



## UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks  
and adjoining land, Bedford

### Environmental Statement Volume 3

### Appendix 7.3 - LVIA Methodology

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# 1 INTRODUCTION

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- 1.1.1. This methodology for the Landscape and Visual Impact Assessment (LVIA) has been produced in accordance with best practice by suitably qualified Landscape Architects that are Chartered Members of the Landscape Institute (CMLI). This methodology is based upon that which was prepared at the Scoping stage.
- 1.1.2. The assessment considers two distinct but closely related areas; landscape character and visual amenity;
- The landscape assessment considers the effects of a development on landscape character and landscape as a resource; and
  - The visual assessment considers the views that are available to people who may be affected by a development and their perception and responses to changes in these views.

## 2 GUIDANCE

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- 2.1.1. In addition to the legislation, policy and guidance set out in **Appendix 3.1: Legislation, Policy and Guidance for all ES Technical Topics (Volume 3)**, the primary source of guidance for the Landscape and Visual Impact Assessment is the Landscape Institute with the Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment*, 3<sup>rd</sup> Edition (GLVIA3)<sup>1</sup>. The following sources (ordered by date) have also been referred to in the preparation of the methodology for the LVIA and production of visual representations:
- Natural England (2014). *An Approach to Landscape Character Assessment*<sup>2</sup>;
  - Landscape Institute (2019). *Visual Representation of Development Proposals: Landscape Institute Technical Guidance Note 06/19*<sup>3</sup>;
  - Natural England (2019) *An approach to landscape sensitivity assessment – to inform spatial planning and land management-Consultation Draft*<sup>4</sup>; and
  - Landscape Institute (2021). *Assessing Landscape Value outside National Designations Technical Guidance Note 02/21*<sup>5</sup>.

### 2.2 GLVIA3

- 2.2.1. The methodology is consistent with the approach and process set out in GLVIA3, as summarised in **Figure 2-1 - Flow Diagram from GLVIA3**.
- 2.2.2. In summary, the assessment involves the following key stages:
- Establishment of the baseline conditions; the landscape character and visual context of the receiving environment and the sensitivity to change of these receptors;
  - Contributions to the iterative process of design and mitigation based on understanding the nature, form and features of the Proposed Development in relation to the key landscape and visual sensitivities;
  - An evaluation of the magnitude of change likely to result from the Proposed Development, both during Construction Phase and in Operational Phase on visual amenity and the landscape;
  - An evaluation of the cumulative magnitude of change likely to result from the Proposed Development in conjunction with other similar existing or future developments, both during Construction Phase and in Operational Phase on visual amenity and the landscape resource;
  - An assessment of the significance of landscape and visual effects considering the sensitivity of resources and the magnitude of change; and

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<sup>1</sup> Landscape Institute with the Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment*, 3<sup>rd</sup> Edition (GLVIA3)

<sup>2</sup> Natural England (2014). *An Approach to Landscape Character Assessment*

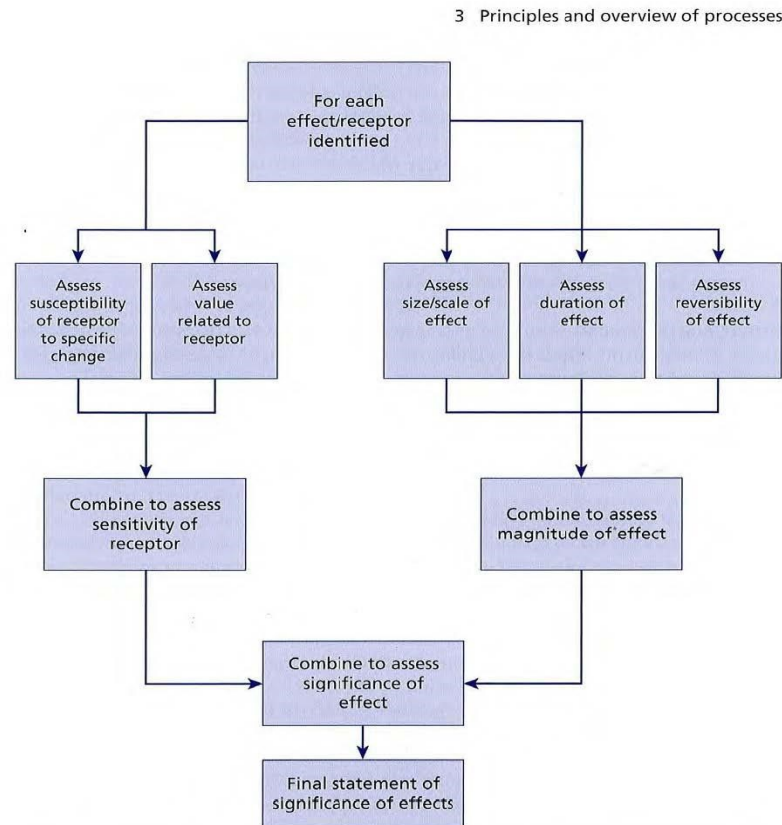
<sup>3</sup> Landscape Institute (2019). *Visual Representation of Development Proposals: Landscape Institute Technical Guidance Note 06/19*

<sup>4</sup> Natural England (2019) *An approach to landscape sensitivity assessment – to inform spatial planning and land management-Consultation Draft*

<sup>5</sup> Landscape Institute (2021). *Assessing Landscape Value outside National Designations Technical Guidance Note 02/21*

- An assessment of the cumulative significance of landscape and visual effects considering the sensitivity of resources and the magnitude of change.

**Figure 2-1 - Flow Diagram from GLVIA3**



- 2.2.3. As stated in **Chapter 3: Approach to EIA (Volume 1)**, the assessment has taken into consideration the ‘future baseline’ - how the current baseline conditions may change going forward to the point of construction. Due to the uncertainty and lack of reliable data associated with future conditions, a detailed consideration of the effects of the Proposed Development against the future baseline would generally not result in a robust assessment depending on the length of future prediction. However, the future baseline with relevance to LVIA is considered in descriptive terms highlighting where significant effects are likely to arise as far as can be reasonably predicted. This includes developments in construction and consented developments in particular but also other changes such as forestry works, implications of tree diseases, change to land use and settlement patterns for example.
- 2.2.4. For both the landscape and visual assessments, including cumulative assessment, the significance of effect is derived from the combination of the magnitude of change and the sensitivity of the landscape or visual receptor. Criteria tables (set out below) are used to guide the decision-making process for assessing sensitivity and magnitude and how these are considered together to reach an assessment of significance of effect. These tables are guidelines to illustrate typical outcomes and not to be used as a prescriptive tool. It should be noted that professional judgement is also used in determining both the sensitivity of a receptor and the magnitude of change. There are situations where the conclusions regarding significance in the LVIA differ from that suggested by the significance matrix which reflects the application of professional judgement.

### 3 STUDY AREA

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- 3.1.1. The study area defines the area in which significant effects are likely to occur. Visual effects can only occur where a development is visible. However, the landscape assessment will consider the effect on the whole of those parts in defined units of landscape character potentially affected, not simply on those parts of the landscape where visibility of the Proposed Development occurs. Where receptors are closer to the Site, it is expected that effects will be greater than those located at the outer edges of the study area which are likely to experience lower effects.
- 3.1.2. GLVIA3 clarifies how study areas should be determined on a project specific basis for landscape and visual receptors. Paragraph 5.2 of GLVIA3<sup>1</sup> states that the study area extent for effects on landscape character should be “... *based on the extent of Landscape Character Areas likely to be significantly affected either directly or indirectly*” and in Paragraph 6.2 for visual receptors the study area “*should consider the area from which the Proposed Development will potentially be visible.*”
- 3.1.3. The proposed study area is based on a combination of professional judgement and an analysis of the height and extent of the Proposed Development, as shown in **Figure 7.1: Zone of Theoretical Visibility** and **Figure 7.1a: Viewpoint Locations (Volume 2)** as well as subsequent field visits.



## 4 INFORMATION AND DATA SOURCES

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- 4.1.1. The first stage of the LVIA baseline process is to collect data through a desktop study of the Site and the study area. This desktop study identifies information such as landscape related planning designations, landscape character typology, other infrastructure in the area, and initial identification of visibility from key locations such as routes and settlements.
- 4.1.2. Geographical Information Systems (GIS) and Google Earth<sup>6</sup> are used to explore the potential visibility of the Proposed Development. The Zone(s) of Theoretical Visibility (ZTV) and Google Earth Viewshed tool inform the identification of landscape and visual receptors that are likely to be pertinent to the assessment. The technical methodology for producing ZTVs and visualisations is provided in this document.

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<sup>6</sup> <https://earth.google.com/web/>

## 5 DETERMINING SENSIVITY

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### 5.1 LANDSCAPE RECEPTORS

- 5.1.1. Landscape effects are defined as the changes in the character and quality of the landscape as a result of a development.
- 5.1.2. Direct and indirect landscape effects are defined in GLVIA3<sup>1</sup>. Direct effects “*result directly from the development itself*” whilst indirect or secondary effects result from the “*consequential change resulting from the development*”. Indirect effects are often generated away from the site of development or as a result of a secondary association or complex pathway.
- 5.1.3. To understand the effects of the Proposed Development it is necessary to consider the following:
  - Key landscape characteristics - this includes notable elements or combination elements which contribute to defining the character of an area; and
  - Landscape fabric/elements - specific features and elements that make up the landscape such as the topography, vegetation and built form.
- 5.1.4. Aesthetic, perceptual/experiential qualities of landscapes are also considered such as scale, enclosure, diversity, sense of wildness, remoteness, openness and tranquillity that give rise to landscape character and regional and local distinctiveness.
- 5.1.5. The sensitivity of the landscape receptors is determined by separately considering the landscape receptor value and the susceptibility of the landscape receptor to the change proposed. These are described below.

### 5.2 LANDSCAPE VALUE

- 5.2.1. When determining landscape value, a range of factors are reviewed that fit on a sliding scale from high to negligible, as illustrated in **Table 5-1**. For example, a National Scenic Area with a strong sense of place in very good condition would be expected to fall within the higher end of the scale. Reference is normally made to the relevant existing national and local studies to draw a list of the factors set out in **Table 5-1**. Where these do not exist, as set out in page 84 of GLVIA3<sup>1</sup>, a range of factors that can help in the identification of valued landscapes are reviewed.
- 5.2.2. It should be noted that the importance of a landscape is often based on its designation or recognition through national or local consensus and because of its quality including cultural associations, scenic or aesthetic qualities. The absence of a landscape designation however should not preclude an area being defined as important. Such locations may be of local value informed by local cultural or natural heritage records, works of art or levels of use.

**Table 5-1 - Landscape Value**

Value	Recognition	Features	Quality/condition
High	Typically, a landscape or feature of international or national recognition: National Parks, Areas of Outstanding Natural Beauty, World Heritage sites (where designated for landscape reasons), designed landscapes on the Cadw Historic Environment Service asset register.	Typically, a strong sense of place with landscape/features worthy of conservation; no or few detracting features.	A very high-quality landscape/feature; attractive landscape/feature; exceptional/distinctive.
Medium	Regional recognition or undesignated, but locally valued landscape/features: Local Landscape Areas, Regional Scenic Areas, locally listed designed landscapes and Regional Parks.	Typically, contains distinguishing features worthy of conservation; evidence of some degradation and/or some detracting elements.	Ordinary to good quality landscape/feature with some potential for substitution; a reasonably attractive landscape/feature; fairly typical and commonplace.
Low	Typically, an undesignated landscape/feature.	Few landscape features worthy of conservation, evidence of degradation with many detracting features.	Ordinary landscape/feature with high potential for substitution; quality that is typically commonplace and unremarkable; limited variety or distinctiveness.
Negligible	Typically, an undesignated landscape/feature.	No landscape features worthy of conservation; evidence of degradation with many detracting features.	Low quality landscape/feature with very high potential for substitution; limited variety or distinctiveness; commonplace.

## 5.3 LANDSCAPE SUSCEPTIBILITY

- 5.3.1. When determining landscape susceptibility, a range of factors are considered on a scale from high to negligible, as set out in **Table 5-2**. For example, a large-scale development proposed within a small and intimate landscape would be expected to fall within the higher end of the sliding scale.

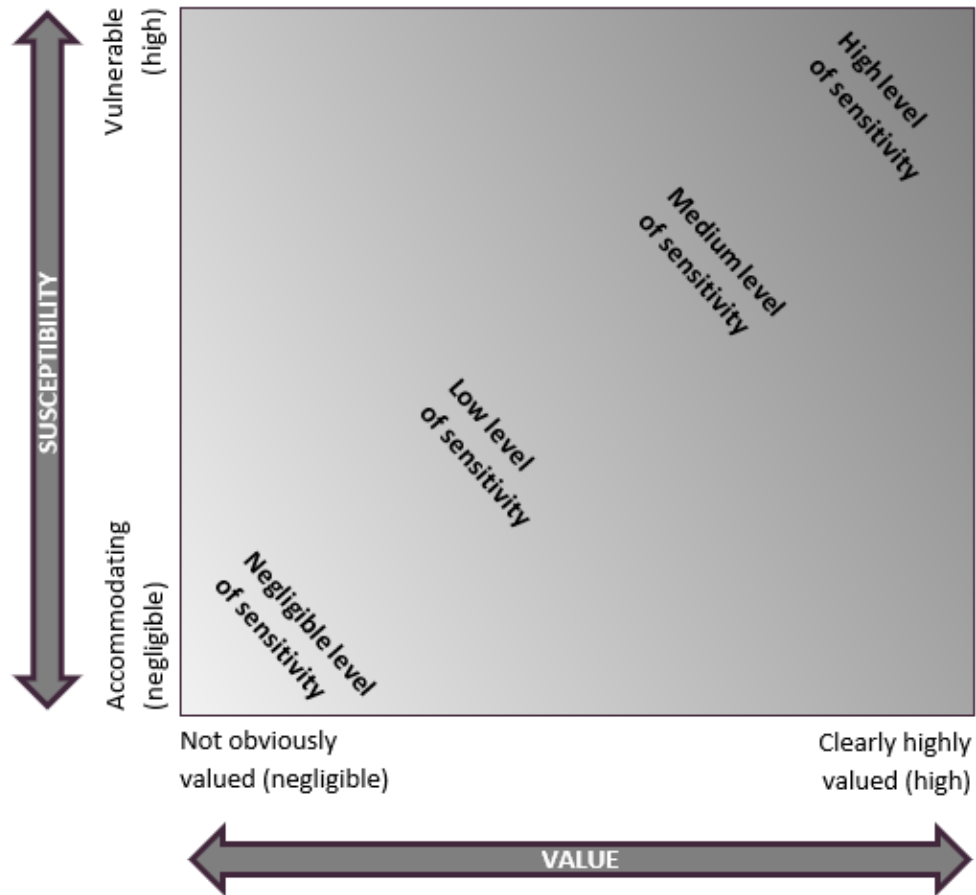
**Table 5-2 - Landscape Susceptibility**

Susceptibility to Proposed Change	
High	Low ability to accommodate the specific proposed change; undue consequences for the maintenance of the baseline situation (receptor value) and/or achievement of relevant planning policies/strategies.
Medium	Moderate ability to accommodate the specific proposed change; some undue consequences for the maintenance of the baseline situation (receptor value) and/or achievement of relevant planning policies/strategies.
Low	High ability to accommodate the specific proposed change; little or no undue consequences for the maintenance of the baseline situation (receptor value) and/or achievement of relevant planning policies/strategies.
Negligible	Very high ability to accommodate the specific proposed change; no undue consequences for the maintenance of the baseline situation (receptor value) and/or achievement of relevant planning policies/strategies.

## 5.4 LANDSCAPE SENSITIVITY

- 5.4.1. Susceptibility and value can be combined in different ways although it is generally accepted that a combination of high susceptibility and high value is likely to result in the highest sensitivity, whereas a low susceptibility and low value is likely to result in the lowest level of sensitivity. As noted in GLVIA3<sup>1</sup> there can be complex relationships between the value attributed to a landscape and its susceptibility to change, which can be particularly important when considering change in designated landscapes or those that are being considered for designated status.
- 5.4.2. However, whilst a valued landscape may serve to increase the overall sensitivity of the landscape receptor, a low value will not necessarily reduce overall sensitivity. Whilst it would be anticipated that landscape receptors considered highly susceptible to the proposed change would be considered to be of high sensitivity, this would not be the case if there were reasons associated with the value that might lead to a reduction in sensitivity. For example, where a designated feature or area covered by policy may have a deterioration in recent condition and management regime.
- 5.4.3. The diagram presented as **Figure 5-1** illustrates how value and susceptibility can be combined. When determining overall landscape sensitivity, it should be noted that the levels are indicative and fall on a scale from high to negligible and professional judgement is used to determine the overall level of sensitivity.
- 5.4.4. Any landscape receptors assigned a negligible level of sensitivity will not be further considered as part of the assessment on the basis that significant effects are highly unlikely as demonstrated by **Table 7-1**.

**Figure 5-1 - Level of Landscape Sensitivity Diagram**



## 5.5 VISUAL RECEPTORS

- 5.5.1. Visual effects relate to changes in available views of the landscape and the effect of those changes on people, including:
- The immediate impact of the Proposed Development on the content and character of views (E.g., through intrusion or obstruction and/or the change or loss of existing elements in the view); and
  - The broader impact considering the overall change on visual amenity enjoyed by receptors in the area.
- 5.5.2. GLVIA3<sup>1</sup> advises that it is helpful to consider (but not restricted to) the following:
- Nature of the view (open, panoramic, framed, enclosed);
  - Proportion of the development visible (full, most, part or none);
  - Distance of the viewpoint from the development and whether it would be the focus of the view or only a small element;
  - Whether the view is stationary, transient or sequential; and
  - The nature of the changes to the view.

- 5.5.3. Additionally, the seasonal effects of vegetation are considered, in particular the varying degree of screening and filtering of views.
- 5.5.4. The sensitivity of a visual receptor reflects their susceptibility to change and any values which may be associated with the specific view. The sensitivity of the visual receptors is determined by separately considering the visual receptor value and the susceptibility of the visual receptor to the change proposed.

## 5.6 VISUAL VALUE

- 5.6.1. Certain views are highly valued for either their cultural or historical associations, which can increase the sensitivity of the viewer, as set out in **Table 5-3**.

**Table 5-3 - Visual Value**

Value	Recognition	Indicators of Value
High	Recognised views from nationally or internationally important landscape or heritage resources may be identified in planning policies or statutory documents.	High value/celebrated view; referred to in national or international guidebooks, tourist guides etc.; literary and art references; presence of interpretive facilities (E.g., visitor centre).
Medium	Recognised views from local or regionally important landscape or heritage resource may be identified in local planning policies or supplementary planning documents.	Moderately valued view; referred to in local or regional guidebooks, tourist maps etc.; local literary and art references; presence of some interpretive facilities (E.g., parking places or sign boards).
Low	Locally recognised views, usually informal.	Valued view but no formal references, may include informal footpaths that indicate well used routes by locals. Likely to be common where views are typical of the location with little distinctiveness, lacking in attractors or detractors.
Negligible	Little to no recognition	Not known locally for its views, places that lack evidence of people actively seeking use and therefore any associated views.

## 5.7 VISUAL SUSCEPTIBILITY

- 5.7.1. When determining visual susceptibility, a range of factors are considered that fit on a scale from high to negligible, as set out in **Table 5-4**. For example, a view experienced by a resident of a property in close proximity and overlooking the Site would be expected to fall within the higher end of the scale.

**Table 5-4 - Visual Susceptibility**

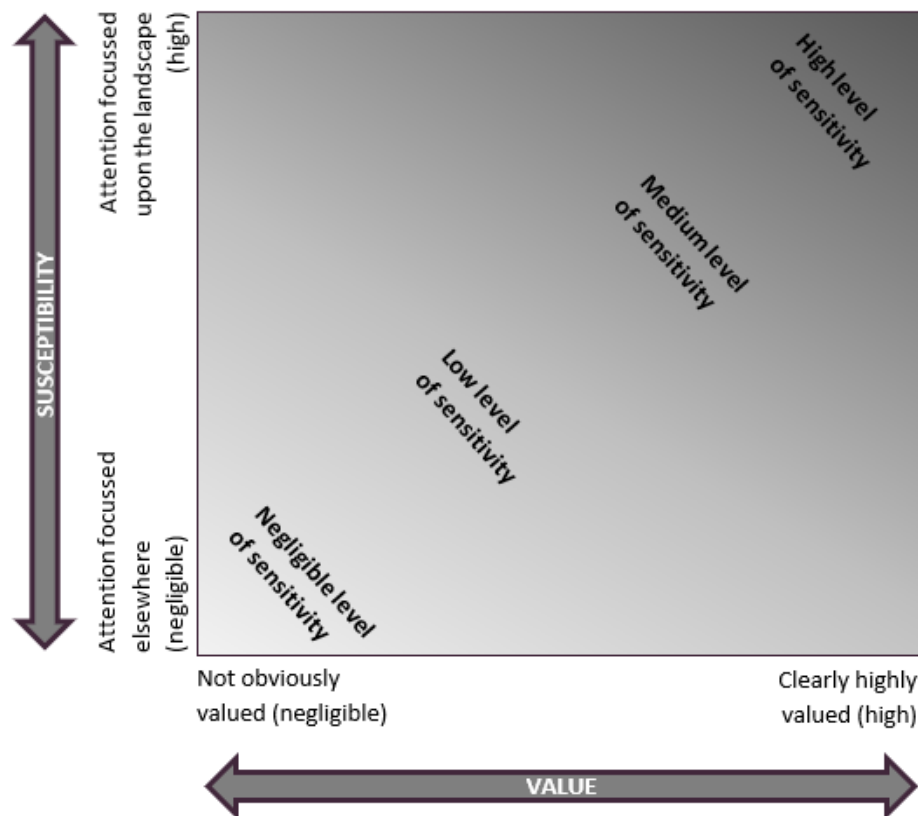
<b>Susceptibility to Proposed Change</b>	
High	<p>Residents at home.</p> <p>Walkers on long distance trails and mountain access routes,</p> <p>Users of footpaths where the attractive nature of the countryside is a significant factor in the enjoyment of the walk,</p> <p>Cyclists on national and local cycle routes designed to provide an attractive experience.</p> <p>Road users on recognised tourist routes; and</p> <p>Visitors to landscape and heritage resources and other attractions where views of the surroundings are an important contributor to appreciation, experience and/or enjoyment.</p>
Medium	<p>General road users.</p> <p>Passengers on rail lines where the trains run at low or moderate speeds.</p> <p>Users of public open space and footpaths where the nature of the surroundings is not a significant factor in the enjoyment of the activity; and</p> <p>Visitors to landscape and heritage resources and other attractions where views of the surroundings are a minor contributor to appreciation, experience and/or enjoyment.</p>
Low	<p>People at their place of work or shopping.</p> <p>Users of high-speed roads and passengers in trains running at high speed.</p> <p>People engaged in recreational activities where the view of the surroundings is secondary to the enjoyment of the activity (such as playing or spectating at outdoor sports facilities); and</p> <p>Users of public open space and footpaths where the nature of the surroundings is irrelevant to the enjoyment of the activity.</p>
Negligible	<p>Users of indoor facilities where the view is irrelevant to their activity.</p>

## 5.8 VISUAL SENSITIVITY

- 5.8.1. As with landscape, susceptibility and value can be combined in different ways to form a judgement about the visual sensitivity of a given receptor. It is generally accepted that a combination of high susceptibility and high value is likely to result in the highest sensitivity, whereas a low susceptibility and low value is likely to result in the lowest level of sensitivity.
- 5.8.2. However, whilst a valued view may serve to increase the overall sensitivity of the visual receptor, a low value will not necessarily reduce overall sensitivity. Whilst it would be anticipated that visual receptors considered highly susceptible to the proposed change would be considered to be of high sensitivity, this would not be the case if there were reasons associated with the value of the view that might lead to a reduction in sensitivity. For example, a resident at home would generally have a high sensitivity to the proposed change, but if the view they currently experience is of a low value degraded and industrial landscape it can be expected that their susceptibility to a proposed change of a similar industrial nature would be reduced.

- 5.8.3. Similarly, receptors considered of low or medium susceptibility are usually in the same category of sensitivity, unless there are reasons associated with the value of the view that lead to an increase in sensitivity, which is shown **Table 5-4**. For example, where a road user on a defined tourist route would have a higher susceptibility to the proposed change than if travelling on a busy main road. **Figure 5-2** illustrates typical characteristics of the different levels of sensitivity taking into account the value and susceptibility as described above. When determining overall visual sensitivity, it should be noted that the levels are indicative and fall on a scale from high to negligible and professional judgement is always used to determine the overall level of sensitivity.

**Figure 5-2 - Visual Sensitivity**



- 5.8.4. The criteria used to describe Visual Sensitivity are outlined below in **Table 5-5**. These are based on commonly accepted criteria which relate specifically to landscape and visual assessment.



**Table 5-5 - Sensitive Receptors**

Sensitivity	Typical Criteria
High	<ul style="list-style-type: none"> <li>Residents of properties.</li> <li>Users of Public Rights of Way or other recreational trails (e.g. National Trails such as the John Bunyan Way, footpaths, bridleways, etc.).</li> <li>Users of recreational facilities where the purpose of that recreation is enjoyment of the countryside (e.g. English Heritage sites such as Houghton House, Country Parks, National Trust or other access land, etc.).</li> </ul>
Medium	<ul style="list-style-type: none"> <li>Outdoor workers.</li> <li>Users of scenic roads, railways or waterways, or users of designated tourist routes.</li> <li>Users of schools and other institutional buildings, and their outdoor areas.</li> </ul>
Low	<ul style="list-style-type: none"> <li>Indoor workers</li> <li>Users of main roads (e.g. trunk roads) or passengers in public transport on main arterial routes</li> <li>Users of recreational facilities where the purpose of that recreation is not related to the view (e.g. sports facilities).</li> </ul>

## 6 ASSESSING MAGNITUDE OF CHANGE

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6.1.1. The magnitude of landscape and visual change depends upon a combination of factors including:

- The size, scale and nature of change in relation to the context;
- The geographical extent of the area influenced; and
- Its duration and reversibility.

### 6.2 SIZE/SCALE OF CHANGE

6.2.1. The size/scale of change to the landscape and to visual receptors that would arise because of the Proposed Development will take account of the following factors and as set out in **Table 6-1**.

#### LANDSCAPE

- The extent of loss or alteration to key existing landscape characteristics and landscape fabric/elements and for designated areas – special qualities and/or purpose of designation;
- The proportion of total extent represented and the contribution this element makes to the landscape;
- The scale of the receiving landscape and whether it can absorb the Proposed Development;
- The distance of the landscape receptor from the Proposed Development; and
- The landscape context within which the Proposed Development is located.

#### VISUAL

- The scale of change in the view (addition or loss of features) and changes to its composition and depth of view;
- The degree of contrast or integration of new features or characteristics into the landscape considering form, scale, mass, height, colour and texture; and
- The nature of the view of the Proposed Development, the time over which it will be experienced and changes in the experience from for instance full, partial, glimpsed to screened.

**Table 6-1 - Scale of Change**

Size/scale of Change	
High	Occupies a wide proportion of the view or would obstruct a significant portion of the view; The Proposed Development would become the dominant feature; and Considerable change to the majority/many existing landscape elements and/or landscape character; fundamental changes to the surroundings and baseline to a large extent; very noticeable.
Medium	Occupies much of the view but would not fundamentally change its characteristics; Changes would be immediately visible but not a key feature of the view; and Some change to existing landscape elements and/or landscape character; discernible changes to the surroundings of a receptor, such that its baseline is partly altered; readily noticeable.
Low	Occupies a small portion of the view and would only slightly alter the view's composition; and Small change to existing landscape elements and/or landscape character; slight, but detectable impacts that do not alter the baseline of the receptor materially; not readily noticeable.
Negligible	Occupies little or no portion of the view and would not result in a change to the view's composition; and Little or limited/no change in existing landscape elements and/or landscape character, barely distinguishable change from baseline conditions; not noticeable.

## 6.3 GEOGRAPHICAL EXTENT

- 6.3.1. The geographical extent over which the landscape effects would be experienced and the geographical extent of the Proposed Development in relation to visual receptors is also considered as set out in **Table 6-2**. This is distinct from the size and scale of effect.
- 6.3.2. The extent of landscape effects will vary depending on the nature of the Proposed Development and not all the following scales may be relevant:
- At the Site level, within the development Site itself;
  - At the level of the immediate setting of the Site;
  - At the scale of the landscape type or character area within which the Proposed Development lies; and
  - On a larger scale, influencing several landscape types or character areas.
- 6.3.3. In terms of visual effects, the geographical extent of the Proposed Development will vary based on the location of the visual receptor and consideration will be given to:
- The angle of the view in relation to the main activity of the receptor and the main focus of the view;
  - The distance of the visual receptor from the Proposed Development; and
  - The extent of the area over which the changes would be visible.
- 6.3.4. For visual receptors moving through the landscape (E.g., road and rail users) the length of the journey during which they would see the Proposed Development is reflected in the judgement of the geographical extent of effects.

**Table 6-2 - Geographical Extent of Change**

Geographical Extent of Change	
High	The assessment location is representative of similar effects over an extensive geographic area. E.g., the change would influence multiple landscape types or character areas. The change would affect a large number of receptors and would have high influence on the perception of the landscape or view.
Medium	The assessment location is representative of similar effects over a moderate geographic area. E.g., the change would influence the landscape types or character areas within which the proposal lies. The change would affect a moderate number of receptors and would have moderate influence on the perception of the landscape or view.
Low	The assessment location represents a small geographic area. E.g., the change would influence the immediate setting of the Site. The development would be perceived locally, with a minor effect on wider landscape character or views.
Negligible	The assessment location clearly represents a small geographic area. E.g., the change would influence the Site level within the development Site itself. The development would be perceived only locally, with a limited effect on wider landscape character or views.

## 6.4 DURATION AND REVERSIBILITY

- 6.4.1. Duration and reversibility are particularly important when considering the different stages of the project. As stated in GLVIA3 (Paragraph 5.51) “*duration can usually be simply judged on a scale such as short term, medium term or long term*” and is defined in **Table 6-3**.
- 6.4.2. Reversibility (Paragraph 5.52 of GLVIA3) “*is a judgement about the prospects and the practicality of a particular effect being reversed in, for example, a generation.*” Some forms of development are considered permanent such as housing developments, whilst others such as solar farms can be considered temporary or reversible since they have a limited operational life and can be removed and land reinstated. There are no proposals to limit the lifetime of the Proposed Development therefore the LVIA considers the Proposed Development as long term.
- 6.4.3. In order that a cautious worst case scenario (that provides a robust assessment of likely significant effects), the effects during construction of the Primary Phase of the development are assessed as temporary however due to the length of the Construction Phase effects will be medium in duration. Effects associated with the Full Build Out will be long term in duration.

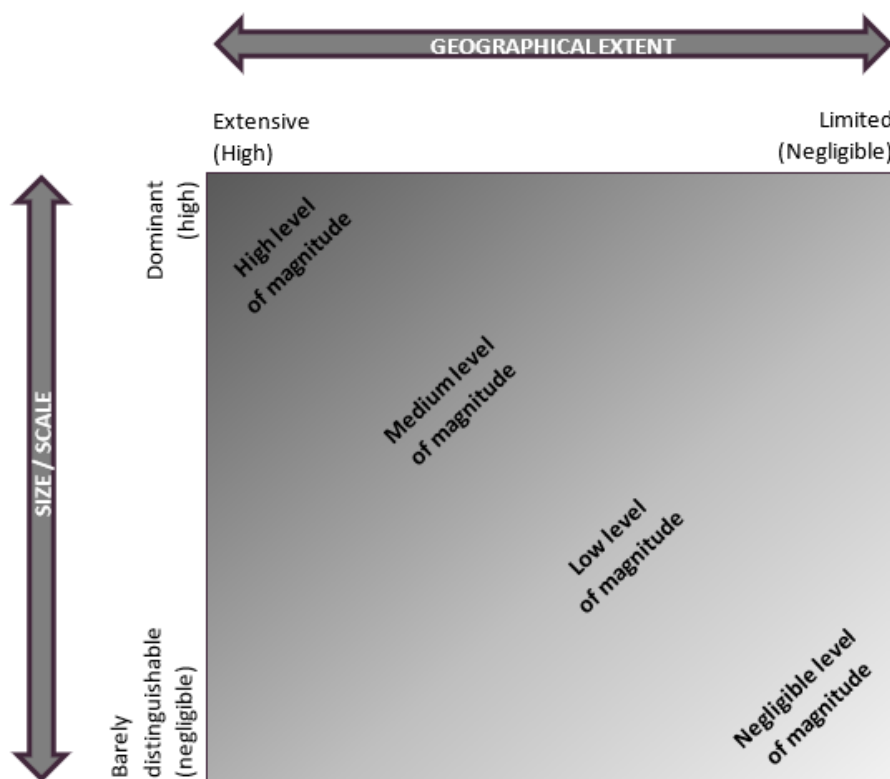
**Table 6-3 - Duration of Change**

Duration of Change	
High	Long term/10 years +
Medium	Medium term/2 to 10 years
Low	Short term/1-2 years
Negligible	Brief term/<1 year

## 6.5 MAGNITUDE OF CHANGE

- 6.5.1. Like with sensitivity, combining the scale, geographical extent, and duration/reversibility of the change together requires careful consideration and professional judgement. As such, the LVIA will separately consider each aspect to form the judgement of overall magnitude.
- 6.5.2. **Table 6-3** have demonstrated these individual judgements. The following **Figure 6-1** and **Figure 6-2** illustrate how these are combined through a two-step process. First by considering size and scale together with the geographical extent in step one. The result of this provides a preliminary magnitude of change result.

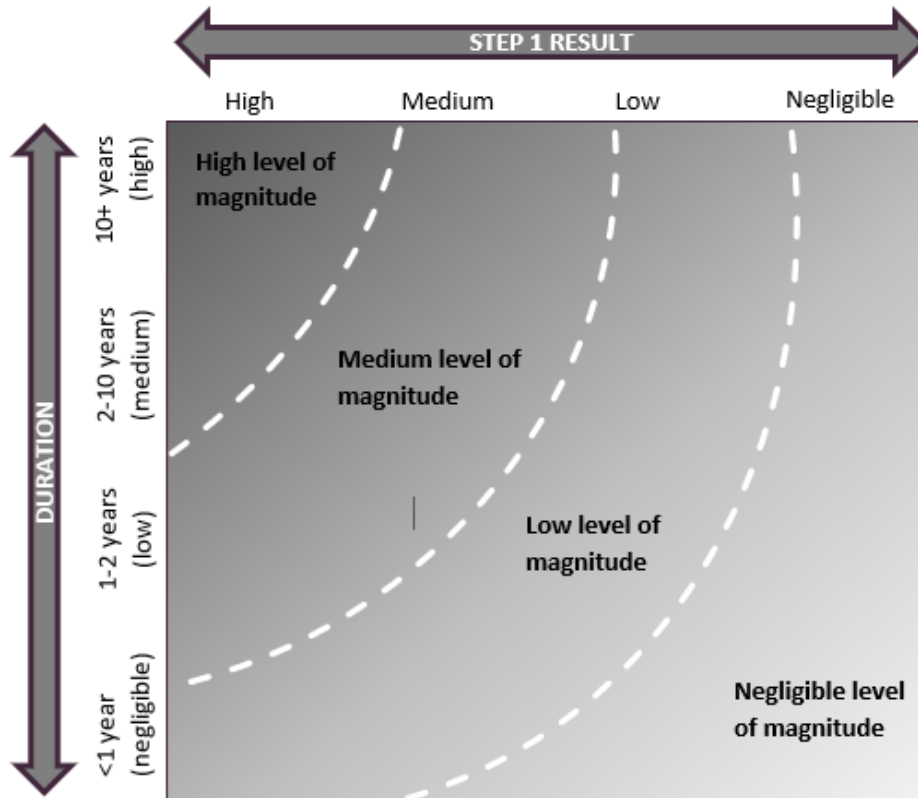
**Figure 6-1 - Magnitude of Change Diagram: Step 1**



- 6.5.3. As illustrated below in the diagram presented as **Figure 6-2**, for step two, the preliminary result from step 1 is then considered alongside the duration and reversibility which can either increase or

decrease the rating accordingly. For example, a high magnitude of change could be reduced if this is only going to be experienced over a short period of time. This is typical of construction activities where they are both short term and of a temporary nature.

**Figure 6-2 - Magnitude of Change Diagram: Step 2**



## 7 LEVEL OF EFFECT AND SIGNIFICANCE

- 7.1.1. Combining the stated measures of magnitude and sensitivity indicates the relative importance of different effects. This, combined with an oversight of professional judgement, allows us to evaluate effects and to determine significance their significance.
- 7.1.2. **Table 7-1** provides general guidance on the inter-relationship between magnitude of change and sensitivity of receptor. However, this matrix is used as a framework and guide for consistency, not as a prescriptive formula: the level of effect and thus significance will vary depending on the circumstances, the type and scale of development proposed, the baseline context and other factors as set out in the previous sections. Effects classified as **Moderate or above** (indicated in **bold** in **Table 7-1 – Significance Matrix** below) are considered to be **Significant** and effects classified as **Slight or below** are considered to be **Not Significant**. This ensures that reasonable and proportional, largely qualitative decisions are made throughout. The final section below titled **Significance of Effect** sets out the bespoke approach to determining significance as relevant to the Landscape and Visual Impact Assessment.
- 7.1.3. For the purposes of proportionality and to ensure the effects that are significant are the key focus of this assessment, any landscape or visual receptors assigned a negligible level of sensitivity will not be further considered as part of the assessment on the basis that significant effects are highly unlikely.
- 7.1.4. Based on the Scheme Description provided in **Chapter 2: Description of the Proposed Development** and the articulated skyline secured within the **Design Standard (Document 6.3.0)**, those landscape and visual receptors with effects assigned as not significant during either the Construction or Operational Phase are not further considered within the ES. These will be considered as scoped out. This will allow a focussed and proportionate assessment considering only those receptors with the potential to be significantly affected.

**Table 7-1 - Significance Matrix**

		Magnitude of Change			
		High	Medium	Low	Negligible
Sensitivity	High	Large	Large or Moderate	Moderate	Slight or Negligible
	Medium	Large or Moderate	Moderate	Moderate or Slight	Negligible
	Low	Moderate	Moderate or Minor	Slight	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

### LANDSCAPE LEVEL OF EFFECT

- 7.1.5. Through the steps carried out above, the resulting landscape level of effect is established. **Table 7-2** below presents the scale for landscape effects and can be summarised in the following descriptions.

**Table 7-2 - Landscape Level of Effect**

Landscape Level of Effect	
Large	The Proposed Development would result in major changes to landscape character, and these would be considered significant.
Moderate	The Proposed Development would result in moderate changes to landscape character, and these would be considered significant.
Slight	The Proposed Development would result in minor changes, and these would be considered non-significant.
Negligible	The Proposed Development would result in negligible changes to landscape character, and these would be considered non-significant.

## VISUAL LEVEL OF EFFECT

- 7.1.6. Through the steps carried out above, the resulting visual level of effect is arrived at **Table 7-3** below presents the scale for visual effects and can be summarised in the following descriptions.

**Table 7-3 - Visual Level of Effect**

Visual Level of Effect	
Large	The Proposed Development would result in major changes to visual receptors, and these would be considered significant.
Moderate	The Proposed Development would result in moderate changes to visual receptors, and these would be considered significant.
Slight	The Proposed Development would result in minor changes to visual receptors, and these would be considered non-significant.
Negligible	The Proposed Development would result in negligible changes to visual receptors, and these would be considered non-significant.

## NATURE OF EFFECT

- 7.1.7. Effects can be either beneficial or adverse and, in some cases, neutral (neither beneficial nor adverse).
- 7.1.8. The nature of effect of infrastructure on landscape character and visual amenity is very subjective, with a broad spectrum of opinion on the appearance of infrastructure in the landscape. Some people see infrastructure as sculptural features positively addressing the effects of climate change, whilst others regard them as alien and an industrialisation of the countryside.
- 7.1.9. The aim of the LVIA is to provide an objective assessment of the relationship between the Proposed Development and the landscape in which it would be located and seen. As part of this it is also important to consider the nature of the proposed change in the context of the key characteristics of the landscape. As large-scale recreational and mixed-use development, including visually prominent structures, are being added to the landscape, it is unlikely that a beneficial nature of effect would be found, but neutral effects could occur where it is considered the Proposed Development does not change the defining characteristics of the landscape.



- 7.1.10. For the purposes of this LVIA, and to ensure this LVIA assesses a cautious worst case scenario, the nature of all effects will be considered as adverse, unless otherwise identified through mitigation. In this context, where the phrase “cautious worst case” is used it means “a cautious worst case that provides a robust assessment of likely significant effects”.
- 7.1.11. Other aspects of the Proposed Development may have opportunities for beneficial landscape and visual effects, for example, where improvements are made to access and public rights of way or mitigation planting increasing biodiversity.

## SIGNIFICANCE OF EFFECT

- 7.1.12. The criteria used to describe the Significance of Effect are outlined below in **Table 7-4**. These are based on commonly accepted criteria which relate specifically to landscape and visual assessment.

**Table 7-4 - Typical Descriptors of Effect Categories (Landscape and Visual)**

Effect Category	Typical Descriptors of Effect
<b>Very Large Beneficial (Positive) Effect</b>	<p><b>Landscape</b> The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Greatly enhance the character (including quality and value) of the landscape</li> <li>Create an iconic high-quality feature and/or series of elements</li> <li>Enable a sense of place to be created or greatly enhanced</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The Proposed Development would create an iconic new feature that would greatly enhance the view.</li> </ul>
<b>Large Beneficial (Positive) Effect</b>	<p><b>Landscape</b> The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Enhance the character (including quality and value) of the landscape.</li> <li>Enable the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development</li> <li>Enable a sense of place to be enhanced</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The Proposed Development would lead to a major improvement in a view from a highly sensitive receptor.</li> </ul>
<b>Moderate Beneficial (Positive) Effect</b>	<p><b>Landscape</b> The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Improve the character (including quality and value) of the landscape</li> <li>Enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development</li> <li>Enable a sense of place to be restored</li> </ul> <p><b>Visual</b></p>

Effect Category	Typical Descriptors of Effect
	<ul style="list-style-type: none"> <li>The Proposed Development would cause obvious improvement to a view from a moderately sensitive receptor, or perceptible improvement to a view from a more sensitive receptor.</li> </ul>
<b>Slight Beneficial (Positive) Effect</b>	<p><b>Landscape</b> The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Complement the character (including quality and value) of the landscape</li> <li>Maintain or enhance characteristic features and elements</li> <li>Enable some sense of place to be restored</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The Proposed Development would cause limited improvement to a view from a receptor of medium sensitivity, or would cause greater improvement to a view from a receptor of low sensitivity.</li> </ul>
<b>Neutral Effect</b>	<p><b>Landscape</b> The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Maintain the character (including quality and value) of the landscape</li> <li>Blend in with characteristic features and elements</li> <li>Enable some sense of place to be retained</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>No perceptible change in the view.</li> </ul>
<b>Slight Adverse (Negative) Effect</b>	<p><b>Landscape</b> The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Not quite fit the character (including quality and value) of the landscape</li> <li>Be at variance with characteristic features and elements</li> <li>Detract from a sense of place</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The Proposed Development would cause limited deterioration to a view from a receptor of medium sensitivity, or cause greater deterioration to a view from a receptor of low sensitivity.</li> </ul>
<b>Moderate Adverse (Negative) Effect</b>	<p><b>Landscape</b> The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Conflict with the character (including quality and value) of the landscape</li> <li>Have an adverse impact on characteristic features and elements</li> <li>Diminish a sense of place</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The Proposed Development would cause obvious deterioration to a view from a moderately sensitive receptor, or perceptible damage to a view from a more sensitive receptor.</li> </ul>

Effect Category	Typical Descriptors of Effect
<b>Large Adverse (Negative) Effect</b>	<p><b>Landscape</b></p> <p>The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Be at considerate variance with the character (including quality and value) of the landscape</li> <li>Degrade or diminish the integrity of a range of characteristic features and elements</li> <li>Damage a sense of place</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The Proposed Development would cause major deterioration to a view from a highly sensitive receptor and would constitute a major discordant element in the view.</li> </ul>
<b>Very Large Adverse (Negative) Effect</b>	<p><b>Landscape</b></p> <p>The Proposed Development would:</p> <ul style="list-style-type: none"> <li>Be at complete variance with the character (including quality and value) of the landscape</li> <li>Cause the integrity of characteristic features and elements to be lost</li> <li>Cause a sense of pace to be lost</li> </ul> <p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The Proposed Development would cause the loss of views from a highly sensitive receptor and would constitute a dominant discordant feature in the view.</li> </ul>

- 7.1.13. The standard approach adopted by this Environmental Impact Assessment for determining significance is set out in paragraph 7.1.2 and **Table 7-1** above. For the Landscape and Visual Impact Assessment a bespoke approach is taken, adapted for the wider range of effect categories relevant to the assessment.
- 7.1.14. Effects that are Very Large Adverse, Very Large Beneficial, Large Adverse, Large Beneficial, and Moderate Beneficial are classified as **Significant** effects.
- 7.1.15. Effects that are Neutral, Slight Adverse, and Slight Beneficial are classified as **Not Significant** effects.
- 7.1.16. Moderate Adverse effects may be **Not Significant** or **Significant** depending on the specific receptor and magnitude of change experienced. A degree of professional judgement is required to consider the circumstances, the type and scale of development proposed, the baseline context and other factors as set out in the previous sections. The level of significance of the effect is made clear in the assessment.

## 8 ASSESSMENT SCENARIOS

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- 8.1.1. The effects of the Proposed Development on receptors vary over time due to daily changes in light level, seasonal variation and over the longer term the maturing of essential mitigation planting. The following scenarios are assessed:
- Construction Phase: During construction assuming a maximum perceived change situation (i.e. when construction activity is at its peak) commencing in 2026 and lasting for 60 months, with an anticipated peak in construction activities in 2029;
  - Operation (Primary Phase Opening Year - 2031): The Proposed Development would be viewed from locations that are publicly accessible, occupied by residents and fully operational (i.e. with new planting in place but before any of it has become established such as to become visually effective at screening or filtering or offering visual amenity benefits); and
  - Operation (Year 15 - 2046): The fifteenth year after opening (i.e. when the planted essential mitigation measures can be assumed to be substantially effective). This is usually a reflection of the near fully mitigated scenario under normal conditions however, further development is anticipated to continue to a full build out within the Lake Zone, East and West Gateway Zones, and potential further expansion of the Theme Park within the Core Zone.

## 9 ASSESSMENT OF CUMULATIVE EFFECTS

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### 9.1 APPROACH

- 9.1.1. GLVIA3 provides the basis for the cumulative assessment methodology. The assessment of cumulative effects is essentially the same as for the assessment of the stand-alone landscape and visual effects, in that the level of landscape and visual effect is determined by assessing the combination of sensitivity of the landscape or visual receptor and the magnitude of change.
- 9.1.2. A review of applications of a sufficient size and scale to potentially change the resulting effects has been carried out to determine which applications within the planning system are included for assessment. These are referred to as Committed Developments.
- 9.1.3. Receptors judged to receive a negligible level of effect from the Proposed Development on its own are not considered for cumulative assessment on the basis that any significant effects arising will primarily be caused by the Committed Developments and unlikely to be contributed by the Proposed Development.
- 9.1.4. Types of cumulative effect are defined as follows:
  - Cumulative landscape effects: Where more than one development may have an effect on a landscape designation or particular area of landscape character. This may also include effects on the physical fabric of the landscape where one or more developments may affect landscape components; and
  - Cumulative visual effects: Where the cumulative or incremental visibility of similar types of development combined generate a cumulative visual effect.
- 9.1.5. The study area and receptors remain as per the Proposed Development assessment.
- 9.1.6. The methodology for the assessment of sensitivity remains the same as per the Proposed Development assessment. The cumulative landscape and visual magnitude of change is determined with reference to the criteria set out above for the main assessment and the following considerations:
  - The distance and direction to each visible or potentially visible Committed Development;
  - The number of visible or potentially visible Committed Developments;
  - The distance between Committed Developments and the Proposed Development;
  - The height of features at each Committed Development;
  - The horizontal extent of the view occupied by Committed Developments;
  - The vertical scale comparison of Committed Developments; and
  - Duration of the change of Committed Developments.
- 9.1.7. Determination of the significance of cumulative landscape and visual effects is undertaken by employing professional judgement to combine and analyse the cumulative magnitude of change against the identified sensitivity to change. It should be noted that the cumulative assessment is the result of the addition of the Proposed Development to the identified cumulative baseline scenario.

## 10 VISUAL REPRESENTATIONS

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- 10.1.1. The methodology for undertaking ZTVs and preparing visual representations is compliant with relevant sections of:
- Visual Representation of Development Proposals, Technical Guidance Note 06/19', Landscape Institute (LI), 2019<sup>3</sup>; and
  - Guidelines for Landscape and Visual Impact Assessment' Third Edition, Landscape Institute and the Institute of Environmental Assessment, 2013 (GLVIA3)<sup>1</sup>.
- 10.1.2. The LI guidance provides detail on maintaining a proportionate approach to visualisations, providing advice on selecting visualisation types taking into account the intended purpose, anticipated users, planning stage, sensitivity of the context, and indicative overall level of effect. This is helpful in consideration of responding to stakeholder and public requests where it may not always be appropriate to produce the full suite of visualisations.

### 10.2 ZONE OF THEORETICAL VISIBILITY

- 10.2.1. ZTVs are used to identify the theoretical visibility of a Proposed Development. It is a computer-generated analysis which evaluates visibility using the height and extent of a Proposed Development against a digital terrain model.
- 10.2.2. ZTVs are produced using Geographic information System (GIS) software (ESRI ArcGIS). During the initial design stage, coordinates of the Proposed Development were input into GIS and a selection of max heights including 115m and 75m (to represent the maximum height range of various features within the Site) are assigned. OS Terrain Data 5 is used for the digital terrain model (known as bare earth data) which provides a suitable level of detail to produce the ZTV, in accordance with the above stated guidance. Observer height is set to 1.6m above ground level.
- 10.2.3. The limitations with the preparation of ZTVs, as follows:
- The ZTV illustrates the 'bare ground' situation, and does not take into account the screening effects of vegetation, buildings or other surface features;
  - The ZTVs are based on theoretical visibility from 1.6m above ground level; and
  - The ZTV does not indicate the decrease in visibility that occurs with increased distance from the Proposed Development. The nature of what is visible from 1km away would be markedly different from what is visible from 5km away.
- 10.2.4. These limitations mean that while the ZTVs have been used as a starting point in the assessment to determine where the Proposed Development would be theoretically visible from, such information needs to be verified in the field to ensure that the assessment conclusions are accurate.

## VISUALISATIONS

- 10.2.5. The necessity for photomontages from agreed viewpoints has been determined through engagement with Bedford Borough Council and Central Bedfordshire Council. All photographs and visualisations have been produced in line with Landscape Institute Technical Guidance Note (TGN) 06/19 (2019); 'Visual Representation of Development Proposals'. Further information on the methodology used for the photography, production of photographs and visualisations for the LVIA is provided in **Appendix 7.1: Technical Methodology: Photography, 3D Modelling, Accurate Visual Representations (Volume 3)** of this ES.



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