

Eastern Green Link 4: Scottish Onshore Scheme

Volume 4: Appendices

Appendix 6.1: Landscape and Visual Methodology

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1. Introduction

This section sets out the detailed methodology for the landscape and visual impact assessment (LVIA) contained in **Chapter 6: Landscape and Visual (Volume 2: Main Report)**. It takes into account best practice guidance and builds on the general assessment methodology presented in **Chapter 4: Environmental Impact Assessment Methodology (Volume 2: Main Report)** and develops this to take account of the range of likely significant effects on the landscape character and visual amenity arising from the construction and operational phases of the Scottish Onshore Scheme.

It should be noted that the methodology for the LVIA does not use the standard significance matrix set out within **Chapter 4: Environmental Impact Assessment Methodology (Volume 2: Main Report)**, as the approach to determining significance is based on professional judgement with narrative descriptions provided.

2. Sensitivity of Landscape Receptors

Landscape receptors are described as components of the landscape that are likely to be affected by the Scottish Onshore Scheme. These can include overall character and key characteristics, individual elements or features and specific aesthetic or perceptual aspects. It is the interaction between the different components of the Scottish Onshore Scheme and these landscape receptors which has potential to result in landscape effects (both adverse and beneficial).

The sensitivity of the landscape receptor has been derived by combining the value of the landscape (undertaken as part of the baseline study) and the susceptibility to change of the receptor to the specific type of development being assessed.

Landscape value is frequently addressed by reference to international, national, regional, and local designations. Absence of such a designation does not necessarily imply a lack of quality or value. Factors such as accessibility and local scarcity can render areas of nationally unremarkable quality, highly valuable as a local resource. The evaluation of landscape value considers the following factors, as outlined in the Landscape Institute's Technical Guidance Note 02/21¹, and classified as **very high, high, medium, low and very low** with evidence provided as to the basis of the evaluation:

- Natural heritage – the extent to which a landscape has clear evidence of ecological, geological, geomorphological or physiographic interest which contribute positively to the landscape;

¹ Landscape Institute. (2021). *Assessing landscape value outside national designations Technical Guidance Note 02/21* [Online]. Available: <https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/> (Accessed: 31/07/2025).

- Cultural heritage – the extent to which a landscape has clear evidence of archaeological, historical or cultural interest which contribute positively to the landscape;
- Landscape condition - the extent to which a landscape is in a good physical state both with regard to individual elements and overall landscape structure;
- Associations - the extent to which a landscape is connected with notable people, events and the arts;
- Distinctiveness - the extent to which a landscape has a strong sense of identity;
- Recreational - the extent to which a landscape offers recreational opportunities where experience of landscape is important;
- Perceptual (scenic) - the extent to which a landscape appeals to the senses, primarily the visual sense;
- Perceptual (wildness and tranquillity) - the extent to which a landscape has a strong perceptual value notably wildness, tranquillity and/or dark skies; and
- Functional - the extent to which a landscape performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape.

Landscape susceptibility relates to the ability of a particular landscape to accommodate the Scottish Onshore Scheme. It is assessed through consideration of the baseline characteristics of the landscape, and in particular, the scale or complexity of a given landscape. The baseline characteristic considerations include the following:

- Scale – a measure of how well a proposed development would relate to the overall scale of the landscape, landform and/or landscape features;
- Landform – the extent to which a proposed development would relate to and/or integrate with the existing landform and topographic features;
- Pattern – the extent to which a proposed development would relate to the existing landscape pattern;
- Landcover – a measure of how well the proposed development would relate to existing landcover;
- Openness/enclosure – the level of which the openness or enclosure of a landscape would influence the ability of a landscape to accommodate a proposed development;
- Landmarks – a measure of how well the proposed development would relate to existing landmark features;
- Development context – the level to which existing similar development within a landscape influences the ability to accommodate a proposed development; and
- Perceptual qualities (remoteness, tranquillity, dark skies etc.) – extent to which existing perceptual qualities would influence the ability of the landscape to accommodate the proposed development.

The evaluation of landscape susceptibility is defined as **very high, high, medium, low** and **very low** and is supported by a clear explanation based upon the analysis of the landscape

receptor and the extent to which it is able to accommodate the changes that would result from the Scottish Onshore Scheme.

The overall sensitivity assessment of the landscape receptor has been made by applying professional judgement to combine and analyse the identified value and susceptibility ratings. Overall sensitivity has been rated as **very high, high, medium, low** and **very low**.

Table 1 Sensitivity of landscape receptors below outlines indicators that inform landscape value, susceptibility and sensitivity. The basis of the assessment is made clear in the evaluation of each landscape receptor.

Table 1 Sensitivity of landscape receptors

	Higher Sensitivity Indicators	Lower Sensitivity Indicators
Value	A nationally designated landscape and/or a landscape in very good condition, recognised associations, exceptional scenic quality, very high recreational opportunities, a very high degree of distinctiveness, with very strong perceptual aspects and/or very important natural and cultural heritage features and functional qualities.	An undesignated landscape and/or landscape containing few if any notable elements/features, of poor condition or containing several detracting features and limited aesthetic qualities. Landscapes which have limited recognised associations, recreational opportunities, natural and cultural heritage features and/or functional qualities.
Susceptibility	Attributes that make up the character of the landscape which offer very limited opportunities to accommodate change of the type proposed without fundamentally altering key characteristics.	Attributes that make up the character of the landscape which are tolerant of a large degree of the type of change proposed without fundamentally altering the key characteristics.

3. Sensitivity of Visual Receptors

Sensitivity of visual receptors has been defined through an appraisal of the viewing expectation, or value placed on the view as identified in the baseline study, and its susceptibility to change.

Value of the view is an appraisal of the value attached to views and is often informed by the appearance on Ordnance Survey or tourist maps and in guidebooks, literature and art, or identified in policy. Value can also be indicated by the provision of parking places and sign boards and interpretive material for enjoyment. The nature and composition of the view and its scenic quality is also an indicator. It is important to note that the absence of view recognition does not preclude local value, as a view may be important as a resource in the local or immediate environment due to its relative rarity or local importance. The value of the view has been classified as **very high, high, medium, low** and **very low** and is supported by evidenced, professional judgements.

The susceptibility of visual receptors to change has been established as a function of the occupation or activity of people experiencing the view, and the extent to which their attention or interest is focussed on the view and the visual amenity they experience. For example, walkers whose interest may tend to be focused on the landscape or a particular view, or visitors at an attraction where views are an important part of the experience, indicate a higher level of susceptibility. Conversely receptors engaged in outdoor sport where views are not important or receptors at their place of work are considered less susceptible to change. The susceptibility of visual receptors is not dependent on the specific change being proposed. Judgements about the susceptibility of visual receptors have been ascribed using **very high, high, medium, low** and **very low** ratings using consistent and reasoned judgements.

The overall sensitivity assessment of the visual receptor has been determined by applying professional judgement to combine and analyse the identified value and susceptibility ratings. Overall visual sensitivity has been rated as **very high, high, medium, low** and **very low**. **Table 2 Sensitivity of visual receptors** below outlines indicators that inform value of the view, susceptibility and sensitivity of visual receptors. The basis of the assessment is made clear in the evaluation of each visual receptor.

Table 2 Sensitivity of visual receptors

	Higher Sensitivity Indicators	Lower Sensitivity Indicators
Value	Views protected by designation, or nationally recognised, or recorded on maps/ guidebooks or with cultural associations. Views that have high scenic qualities relating to the content and composition of the view.	Views which are not documented or protected with minimal or no cultural associations. Views that exhibit low scenic qualities relating to the content and composition of the view.
Susceptibility	Viewers whose attention or interest is focused on their surroundings; Residential properties and settlements where views contribute to the landscape setting enjoyed by residents; and People engaged in outdoor recreation including users of cycle routes, recreational routes, core paths and visitors to heritage assets where views of the surroundings are an important contributor to experience.	People whose attention or interest is not focused on their surroundings and where the view is incidental to their enjoyment; People travelling more rapidly on major roads, rail or transport routes not recognised as scenic routes; People engaged in outdoor recreation which does not involve or depend upon appreciation of views of the landscape; and People at their place of work whose attention is not on their surroundings.

Landscape Magnitude of Effect

Landscape magnitude of effect refers to the extent to which the Scottish Onshore Scheme would alter the existing characteristics of the landscape. It is an expression of the size or scale of change to the landscape, the geographical extent of the area influenced, and its duration and reversibility. Notes and Clarifications on Aspects of GLVIA3 Technical Guidance Note LITGN-2024-01² sets out that the size/scale of effect is likely to be the most important factor with geographical extent and duration/reversibility considered as ‘modifiers’. The variables involved are:

- The extent of existing landscape elements that would be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape;
- The extent to which aesthetic or perceptual aspects of the landscape are altered either by removal of existing components of the landscape or by the addition of new components;
- Whether the change alters the key characteristics of the landscape that are integral to its distinctive character;
- The geographic area over which the change will be experienced (for example within the application boundary, the immediate setting around that boundary, at the local landscape character area scale, or on a larger scale influencing broader areas of landscape character);
- The duration of the change (i.e., short term, medium term, or long term), as defined in **Chapter 4: Approach to Environmental Impact Assessment (Volume 2: Main Report)**, and its reversibility (i.e., whether it is permanent, temporary, or partially reversible); and
- Landscape change can be both direct, through alteration of physical components, or indirect, resulting from changes to perceptual aspects of character and how it is experienced.

An overall assessment of the magnitude of landscape effect resulting from the Scottish Onshore Scheme on landscape receptors has been made by combining the above judgements using evidence and professional judgement. The levels of landscape magnitude of effect are described as being **very high, high, medium, low, very low** and **none** as defined in **Table 3 Landscape magnitude of effect** below.

² Landscape Institute (2024) *Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition (GLVIA3) Technical Guidance Note - 2024-01*. Available at: https://www.landscapeinstitute.org/wp-content/uploads/2024/08/LITGN-2024-01-GLVIA3-NC_Aug-2024.pdf (Accessed: 31/07/2025).

Table 3 Landscape magnitude of effect

Magnitude	Criteria
Very High	Substantial alteration to the landscape receptor or may impact an extensive area or unique characteristics at a local level. May be longer term, permanent or reversible.
High	Large alteration to the landscape receptor or may impact an extensive area or unique characteristics at a local level. May be longer term, permanent or reversible.
Medium	Partial alteration to the landscape receptor or may impact a wide area or characteristics at a local level. May be medium term, permanent or reversible.
Low	Slight alteration to the landscape receptor or may impact a restricted area and few key characteristics. May be short to medium term, permanent or reversible.
Very Low	Very slight alteration to the landscape receptor or may impact a limited area or no key characteristics. May be short-term, permanent or reversible.
None	No change to the landscape receptor.

Visual Magnitude of Effect

Visual magnitude of effect relates to the extent to which the Scottish Onshore Scheme would alter the existing view and is an expression of the size or scale of change in the view, the geographical extent of the area influenced and its duration and reversibility. Notes and Clarifications on Aspects of GLVIA3 Technical Guidance Note LITGN-2024-01² sets out that not all components of magnitude of effect are equally weighted. It is considered that the scale of change and degree of contrast are likely to be the most important factors with the nature of view, angle of the view and duration/reversibility considered as ‘modifiers’. The variables involved are described below:

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the Scottish Onshore Scheme;
- The degree of contrast or integration of any new features or changes in the form, scale, composition and focal points of the view;
- The nature of the view of the Scottish Onshore Scheme in relation to the amount of time over which it will be experienced, and whether views of this will be visible fully, partially or glimpsed;
- The angle of view in relation to the main activity of the receptor, distance of the viewpoint from the Scottish Onshore Scheme and the extent of the area over which the changes would be visible; and

- The duration of the change (i.e., short-term, medium term, or long term), as defined in **Chapter 4: Approach to Environmental Impact Assessment (Volume 2: Main Report)**, and its reversibility (i.e., whether it is permanent, temporary, or partially reversible).

An overall assessment of the magnitude of visual effect resulting from the Scottish Onshore Scheme on the visual receptor has been made combining the above judgements using evidence and professional judgement. The levels of visual magnitude of effect are described as being **very high, high, medium, low, very low** and **none** as defined **Table 4 Visual magnitude of effect** below.

Table 4 Visual magnitude of effect

Magnitude	Criteria
Very High	A substantial change to the composition of the view or change that may be viewed in the foreground or directly. May be longer term, permanent or reversible.
High	A pronounced change to the composition of the view or change that may be viewed in the foreground or directly. May be longer term, permanent or reversible.
Medium	A noticeable change to the composition of the view or change that may be viewed in the middle ground or indirectly. May be medium term, permanent or reversible.
Low	An unobtrusive change in the composition of the view or change that may be viewed in the background or obliquely. May be short to medium term, permanent or reversible.
Very Low	A barely perceptible change in the composition of the view or change that may be viewed in the background and/or very obliquely. May be short-term, permanent or reversible.
None	No change to the view.

Duration of Change

For the purposes of this LVIA, the duration of change associated with the landscape and visual magnitude of effect is considered to be as follows:

- Short-term: 0-4 years;
- Medium-term: 5-10 years; and
- Long-term: 11+ years.

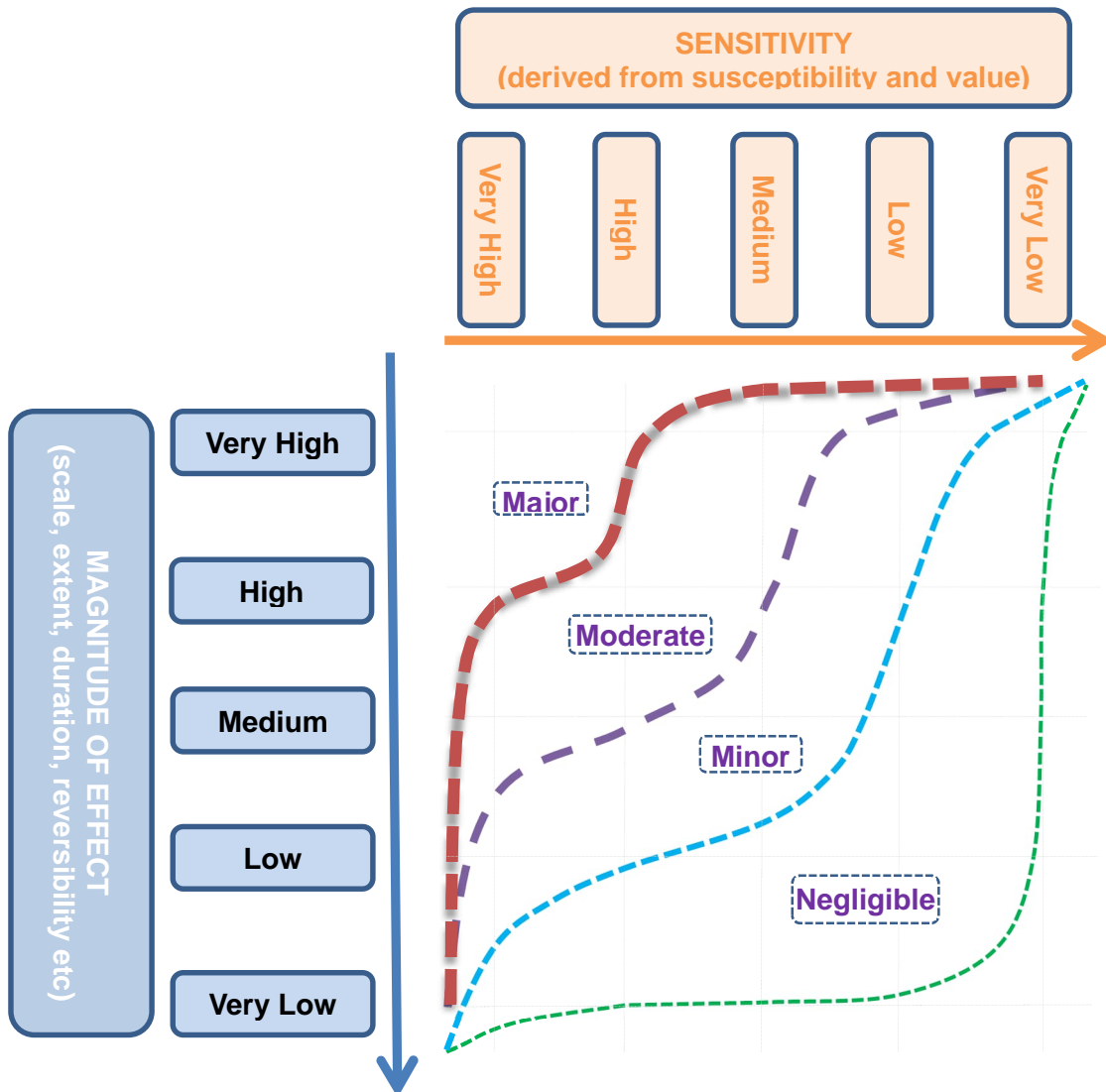
Significance of Effects

Determination of the significance of landscape and visual effects has been undertaken by employing professional judgement and experience to combine and analyse the magnitude of effect against the identified sensitivity of landscape and visual receptors.

The significance of landscape and visual effects are described with reference to the criteria presented in **Table 5 Significance of effect** below. For the purposes of this assessment, effects rated as being of **moderate or major** significance are considered to be significant.

Table 5 Significance of effect

Significance of Effect	Landscape	Visual
Major	Highly noticeable change affecting key characteristics of a very highly sensitive landscape, resulting in a fundamental change to its character.	Considerable change affecting a large extent of a very highly sensitive view and becoming a dominant feature.
Moderate	Noticeable change affecting some key characteristics in a highly sensitive landscape or very noticeable change in a medium sensitivity landscape, resulting in a change to the overall impression of its character.	Noticeable change affecting an important part of a highly sensitive view or a wider extent of a medium sensitivity view, becoming prominent or detracting from the existing focus.
Minor	Small change affecting few characteristics in a medium to highly sensitive landscape or noticeable change to a less sensitive landscape, resulting in a limited or localised change to the impression of its character.	Small change affecting a limited and/or unimportant part of a medium to highly sensitive view or an important part of a less sensitive view, unlikely to distract from the existing focus.
Negligible	Very little change from baseline conditions, resulting in a barely distinguishable or indistinguishable change.	Where there is no discernible improvement or deterioration in the existing view.
No change	No alteration to any of the components that contribute to the existing landscape resource.	No change to the existing view.



4. Photomontage Methodology

Introduction

This document details how the photomontages shown in **Volume 4: Visualisations** have been prepared. They have been produced using a combination of specific site photography and point cloud survey data.

Guidelines

The photomontages are based on guidance from the following publications:

- Visual Representation of Development Proposals Technical Guidance Note 06/19 [3];
- Photography and Photomontage in Landscape and Visual Impact Assessment Advice Note 01-11 [4]; and,
- Guidelines for Landscape & Visual Impact Assessment (Third Edition) [5].

Site Photography

Viewpoint photography was captured in June 2025. The procedure for taking photography is described below:

- Site visits are based upon the time of day and take the weather into consideration. The photos are best taken with the sun behind the camera. This means views facing west are best taken in the morning and views facing east in the afternoon;
- Photos are taken using a full-frame format (Nikon or Canon) with a fixed 50mm focal length lens mounted to a panoramic head on a steady tripod;
- The panoramic head is used to eliminate any parallax problems between near and distant objects in the scene. The sliding plates are set to the marks calculated to enable the camera and lens combination to rotate accurately around the nodal point (centre of panorama rotation);
- The camera is levelled in both pitch and roll referencing the bubble level on the panoramic head and the electronic 'virtual horizon' feature in the camera. A levelling base between tripod and panoramic head is used to fine adjust the camera level;
- Manual camera settings are used to ensure consistent exposure across all photos taken;
- Photos are taken using a remote shutter release to eliminate any camera shake; and
- The panoramic head is rotated to the next interval using the built-in step rotator and another photo is taken using the remote shutter release. This is repeated until a full 360° sweep of photos is taken.

Photo Stitching

When dealing with panoramic views the photos are loaded into list photo stitching software (PTGui Pro). The images are automatically corrected for lens distortion and stitched to create

3 Landscape Institute. (2019). Visual Representation of Development Proposals Technical Guidance Note 06/19 [Online] Available: <https://www.landscapeinstitute.org/visualisation/> (Accessed: 31/10/2024)

4 Landscape Institute. (2011). Photography and Photomontage in Landscape and Visual Impact Assessment Advice Note 01-11 [Online] Available: <https://www.landscapeinstitute.org/visualisation/photography-and-photomontage/> (Accessed: 31/10/2024)

5 Landscape Institute and IEMA. (2013). Guidelines for Landscape & Visual Impact Assessment (Third Edition). Routledge.

a full 360-degree image. Adjustments can be made to manually correct the blend between images where appropriate.

Camera Matching

A virtual camera is positioned in the 3D software (Autodesk 3ds Max) according to the same real-world position and height as per the GPS data. This camera is set-up with the stitched panorama photography. The stitched image loaded as the camera back plate.

The camera target is aligned to match existing elements visible in the photograph. For EGL4, Ordnance Survey Terrain 5 (2m) data and Scottish Public Sector LiDAR Phase 5 Point Cloud data is used to match features in the photography.

3D Modelling

The daylight settings in the scene are matched to the time and location of the original photography.

The CAD data provided by the design team is georeferenced checked relating to how the proposed model elements sit with the existing data. Once checked, a 3D computer model is developed using Autodesk 3ds Max. This includes model elements for the converter station block, detention basins, and underground cable route (which is not visible in any of the views) as well as accurate planting for year 1 and year 15 of operation to achieve a realistic representation of the proposals.

Post-Production

The virtual camera views are rendered and composited into the background photography using Adobe Photoshop. The images are adjusted to mask the correct parts of the render behind existing elements in the photography. Proposed mitigation is added to align with the landscape design drawings and planting information. A wireline version can also be produced to illustrate how the scheme is sited in the bare-earth terrain.

Planting Heights

At year 1 of operation, the proposed mitigation planting is assumed to be whips. The following heights have been used for the year 15 operational visualisations when the planting is assumed to have matured:

- Proposed or enhanced woodland: 10m
- Proposed or enhanced hedgerow: 3m
- Proposed or enhanced hedgerow with trees: 3m hedge with 9m trees

It should be noted that these year 15 planting heights have been estimated using median values for UK forestry general yield class data from the Forestry Commission and informed qualitatively by existing tree species on the Development Site.