regularly monitored and maintained in accordance with the Outline LBMP provided as Appendix 8.2 of this ES [TR020001/APP/5.02].	Remote	Low	Minor. Not significant

14.13 Monitoring

- 14.13.1 Landscape mitigation measures will be monitored annually throughout the construction period, at the year of maximum passenger capacity and at a rate to be agreed with the local planning authority thereafter until the design year as set out in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02].
- 14.13.2 The purpose of landscape monitoring is:
- a. to provide assurance to the planning authority that required mitigation measures are delivered;
 - b. to inform the local planning authority about the effectiveness of proposed mitigation measures with regards to mitigating significant effects;
 - c. to provide an early warning to the local planning authority about any unexpected impacts of development because of changes to construction and/or mitigation procedures; and
 - d. to provide an evidence base for discussions with the local planning authority or public concerning future delivery and/or management practices.
- 14.13.3 Landscape monitoring would include both quantitative information (to evidence what mitigation has been delivered and how those measures are succeeding in the environment) and qualitative judgements (to help inform about how effective measures are in mitigating identified significant landscape and visual effects).
- 14.13.4 The requirements for the provision of quantitative information and qualitative judgements are set out in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02].
- 14.13.5 The qualitative judgements would be undertaken by a Chartered Member of the Landscape Institute (CMLI) and/or other professional experienced in the preparation of LVIAs.

14.14 Assessment summary

- 14.14.1 A summary of the landscape and visual effects of the Proposed Development is presented in **Appendices 14.4** and **14.5** of this ES **[TR020001/APP/5.02]**.

COMPETENT EXPERTS

Topic	Role	Company	Qualifications/competencies/experience of author
LVIA	Technical Director	GL Hearn	MA Hons; 17 years' experience; Chartered Member of the Landscape Institute
LVIA	Associate	GL Hearn	BA Hons, PGDip UD; 17 years' experience; Chartered Member of the Royal Town Planning Institute
LVIA	Landscape Architect	GL Hearn	BA Hons, PGDip LA; 8 years' experience Chartered Member of the Landscape Institute

GLOSSARY AND ABBREVIATIONS

Term	Definition
ANPS	Airports National Policy Statement
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
Luton Rising	A trading name for London Luton Airport Limited
Access Land	Land where the public have access either by legal right or by informal agreement.
AMSL	Above Mean Sea Level
Area of Great Landscape Value (AGLV) / Area of Local Landscape Value (ALLV)	An area of land which is locally designated for its landscape quality and strong distinctive characteristics.
Area of Outstanding Natural Beauty (AONB)	An area of land that has been designated in recognition of its national importance. AONB enjoy similar levels of protection from development to National Parks but do not have their own planning powers.
CBC	Central Bedfordshire Council
CBDLCA	Central Bedfordshire Landscape Character Assessment
CCB	The Chilterns Conservation Board
CEMP	Construction Environmental Management Plan
Characteristics	Elements (or combinations of elements) which make a contribution to distinctive landscape character.
CMLI	Chartered Member of the Landscape Institute
CoCP	Code of Construction Practice
Conservation Interest	Features of wildlife, earth science or archaeological or historical and cultural interest.
Designated landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other local documents.
Development	Any proposal that results in a change to the landscape and / or visual environment.
Dip-Slope	A slope in the land which dips in the same direction, and often by the same amount, as the true dip of the underlying strata.
Direct Effects	An effect that is directly attributable to the Proposed Development.

Term	Definition
EDM	Electronic Distance Meter
ELC	European Landscape Convention
Elements	Individual parts which make up the landscape (e.g. trees, hedges and buildings).
Enhancement	Proposals that seek to improve the landscape resource and the visual amenity of the proposed development site and its wider setting, over and above its baseline condition.
Feature	Particularly prominent or eye-catching elements in the landscape, such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposals.
Frequently Sequential	Where features appear regularly and with short time lapses between instances depending on speed of travel and distance between the viewpoints (see also Sequential).
GLVIA3	Guidelines for Landscape and Visual Impact Assessment – Third Edition.
Green Infrastructure	Networks of natural and semi-natural features, green spaces, watercourses and water bodies that connect within and between rural areas, villages, towns and cities.
HCC	Hertfordshire County Council
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.
HLCA	Hertfordshire Landscape Character Assessment
In Combination	Where two or more developments would be within the observer's arc of vision at one viewpoint without moving her/his head.
Indirect Effects	Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
In Succession	Where the observer has to turn her/his head to see two or more developments at one viewpoint.
Iterative Design Process	The process by which project design is amended and improved by successive stages of refinement which responds to growing understanding of environmental issues.
Key Characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.

Term	Definition
Land Cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it.
Land Use	What the land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical process.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction of natural and / or human factors.
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another.
Landscape Character Areas (LCAs)	Single unique areas which are the discrete geographical areas of a particular landscape type.
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscape distinctive.
Landscape Effects	Effects on the landscape as a resource in its own right.
Landscape Quality (Condition)	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape Receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.
Landscape Value	The relative value that is attached to different landscape by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
LBC	Luton Borough Council
LBLCA	Luton Borough Landscape Character Assessment
Magnitude of Impact	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
NE	Natural England

Term	Definition
NHDC	North Herts District Council
NPPF	National Planning Policy Framework
Occasionally Sequential	Where longer time lapses between appearances would occur because the observer is moving slowly and/or there are large distance between the viewpoints (see also Sequential).
Parameters	A limit or boundary which defines the scope of a particular process or activity.
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).
Perceptual Aspects	A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity.
Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.
PRoW	Public Right of Way
Recreation Value	Evidence that the landscape is valued for recreational activity where experience of the landscape is important.
RVAA	Non-Statutory Residential Visual Amenity Appraisal
Scenic Quality	The term used to describe landscapes that appeal primarily to the senses (primarily but not wholly the visual senses).
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
Sequential	When the observer must move to another viewpoint to see the same or different developments. Sequential effects may be assessed for travel along regularly used routes such as major roads or popular paths.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Stakeholders	The whole constituency of individuals and groups who have an interest in a subject or place.
Susceptibility	The ability of a defined landscape or visual receptor to accommodate the Proposed Development without undue negative consequences.
Townscape	The character and composition of the built environment including the buildings and the relationship between them,

Term	Definition
	the different types of urban open space, including green spaces, and the relationship between buildings and open spaces.
Tranquillity	A state of calm and quietude associated with peace, considered to be a significant asset of landscape.
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.
Visual Effects	Effects on the specific views and on the general visual amenity experienced by people.
Visual Receptors	Individuals and / or defined groups of people who have the potential to be affected by a proposal.
Zone of Theoretical Visibility (ZTV)	A map, usually digitally produced, showing the areas of land within which, a development is theoretically visible.

REFERENCES

- Ref 14.1 Landscape Institute and Institute of Environment Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment 3rd Edition
- Ref 14.2 Council of Europe Landscape Convention (2000) European Landscape Convention
- Ref 14.3 The Countryside and Rights of Way Act 2000 [Accessed May 2019]
- Ref 14.4 Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework]
- Ref 14.5 Department for Transport (2014) National Planning Statement for National Networks
- Ref 14.6 Luton Borough Council (2017) Local Luton Plan 2011-2031.]
- Ref 14.7 North Hertfordshire District Council (November 2022) North Hertfordshire District Local Plan 2011-2031
- Ref 14.8 Central Bedfordshire Council (2021) Central Bedfordshire Local Plan 2015 to 2035
- Ref 14.9 Dacorum Borough Council (2013) Dacorum Core Strategy 2006-2031
- Ref 14.10 Department for Transport (June 2018) Airports National Policy Statement
- Ref 14.11 Department for Transport (2018) Beyond the horizon, The future of UK aviation, Making best use of existing runways, June 2018. [Accessed: 30/11/22].
- Ref 14.12. Civil Aviation Authority (2021) Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information (4th edition [Accessed August 2021]
- Ref 14.13 The Institute of Lighting Engineers (2021) Guidance Note 01/21 The Reduction of Obtrusive Light
- Ref 14.14 Department for Environment, Food and Rural Affairs (2019) Landscapes Review: Final Report
- Ref 14.15. Landscape East (2011) East of England Landscape Typology
- Ref 14.16. Natural England (2013) National Character Area Profile:110 Chilterns. [Accessed May 2019]
- Ref 14.17. The Greensand Trust (2014) Luton Borough Landscape Character Assessment. [Accessed May 2019]
- Ref 14.18. Land Use Consultants (2015) Central Bedfordshire Landscape Character Assessment Babbie Group (2011) North Herts Landscape Study (Character, Sensitivity and Capacity)
- Ref 14.19. Babbie Group (2011) North Herts Landscape Study (Character, Sensitivity and Capacity)
- Ref 14.20. The Greensand Trust (2015) A Green Infrastructure Plan for Luton [Accessed June 2019]
- Ref 14.21. The Greensand Trust (2015) Green Space Strategy Review. [Accessed May 2019]
- Ref 14.22. North Hertfordshire District Council (2016) North Hertfordshire Open Space Review and Standards
- Ref 14.23. Luton Borough Council (1992) Nature Conservation Strategy.
- Ref 14.24. The 'Proposed Local Landscape Designations for Luton', produced by The Greensand Trust on behalf of LBC and published June 2014
- Ref 14.25. The Landscape Partnership (2009) Review of Environmental Sensitivity Study to inform Potential Growth Areas around Luton
- Ref 14.26. Land Use Consultants (2009) North Hertfordshire District Green Infrastructure Plan
- Ref 14.27. North Hertfordshire District Council (2011) North Hertfordshire Design Supplementary Planning Document
- Ref 14.28. Central Bedfordshire Council (2014) Design in Central Bedfordshire
- Ref 14.29. Bedfordshire & Luton Green Infrastructure Consortium (2007) Bedfordshire & Luton Strategic Green Infrastructure Plan
- Ref 14.30. The Greensand Trust (2009) Luton and Southern Bedfordshire Green Infrastructure Plan
- Ref 14.31. Chilterns Conservation Board (2014) Chilterns Area of Outstanding Natural Beauty Management Plan 2014-2019
- Ref 14.32. Chilterns Conservation Board (2011) Development Affecting the Setting of the Chilterns AONB
- Ref 14.33. Campaign to Protect Rural England March (2007) The Tranquillity Map for Bedfordshire and Hertfordshire
- Ref 14.34. Chilterns Conservation Board (2019) Chilterns AONB Management Plan 2019 – 2024: Caring for the Chilterns forever and for everyone
- Ref 14.35 British Geological Survey. BGS Maps Portal
- Ref 14.36 Cranfield University Soilscales Map Portal
- Ref 14.37. Greensand Trust on behalf of Luton Borough Council (2014) Proposed Local Landscape Designations for Luton