Technical Appendices 6.1 – 6.4: Landscape and Visual Impact Assessment

Kirknewton Solar & BESS EIA Report

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Technical Appendix 6.1 – Policy and Guidance

Legislation

- Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations, 2017 ('EIA Regulations')[1]

Planning Policy and Guidance

National Planning Framework 4, (NPF4), updated Oct 2024[2]

NPF4 recognises the distinctive landscapes across the regions of Scotland and respective areas of high landscape quality. Its overarching policies seek to protect the integrity of key landscapes and landscape features from significant adverse effects. There is also general support for proposals to enhance, expand and improve woodland and tree cover.

- Policy 1: Tackling the Climate and Nature Crises

  This policy is to encourage, promote and facilitate development that addresses the global climate emergency and nature crisis

- Policy 3: Biodiversity

  This policy is to ensure that development proposals protect biodiversity, reverse biodiversity loss, deliver positive effects, and strengthen nature networks.

- Policy 4: Natural Places

  This policy seeks to ensure that new development protects, restores and enhances natural assets making best use of nature-based solutions.

- Policy 11: Energy

  This policy is to encourage, promote and facilitate all forms of renewable energy development. This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisation and storage (CCUS).

Local Development Plan (LDP), West Lothian Council (WLC), 2018[3]

The Local Development Plan 2018 sets out the Council's vision for the area to guide development. Relevant landscape-related policies from the LDP are listed below:

- ENV 1: Character and Special Landscape Areas
- ENV 4: Loss of Prime Agricultural Land
- ENV 7: Countryside Belts and Settlement Setting
- ENV 8: Green Network

[1] ScotGov, Environmental Assessment: https://www.gov.scot/policies/environmental-assessment/environmental-impact-assessment-eia/

[2] ScotGov, NPPF4: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/02/national-planning-framework-4/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4.pdf

[3] WLC, LDP: https://www.westlothian.gov.uk/LDP

- ENV 9: Woodland, Forestry, Trees, and Hedgerows
- ENV 13: Pentland Hills Regional Park.

Statutory Guidance

- Development in the Countryside Supplementary Guidance (2019)[4]; and
- Supplementary Guidance: Renewables and Low Carbon Energy Development (Excluding Wind Energy) (2021)[5].

Non-Statutory Guidance

- Planning Guidance: Controlling Obtrusive Lighting (2021)[6];
- Planning Guidance: Planning for Nature – Development Management and Wildlife (2020)[7]: and
- Planning Guidance: Soil Management & After Use of Soils on Development Sites (2021)[8].

Other Policy and Guidance

- *Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3)*; Institute of Environmental Management and Appraisal and the Landscape Institute, 2013;
- *Landscape Character Assessment: Guidance for England and Scotland*; Prepared on behalf of the Countryside Agency and NatureScot, Land Use Consultants, 2002;
- *Landscape Sensitivity Assessment Guidance*; NatureScot, 2022;
- *Visual Representation of Development Proposals*; Landscape Institute Technical Guidance Note 06/2019 (2019)*;*
- *Assessing Landscape Value Outside National Designations*: Landscape Institute Technical Guidance Note 02/21;
- *Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment (GLVIA3)*: Landscape Institute Technical Guidance Note (LITGN-2024-01); and
- BS 5834:2012 Trees in Relation to Design, Demolition and Construction.

[4] WLC, SG: https://www.westlothian.gov.uk/media/18715/SG-Supplementary-Guidance-Development-in-the-Countryside-Adopted-March-2019/pdf/SG_Development_in_the_countryside--FINAL.pdf

[5] WLC, SG: https://www.westlothian.gov.uk/media/49607/SG-Supplementary-Guidance-Renewables-and-Low-Carbon-Energy-Development-Excluding-Wind-Energy-Adopted-July-2021/pdf/SG_-_Renewables_and_Low_Carbon_Energy_Excluding_Wind_Development_-_Adopted_15_July_2021.pdf

[6] WLC, PG: https://www.westlothian.gov.uk/media/39794/PG-Planning-Guidance-Controlling-Obtrusive-Lighting-Adopted-March-2020/pdf/PG_-_Controlling_Obtrusive_Lighting_-_Adopted_March_2020.pdf

[7] WLC, PG: https://www.westlothian.gov.uk/media/43377/PG-Planning-Guidance-Planning-for-Nature-Development-Management-and-Wildlife-Adopted-April-2020/pdf/PG_-_Planning_for_Nature_-Development_Management_and_Wildlife_-_Adopted_Version_-Pdf_Version_-_Fixed.pdf

[8] https://www.westlothian.gov.uk/media/48547/PG-Planning-Guidance-Soil-Management-After-Use-of-Soils-on-Development-Sites-Adopted-April-2021/pdf/PG_-_Soil_Management___After_Use_of_Soils_on_Development_Sites_-__Adopted_Version_for_Web.pdf

Technical Appendix 6.2 – Full LVIA methodology

Landscape Effects

The starting point for the assessment of landscape effects is a desk-based review of published landscape assessments.

The sensitivity of the landscape to change resulting from a Proposed Development is not absolute and varies according to the existing landscape, the nature of the Proposed Development and the type of change being proposed. Good practice guidance differentiates between baseline sensitivity of the landscape and the sensitivity of a landscape to a specific development proposal. Accordingly, the concept of 'sensitivity to change' to new development, as described within the baseline published landscape character assessments, is distinct from the consideration of landscape sensitivity to the specific development proposal.

The baseline for consideration of landscape effects is the established landscape character. The landscape effects of a Proposed Development are considered against the key characteristics of the receiving landscape. The degree to which the Proposed Development may change '*the distinct and recognisable pattern that makes one landscape different from another, rather than better or worse*' (Countryside Agency and NatureScot, 2002), enables a judgement to be made as to the significance of the effect in landscape character terms. This involves consideration of where the Proposed Development may give rise to a different landscape character type or sub-type.

In general terms, a distinctive landscape of acknowledged value (e.g. covered by a designation) and in good condition is likely to be more sensitive to change than a landscape in poor condition and with no designations or acknowledged value. General guidance on the evaluation of sensitivity is provided below; however, the actual sensitivity would depend on the attributes of the landscape receiving the proposals and the nature of those proposals.

In order to reach an understanding of the effects of development upon the landscape it is necessary to consider different aspects of the landscape as follows:

- **Landscape Fabric / Elements**: The individual features of the landscape, such as hills, valleys, woods, hedges, tree cover, vegetation, buildings and roads for example which can usually be described and quantified;
- **Landscape Quality**: The state of repair or condition of elements of a particular landscape, its integrity and intactness and the extent to which its distinctive character is apparent;
- **Landscape Value**: The importance attached to a landscape, often used as a basis for designation or recognition which expresses national or regional consensus, because of its special qualities/attributes including aesthetic or perceptual aspects such as scenic beauty, tranquillity or wildness, cultural associations or nature conservation interest; and
- **Landscape Key Characteristics**: The particularly notable elements or combinations of elements which makes a particular contribution to defining or describing the character of an area, which may include experiential characteristics such as wildness and tranquillity.

The sensitivity of the landscape to a particular development considers the susceptibility of the landscape and its value. The overall sensitivity is described as High, Medium, or Low. This is assessed by taking into account the existing landscape quality and landscape value, with the landscape capacity or susceptibility to change, which often vary depending on the

type of development proposed and the particular site location, such that sensitivity needs to be considered on a case-by-case basis. This should not be confused with 'inherent sensitivity' where areas of the landscape may be referred to as inherently of 'high' or 'low' sensitivity.

For example, a National Park may be described as inherently of high sensitivity on account of its designation, but it may prove to be less sensitive to particular development and/or the design of that development.

Alternatively, an undesignated landscape may be of high sensitivity to a particular development and/or the design of that development regardless of the lack of local or national designation.

Landscape susceptibility according to GLVIA3 means "*the ability of the landscape to accommodate the Proposed Development without undue consequences for maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies*". Judgements on landscape susceptibility include references to both the physical and aesthetic characteristics and the potential scope for mitigation that would be in character with the landscape.

These relationships can be complex and value alone does not automatically or by definition have high susceptibility to all types of change. Examples of the evaluation of landscape sensitivity are provided in **Table A6.2.1**:

Table A6.2.1 – Landscape Sensitivity Criteria

Sensitivity	Description
High	Landscape character, characteristics and elements which would generally be of lower landscape capacity or scope for landscape change, and of notable landscape value and quality. These are landscapes that may be considered to be of particular importance to conserve and which may be particularly sensitive to change if inappropriately dealt with.
Medium	Landscape character, characteristics and elements where there would be a moderate landscape capacity or some scope for landscape change. Often include landscapes of moderate landscape value and quality which may be locally designated.
Low	Landscape Character, characteristics and elements where there would be higher landscape capacity or scope for landscape change to accommodate the proposed type of development. Usually applies to landscapes with of lesser landscape susceptibility or higher landscape capacity for the Proposed Development.

The level of landscape effects is not absolute and can only be defined in relation to each development and its location. It is for each assessment to determine the assessment criteria and thresholds using well informed and reasoned judgements.

The magnitude of landscape change arising from the Proposed Development at any particular location is described as Substantial, Moderate, Slight or Negligible based on the interpretation of a combination of largely quantifiable parameters, as follows:

- degree of loss or alteration to key landscape features/elements or characteristics;
- distance from the development;
- duration of effect;
- landscape backdrop to the development; and

- landscape context of other built development, particularly vertical elements.

In order to differentiate between different levels of magnitude the following definitions are provided:

Table A6.2.2 – Landscape Magnitude of Change Criteria

Magnitude	Description
Substantial	Total loss or extensive alteration to key landscape elements/features/ characteristics of the baseline, or introduction of uncharacteristic elements which would give rise to a fresh characterising effect.
Moderate	Partial loss or alteration to one or more key landscape elements/features/ characteristics of the baseline and/or introduction of elements that may be prominent, but not necessarily substantially uncharacteristic with the attributes of the receiving landscape (which could co-characterise parts of the landscape).
Slight	Minor loss or alteration to one or more key landscape elements/features/ characteristics of the baseline and/or introduction of elements that may not be uncharacteristic with the surrounding landscape or may not lead to a characterising or co-characterising effect.
Negligible	Very minor loss or alteration to one or more key landscape elements/features/ characteristics of the baseline and/or the introduction of elements that are not uncharacteristic of the surrounding landscape. Change would be barely distinguishable approximating to no change.

Having established where the observation of varying levels of change to the landscape baseline may occur, the geographical extent of the change can be identified and a judgement made as to the level of effect in landscape character terms at varying scales.

The importance of the effect on the landscape resource may be determined by correlating the magnitude of the landscape change (Substantial, Moderate, Slight, or Negligible) with the sensitivity of the landscape resource (High, Medium, or Low).

Visual Effects

The sensitivity of potential visual receptors is based on a combination of their susceptibility to the Proposed Development and the value of the views experienced. The susceptibility of potential visual receptors varies depending on the activity of the receptor.

Local residents living with potential views are regarded as the highest susceptibility group, as well as those engaged in outdoor activities for whom landscape experience is the primary objective.

The value varies depending on the location and context of the view and its importance. Visual receptor sensitivity is defined as High, Medium, or Low in accordance with the following criteria:

Table A Error! No text of specified style in document.**.2.3 – Visual Sensitivity Criteria**

Sensitivity	Description
High	Residents within the curtilage of their homes; users of outdoor recreational facilities including footpaths, cycle ways and recreational road users; people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas.

Sensitivity	Description
Medium	Road users and travellers on trains experiencing views from transport routes. People engaged in outdoor sport other than appreciation of the landscape, e.g. nature conservation, golf and water-based recreation.
Low	Workers, users of facilities and commercial buildings (indoors) experiencing views from buildings.
Negligible	People with very low susceptibility to visual change due to the very low quality / value of existing views.

The magnitude of change arising from the Proposed Development at any particular location is described as Substantial, Moderate, Slight or Negligible based on the interpretation of a combination of largely quantifiable parameters, as follows:

- distance of the viewpoint/receptor from the development;
- duration of effect;
- extent of the development in the view;
- angle of view in relation to main receptor activity;
- proportion of the field of view occupied by the development;
- background to the development; and
- extent of other built development visible, particularly vertical elements.

It is assumed that the change would be seen in clear visibility and the assessment is carried out on that basis. Where appropriate, comment may be made on lighting and weather conditions. In order to differentiate between levels of magnitude the following definitions are provided in **Table A6.2.4**:

Table A Error! No text of specified style in document.**.2.4 – Visual Magnitude of Change Criteria**

Magnitude	Description
Substantial	Where the proposals would have a defining influence on the view. Change very prominent leading to substantial obstruction or complete change in character and composition of the baseline existing view.
Moderate	Where the proposals would be clearly noticeable and an important new element in the view. It may involve partial obstruction of existing view or partial change in character and composition of the baseline existing view.
Slight	The proposals would be partially visible or visible at sufficient distance to be perceptible and result in limited or minor changes to the view. The character and composition, although altered will be similar to the baseline existing situation.
Negligible	Change would be barely perceptible. The composition and character of the view would be substantially unaltered, approximating to little or no change.

The threshold for different levels of visual effects relies to a great extent on professional judgement. Criteria and local circumstances require close study and careful judgement.

Beneficial effects upon receptors may result from a change to a view by the removal of eyesores or through the addition of well-designed elements which add to the sense of place in a beneficial manner.

Assessment of Significance

The significance of effect is a product of the sensitivity of the landscape or visual receptor and the magnitude of the impact. **Table** sets out how the significance of effects has been ascribed in this technical assessment.

Table A6.2.5 – Significance Matrix

		Magnitude of change				
		Substantial	**Moderate**	**Slight**	**Negligible**	**No Change**
Receptor Sensitivity	**High**	Major	Major/Moderate	Moderate	Minor	Neutral
	Medium	Major/Moderate	Moderate	Moderate/Minor	Minor/Negligible	Neutral
	Low	Moderate	Moderate/Minor	Minor	Negligible	Neutral

Level of Effect

As per this matrix, the level of any identified landscape or visual effect has been assessed in terms of Major, Moderate, Slight, and Negligible.

Intermediate correlations are also possible and depend upon professional judgement, e.g. Major/Moderate. These categories are based on the juxtaposition of viewer or landscape sensitivity with the predicted magnitude of change. No change to physical landscape or visual amenity returns a neutral effect.

This matrix should not be used as a prescriptive tool, but rather allow for the exercise of professional judgement, as established by GLVIA3. The logical set out of assessment aims to maximise its transparency and ensure that conclusions are readily traceable.

For the purposes of this assessment, effects judged to be Major or Major/Moderate are considered to be 'significant' per the EIA guidelines. Where Moderate effects are predicted, professional judgement is applied to ensure that the potential for significant effects arising has been thoroughly considered.

Type of Effect

Landscape and visual effects are described with reference to type (direct, indirect, secondary or cumulative), timeframe (short, medium, long term, permanent, and temporary) and whether they are beneficial or adverse (beneficial or adverse). The various types of effect are described as follows:

Temporary / Residual Effects

If a proposal would result in an alteration to an environment whose attributes can be quickly recovered, then judgements concerning the significance of effects should be tempered in that light. Commercial development applications typically include permanent, long-term elements as well as minor alternations to landform resulting in residual landscape and visual effects.

Direct / Indirect

Direct and indirect landscape and visual effects are defined in Guidelines for Landscape and Visual Impact Assessment (GLVIA3). Direct effects may be defined "*result directly from the development itself*" (para 3.22). An indirect (or secondary) effect is one that results "*from consequential change resulting from the development*" (para 3.22) and is often produced away from the site of the Proposed Development or as a result of a complex pathway or

secondary association. The direct or physical landscape effects of the Proposed Development would generally be limited to an area around the development itself. Any indirect landscape effects are concerned with the view of the changes from outside the local landscape.

Beneficial / Adverse

Landscape and visual effects can be beneficial or adverse and, in some instances, may be considered neutral. Beneficial effects upon landscape receptors may result from changes to the landscape involving enhancement measures, or through the addition of well-designed elements, which add to the landscape experience or sense of place in a complementary manner.

The landscape impacts of the Proposed Development have been considered against the landscape baseline, taking account of the landscape characteristics. Taking a precautionary approach, changes to rural landscapes involving construction of man-made objects of a large scale are generally considered to be adverse, as they are not usually actively promoted as part of a district wide landscape strategy and therefore in the assessment of landscape effects, they are assumed to be adverse, unless specified otherwise in the text.

It is important to recognise that for the same development, some may consider the visual effects as adverse, whilst others may consider it beneficial. This depends to some extent on the viewer's predisposition towards landscape change, but also the principle of commercial building features / development in the landscape.

Taking a precautionary approach in making an assessment of the 'worst case scenario', the assessment considers that all effects on views which would result from the construction and operation of the Proposed Development to be adverse, unless specified otherwise in the text.

Mitigation and Enhancement

Mitigation refers to the measures taken to minimise or eliminate the negative impacts of a proposed project or activity on the environment. These measures aim to reduce or offset the severity, duration, or extent of the adverse impacts during the construction and operational phases of the proposal.

Site Location

The initial Site selection provides for an appropriately open location, set back from concentrations of sensitive residential receptors and active travel routes.

Areas of existing plantation and deciduous woodland, along with shelterbelts and field boundary trees, break up the solar farm into smaller compartments and provide visual separation and screening.

Design

The array development is designed and aligned per operational function for solar exposure. This layout allows for minimal disturbance by internal access tracks, while also being sympathetic to undesignated paths which run through The Site and are important locally. The iterative design process of assessment and reporting also allows for appropriate set-back from sensitive heritage, residential, and ecological features.

Given the agricultural nature of the development site location and the footprint of Proposed Development, further "shelterbelt" and field boundary tree planting in the western parcel of The Site is to be accommodated to lessen direct impact of views of array infrastructure from receptors to the west.

Such boundary treatment would be suitable within the wider landscape framework of field and woodland patterns. By optimising the existing field pattern for the array, the scale and pattern of development is suited to the scale and character of the receiving landscape.

Within the eastern parcel, the BESS compound has been located in the southwest corner allowing for backdropping against existing woodland. Additional tree planting along the northern boundary is proposed to further assist visual screening of the Substation and DNO Switchroom which are the tallest elements of the Proposed Development.

Enhancing the line of field boundary trees along this northern site edge between Overton Wood and the belt of woodland at Leyden Rd with infill tree planting would provide longevity to this landscape feature and create additional visual buffering between development and receptors to the north.

The solar array has been located at increased setback distance from properties at Newlands. Additional woodland buffer planting is proposed in the southeastern corner of this parcel to allow considered visual screening of the array structures from these adjacent residential properties.

By reducing more intensive agricultural grazing regimes within The Site and allowing for a grassland management strategy that favours a species-rich meadow establishment between rows of the array, biodiversity can be enhanced which is of betterment to The Site and wider landscape.

In summary, the Proposed Development has been designed to achieve the following landscape objectives:

- Buildings, structures, and palisade fencing would be finished in a recessive colour (RAL 6003 Olive Green, or similar approved) to assist with blending into the natural landscape.
- Design around wetland / flood zones to prevent disturbance of natural drainage systems.
- Keep informal local path routes open.
- Set back infrastructure from neighbouring properties and provide suitable visual screening, while infilling gaps in existing woodland to increase visual screening and improve nature connectivity.

Landscape Enhancement

Enhancement refers to measures taken to maximise the positive impacts of a proposed project or activity on the environment. These measures aim to amplify the beneficial effects or potential benefits of the project. Impact enhancement can involve the incorporation of environmental restoration or creation of habitats, promotion of biodiversity, or other actions to enhance the positive outcomes.

In terms of the Proposed Development, this includes:

- Suitable species-rich wildflower meadow is proposed within the array and BESS site. This would boost species diversity within The Site and be of benefit to the wider area. Ground preparation and sowing would be undertaken at the first available season and would establish thereafter through appropriate maintenance and reduced livestock grazing.
- Reduced intensive grazing and a suitable ‘hay meadow’ maintenance / management regime between array rows would be of benefit to ground-nesting birds, invertebrate species (including pollinators), and provide foraging areas and cover to further avian, mammalian, and reptilian species.*

*RSPB and University of Cambridge study shows how management of solar farms for nature can boost bird numbers and biodiversity[9].

With reference to **Appendix 6.4**: Landscape Mitigation Plan, the proposed planting measures would encompass peripheral parts of the Site to provide visual integration / softening of infrastructure elements within the countryside, in combination with ecological enhancement.

Whilst the proposed planting measures represent an embedded component of the Proposed Development; the study takes a 'worst case scenario' where assessment of construction landscape and visual effects is based on the initial appearance of the Site during clearance and construction stages, with residual effects determined after completion, with installation and establishment of bio-diverse groundcover and secondary mitigation planting.

Visualisation Methodology

Zone of Theoretical Visibility Maps

Computer generated Zone of Theoretical Visibility (ZTV) Maps have been prepared to assist in viewpoint selection and to indicate the potential influence of the Proposed Development in the wider landscape.

The Theoretical Visibility Mapping has been prepared at 1:30,000 scale to indicate the extent of potential visibility on the basis of both 'bare-earth' (worst-case scenario), and 'excluded' (to include the screening effects of intervening established tree cover and built form). The Theoretical Visibility Mapping indicates areas from which it might be possible to secure views of part, or parts, of the Proposed Development. However, use of the Visibility Maps needs to be qualified on the following basis:

There are a number of areas within the Visibility Maps from which there is potential to view parts of the proposal, but which comprise open farmland, or other land where the general public do not appear to exercise regular access (hillsides / summits with no public access);

The Visibility Mapping does not account for the likely orientation of a viewer – for example when travelling in a vehicle.

In addition, the accuracy of the Visibility Maps has to be considered. In particular, the Visibility Map will be generated from Ordnance Survey (OS) Landform Panorama digital data based on a gridded terrain model with 5m cell sizes. The resolution of this model cannot accurately represent small-scale terrain features, which can therefore give rise to inaccuracy in the predicted visibility. This can lead to underestimation of visibility – e.g. a raised area of ground permitting views over an intervening obstruction or can lead to overestimation of visibility – such as where a roadside embankment obscures a view.

Photography

A high resolution digital SLR camera with a 50mm fixed lens and full frame sensor is used for viewpoint photography. The camera is mounted on a tripod with a panoramic head to give level and stable photography. Geographic location, elevation, camera height and date and time of photography is recorded.

[9] RSPB, News: https://www.rspb.org.uk/whats-happening/news/solar-farms-managed-for-nature-boost-bird-numbers-and-biodiversity

3D Modelling

The proposed scheme is modelled using industry standard computer aided design (CAD) software and 3D modelling and animation software (3D Studio Max). The model is typically geo-referenced to aid accurate positioning at real-world coordinates.

Camera Matching and Rendering

Virtual cameras are created in 3D Studio Max software to simulate the viewpoint photograph positions and the surveyed reference points for each viewpoint are imported. Displaying the viewpoint photograph in the background, each camera is 'matched' to the photograph using the imported reference points. In this way, the proposed scheme is positioned at the correct scale and in the correct position.

Photomontages

Using industry standard image editing software (Adobe Photoshop), the rendered image is merged with the base viewpoint photograph, masking any elements of the proposed scheme that would be occluded by the intervening existing features.

Presentation

The angle of view (AOV) of the image and the viewing distance from the page is displayed on each sheet. These two variables are compliant with best practice guidelines to give an accurate representation of what would be seen 'in the field'. They often vary within the guidelines depending on the scale of project in the landscape. Viewpoint information, viewpoint coordinates and camera information is also detailed on each sheet.

Site-Specific Assumptions

The following site-specific assumptions have been made in respect to the LVIA:

- Assumption 1 – The Site – refers to the land located within the red line boundary (as shown in application Figures);
- Assumption 2 – The Proposed Development – comprises: the Solar array; BESS Compound with Battery Units and Power Conversion System (PCS) Units; DNO Substation; Private Substation; 7no Transformer Stations; 2no Welfare Units; Pump House & 2no Water Tanks; Storage building; Spare container; Perimeter fencing, CCTV cameras and security lighting; 6m wide Access Road and Vehicular access points; and Landscaping and biodiversity enhancement measures;
- Assumption 3 – For the purposes of the LVIA, the Proposed Development, albeit long-term, is regarded as being temporary. The construction stage would be temporary, approximately 8 to 12 months in duration;
- Assumption 4 – The landscape proposals within the Site (including tree planting and other areas of habitat creation) form an integral component of the Proposed Development;
- Assumption 5 – Visual effects are assessed on the basis of good visibility. Visual effects can be expected to vary e.g. poor visibility at times of low cloud, rainfall and dusk. At these times a reduction in visual clarity, colour and contrast would be experienced. Reduced visibility would limit the extent of view, particularly from mid to long distance views. Consequently, the assessment of effects is based on the worst-case scenario, where the Proposed Development would be most visible; and
- Assumption 6 – The assessment considers the landscape and visual effects at completion, and the residual effects when embedded mitigation planting has

established. This is considered to occur ten years post-completion, referred to hereafter as ‘Year 10’.

- Assumption 7 – Viewpoint locations included in the assessment are from publicly accessible locations.

Technical Appendix 6.3 – Landscape Sensitivity

The sensitivity of the 'host' Lowland Plains LCT is assessed in detail below. Landscape sensitivity is not absolute and can only be defined in relation to each development and its location taking account of susceptibility as described in the methodology. To understand the sensitivity of a particular landscape and its location it is good practice to consider a range of criteria as set out in the table below.

The table below highlights the inherent sensitivities of this landscape to the development proposed, with reference to relevant characteristics as described within NatureScot's *2019 National Landscape Character Assessment*. Extracts are included in italics.

Table A6.3.1 – Sensitivity of the Lowland Plains LCT

Factors affecting the sensitivity	Lower Sensitivity	Higher Sensitivity	Characteristics of local landscape	Sensitivity Rating
Physical				
Scale	Large scale featureless landscapes	Small to medium scale landscapes with some scaling features	The LCT is described as a '*large scale agricultural plain*' albeit the Site locality is limited by surrounding tree cover / woodland.	Medium
Openness	Enclosed and sheltered landscapes	Open and exposed landscapes	Local landscape is partly enclosed by landform and surrounding tree cover / woodland.	Medium/Low
Landform	Smooth regular flowing, flat or uniform landscapes	Dramatic, rugged and complex landscapes	The Site locality reflects the '*smoothly rolling*' characteristic.	Medium/Low
Land cover	Extensive areas of simple regular land cover (including farming and forestry)	Complex, intimate or mosaic cover	'*Agricultural land with a predominantly rural character*' that also incorporates parcels of woodland in nearby areas.	High/Medium
Complexity and patterns	Simple and sweeping lines, linear features and patterns	Complex or irregular patterns	The LCT exhibits '*a strong pattern of large arable fields by fences, hedges, occasional walls and a network of shelterbelts.*'	High/Medium
Built Environment	Contemporary masts, pylons, industrial elements, buildings infrastructure, settlements	Established, traditional or historic built character	Farmland is traditional in character. However, the local landscape is influenced the existing large-scale	Medium/Low

Factors affecting the sensitivity	Lower Sensitivity	Higher Sensitivity	Characteristics of local landscape	Sensitivity Rating
			infrastructure, including overhead power lines.	
Overall physical sensitivity				Medium
Perceptual				
Wildness / Sense of Remoteness	Busy evidence of human activity	Remote, peaceful or sense and tranquillity, solitude and emptiness	The locality comprises managed farmland with elements of 'urban fringe influence' across wider parts of the Study Area.	Medium
Perception of Change	Dynamic or modern landscapes	Ancient landscapes, designed landscapes or with obvious historical continuity	The locality comprises a mixture of rural features with modern day components and built form.	Medium
Overall perceptual sensitivity				Medium
Visual				
Landscapes that form settings, skylines, backdrops, focal points	Generally low-lying landscapes without distinctive landform or horizon	Areas with strong features, focal points that define the setting or skyline	The Site is sloping, albeit potential sky lining effects would be restricted due to back-clothing by adjoining areas of tree cover.	Medium/Low
Views intervisibility	Visually contained and have limited inward or outward views	Extensive views within or of the area with distant horizons.	The '*policy woodlands and shelterbelts*' restrict intervisibility of the Site from surrounding areas.	Medium/Low
Overall visual sensitivity				Medium/Low

Factors affecting the sensitivity	Lower Sensitivity	Higher Sensitivity	Characteristics of local landscape	Sensitivity Rating
Rarity	Commonplace	Rare	The mix of farmland, woodland and elements of built form / urban fringe are not considered to be of particular rarity.	Low
Designated scenic quality	No specific designation	National or regional designation	The Site and surrounding locality are not within any landscape designation, although wider parts of the Study Area encompass SLAs.	Medium/Low
Cultural associations	No specific cultural associations	Strong cultural association	Cultural associations are present in wider surrounding areas, including Scheduled Monuments, and parcels of ancient woodland.	Medium
Amenity and recreation	Limited amenity function	Well used for amenity/recreation, especially for National trails or other long-distance routes	There are no recreational attractions within the vicinity of the Site. However, the Study Area includes Core Paths and NCR 75.	Medium/Low
Overall Value				**Medium/Low**
Overall Sensitivity of the Lowland Plains LCT				**Medium**

Technical Appendix 6.4 – Residual Visual Effects on Sensitive Receptors

The detailed examination of identified receptors is provided in **Table 6.4.1**.

Table A6.4.1 – Residual Visual Effects

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
Landscape Designations								
Pentland Hills SLA	High	An expansive SLA area extending into Midlothian, City of Edinburgh, and the Scottish Borders, the Pentland Hills are seen widely across the Lothians and form key components of the landscape setting to the lowlands and fringe landscapes of West Lothian. The hills provide a contrast to nearby urban areas. The interior landscape of the eastern Pentlands is more intimately scaled, with the highest and most shapely peaks forming a backdrop to Midlothian and Edinburgh. Fringe hill landscapes are rolling with strongly enclosed farmland. Views of the uplands are impacted by intervening large-scale electricity transmission lines and pylons. Interior wilder areas of the SLA will not be affected by Proposed Development. Those areas on the fringe of the SLA which allow for extremely limited pedestrian / recreational access in closest proximity to The Site experience the complexity of the lowland landscape with its influence of urban form; patterns of woodland and geometric shelterbelts and plantation forestry;	Negligible / Slight	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Beneficial (landscape) Adverse (infrastructure)	Minor

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
		and overlay of electricity transmission infrastructure. As illustrated within **Figure 6.5**, the northern face of Corston Hill presents the only area of the SLA with potential visibility of the Proposed Development within the Study Area. The inclusion of the low-lying solar arrays, given their scale within this mosaic, would not result in a significant alteration to the baseline, or perception of the SLA, when viewed from this location.						
Almond & Linhouse Valleys SLA	High	Following the course of the River Almond to the west and northwest of The Site, the majority of this SLA as illustrated in **Figure 6.5** is outside of the ZTV, with the designation covering the lower elevation / incised valley. An area to the north of Morton Reservoir at Linhouse Nature Reserve and to the west of Selm Muir Wood is highlighted with potential visibility. Given local woodland cover and intervening shelterbelt / wooded screening, significant effects are deemed unlikely.	Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Beneficial (landscape) Adverse (infrastructure)	Minor
Ratho Hills SLA	High	At the very edge of the 3km Study Area to the north, from the southern extent of this designation the perception of the intervening lowland between the Pentland Hills to the south is unlikely to see significant alteration resulting from the addition of	Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Beneficial (landscape) Adverse (infrastructure)	Minor

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
		Proposed Development within the complex mosaic of agricultural land and woodland / shelterbelt. Nestled within a rolling landscape that comprises various patterns and colours, at this range the solar array and BESS will not be noticeable.						
Local Residents								
Newlands	High	The majority of large detached properties in this neighbourhood are separated and screened by intervening properties and a belt of woodland to the east of the Proposed Development. Construction activities and residual operations would present no perceptible change to residential amenity.	No change / Negligible	Direct	Long-term	Permanent	Beneficial	Neutral / Neg
29 & 31 Newlands	High	Located in closest proximity to the eastern parcel of The Site, these properties have rear gardens which abut the boundary and do not have the density of woodland to provide a natural semi-opaque screen. For these properties, construction operations (notably the appearance of perimeter fencing and plant) and residual components (array infrastructure) would result in a magnitude of change deemed Moderate, with a level of effect classed as Major/Moderate, adverse, and temporary.	Slight	Direct	Long-term	Temporary	Adverse	Moderate

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
		The installation and establishment of mitigation woodland planting in this location would see the residual adverse level of effect reduced.						
Kirknewton	High	Construction and residual operations would cause no change or perceptible effect on the residential amenity of receptors within, or on the periphery of, this settlement due to intervening woodland.	No change / Negligible	Direct	Long-term	Temporary	Beneficial	Neutral / Neg
Belstane Farm	High	While in close proximity to the western array parcel, the setting of the residence at Belstane Farm, in combination with intervening mature roadside vegetation results in a visual magnitude of change deemed none to Negligible resulting from construction activities or residual solar farm/BESS infrastructure.	Slight	Direct	Long-term	Permanent (landscape)	Beneficial	Moderate
Leyden	High	Surrounded by mature garden vegetation and perimeter tree cover, the setting and visual amenity of Leyden is largely unaffected by Proposed Development. Primary / front views are orientated north away from The Site, while the garden setting is enclosed. Construction operations and residual infrastructure would result in a Slight magnitude of change given proximity to the western solar farm parcel.	Slight	Direct	Long-term	Permanent (landscape)	Beneficial	Moderate

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
Leyden Farm Cottages	High	At approx. 228 to 230m AOD which is approx. 1m below the western boundary of The Site, these residences are separated by open agricultural field and broken hedgerow. On a similar visual plain there would be Slight to Moderate magnitude of change to visual amenity at construction and residually. Intervening hedgerow restoration and installation of small-scale woodland planting along the western boundary of The Site would see the overall residual level of effect reduced.	Slight	Direct	Long-term	Permanent (landscape)	Adverse	Moderate
Leyden Old House	High	This residence sits at approx. 250m AOD, similar to the elevation of Proposed Development on the same latitude to the east, and some 15m higher than The Site to the north / northeast. With large-scale farm buildings to the northeast and east, the magnitude of change on the house and garden would be Slight at worst.	Slight	Direct	Long-term	Permanent (landscape)	Adverse	Moderate
Birchwood & Rowanbank	High	These residences are located within Selm Muir Wood and have no direct visibility of The Site from within their curtilage. Magnitude of change is none to Negligible, with level of effect on visual amenity deemed none to Negligible at worst.	No change / Negligible	Direct	Long-term	Permanent (landscape)	Beneficial	Neutral / Neg

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
Belstane Farm (South)	High	With a similar setting to Belstane Farm where intervening tree cover and mature vegetation, coupled with topography of site sloping away from the viewer, direct views of The Site are screened. Magnitude of change resulting from construction activities or residual solar farm/BESS infrastructure is deemed to be Negligible.	Negligible	Direct	Long-term	Permanent (landscape)	Beneficial	Negligible
The Byrony	High	This residence is separated from The Site by intervening buildings and stances / strips of woodland and shelterbelt planting. Magnitude of change resulting from construction activities or residual solar farm/BESS infrastructure is deemed to be none to Negligible.	No change / Negligible	Direct	Long-term	Permanent (landscape)	Beneficial	Neutral / Neg
Burnbrae	High	This residence within a farm steading complex has open and direct views south towards The Site. Views restricted and guided by the evergreen shelterbelt immediately to the east of the steading will encompass the western extent of the eastern array parcel, including the BESS compound, along with the majority of the western array parcel extending up the opposite gentle hill rise. Partly screened by existing field boundary trees, the magnitude of change would be Moderate, with resultant level of effect	Slight	Direct	Long-term	Permanent (landscape)	Beneficial	Moderate

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
		on visual amenity expected to be Major/Moderate and adverse. Establishment of infill boundary tree planting and hedgerow would further soften direct views of infrastructure which would see residual level of effect reduced to Moderate and beneficial.						
Greenburn	High	This property is screened from direct views by intervening evergreen woodland / shelterbelt planting. The magnitude of change would be none to Negligible.	No change / Negligible	Direct	Long-term	Temporary (infrastructure)	Adverse	Neutral
Latch Farm Cottages	High	These residences are separated from The Site by the expansive Selms Muir Wood. Magnitude of change would be none to Negligible.	No change / Negligible	Direct	Long-term	Permanent (landscape)	Adverse	Neutral
Whitemoss Cottages	High	Houses are screened from The Site by intervening areas of shelterbelt planting and coniferous woodland which prevent direct views. The magnitude of change would be none to Negligible.	No change / Negligible	Direct	Long-term	Temporary (infrastructure)	Adverse	Neutral / Neg
Kirknewton House	High	The house is located within extensive estate / policy woodland which restrict open views towards The Site from both house and gardens. The magnitude of change would be none to Negligible.	No change / Negligible	Direct	Long-term	Temporary (infrastructure)	Adverse	Neutral / Neg

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
Ormiston Hill House & Ormiston Bungalow	High	Properties at this location have south-facing views from both house and garden towards The Site. Direct views are filtered and partly screened by intervening field boundary trees and shelterbelt planting. The magnitude of change would be Negligible to Slight at worst	Negligible / Slight	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Neg / Minor
Ormiston Hill & Ormiston Farm Steadings	High	Direct views of The Site from properties in this location are filtered and partly screened by intervening buildings, field boundary trees, and shelterbelt planting. The magnitude of change would be none to Negligible.	No change / Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Beneficial	Negligible
Cockmylane	High	This property experiences filtered views of The Site. Given distance and intervening field boundary trees, magnitude of change resulting from Proposed Development would be Slight.	Slight / Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Moderate / Minor
Overton Farm & Overton Farm Cottages	High	Houses are separated from The Site by the shelterbelt, “Middle Strip”, and Overton Wood. The magnitude of change would be none to Negligible.	No change / Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Negligible
Recreational Receptors								
Core Path 1	High	The route is predominantly outside the ZTV. For the section of path route to the south of Kirknewton where bare-earth mapping identifies potential	Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Minor

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
		visibility, intervening woodland and built form prevents direct visibility of The Site or Proposed Development. As such, magnitude of change is Negligible at worst.						
National Cycle Route (NCR) 75	High	This stretch of NCR follows the same route as Core Path 1. Magnitude of change and level of effect is the same as above.	Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Minor
Core Path 13	High	ZTV overlay shows that users on two sections of this circular route may be presented with combined views of solar array and BESS infrastructure. However, due to the intervening shelterbelt planting and woodland, namely Selm Muir Forest, direct views of Proposed Development are unlikely. As such, magnitude of change is classed as Negligible.	Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Minor
Core Path 15	High	This path route (which follows the River Almond valley) is predominantly outside of the ZTV. Magnitude of change is Negligible.	Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Minor
Kaimes Hill Fort	High	From an elevated position which allows 360° panoramic views, the change to the complex fabric of colours and textures of the lowland valley results in a magnitude of change deemed Slight.	Slight	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Moderate

Receptor	Sensitivity (Low / Medium / High)	Baseline and Likely Effect	Magnitude of Impact (No change/ Negligible / Slight / Moderate / Substantial)	Nature of Effect (Direct / Indirect)	Temporal Scale (Short / Medium / Long)	Permanance of Effect (Temporary / Permanent)	Type of Effect (Adverse / Beneficial)	Residual Significance (Neutral / Neg / Minor / Moderate / Major)
Dalmahoy Hill (Fort)	High	On the opposite side of Kaimes Hill Fort, potential views of the Proposed Development would be restricted by the intervening landform at Kaimes Hill, and parcels of woodland in the landscape beyond. The magnitude of change would be Negligible.	Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Minor
Leyden Road	Medium	Visual effect – solar / BESS infrastructure and increased landscape elements	Moderate	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Moderate
B7031	Medium	The road connects Kirknewton in the north with the busy A70 in the south. Direction of traffic is at an oblique angle to the direction of The Site. The road corridor is extensively tree-lined to the south of Kirknewton with woodland in the vicinity of Lirknewton House, and single field boundary trees and hedgerow to the south of this. This, and intervening shelterbelt / coniferous tree cover, obscures many of the direct views of The Site. There would be Negligible to no change.	No change / Negligible	Direct	Long-term	Permanent (landscape) Temporary (infrastructure)	Adverse	Neutral