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APPENDIX 13-1

LVIA METHODOLOGY

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Appendix 13-1: LVIA Methodology

Kingston Stables, Knocknacarra West Proposed Large-Scale Residential Development

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1. LANDSCAPE AND VISUAL IMPACT ASSESSMENT (LVIA) METHODOLOGY

1.1 Introduction

This Appendix sets out the detailed methodology and guidance used for the Landscape and Visual Impact Assessment (LVIA) of the Proposed Development included in Chapter 13.

1.2 Guidelines

While the legislation and general guidance on Environmental Impact Assessment (EIA) is set out in Chapter 1 of this EIAR, only the guidance specifically pertaining to landscape and visual impact are outlined below.

In 2002, Ireland signed and ratified the European Landscape Convention (ELC), which introduced a pan-European concept centring on the quality of landscape protection, management, and planning. In 2015, the Department of Arts, Heritage and the Gaeltacht accordingly published a National Landscape Strategy for Ireland, aiming to ensure compliance with the ELC and containing six main objectives, which included developing a 'National Landscape Character Assessment' as well as 'Landscape Policies'.

In 2000, the Department of the Environment, Heritage, and Local Government (DoEHLG, formerly Department of Environment and Local Government) published the 'Landscape and Landscape Assessment: Consultation Draft of Guidelines for Planning Authorities' (hereafter, DoEHLG 2000 Guidance), which recommended that all Local Authorities adopt a standardised approach to landscape assessment for incorporation into Development Plans and consideration as part of the planning process. However, at the time of writing this report, the DoEHLG 2000 Guidance remains in draft form.

The methods and processes used in Chapter 13 is primarily based on the following guidance, which are widely considered the benchmark best practice guidance documents for LVIA:

- GLVIA3 (LI & IEMA, 2013), and
- 'Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Assessment Third Edition (GLVIA3): Landscape Institute Technical Guidance Note 2024-01' (hereafter, LI TGN 24-01) (LI, 2024).

In addition, several general guidance documents also informed the framework preparation of this LVIA, as follows (arranged from most recent):

- 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (Environmental Protection Agency of Ireland [EPA], 2022);
- 'Visual Representation of Development Proposals' (Landscape Institute Technical Guidance Note 06/19, 2019) (hereafter, LI TGN 06/19);

1.3 Scope and Definition of the LVIA Study Area for Baseline Landscape and Visual Investigations

Where the 'Proposed Development site' is referred to in Chapter 13, this includes the lands where the Proposed Development is located and where the Proposed Development will materially change the

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landscape. The Proposed Development site is delineated by a red line labelled 'Proposed Planning Application (red line) Boundary' within mapping figures throughout the LVIA. The lands of the Proposed Development site and the lands immediately to the east ('LRD East') are collectively termed as the 'EIAR Study Area' and are referred to throughout the LVIA.

The GLVIA3 (LI & IEMA, 2013) refers to the identification of the area of landscape that is to be covered while assessing landscape and visual effects. The guidelines state:

> *"The study areas should include the Site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner."*

Landscape and visual baseline mapping and viewpoint selection are therefore based on a wider study areas referred to in this LVIA as the 'LVIA Study Area' with a 1km radius from the EIAR Study Area. The geographical parameters of the LVIA were determined by desktop study, survey work undertaken and the professional judgement of the assessment team, as well as experience from other relevant projects and policy guidance or standards.

Considering the scope and scale of the Proposed Development and its existing landscape setting, it is considered that landscape and visual effects will not be 'Significant 'beyond the 1km LVIA Study Area, therefore assessment of landscape and visual effects from locations beyond 1km are scoped out of assessment in Chapter 13.

1.4 Baseline Landscape and Visual Investigations

The first step in the LVIA process is to establish the landscape and visual baseline. This exercise describes and determines the nature and characteristics of the receiving landscape and visual amenity within the LVIA Study Area, with a key focus on identification of sensitive landscape and visual receptors to be assessed. Baseline investigations of the LVIA Study Area were conducted through desk studies, constraints mapping and site visits.

1.4.1 Landscape Baseline

The Landscape Baseline exercise is included in Section 13.3 of Chapter 13. This exercise identifies landscape policy pertinent to the Proposed Development site and LVIA Study Area such as landscape designations contained in the Galway City Development Plan 2023-29. This includes policies on landscape and landscape character, designated landscapes, and protected views. The Proposed Development site is described in terms of landscape character as identified and defined in 'Landscape and Landscape Assessment: Consultation Draft of Guidelines for Planning Authorities' (DoEHLG, 2000) as well as the surrounding landscapes within the LVIA Study Area. The landscape baseline exercise identifies key landscape values and sensitivities within the Proposed Development site and wider landscape setting.

1.4.2 Visual Baseline

The Visual Baseline exercise is included in Section 13.4 of Chapter 13. This exercise includes an appraisal of the likely visibility of the Proposed Development from key visual receptors within the surrounding landscape and within the immediate setting of the Proposed Development site itself. This includes a description of views towards the Proposed Development from a variety of perspectives which informs the visual impact assessment.

1.4.3 LVIA Field Surveys and Identification of Viewpoints

Field Surveys are a key part of the landscape and visual baseline exercise where the Proposed Development site and LVIA Study Area is visited to accurately define the baseline conditions. Visibility

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appraisals are conducted and photographic imagery is captured to inform the LVIA reported in Chapter 13. The likely significant landscape and visual effects of the Proposed Development are strongly informed by the on-site visibility appraisals and the assessment of visual effects at specific 'viewpoints'. An outcome of the landscape and visual baseline exercise is the selection of representative viewpoints for the production of verified photomontage visualisations.

1.5 Photomontage Visualisations

'Photomontages' are visualisations that superimpose an image of a proposed development upon a photograph or series of photographs from a specific location, termed the 'viewpoint'. The photomontage is intended as an accurate graphical representation of how a proposed development will appear in the existing landscape and is used as an important tool in the LVIA process. A series of photomontages have been prepared as part of this LVIA and are presented in Appendix 13-2 – *Photomontage Booklet.*

Guidance within LI TGN 06/19 (2019) is considered the industry benchmark for production of accurate, robust and verifiable photomontages. The photomontages produced for this EIAR adheres to all standards set out in the LI TGN 06/19 (2019) guidance. The verified photomontages included in the Photomontage Booklet are classified as 'Type 4 Visualisations' in the LI TGN 06/19 (2019), meaning that the data capture and image production process adhere to the highest industry verification standards and methods. Type 4 photomontages require the use of equipment and processes which provide quantifiable verification data, such that they may be checked for accuracy (as per industry-standard 'AVRs' or 'Verified Views'). Precise survey of features and viewpoint / camera locations may be included where warranted. Type 4 visualisations are generally reproduced with scale representation.

The views presented in the Photomontage Booklet include a range of distances and geographic perspectives, and the images used for photomontages represent differing atmospheric conditions. Although it is not reasonable to control the weather, all images were captured when weather was sufficient to enable clear visibility in the direction of the Proposed Development from selected viewpoints and sufficiently demonstrate the landscape and visual impact.

1.5.1 Photomontage Viewpoint Selection

A step-by-step process was followed in selecting appropriate photomontage viewpoint locations. The first step was to select a number of representative locations following a detailed desktop study of mapping. Viewpoints are selected from locations that satisfy the following criteria:

- Potential visibility of the Proposed Development within a clear line of sight from vantage points representing visual receptors.
- Representative of critical landscape and visual designations e.g. views and prospects, scenic routes, areas classed as sensitive.
- Representative of other receptors, ensuring proximity to receptors such as settlements, groups of residential dwellings or recreational routes and amenity areas.
- Accessible public areas or on public roads, particularly more trafficked routes.
- Selection of viewpoints that cover a wide area in terms of geographical location, elevation, and varying distance from Proposed Development site.

Following a site visit to analyse visibility on the ground, a total of 5 no. locations were identified as suitable viewpoints for photomontage production. The locations provide a representative range of local views.

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1.5.2 Photomontage Production and Presentation

The methods used for photomontage production are set out below, they are also included in the Appendix 13-2 Photomontage Booklet.

1.5.2.1 Photography and GPS Survey

Photographic imagery was captured from viewpoint locations using a 50mm lens with a full frame sensor camera to minimise image distortion. The camera was mounted on a tripod at an above ground height of approximately 1.6 metres (representative of the average eye height of a visual receptor) as prescribed in best-practice guidance.

Control points within the visible landscape are surveyed using a Trimble DA2 GNSS receiver for the GNSS positioning service. GPS coordinates are recorded for the exact location and position of the tripod mounted camera lens (viewpoint location). Coordinates of each viewpoint location are recorded in the Photomontage Booklet.

Capture of imagery with Wide-Angle 24mm Lens

As reported in Chapter 13, there is very limited long-range visibility of the Proposed Development, therefore almost all viewpoints were captured within its immediate vicinity. Considering the proximity of viewpoints and the nature of the townscape and extent of the Proposed Development, imagery was also captured using 24mm wide angle full frame sensor. Imagery was captured with the wide-angle lens in order to provide more landscape context for the reader/observer of the Photomontage Booklet.

1.5.2.2 3D Modelling and Rendering

A 3D digital model of the Proposed Development was created using 3D modelling software (3D Studio Max). The scaled digital model is built using the drawings & specifications supplied by the developer, engineer and/or architects. The 3D architectural model is then integrated into a high-resolution topographical model including the GPS validated control points and the viewpoint capture locations. The model of the proposal is positioned relative to the virtual camera with the aid of the survey reference control points to ensure a baseline photo match of perspective and scale.

A rendering is applied to the imagery that best represents the proposed materials from which the Proposed Development will comprise in the light conditions when the photomontage was captured.

1.5.2.3 Layout and Booklet Presentation

The following images will be shown in the Photomontage Booklet for each viewpoint location:

- **Existing Wide Angle View at 73.7° Horizontal (24mm lens):** Shows the existing landscape conditions as it currently exists within a 73.7° degree field of view;
- **Proposed Wide Angle View at 73.7° Horizontal (24mm lens):** Shows a scaled verified render of the Proposed Development within the current landscape within a 73.7° degree field of view;
- **Existing View at 39.6° Horizontal (50mm lens):** Shows the existing landscape conditions as it currently exists within a 39.6° degree field of view;
- **Proposed View at 39.6° Horizontal (50mm lens):** Shows a scaled verified render of the Proposed Development within the current landscape within a 39.6° degree field of view;

For 1 No. relevant Viewpoint, VP4, another view is presented to aid assessment of potential cumulative visual effects in a future receiving environment:

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- **Proposed Cumulative View at 73.7° Horizontal (24mm lens):** Shows a scaled verified render of the Proposed Development as well as block models of the Potential Future Residential Development of the Proposed Project (LRD East) within a 73.7° degree field of view;
- **Proposed Cumulative View at 39.6° Horizontal (50mm lens):** Shows a scaled verified render of the Proposed Development as well as block models of the Potential Future Residential Development of the Proposed Project (LRD East) within a 39.6° degree field of view;

The 'Proposed View at 39.6°' use photographic imagery captured using a 50mm full frame sensor. These views are presented on A3 paper at a 39.6° field of view (equivalent of a full frame) as per the TGN 6/19 (LI, 2019) Guidance. When printed at A3 and held out at typical arm's length, the photomontages presented within the 39.6°field of view are representative of the view and Proposed Development as it would be seen in the landscape from a given viewpoint.

As stated previously, imagery was captured with a wide-angle lens (24mm) in order to provide more landscape context for the reader/observer of the Photomontage Booklet due to the proximity of viewpoints. Imagery from the wide-angle lens are presented within a 73.7° field of view prior to the 39.6° views. These wide-angle images were captured with a 24mm full frame sensor. An orange box is presented within the wide-angle views to illustrate the extent of 39.6° field of view.

1.5.3 Limitations of Photomontage Visualisation

Photographs, and therefore photomontages, are subject to a range of limitations:

- Visualisations provide a tool for assessment that can be compared with an 'actual' view in the field; they should never be considered as a substitute to visiting a viewpoint in the field;
- Neither photographs nor visualisations can replicate a view as seen in reality by the human eye;
- Visualisations are only as accurate as the data used to construct them;
- Visualisations can only represent the view from a single location at a particular time and in particular weather conditions;

Although the scale, siting and geometry of photomontages are based on technical data, the other qualities of the image are open to judgement. Interpretation of visualisations must be taken into account as well as additional information including variable lighting, seasonal differences and the movement of the viewer or receptor through the landscape. However, accepting these limitations, photomontages are useful tools in the visual impact assessment of development proposals.

1.6 Assessing Landscape Effects

In line with the GLVIA3 (LI & IEMA, 2013), the potential impacts on landscape receptors and visual receptors are assessed separately. This section details the methods used to determine the likely significant landscape effects of the Proposed Development on landscape receptors.

The methodology for assessing landscape effects uses qualitative methods in order to arrive at an overall impact assessment, based on the DoEHLG 2000 Guidance as well as the GLVIA3 (LI & IEMA, 2013).

Here, 'landscape effects' are described as changes which affect the landscape as a resource. This includes how the Proposed Development will affect the physical elements that make up the landscape, as well as its aesthetic and perceptual aspects and its landscape character. Landscape effects also relate to changes in the structure and physical fabric of the landscape. Under the GLVIA3 (LI & IEMA,

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2013), the assessment of likely 'Significant' effects on landscape receptors includes a judgement on both the 'Sensitivity' of the receptor as well as the 'Magnitude of Change'.

The assessment of landscape effects considers the landscape 'Sensitivity' balanced with the 'Magnitude of Change' of the effect to determine the 'Significance' of the effect. Mitigating factors are then taken into consideration to arrive at a 'Residual' landscape effect. Residual landscape effects are graded upon an 'impact assessment classification of significance' scale, as defined by the '*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*' of the Environmental Protection Agency of Ireland (EPA) (2022), included below in Table 1-4 of Section 1.6.3 - *Landscape Effects Assessment Matrix*, of this appendix.

1.6.1 Assessing Landscape Sensitivity

Landscape 'Sensitivity' is described in the GLVIA3 (LI & IEMA, 2013) as a combination of the landscape's 'Susceptibility to Change' as well as the 'Value' attached to the landscape.

Landscape susceptibility to change is described as the ability of the landscape receptor (either the overall character, quality of the landscape or a particular landscape feature) to accommodate the Proposed Development without undue consequences for the maintenance of the baseline (existing) landscape and/or the aims of landscape planning policies and strategies. Table 1-1 below presents differing assessment criteria for susceptibility to change.

Table 1-1: Assessment Criteria for Landscape Susceptibility to Change

Susceptibility of Landscape Receptor to Change	Description and Example Criteria
'High'	Landscape receptors where the overall character of the landscape receptor or the nature of the individual landscape receptor causes it to have a high susceptibility to change considering its inherent characteristics and where the landscape receptor has a low ability to accommodate the proposed change without undue consequences for the maintenance of its landscape character, and/or its quality or condition, and/or its particular aesthetic and perceptual aspects, and where such change is not in compliance with planning policies/strategies.
'Medium'	Landscape receptors where the overall character of the landscape receptor or the nature of the individual landscape receptor causes it to have a medium susceptibility to change considering its inherent characteristics and where the landscape receptor has a moderate ability to accommodate the proposed change without undue consequences for the maintenance of its landscape character, and/or its quality or condition, and/or its particular aesthetic and perceptual aspects, with consideration given to planning policies/strategies.
'Low'	Landscape receptors where the overall character of the landscape receptor or the nature of the individual landscape receptor causes it to have a low susceptibility to change considering its inherent characteristics and where the landscape receptor has a Strong ability to accommodate the proposed change without undue consequences for the maintenance of its landscape character, and/or its quality or condition, and/or its particular aesthetic and perceptual aspects, and where such change may be in compliance with planning policies/strategies.

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Landscape 'Value' is a combination of values which are assessed in the 'Landscape Baseline' (Section 13.3 of Chapter 13), combining any formal landscape designations, and, where there are no designations, judgements based on individual elements of the landscape receptor, for example particular landscape features, notable aesthetic, perceptual or experiential qualities, and combination of these contributors.

Notably, the GLVIA3 (LI & IEMA, 2013, p.89) states that:

> *'...there should not be over-reliance on designations as the sole indicator of value'.*

Accordingly, the assessments of landscape value undertaken in the LVIA included consideration of various elements that contribute to landscape value of specific receptors, using best practice standards and professional judgement. Where this occurred, landscape value was judged based on clearly stated criteria. Table 1-2 below presents differing assessment criteria for landscape value.

Table 1-2: Assessment Criteria for Landscape Value

Value Attached to Landscape Elements	Description and Example Criteria
'High'	Landscape receptors forming part of designations (e.g. areas of amenity, scenic routes/views) in the development plan, or at a national or international level, or landscape receptors not designated but where the receptor is judged to be of equivalent value using clearly stated criteria including wildness, naturalness, very strong cultural heritage or natural heritage associations and/or very high recreational value.
'Medium'	Landscape receptors where value is not formally designated but are of value as good examples of high quality, intact landscapes or landscape features and are deemed to be of relatively high scenic quality. Landscapes or landscape receptors that contain some rare elements, include areas or features which are wild or have a sense of naturalness, have strong cultural associations or which have recreational value.
'Low'	Landscapes that are not formally designated and considered as modified. Areas which do not have particularly scenic qualities, do not include rare elements or landscape features and do not have strongly evident cultural or heritage associations.

The 'Landscape Baseline' (Section 13.3.4 of Chapter 13) describes and determines the landscape value of the Proposed Development site and its wider landscape setting in order to establish the capacity of the immediate landscape in which the Proposed Development will be built, as is prescribed by best practice guidance (GLVIA3, 2013, p.80):

> *'...as part of the baseline description the value of the potentially affected landscape should be established'.*

Comprehension of landscape value and its susceptibility to change enables determination of the sensitivity of the landscape at a micro-level, this relates to the Proposed Development site itself and the wider landscape setting.

In combining the assessment of the landscape value of a landscape receptor with the susceptibility to change of that receptor, it is noted here that a judgement of 'High' landscape value does not necessarily

imply that this receptor has a 'High' susceptibility to change, and it is emphasised that this relationship can be complex. The combination of these judgements, which determines the overall landscape 'Sensitivity', is undertaken using professional judgement with the rationale for judgements clearly explained in the description of the assessment of effects or in the baseline study. On this basis, landscape receptors have been assigned one of the four following 'Sensitivity' ratings:

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- 'Very High';
- 'High';
- 'Medium';
- 'Low'.

No table is provided for the description of these different classifications of landscape sensitivity as the relationship between susceptibility to change and landscape value is inherently complex and not suitable to concise definitions. It is noted that sensitivity classifications are generally guided by local and national planning policy, particularly for designated Landscape Character Areas (LCAs) and county policy in relation to these. However, it is noted that in cases where local variations in landscape receptors merit a smaller-scale-focused assessment that may differ from the policy, this was undertaken using professional judgement and is clearly explained in Chapter 13.

1.6.2 Assessing Magnitude of Change in the Landscape

The 'Magnitude of Change' at the Proposed Development site itself, within a given LCA, or for a specific landscape receptor, is defined by a combination of the visual presence—that is, the size and scale—of the change, the extent of the area to be affected and the duration and reversibility of the effect. Assessment criteria for varying degrees of 'Magnitude of Change' are defined and described in Table 1-3 below.

Table 1-3: Assessment Criteria for Magnitude of Landscape Change

Magnitude of Change	Description
'Substantial'	Where a landscape will experience the loss of key landscape features or the introduction of uncharacteristic additions over a large area. The changes to the landscape are prominent and large in scale. The level of change has an effect on the overall landscape character. The effects are likely long term and may be irreversible.
'Moderate'	A more limited loss of or change to landscape features over a medium extent which will result in some change to landscape features and aesthetics. Could include the addition of some new uncharacteristic features or elements that would lead to the potential for change in landscape character in a localised area or part of a landscape character area. Would include moderate effects on the overall landscape character that do not affect key characteristics. The effects could be long- to medium-term and/or partially reversible.
'Slight'	The loss of or change to landscape features of limited extent, or changes to landscape character in smaller areas. Changes would not affect key characteristics. The addition of any new features or elements to the landscape would only result in low-level changes to the overall aesthetics of the landscapes. Changes to the landscape are more evident at a local level and not over a wide geographical area. The effects could potentially be medium- to short-term and/or reversible.

Magnitude of Change	Description
'Negligible'	A change affecting smaller areas of landscape character including the loss of some landscape elements or the addition of features or elements which are either of low value or hardly noticeable. The effects could be short-term and/or reversible.

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1.6.3 Landscape Effects Assessment Matrix

The overall 'Significance' of landscape effects is determined by combining the landscape receptor 'Sensitivity' and the 'Magnitude of Change' classifications, according to the Landscape Effects Assessment Matrix shown below in Table 1-4.

In the below matrix, landscape receptor sensitivity is shown in the first, left-hand column and magnitude of landscape change is shown in the first row at the top. This matrix is used as an indicative tool to assist in determining the significance of landscape effects. In different circumstances, differing levels of mitigating factors may ultimately result in a different determination of the final rating of significance. The 'Significance' of a landscape effect is based on a balance between the 'Sensitivity' of the receptor and the 'Magnitude of Change' of the effect.

Table 1-4: Landscape Effects Assessment Matrix

	Substantial	Moderate	Slight	Negligible
Very High	Major	Major/Moderate	Moderate	Moderate/Minor
High	Major/Moderate	Moderate	Moderate/Minor	Minor
Medium	Moderate	Moderate/Minor	Minor	Minor/Negligible
Low	Moderate/Minor	Minor	Minor/Negligible	Negligible

The final 'Significance' rating of the landscape effect is then arrived at using a combination of the matrix and the EPA (2022) classification definitions, shown below in Table 1-5.

The determination of significance uses a seven-point scale, ranging from 'Major' to 'Negligible'. This seven-point scale is then translated to the EPA (2022) impact assessment classifications of 'Significance', as outlined in the table.

Table 1-5: Impact Assessment Significance Classification from EPA (2022) for Landscape Effects

Matrix Classification Significance	EPA Significance Classification	EPA (2022) Definition of Significance
Major	**Profound**	An effect which obliterates sensitive characteristics.
Major/Moderate	**Very Significant**	An effect, which by its character, magnitude, duration or intensity alters most of a sensitive aspect of the environment.
Moderate	**Significant**	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Moderate/Minor	**Moderate**	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends.
Minor	**Slight**	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Minor/Negligible	**Not Significant**	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Negligible	**Imperceptible**	An effect capable of measurement but without significant consequences.

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1.7 Assessing Visual Effects

'Visual effects' relate to the changes in views and visual amenity of the surroundings of individuals or groups of people, brought about by the Proposed Development. These may result from changes in content and character of views as a result in changes to the landscape. The assessment of visual effects is based on the information recorded during field surveys and the views shown in the photomontages.

It should be noted that, in assessing visual effects, there are two types of effects:

- **Visual obstruction:** Occurs when there is an impact on a view which blocks the view;
- **Visual intrusion:** Occurs when there is an impact on a view, but which does not block the view.

The 'Significance' of the visual effect on visual receptors is a combination of the 'Sensitivity' of the receptor as well as the 'Magnitude of Change' of the effect. Mitigating factors are then taken into consideration to arrive at a 'Residual' visual effect. Residual visual effects are graded upon the same 'impact assessment classification of significance' scale used for landscape effects, as defined by the EPA (2022), which is included below in Table 1-8 of Section 1.7.3: Visual Effects Assessment Matrix.

1.7.1 Visual Receptor Sensitivity

The 'Sensitivity' of a visual receptor depends on the occupation or activity of the people involved, as well the extent to which the attention is focused on views and visual amenity, according to the GLVIA3 (LI & IEMA, 2013). Visual receptor sensitivity is assessed as being 'Very High', 'High', 'Medium', or 'Low', based on the definition of descriptions and examples set out below in Table 1-6.

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Table 1-6: Assessment Criteria for Visual Receptor Sensitivity

Sensitivity of Visual Receptor(s)	Description
'Very High'	Included in this category are viewers primarily focused on views from this particular location, such as visitors to popular destinations identified for their outstanding views.
'High'	Includes viewers at designated views or landscapes or viewers at well-known heritage or popular tourist or recreational areas and viewers along scenic or tourist routes. May include nearby residents.
'Medium'	Includes viewers who may have some susceptibility to a change in view. May include receptors travelling along routes or at views which are considered moderately scenic but which are not designated and may have local recreational value.
'Low'	Includes viewers engaged in activities where the focus is not on the landscape or view. This includes those travelling along a busy route, viewers at work or engaged in sport not related to views or the experience of the landscape.

As described earlier in Section 1.5: Photomontage Visualisations, the photomontage viewpoints are selected as specific locations representative of the key visual receptors. Viewpoint assessment tables are included in Section 13.5 of Chapter 13. These viewpoint assessment tables consider all receptors represented in the determination of the visual receptor sensitivity rating for each viewpoint. This determination takes a balanced approach considering the types, sensitivities, and quantities of visual receptors represented. The sensitivity rating given to each photomontage viewpoint considers both the susceptibility of the visual receptors represented as well as the value attached to the available views at that particular location.

1.7.2 Magnitude of Visual Change

The 'Magnitude of Change' in terms of the visual change resulting at each viewpoint is determined by assessing a combination of scale of the change, the extent of the area to be affected and the duration and reversibility of the effect, determined by reviewing the photomontage images for each viewpoint. The 'Magnitude of Change' is determined in accordance with the definitions and descriptions included below in Table 1-7.

Table 1-7: Assessment Criteria for Magnitude of Visual Change

Magnitude of Change	Description
'Substantial'	Substantial change, where the proposal would result in large-scale, prominent or very prominent change, leading to substantial obstruction of an existing view or complete change in character and composition of the baseline through removal of key elements or the addition of uncharacteristic elements which may or may not be visually discordant. This includes viewpoints where the Proposed Development is fully or almost fully visible over a wide extent, at close proximity to the viewer. This change could be long-term or of a long duration.
'Moderate'	The change in the view may involve partial obstruction of existing view or partial change in character and composition of the baseline through the introduction of new elements or removal of existing elements. Likely to occur at locations where the

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Magnitude of Change	Description
	Proposed Development is partially visible over a moderate or medium extent, and which are not in close proximity to the proposed development. Change may be readily noticeable but not substantially different in scale and/or character from the surroundings and wider setting.
'Slight'	The proposal would be partially visible or visible at sufficient distance to be perceptible and result in a low level of change in the view and its composition and a low degree of contrast. The character of the view may be altered but will remain similar to the baseline existing situation. This change could be short-term or of a short duration.
'Negligible'	Any change would only be barely distinguishable from the status quo 'do-nothing scenario' in the surroundings. The composition and character of the view would be substantially unaltered, approximating to little or no change.

1.7.3 Visual Effects Assessment Matrix

The final 'Significance' rating of visual effects is determined by combining the visual receptor 'Sensitivity' and the 'Magnitude of Change' classifications, according to the Visual Effects Assessment Matrix shown below in Table 1-8.

In the matrix, visual receptor sensitivity is shown in the first, left-hand column and magnitude of the visual change is shown in the first row at the top of the table. This matrix is used as an indicative tool to assist in determining the significance of visual effects. In different circumstances, differing levels of mitigating factors may ultimately result in a different determination of the final rating of significance. The 'Significance' of a visual effect is based on a balance between the 'Sensitivity' of the receptor and the 'Magnitude of Change' of the effect.

Table 1-8: Visual Effects Assessment Matrix

	Substantial	Moderate	Slight	Negligible
Very High	Major	Major/Moderate	Moderate	Moderate/Minor
High	Major/Moderate	Moderate	Moderate/Minor	Minor
Medium	Moderate	Moderate/Minor	Minor	Minor/Negligible
Low	Moderate/Minor	Minor	Minor/Negligible	Negligible

The significance of the visual effect is arrived at using a combination of the above matrix and what is known as the 'Visual Effect Significance Graph' from the EPA (2022) (shown in Figure 1-1: Visual Effects Significance Graph (EPA, 2022), see next section). The determination of significance uses a seven-point scale, ranging from 'Major' to 'Negligible'. This seven-point scale is then translated to the EPA (2022) impact assessment classifications of 'Significance', as outlined below in Table 1-9.

Table 1-9 Impact Assessment Significance Classification from EPA (2022) for Visual Effects

Matrix Classification Significance	EPA Significance Classification	EPA (2022) Definition of Significance
Major	**Profound**	An effect which obliterates sensitive characteristics.
Major/Moderate	**Very Significant**	An effect, which by its character, magnitude, duration or intensity alters most of a sensitive aspect of the environment.
Moderate	**Significant**	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Moderate/Minor	**Moderate**	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends.
Minor	**Slight**	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Minor/Negligible	**Not Significant**	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Negligible	**Imperceptible**	An effect capable of measurement but without significant consequences.

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1.8 Determination of Residual Landscape and Visual Effects

After determining the 'Significance' of landscape and visual effects using the above assessment matrices (and significance graph in the case of visual effects), mitigating factors are then taken into consideration to arrive at the final 'Residual' effect rating, translated to the EPA classification scheme. In some cases, mitigating factors merit a reduction in classification.

The matrices and tables above are excellent tools to aid professional judgement in the determination of the significance of an effect. They are useful in that they provide a transparent, objective structure to the process of balancing 'Sensitivity' and 'Magnitude of Change'.

Particularly for determining residual visual effects, the formulaic process created by the use of the above matrices (Table 1-4 and Table 1-8) does provide an indicative initial assessment, which can be seen clearly in the assessment of photomontages in viewpoint assessment tables in the LVIA.

However, over-reliance on the formulaic process, which is heavily influenced by the definitions of 'Sensitivity' and 'Magnitude of Change' contained in the matrices can lead to a failure of properly accounting for the full range of circumstances and factors at play in the determination of the final significance rating of a visual effect (see *sub-section 3.35* in '*Step 3: Judging the Overall Significance of the Effects*' of the GLVIA3, LI & IEMA, 2013, p.41).

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In actuality, a wide range of factors, mitigating or otherwise, can factor into the final determination, and it is not possible to capture the complexity involved in balancing all considerations within the necessarily limited definitions contained in the matrices. This then naturally results in circumstances whereby the process of the determination of significance using the formulaic method involved with the matrix shown above in Table 1-8 can result in misrepresentations of the overall significance of visual effects. It is only by applying professional judgement and composing narrative descriptions of the effect, that such complexity can be integrated into the final determination of significance.

Therefore, the formulaic methods based upon the matrices presented above are combined with professional judgement in the determination of significance. This is shown by the 'Visual Effects Significance Graph' below in Figure 1-1 (adapted from the EPA, 2022) which illustrates how the professional judgement of the competent expert is used to properly determine the significance of an effect taking all considerations into account.

Accordingly, in this LVIA, focus is placed upon the narrative description of effects (see *sub-section 3.36* of the GLVIA3, LI & IEMA, 2013, p.41) given the naturally subjective nature of the significance determination process, particularly in relation to visual effects, ensuring that the rationale for the overall judgement is clear (see *sub-sections 3.28* and *3.29* in '*Step 2: Combining the Judgments*', GLVIA3, 2013, p.40). The comprehensive assessment of photomontages included the LVIA aims to provide a transparent and robust determination of residual visual effects utilising the graph in Figure 1-1 in combination with a clear and logical narrative.

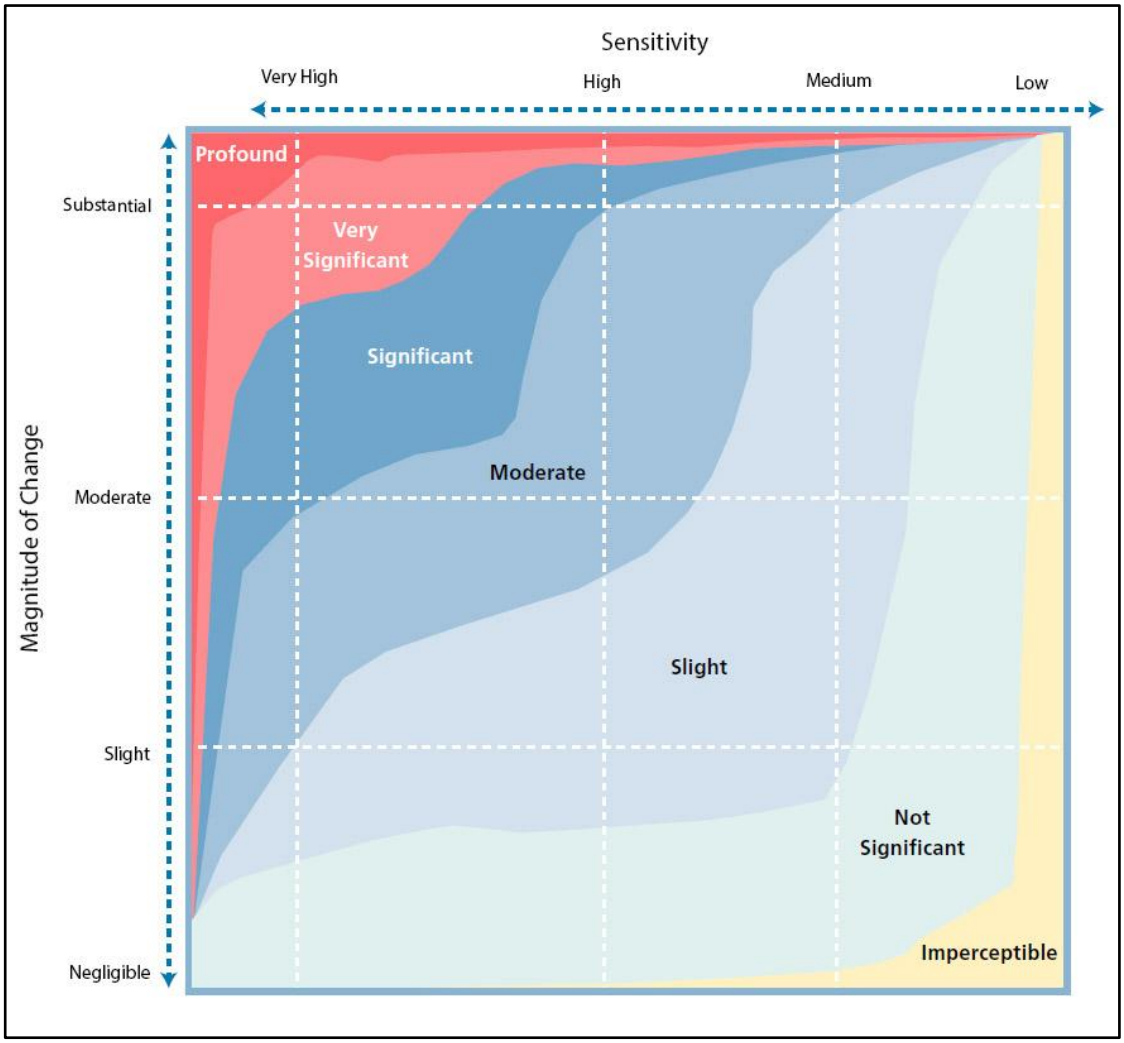


Figure 1-1: Visual Effects Significance Graph (EPA, 2022)

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1.9 Assessing Cumulative Landscape and Visual Effects

Assessment of cumulative effects addresses how other developments contribute to landscape and visual effects in combination with the Proposed Development. The focus is always on developments and cumulative effects which have the greatest potential for 'Significant' landscape and visual effects to occur in combination with the Proposed Development. The discussion of effects reported in the LVIA uses appropriate and logical narrative to describe cumulative interactions between the Proposed Development and other relevant developments.

Other types of development can be categorised as being 'Existing', 'Permitted' or 'Proposed'. Further, the discussion of cumulative effects consider the probability of such cumulative effects arising in mind of the above category of the other developments with which the Proposed Development interacts.

1.9.1 Cumulative Landscape Effect

Cumulative landscape effects occur where one or more developments collectively effect a specific landscape receptor in combination with the Proposed Development. The landscape receptor could be the landscape of the Proposed Development site itself, a specific landscape area and receptor, or a larger landscape such as a designated Landscape Character Area. Cumulative landscape effects can be changes to the physical fabric of a landscape, changes to landscape character, or changes to the setting of a specific landscape receptor.

1.9.2 Cumulative Visual Effects

The GLVIA3 (LI & IEMA, 2013) guidance notes that cumulative visual effects can be experienced **in combination**, where two or more developments or areas of focus are visible from one viewpoint, either simultaneously or in succession. **In combination simultaneous** views occur when two elements of focus (e.g. The Proposed Development and Protected Structures) are viewed together in the same field of view at the same time from the same viewpoint. **In combination successional** views occur when two elements of focus are seen from the same viewpoint or location but are visible in an opposing direction and where a receptor needs to turn their head.

Another type of cumulative visual effect includes where two or more developments are seen **sequentially**, where a viewer moves to another viewpoint or along a transport or recreational route and sees the same or different developments.

1.9.3 Proportionate Assessment of Cumulative Landscape and Visual Effects

The discussion of cumulative interactions on specific landscape and visual receptors is relative to the effects on that receptor and is proportionate to the likelihood of 'Significant' landscape and visual effects occurring. Finally, the assessment of cumulative landscape and visual effects is maintained proportionally, meaning that the focus is always on the extent to which the Proposed Development may contribute towards cumulative effects on the specific receptors under assessment; these contributions are clearly explained through clear logical narrative, or with the aids of maps and visualisations in the cumulative assessments within the LVIA.