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Glossary

Assessment (Landscape)	An umbrella term for description, classification and analysis of landscape.
Baseline	The landscape and visual character of the study area as it exists at the commencement of the assessment process – i.e. prior to the development proposal under consideration.
Countryside	The rural environment and its associated communities (including the coast).
Cumulative Effects	Effects arising from the additional changes to the landscape or visual character caused by a proposed development in conjunction with other developments (associated with it or separate to it).
Digital Terrain Model (DTM)	Computer generated three dimensional model based on aerial survey of ground surface (e.g. Ordnance Survey <i>Profile data</i>). Often utilised as a basis for visibility modeling over large areas.
Diversity	Where a variety of qualities or characteristics occur.
Effect	The result of an impact on a landscape or visual receptor.
Element	A component part of the landscape (e.g. roads, hedgerows, woods).
Field Pattern	The pattern of hedges and walls that define fields in farmed landscapes.
Key Characteristics	The elements of the landscape and/or their inter relationship which form the defining components of the landscape.
Impact	The change arising for a landscape or visual receptor as a result of some form of alteration to the baseline.
Land Cover:	Combination of land use and vegetation that covers the land surface.
Landform	The topography of land or seabed, the extent to which the elevation changes and resulting features .
Landscape	<p>Human perception of the land conditioned by knowledge and identity with a place (as defined in the <i>Guidelines for Landscape and Visual Impact Assessment</i> (GLVIA) (The Landscape Institute and the Institute of Environmental Management and Assessment (IEMA), 2002).</p> <p>An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors (as defined in the <i>European Landscape Convention</i> (Council of Europe, 2000).</p>

Landscape Character	The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place in different areas of the landscape.
Landscape Character Area	These are single unique areas which are the discrete geographical areas of a particular landscape type.
Landscape Character Type	A landscape type will have broadly similar patterns of geology, landform, soils, vegetation, land use, settlement and field pattern discernible in maps and field survey records.
Landscape Effect	The consequence of change in the elements, characteristics, qualities and overall character of the landscape as a result of any development. These effects can be positive, neutral or negative.
Landscape Feature	A prominent eye-catching element or landmark (e.g. church spire, wooded hilltop).
Landscape Impact	The change in the elements, characteristics, qualities and overall character of the landscape as a result of any development.
Landscape Quality (or Condition)	Based on judgments about the physical state of the landscape and about its intactness. Also relates to the state of repair of individual features and elements which make up character in any one place.
Landscape Resource	The combination of elements that contribute to landscape context, character and value.
Landscape Sensitivity	The sensitivity of a landscape is based on combining value and susceptibility of the resource to the change envisaged by a proposed development.
Landscape Susceptibility (to a specific type of change)	The extent to which a landscape can accept change of a particular type and scale and is assessed in relation to the following: existing land use; pattern and scale of the landscape and its elements/features; simplicity/complexity of the landscape; landscape quality or condition including presence of any detracting features; the nature of skylines; visual enclosure/openness of views and distribution of visual receptors; value placed on the landscape – which may be expressed through designation or other identifiable form of recognition; and scope of mitigation, which will be in character with the existing landscape.
Land Use	The primary use of land, including both rural and urban activities.
Landscape Value	The relative value or importance attached to a landscape (often as a basis for designation or recognition), which expresses commonly held national or

	local perception of its quality, special qualities and/or scenic beauty, tranquility or wildness and cultural associations.
Magnitude of Change	<p>The magnitude of change arising from a proposed development is described as high, moderate, low or negligible based on the interpretation of a combination of parameters, as follows:</p> <ul style="list-style-type: none"> • distance of the viewpoint from the development; • duration of the predicted impact; • extent of the development in the view (e.g. the horizontal angle subtended by it); • angle of view in relation to main receptor activity; • degree of contrast; • visual permeability of the development (i.e. extent to which views will be blocked or will be retained, albeit interrupted and altered); • background to the development; and • extent and nature of other built development visible.
Methodology	The specific approach and techniques used for a given study.
Mitigation Measures	Measures including any process, activity or design process to avoid, reduce, or remedy for negative landscape and visual impacts of a development. Mitigation can also apply to the improvement of existing negative effects associated with existing developments/features in the landscape.
Policy Woodlands	A diverse and multi-purpose woodland, historically associated with plantings around country houses.
Perception (of Landscape)	The psychology of seeing and possibly attaching value or meaning to the landscape.
Receptor	Physical landscape resource, special interest or individual or group experiencing the view liable to change as a result of the proposed development.
Receptor Location	Location occupied by identified receptors.
Residual Effects	Effect of development after mitigation proposals are taken into account.
Scoping	The process of identifying likely significant effects of a development on the environment – which may be carried out in a formal or informal way.

Significant Effect	An effect which is considered by the assessor to be “significant” in terms of the Environmental Impact Assessment Regulations (85/337/EEC) which require the identification of significant effects.
Visual Amenity	Particular composition of landscape elements that contribute to a view, or views. The value of a particular area or view in terms of what is seen (as defined in the Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment, December 2013)).
Visibility Analysis	The process of identifying theoretical (based on digital modelling) and/or actual predicted areas from where any given development may be seen.
Visual Effect	The consequence of change in the appearance of the landscape as a result of a development, which may be positive or negative.
Visual Impact	The change in the appearance of the landscape and nature of views which may be negative or positive.
Viewpoint Sensitivity	Based on combining value and susceptibility of the view or visual amenity to the change envisaged by a proposed development. Taking into account the following: location and context of the viewpoint; land use or main activity at the viewpoint; frequency and duration of use; seascape or landscape character and quality of the intervening seascape or landscape; and importance of the view (which may be determined with respect to its popularity or number of affected people, its appearance in guidebooks, on tourist maps and the facilities provided for its enjoyment and references to it in literature and/or art).
Zone of Theoretical Visibility	The area predicted to have views of a proposed development on the basis of a digital terrain model or digital surface model, which may/may not take account of land cover features.

Abbreviations and Acronyms

AGLV	Area of Great Landscape Value
CAT	Countryside Around Towns
EIA	Environmental Impact Assessment
ELC	East Lothian Council
ELLP	East Lothian Local Plan
GDL	Inventory Gardens and Designed Landscapes
GLVIA3	Guidelines for Landscape and Visual Impact Assessment, 3 rd Edition
HES	Historic Environment Scotland
ICOL	Inch Cape Offshore Limited
LCA	Landscape Character Area
LCT	Landscape Character Type
LDP	Local Development Plan
LVIA	Landscape and Visual Impact Assessment
MLWS	Mean Low Water Springs
OnTW	Onshore Transmission Works
OS	Ordnance Survey
PPP	Planning Permission in Principle
SDP	Strategic Development Plan
SESplan	The Strategic Development Planning Authority for Edinburgh and South East Scotland
SLA	Special Landscape Area
SNH	Scottish Natural Heritage
ZTV	Zone of Theoretical Visibility

8A Landscape and Visual Impact Assessment Methodology

1 This Appendix sets out the methodologies used to carry out the Landscape and Visual Impact Assessment (LVIA) of the OnTW and to prepare the figures which support the LVIA. The LVIA is contained Chapter 8 of this Environmental Impact Assessment (EIA) report and the supporting figures are contained in *Appendix 8B*.

8A.1 Introduction

2 LVIA is a tool used to identify the effects of development on *“landscape as an environmental resource in its own right and on people’s views and visual amenity”* Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment) 3rd Edition 2013, (GLVIA3) paragraph 1.1. GLVIA3 paragraph 2.22 states, these two elements, although inter-related, should be assessed separately.

3 As GLVIA3 paragraph 2.23 states, professional judgement is an important part of the LVIA process: whilst there is scope for objective measurement of landscape and visual changes, much of the assessment must rely on qualitative judgements. It is critical that these judgements are based upon a clear and transparent method so that the reasoning can be followed and examined by others.

4 Impacts can be defined as the action being taken, whereas effects are the changes result from that action.

5 Landscape and visual effects can be positive, negative or neutral in nature. Positive effects are those which enhance and/or reinforce the characteristics which are valued. Negative effects are those which remove and/or undermine the characteristics which are valued. Neutral effects are changes which are consistent with the characteristics of the landscape or view.

8A.2 Landscape Effects

6 Landscape, as defined in the European Landscape Convention, is *“an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”*, (Council of Europe, 2000). Landscape does not apply only to special or designated places, nor is it limited to countryside.

7 GLVIA3 recommends that the effects of the development on landscape receptors are assessed (paragraph 5.34). Landscape receptors are the components of the landscape that are likely to be affected by the scheme, and can include individual elements (such as hedges or woodland), aesthetic characteristics (for example tranquillity or openness), or, at a larger scale, the character of a defined landscape character area or landscape type.

8 Judging landscape effects requires a methodical assessment of the sensitivity of the landscape receptors to the proposed development and the magnitude of effect which would be experienced by each receptor.

8A.2.1 Landscape Sensitivity

- 9 Sensitivity of landscape receptors is assessed by combining the value attached to the landscape with the susceptibility of landscape receptors to the type of change which is proposed (GLVIA3, para 5.39).

Value attached to landscape receptors

- 10 GLVIA3 recommends that the value of the potentially affected landscape should be established as part of the baseline description. Landscape receptors may be valued at community, local, national or international level. Existing landscape designations provide the starting point for this assessment, as outlined below.
- 11 The following table sets out the interpretation of landscape designations in terms of the value attached to different landscape receptors. As GLVIA3 notes (paragraph 5.24) at the local scale of an LVIA study area, it may be found that the landscape value of a specific area may be different to that suggested by the formal designation.

Table 8A.1: Value attached to the Landscape Receptors

Designation	Description	Value
World Heritage Sites	Unique sites, features or areas identified as being of international importance according to UNESCO criteria. Consideration should be given to their settings especially where these contribute to the special qualities for which the landscape is valued.	International
National Parks, National Scenic Areas (NSAs)	Areas of landscape identified as being of national importance for their Natural Beauty (and in the case of National Parks the opportunities they offer for outdoor recreation).	National
Gardens and Designed Landscapes (GDL)	Gardens and designed landscapes included on the Register of Parks and Gardens of Special Historic Interest as Grade I or II.	National
Local Landscape Designations (e.g. Special Landscape Areas, Areas of Great Landscape Value) included in local planning documents	Areas of landscape identified as having importance at the local authority level.	Local Authority

- 12 Other areas of landscape, or individual elements, features or aesthetic aspects of the landscape contributing to its character, may not be formally designated but may nevertheless be valued. Scottish Natural Heritage (SNH) has published a suite of Landscape Character Assessments which cover Scotland. Some Local Planning Authorities also have Landscape Character Assessments relevant to their area which, in the absence of a separate strategy, may

be referred to in planning policies. Reference is also made where appropriate to the criteria in Table 8A.2 below. This is based on Box 5.1 in GLVIA3 which in turn is based on the Landscape Character Assessment Guidance of 2002. Landscapes may be judged to be of local authority or community value on the basis of one or more of these factors. There may also be occasional circumstances where a landscape may be judged to be of national value.

- 13 An overall assessment is made for each receptor, based on an overview of the above criteria, to determine its value: whether, for example, it is comparable to a local authority landscape designation (or similar) or whether it is of value to local people and communities. For example, an intact landscape in good condition, where scenic quality, tranquility, and or conservation interests make a particular contribution to the landscape, or where there are important cultural or historical associations, might be of equivalent value to a local landscape designation. Conversely, a degraded landscape in poor condition, with no particular scenic qualities or natural or cultural heritage interest is likely to be considered of limited landscape value.

Table 8A.2: Factors considered in assessing the value of non-designated Landscapes

Factor	Criteria
Landscape Quality or Condition	Intactness of the landscape demonstrated by, among others: presence of characteristic natural and man-made elements, which are generally in good condition; absence of significant incongruous elements (or having only localised or temporary effects).
Scenic Quality	General appeal of the landscape to the senses through, for example, combinations of some of the following: a clear and recognisable sense of place; striking landform or patterns of land cover; strong aesthetic qualities which appeal to the senses, such as scale, form, colour and texture, simplicity or diversity, presence of ephemeral or seasonal interest, or notable sensory stimuli such as sounds and smells, qualities of light, or weather patterns.
Rarity	Presence of landscape character areas, types or features that are relatively rare in the local area.
Representativeness	Presence of locally important examples of particular landscape character areas or types or particular characteristics/feature/element.
Conservation Interests	Presence of some of the following where they contribute positively to experience of the landscape: natural heritage features, including geological or geomorphological features, wildlife, and habitats, including those that are designated or notified as SSSIs and features such as veteran trees or trees covered by Tree Preservation Orders; cultural heritage features, including buildings, especially listed buildings, settlements including conservation areas, gardens, parkland and other designed landscapes not on the register, and historic landscape types which demonstrate the time depth of the landscape.
Recreation Value	The extent to which experience of the landscape makes an important contribution to recreational use and enjoyment of an area.

Factor	Criteria
Perceptual aspects	Opportunities to experience a sense of relative wildness and/or relative tranquillity in comparison with other local landscapes in the vicinity.
Associations	Evidence that the landscape is associated with locally important written descriptions of the landscape, or artistic representation of it in any media, or events in history, or notable people or important cultural traditions or beliefs.

Susceptibility of Landscape Receptors to Change

- 14 As set out in GLVIA3 susceptibility of the landscape means the ability of the landscape receptor to *"accommodate the proposed development without undue adverse consequences for the baseline situation and/or the achievement of landscape planning policies and strategies"*. Judgement of susceptibility is particular to the specific characteristics of the proposed development and the ability of a particular landscape or feature to accommodate the type of change proposed. Aspects of the character of the landscape that may be affected by a particular type of development include landform, skylines, land cover, enclosure, human influences including settlement pattern; and aesthetic and perceptual aspects such as the scale of the landscape, its form, line, texture, pattern and grain, complexity, and its sense of movement, remoteness, wildness or tranquility.
- 15 For example an urban landscape which contains a number of industrial buildings will have a low susceptibility to buildings of a similar scale and character. Conversely a rural landscape containing only remote farmsteads is likely to have a high susceptibility to large scale built development.

Table 8A.3: Landscape Receptor Susceptibility to Change

Susceptibility	Criteria
High	The landscape receptor is highly susceptible to the proposed development because the key characteristics of the landscape have no or very limited ability to accommodate it without undue adverse effects taking account of the existing character and quality of the landscape.
Medium	The landscape receptor is moderately susceptible to the proposed development because the relevant characteristics of the landscape have some ability to accommodate it without undue adverse effects, taking account of the existing character and quality of the landscape.
Low	The landscape receptor has low susceptibility to the proposed development because the relevant characteristics of the landscape are generally able to accommodate it without undue adverse effects, taking account of the existing character and quality of the landscape.

Defining Sensitivity

16 As has been noted above, the sensitivity of landscape receptors is defined in terms of the relationship between value and susceptibility to change. The diagram below summarises the nature of the relationship but it is not formulaic and only indicates general categories of sensitivity. Judgements are made about each landscape receptor with the diagram below only serving as a guide.

8A.2.2 Magnitude of Landscape Change

17 The magnitude of landscape change is defined by assessing the size or scale of change, the geographical extent of the area influenced and the duration and reversibility of the change.

Size and Scale of Change

18 The size and/or scale of change in the landscape takes into consideration the following factors:

- The extent/proportion of landscape elements lost or added, and/or
- The degree to which aesthetic/perceptual aspects are altered; and
- Whether this is likely to change the key characteristics of the landscape.

19 The criteria used to assess the size and scale of landscape change are based upon the amount of change that will occur as a result of the proposals, as described in the table below. These descriptions can be applied to both negative/adverse and positive/beneficial effects: Change which is inconsistent with key characteristics of the landscape and/or special qualities for which it is valued (designated or otherwise) would constitute negative/adverse effect and change which is consistent with or contributes towards key characteristics of the landscape and/or special qualities for which it is valued would constitute positive/beneficial.

Table 8A.4: Magnitude of Landscape Change: Size/Scale of Change

Category	Description
Major level of landscape change	The proposals will result in a large amount of change in landscape character and especially in the key characteristics. There will be major loss of or change to existing elements or aesthetic aspects of the landscape and or the introduction of major new and uncharacteristic elements or major change to aesthetic attributes.
Moderate level of landscape change	The proposals will result in a moderate level of change in landscape character. There will be moderate loss of or change to existing elements or aesthetic aspects of the landscape and/or the introduction of moderate new and uncharacteristic elements or moderate change to aesthetic attributes.
Minor level of landscape change	The proposals will result in only a minor level of change in landscape character. There will be minor loss of or change to existing elements or aesthetic aspects of the landscape and/or the introduction of minor new and uncharacteristic elements or minor change to aesthetic attributes.

Category	Description
No or negligible landscape change	The proposals will result in no, or a barely discernible level of change in landscape character with very little loss of or change to existing elements or aesthetic aspects of the landscape and/or negligible effects from the introduction of minor new and uncharacteristic elements.

Geographical extent

- 20 The geographical extent of landscape change is assessed by determining the area over which the changes will influence the landscape. For example this could be at the site level, in the immediate setting of the site, or over some or all of the landscape character types or areas affected.

Table 8A.5: Magnitude of Landscape Change: Geographical Extent

Category	Description
Large level of landscape change	The changes will extend over a large area and will influence landscape character at some distance from the site of the proposal and covering several landscape character types or areas.
Medium level of landscape change	The changes will extend over a moderate area and will influence landscape character at a medium distance from the site of the proposal, including the immediate setting of the site and the landscape character area within which it lies.
Small level of landscape change	The changes will extend over a small area and will influence landscape character only within the site itself or within the immediate vicinity of the site of the proposal.

Duration and Reversibility of Changes

- 21 The duration of the landscape change is categorised in the table below, which considers whether they will be permanent and irreversible or temporary and reversible.

Table 8A.6: Magnitude Landscape Change: Duration and Reversibility

Category	Description
Permanent/ Irreversible	Magnitude of change that will last for 25 years or more is deemed permanent or irreversible.
Long term reversible	Magnitude of change that is theoretically reversible but will endure for between 10 and 25 years.
Medium term reversible	Magnitude of change that is wholly or partially reversible and will last for up to ten years.

Category	Description
Short term reversible	Magnitude of change that is reversible and will last from 0 to 5 years - includes construction effects.

8A.2.3 Assessment of Landscape Effect and Significance

- 22 The assessment of landscape effects is defined in terms of the relationship between the sensitivity of the landscape receptors (value and susceptibility) and the magnitude of the change. The table below summarises the nature of the relationship but it is not formulaic.
- 23 Effects which are considered to be major and major/moderate effects by virtue of the more sensitive receptors and the greater magnitude of effects, are generally considered to be the SIGNIFICANT LANDSCAPE EFFECTS. Those effects falling outside the major, or major / moderate categories are generally considered to be NOT SIGNIFICANT.

Table 8A.7 Landscape Effects

Landscape Sensitivity	Magnitude of Change			
	Substantial	Moderate	Slight	Negligible
High	Major	Major/moderate	Moderate	Moderate/minor
Medium	Major/moderate	Moderate	Moderate/minor	Minor
Low	Moderate	Moderate/minor	Minor	Minor/negligible
Negligible	Moderate/minor	Minor	Minor/negligible	Negligible

8A.3 Visual Effects

- 24 Visual receptors are the people whose views may be affected by the proposals. They generally include users of public rights of way or other outdoor recreational facilities; travelers who may pass through the study area because they are visiting, living or working there; residents living in the study area, either as individuals or, more often, as a community; and people at their place of work.
- 25 Judging visual effects requires a methodical assessment of the sensitivity of the visual receptors to the proposed development and the magnitude of effect which would be experienced by each visual receptor.
- 26 Viewpoints are chosen, in discussion with the competent authority and other stakeholders and interested parties, for a variety of reasons but most commonly because they represent views experienced by relevant groups of people.

8A.3.1 Visual Sensitivity

Value Attached to Visual Receptors

- 27 Different levels of value are attached to the views experienced by particular groups of people at particular viewpoints. Assessment of value takes account of a number of factors, including:
- Recognition of the view through some form of planning designation or by its association with particular heritage assets;
 - The popularity of the viewpoint, in part denoted by its appearance in guidebooks, literature or art, or on tourist maps, by information from stakeholders and by the evidence of use including facilities provided for its enjoyment (seating, signage, parking places, etc.); and
 - Other evidence of the value attached to views by people.
- 28 The assessment of the value of views is summarised in the table below, in terms of high, medium and low value. These criteria are provided for guidance only and are not intended to be absolute.

Table 8A.8: Value Attached to Views

Value	Criteria
High	Views from nationally known viewpoints, which may have some form of planning designation, or may be associated with nationally designated landscapes or important heritage assets, or be promoted in national sources such as maps and tourist literature, or be linked with important and popular visitor attractions where the view forms a recognised part of the visitor/residential experience, or which have important cultural associations. Often associated with facilities provided to enjoy the view.
Medium	Views from viewpoints of some importance at regional or local levels, which may have some form of local planning designation, or be associated with locally designated landscapes or areas of equivalent landscape quality, or be promoted in local sources, or be linked with locally important and popular visitor attractions where the view forms a recognised part of the visitor/residential experience, or which have important local cultural associations. Sometimes provided with facilities provided to enjoy the view.
Low	Views from viewpoints which have no formal planning status, are not associated with designated or otherwise high quality landscapes, or with popular visitor attractions or have known cultural associations. Views do not form a recognised part of the visitor/residential experience. No facilities provided to enjoy the view.

Susceptibility of Visual Receptors to Change

- 29 The susceptibility of different types of people to changes in views is mainly a function of:
- The occupation or activity of the viewer at a given viewpoint; and
 - The extent to which the viewer's attention or interest may therefore be focussed on a particular view and the visual amenity experienced at a given view.

30 This follows the general guidance in GLVIA3 and assesses the susceptibility of different groups of viewers as in the Table below. However, as noted in GLVIA3 *"this division is not black and white and in reality there will be a gradation in susceptibility to change"*. The susceptibility of each group of people affected is therefore considered on merit in each project and assessments are included in the relevant text and tables in the report.

Table 8A.9: Visual Receptor Susceptibility to Change

Susceptibility	Type of Receptor
High	<ul style="list-style-type: none"> • Residents; • People engaged in outdoor recreation where their attention is likely to be focused on the landscape and on particular views; • Visitors to heritage assets or other attractions where views of the surroundings are an important part of the experience; • Communities where views contribute to the landscape setting enjoyed by residents; and • Travellers on scenic routes where the attention of drivers and passengers is likely to be focused on the landscape and on particular views.
Medium	<ul style="list-style-type: none"> • Travellers on road, rail or other transport routes, where attention is generally less likely to be focused on views and visual amenity.
Low	<ul style="list-style-type: none"> • People engaged in outdoor sport or recreation, which does not involve appreciation of views; • People at their place of work, where the setting is not important to the quality of working life; and • Travellers, where the view is incidental to the journey.

Sensitivity

31 The sensitivity of visual receptors is defined in terms of the relationship between the value of views and the susceptibility of the different viewers to the proposed change.

8A.3.2 Magnitude of Visual Change

32 The magnitude of visual change is defined by assessing the size or scale of change, the geographical extent of the area influenced and the duration and reversibility of the change.

Size and Scale of Change

33 The criteria used to assess the size and scale of visual change are as follows:

- The scale of the change in the view with respect to the loss or addition of features in the view, changes in its composition, including the proportion of the view occupied by the proposed development and distance of view;

- The degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of factors such as form, scale and mass, line, height, colour and texture;
- The nature of the view of the proposed development, for example whether views will be full, partial or glimpses or sequential views while passing through the landscape.

34 The above criteria are summarised in the table below.

Table 8A.10: Visual Magnitude of Change: Size/Scale of Change

Category	Criteria
Major visual change	The proposals will cause a complete or very substantial change in the view, resulting from the loss of important features in or the addition of significant new ones, to the extent that this will substantially alter the composition of the view and the visual amenity it offers. Views often full or sequential.
Moderate visual change	The proposals will cause a clearly noticeable change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will alter to a moderate degree the composition of the view and the visual amenity it offers. Views may be partial/intermittent.
Slight visual change	The proposals will cause a perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will partially alter the composition of the view and the visual amenity it offers. Views may be partial only.
Negligible visual change	The proposals will cause a barely perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will barely alter the composition of the view and the visual amenity it offers. Views may be glimpsed only.
No change	The proposals will cause no change to the view.

Geographical extent

35 The geographical extent of the visual change identified at representative viewpoints is assessed by reference to a combination of the Zone of Theoretical Visibility (ZTV) and field work. The following factors are considered:

- The angle of view in relation to the main activity of the receptor;
- The distance of the viewpoint from the proposed development; and
- The extent of the area over which changes would be visible.

36 Thus, low levels of change identified at representative viewpoints may be extensive in terms of the geographical area they are apparent from. Similarly, a view from a public footpath may be visible from a single isolated viewpoint, or over a prolonged stretch of the route. Community views may be experienced from a small number of dwellings, or affect numerous residential properties.

Table 8A.11: Visual Magnitude of Change: Geographical Extent

Category	Criteria
Major visual change	The proposals will cause a complete or very substantial change in the view, resulting from the loss of important features in or the addition of significant new ones, to the extent that this will substantially alter the composition of the view and the visual amenity it offers. Views often full or sequential.
Moderate visual change	The proposals will cause a clearly noticeable change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will alter to a moderate degree the composition of the view and the visual amenity it offers. Views may be partial/intermittent.
Slight visual change	The proposals will cause a perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will partially alter the composition of the view and the visual amenity it offers. Views may be partial only.
Negligible visual change	The proposals will cause a barely perceptible change in the view, resulting from the loss of features or the addition of new ones, to the extent that this will barely alter the composition of the view and the visual amenity it offers. Views may be glimpsed only.
No change	The proposals will cause no change to the view.

Duration and Reversibility of Change

37 The duration of the visual change at representative viewpoints is categorised in the table below, which considers whether views will be permanent and irreversible or temporary and reversible.

Table 8A.12: Visual Magnitude of Change: Duration and Reversibility

Category	Criteria
Permanent/ Irreversible	Landscape change that will last for over 25 years and are deemed irreversible.
Long term reversible	Change that will endure for between 10 and 25 years and are potentially, or theoretically reversible.
Medium term reversible	Change that will last for up to ten years and are wholly or partially reversible.
Short term reversible	Change that will last from 0 to 5 years and are reversible- includes construction effects.

8A.3.3 Assessment of Visual Effect and Significance

38 The assessment of visual effects is defined in terms of the relationship between the sensitivity of the visual receptors (value and susceptibility) and the magnitude of the change. The table below summarises the nature of the relationship but it is not formulaic.

39 Effects which are considered to be major and major/moderate effects by virtue of the more sensitive receptors and the greater magnitude of change, are generally considered to be the SIGNIFICANT VISUAL EFFECTS. Those effects falling outside the area of major, or major / moderate significance are considered to be NOT SIGNIFICANT.

Table 8A.13 Visual Effects

Visual Sensitivity	Magnitude of Change			
	Substantial	Moderate	Slight	Negligible
High	Major	Major/moderate	Moderate	Moderate/minor
Medium	Major/moderate	Moderate	Moderate/minor	Minor
Low	Moderate	Moderate/minor	Minor	Minor/negligible
Negligible	Moderate/minor	Minor	Minor/negligible	Negligible

8A.4 Production of Supporting Figures

40 This section of the Appendix describes the methods used to prepare Zone of Theoretical Visibility (ZTV) Maps and Visualisations (also known as photomontages).

41 ZTVs and Photomontages for the project have been prepared in accordance with the accepted methodologies included in the following guidance documents:

- Landscape Institute Guidance Note 02/17: Visual representation of development proposals issued March 2017 (LI 02/17); and
- Scottish Natural Heritage (SNH): Visual Representation of Wind Farms, Version 2.2 issued February 2017 (SNH 2017).

8A.4.1 ZTV Methodology

42 A ZTV - sometimes known as a Zone of Visual Influence (ZVI) - is used to identify the theoretical visibility of a structure/s. It is a computer generated analysis which evaluates visibility using the height and extent of a proposed development against a digital terrain model (DTM).

43 SLR use ESRI ArcGIS 10.2.2 software to produce ZTVs as it is a package specifically designed to accurately model the characteristics of structures.

- 44 The coordinates and dimensions of the proposed structures of the OnTW were modelled within the software. The ZTV was then processed using OS Terrain 5 height data as a terrain base. Observer height was set to two metres above ground level and both the Earth's curvature (radius = 6,370 km) and atmospheric refraction (refraction coefficient = 0.075) were taken into account.
- 45 Data used to generate ZTVs:
- Ordnance Survey (OS) Terrain 5 DTM; and
 - Structures co-ordinates and dimensions.
- 46 The ZTV analysis does not take into account the screening effects of vegetation, buildings or other surface features.
- 47 Two ZTV maps are included in the supporting Figures contained in Appendix 8B: one with coloured areas of potential visibility shown over OS mapping, the second with potential visibility shown over aerial photography.

8A.4.2 Field Photography

- 48 At each viewpoint location a series of high resolution photographs was taken by a professional photographer, experienced in viewpoint photography, and using a digital Single Lens Reflex (SLR) camera with a full frame sensor. A 50mm fixed focal length lens was used to reduce inaccuracies and enable verification.
- 49 At each viewpoint location, the camera was mounted on a levelled tripod with a calibrated panoramic head which was typically set to between 1.5 m and 1.6 m (accommodating adjustments made to allow for uneven ground). Single frame photographs were then taken every 20 degrees to form a complete 360 degree view from the viewpoint. Photography was taken in landscape format. Each single frame photograph has a horizontal field of view of approximately 39.6 degrees. Taking photographs every 20 degrees provides sufficient overlap between the frames to achieve an accurately stitched panorama. When appropriate, two to three sets of 360 degree sweeps were taken in differing lighting conditions to ensure the photographs have the best possible clarity.
- 50 The location of the tripod was recorded via a hand held GPS device and a photograph of the tripod in situ was taken. If necessary, this allows a viewpoint to be revisited at a later date with the required level of accuracy.

8A.4.3 Post Photographic Processing

- 51 Upon receipt of the photographs by the SLR visualisation team, photograph metadata was checked to ensure that they were taken correctly and that they comply with accepted best practice.
- 52 Each set of viewpoint photographs was reviewed and the best representative 360 degree sweep selected for stitching as a panorama. Individual frames were then manually aligned and the stitching software used to create a 360 degree cylindrically projected panorama. The

stitching was completed using PT Gui Pro 10.0.15 which is an industry recognised photo stitching software package.

53 The stitched panoramas were reviewed for any anomalies generated in the stitching process and reworked where necessary. The suitability of lighting and clarity of view were then checked; any minimal enhancement to the exposure/sharpness of the panoramas was carried out to achieve the clearest possible view of the proposed development.

54 The panoramas are resized to the correct dimensions as described by SNH 2017 guidance.

8A.4.4 3D Model

55 A three dimensional model of the proposed development was created in the industry recognised software package Autodesk 3D Studio Max 2016. The model is based on the following data:

- Ordnance Survey DTM (OS Terrain 5) for generating the landform;
- 3D models of the various different substation components, positioned using information received from ICOL's design engineer; and
- Embedded landscape mitigation proposals, comprising earth mounding and associated planting, as shown in *Appendix 8b: Figures on Figures 8.6a and 8.6b*.

56 Virtual cameras, using the correct horizontal field of view for the stitched panoramas, were positioned within the 3D model at each viewpoint location using the GPS coordinates supplied by the photographers. Lighting of the 3D model view was set by the software using the date, time and weather conditions applicable to the photography.

57 The view from the camera location is generated using a software plugin for 3D Studio Max called Vray 3.0. This package allows a computer generated wireline to be aligned with the corresponding panorama using the visible landform and grid references of objects/features within the view. Once a suitably accurate match between the wireline and panorama is achieved, the wireline is rendered with the material finishes of the proposed development elements and an image generated.

8A.4.5 Visualisations

58 The panoramas for each viewpoint were processed using Adobe Photoshop CC 2017 with any existing infrastructure due to be demolished as part of the demolition works at the former Cockenzie Power Station digitally removed from the view.

59 The modified panorama and the rendered image generated in Vray were imported as two separate layers in a Photoshop file. The panorama layer was duplicated and placed on top to be used for displaying the foreground of the view. The layer showing the foreground is masked so that it only contains what would be visible in front of the proposed structure/s.

60 Final adjustments were made to the lighting of the project elements to match the appearance of existing elements retained within the view. Final adjustments to any proposed planting was then also carried out.

8A.4.6 Figure Production

61 Presentation of the visualisations as a figure begins by cropping the photomontages to 53.5 degrees, as per SNH 2017 guidelines. The photomontages were then placed into the visualisation template provided by ICOL in Adobe InDesign CC 2017.

62 The associated viewpoint information such as viewing instructions, viewpoint and figure numbers, OS grid reference, altitude, fields of view, bearing to centre of view, principal distance and camera information were then added to the template.

63 A thumbnail viewpoint location plan was created and is included at the front of each set of viewpoint visualisations to assist the viewer with orientation.

64 The visualisations are presented in *Chapter 8: Appendix 8B: LVIA Figures*.