



# SUNNICA ENERGY FARM

## Preliminary Environmental Information Report

Appendix 10C: LVIA Methodology

Sunnica Ltd

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## Quality information

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# 1 LVIA Methodology

## 1.1 Introduction

1.1.1 This appendix sets out the methodology for the landscape and visual impact assessment, including the Zone of Theoretical Visibility (ZTV) and the visualisations of the Scheme.

## 1.2 Landscape and Visual Impact Assessment (LVIA) Methodology

1.2.1 The LVIA has been undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) and as presented in the Scoping Report.

1.2.2 The LVIA methodology involves the following stages:

- Baseline review;
- Sensitivity (nature of the receptor)
- Impact (nature of effect); and
- Significance of Effects.

### *Baseline Review*

1.2.3 Landscape and visual receptors have been identified via a review of published landscape character assessments and relevant policy, computer generated ZTVs and field work, as described in the chapter.

### *Sensitivity (nature of the receptor)*

1.2.4 The sensitivity of landscape and visual receptors is assessed separately, however both are based upon the same principles of establishing a receptors' value and susceptibility.

### *Landscape*

#### Landscape Value

1.2.5 The assessment of the value of each landscape receptor will be informed by the information set out in the baseline, including any relevant landscape designations, and the value of elements or characteristics of notable aesthetic, perceptual or experiential quality. Landscape value will be defined in relation to Table 1-1: Landscape Value.

**Table 1-1: Landscape Value**

| <i>Classification</i> | <i>Value Criteria</i>   |
|-----------------------|---|
| National              | Landscape with elements of national importance, e.g. protected by legislation |

| <i>Classification</i> | <i>Value Criteria</i>   |
|-----------------------|---|
| Regional              | Landscape with elements of regional importance designated regional leisure routes and conservation areas.   |
| Local                 | Landscape with elements which are protected or valued through local or neighbourhood planning policies, such as protected open space or groups of listed buildings or buildings of townscape merit. |
| Community             | Landscape with relatively common elements which are likely to be valued by the community which lives and works in the area  |
| Limited               | Landscape with weak or discordant elements and characteristics which detract from the quality of the area.  |

### Landscape Susceptibility

1.2.6 GLVIA3 paragraph 5.40 defines landscape susceptibility as:

*“the ability of the landscape receptor (whether it be overall character or condition of a particular landscape type or area, or an individual element and/or features, or a particular aesthetic and perceptual aspect) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.”*

1.2.7 Landscape susceptibility will be defined in relation to Table 1-2: Landscape Susceptibility, whereby ‘undue consequences’ refers to negative changes.

**Table 1-2: Landscape Susceptibility**

| <i>Classification</i> | <i>Susceptibility Criteria</i>                           |
|-----------------------|--|
| High                  | Undue consequences are likely to arise from the Scheme   |
| Medium                | Undue consequences may arise from the Scheme             |
| Low                   | Undue consequences are unlikely to arise from the Scheme |

### Landscape Sensitivity

1.2.8 The assessment of landscape value and landscape susceptibility will be combined to define the sensitivity (nature) of the receptor as set out in Table 1-3: Landscape Sensitivity.

**Table 1-3: Landscape Sensitivity**

| <i>Classification</i> | <i>Sensitivity Criteria</i>   |
|-----------------------|---|
| High                  | Landscape of national or regional value with distinctive elements and characteristics, highly susceptible to small changes of the type of development proposed without undue consequences for the maintenance of the baseline situation. Typically, these would be: |

|          |   |
|----------|---|
|          | <ul style="list-style-type: none"> <li>• Of high quality with distinctive elements and features making a positive contribution to character and sense of place.</li> <li>• Likely to be designated, but the aspects which underpin such value may also be present outside designated areas, especially at the local scale.</li> <li>• Areas of special recognised value through use, perception or historic and cultural associations.</li> <li>• Likely to contain features and elements that are rare and could not be replaced.</li> </ul>   |
| Medium   | <p>Landscape of local or community value, with mostly common elements and characteristics, which by nature of their character would be able to partly accommodate change of the type proposed without undue consequences for the maintenance of the baseline situation. Typically, these would be:</p> <ul style="list-style-type: none"> <li>• Comprised of mostly commonplace elements and features creating generally unremarkable character but may include some rarer elements and with some sense of place.</li> <li>• Locally designated, or value may be expressed through non-statutory local publications.</li> <li>• Containing some features of value through use, perception or historic and cultural associations.</li> </ul> <p>Likely to contain some features and elements that could not be replaced.</p> |
| Low      | <p>Landscape of community or limited value and relatively inconsequential elements and characteristics, the nature of which is potentially tolerant of substantial change of the type proposed. Typically, these would be:</p> <ul style="list-style-type: none"> <li>• Comprised of some features and elements that are discordant, derelict or in decline, resulting in indistinct character with little or no sense of place.</li> <li>• Not designated.</li> <li>• Containing few, if any, features of value through use, perception or historic and cultural associations.</li> </ul> <p>Likely to contain few, if any, features and elements that could not be replaced.</p>  |
| Very Low | <p>Landscape of very low or limited value, which is damaged, degraded or a substantially modified landscape pattern with few or no natural or original features remaining, such that it is tolerant of change.</p>  |

## Visual

### Visual Value

1.2.9 GLVIA3 paragraph 6.37 provides a list of indicators of the value of views:

- “Appearance in guidebooks our tourist maps;
- Provision of facilities, such as parking places, sign boards and interpretive materials; and
- References in literature or art.”

1.2.10 The assessment of the value of views will also be informed by the location of the viewing place and the quality or designation of the existing elements in the view, set out in Table 1-4: Visual Value.

**Table 1-4: Visual Value**

| <i>Classification</i> | <i>Visual Value Criteria</i>   |
|-----------------------|--|
| National              | Recognised or iconic views within nationally/internationally designated landscapes, such as National Parks, Areas of Outstanding Natural Beauty (AONB) and/or national/international landmarks with views recognised in planning policy and/or management plans. |
| Regional              | Views or viewing places identified in the East of England landscape framework or regional strategies.  |
| Local                 | Views across high quality landscape which might include features of interest, such as landmarks, which may be identified in the Local Plan.  |
| Community             | Views of relatively common landscape elements, likely to be valued by the communities which experience the view.   |
| Limited               | Views across poor quality landscape with a high degree of detracting or common elements.   |

### Visual Susceptibility

1.2.11 The criteria for visual susceptibility are set out in Table 1-5: Visual Susceptibility.

**Table 1-5: Visual Susceptibility**

| <i>Classification</i>           | <i>Visual Susceptibility Criteria</i>   |   |  |
|---------------------------------|---|---|--|
|                                 | <i>High</i>   | <i>Medium</i>   | <i>Low</i>   |
| Occupation or activity          | People living in the area or visiting areas because of their high landscape value | People passing through the area on designated routes                                | People working inside or passing through the area on public roads or railway lines   |
| Degree of attention on the view | Views are an important part of the experience of the landscape                    | Views are relevant to the experience or activity but not central to it              | Views are likely to be focused on the activity of the receptor, rather than the view |
| Degree of exposure to the view  | Views are likely to be open   | Views may be framed, partially screened or filtered                                 | Views are likely to be limited to glimpses or are heavily screened                   |
| Length of exposure to the view  | Views are likely to be experienced daily or for long periods of time              | Views may be fleeting or experienced as a sequence of views moving through the area | Views are likely to be short   |

## Visual Sensitivity

- 1.2.12 The assessment of visual value and visual susceptibility will be combined to define the sensitivity (nature) of the receptor as set out in Table 1-6: Visual Sensitivity.

**Table 1-6: Visual Sensitivity**

| <i>Classification</i> | <i>Visual Sensitivity Criteria</i>  |
|-----------------------|---|
| High                  | Activity resulting in a particular interest or appreciation of the view (e.g. residents with principal private views, or people engaged in outdoor recreation whose attention is focused on the landscape and where people might visit purely to experience the view, such as promoted viewpoints) and/or a view of national value (e.g. within/towards a designated landscape).  |
| Medium                | Activity resulting in a general interest or appreciation of the view (e.g. residents or people engaged in outdoor recreation that does not focus on an appreciation of the landscape, outdoor workers, people in schools or other institutional buildings and hotels and people passing through the landscape on defined scenic routes) and/or a view of local or community value (e.g. suburban residential areas, or agricultural land or urban areas). |
| Low                   | Activity where interest or appreciation of the view is secondary to the activity or the period of exposure to the view is limited (e.g. people at work, motorists travelling through the area or people engaged in outdoor recreation that does not focus on an appreciation of the landscape) and/or a view of limited value (e.g. featureless agricultural landscape, poor quality urban fringe).   |
| Very Low              | Activity where interest or appreciation of the view is inconsequential (e.g. people at work with limited views out, or drivers of vehicles in cutting) and/or very low value of existing view (e.g. industrial areas or derelict land).   |

## Magnitude of Impact (Change)

### Landscape

- 1.2.13 The criteria for landscape magnitude are set out in Table 1-7: Landscape Magnitude of Impact.

**Table 1-7: Landscape Magnitude of Impact**

| <i>Classification</i> | <i>Criteria for Landscape Magnitude of Impact</i>  |
|-----------------------|--|
| High                  | Total loss or large scale damage to key characteristics or distinctive features, and/or the addition of new features or components that will substantially alter the character or setting of the area.   |
| Medium                | Partial loss or noticeable damage to key characteristics or distinctive features, and/or the addition of new features and whilst notable or obvious, the change would not fundamentally alter the balance of the key characteristics.  |
| Low                   | Limited loss or damage to key characteristics or alteration of common features, and/or the addition of new features such that post development the change would be discernible but the underlying pattern of characteristics would remain similar to the baseline condition. |



|          |   |
|----------|---|
| Very Low | Barely noticeable loss, damage or alteration to key characteristics or features. The change would not influence the wider character and would be barely discernible or legible. |
| None     | No change to the landscape receptor.  |

### Visual

1.2.14 The criteria for visual magnitude of impact is set out in Table 1-8: Visual Magnitude of Impact.

**Table 1-8: Visual Magnitude of Impact**

| <i>Classification</i> | <i>Criteria for Visual Magnitude of Impact</i>   |
|-----------------------|--|
| High                  | Extensive change to the composition of the existing view (e.g. widespread loss of characteristic features or the widespread addition of new features within the view) and/or high degree of exposure to view (e.g. close, direct or open views). Where the Proposed Development, or a part of it, would become the dominant feature or focal point of the view.                                      |
| Medium                | Partial change to the composition of the existing view (e.g. loss of some characteristic features or the addition of new features within the view) and/or medium degree of exposure to view (e.g. middle-distance or partially screened views) where the Proposed Development, or a part of it, would form a noticeable feature or element of the view which is readily apparent to the receptor.    |
| Low                   | Subtle change to existing view (e.g. limited loss of characteristic features or the addition of new features within the view) and/or low degree of exposure to view (e.g. long-distance, substantially screened or glimpsed views) where the Proposed Development, or a part of it, would be perceptible but not alter the overall balance of features and elements that comprise the existing view. |
| Very Low              | Barely perceptible change to the existing view and/or very brief exposure to view, where only a very small part of the Proposed Development would be discernible, or it is at such a distance that it would form a barely noticeable feature or element of the view.   |
| None                  | No change to the existing view.  |

### Significance of Effect

1.2.15 The significance of landscape and visual effects will be classified by considering the relationship between the sensitivity of the receptor and the magnitude of impact using a matrix for a guide, as set out in Table 1-9.

**Table 1-9: Landscape and Visual Significance of Effect**

|             | <i>Magnitude of Impact</i> |                   |                   |                     |             |
|-------------|----------------------------|-------------------|-------------------|---------------------|-------------|
|             | <i>High</i>                | <i>Medium</i>     | <i>Low</i>        | <i>Very Low</i>     | <i>None</i> |
| <i>High</i> | Major                      | Major or Moderate | Moderate or Minor | Minor or Negligible | Neutral     |

|                 |                   |                   |                      |                       |         |
|-----------------|-------------------|-------------------|----------------------|-----------------------|---------|
| <b>Medium</b>   | Major or Moderate | Moderate or Minor | Minor or Negligible  | Negligible            | Neutral |
| <b>Low</b>      | Moderate          | Minor             | Minor or Negligible  | Negligible or Neutral | Neutral |
| <b>Very Low</b> | Minor             | Negligible        | Negligible / Neutral | Neutral               | Neutral |

- 1.2.16 Should professional judgement consider that the significance of effect is different to that in the matrix, or if it should fall between two categories, then a reasoned justification will be presented in the assessment.
- 1.2.17 Major and moderate effects are considered to be significant, whilst minor and negligible effects are not considered to be significant. Where a combined significance is identified for example Minor / Negligible, professional judgement is used to determine whether Minor or Negligible or combination of the significance is more suitable for the specific receptor and impact. This will take account of whether the effect is temporary, permanent, or reversible, its duration/frequency and / or its likelihood of occurrence, and a full reasoned justification will be presented in the ES chapter.

### **Zone of Theoretical Visibility Methodology**

- 1.2.18 ZTVs have been modelled using the 'Viewshed' tool in ESRI ArcMap GIS Software.
- 1.2.19 For the ZTV prepared of the operational scheme, a 5m resolution digital terrain model (DTM) was used to create the 'bare-earth' ZTVs.
- 1.2.20 For the ZTVs with existing buildings and woodland, these have incorporated woodland derived from the Forestry Commission National Forest Inventory modelled at 10m height, and buildings derived from OS MasterMap modelled at 8m height.
- 1.2.21 For all of the ZTVs an assumed viewing height of 1.7m above ground level has been used to simulate a person of average height.

### **Visualisations (Photomontage) Methodology**

- 1.2.22 Several visualisations of the Scheme will be undertaken which superimpose the Scheme onto an existing photographs. These visualisations have been prepared in accordance with the Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals and represent 'Type 4' visualisations.
- 1.2.23 The photography has been undertaken via a digital camera to accommodate the necessary scope of the Scheme and relevant context. The camera has been positioned 1.60m above ground level and mounted on a tripod with a Manfrotto head, sliding plate and levelling base.
- 1.2.24 A professional surveyor has used GPS equipment to record the camera position and several survey points within each view, as well as the focal length, date and time of the photograph.

- 1.2.25 The camera outputs are a standard compressed file-type (JPEG). The compressed photographs are then processed and stitched using the software package Hugin; which provides a suite of advanced features and libraries for re-projecting and blending multiple source images into panoramas with exposure, vignetting and white balance correction.
- 1.2.26 Using CAD data, a three-dimensional computer model of the Scheme is augmented with added details to achieve a realistic representation of the Scheme.
- 1.2.27 Once this model is created it is positioned in 3D using the general arrangement drawings.
- 1.2.28 Virtual cameras of matching is then placed within the scene at the correct surveyed location. The virtual 3D camera is rotated to the correct position with the captured photography as a backplate and the survey points will verify the alignment.
- 1.2.29 To obtain photo-realism, physically accurate lighting is required alongside materials and textures. The VRaySun and VRaySky are special features provided as part of the Chaosgroup Vray renderer, utilised by AECOM. Developed to work together, the VRaySun and VRaySky reproduce the real-life Sun and Sky environment of the earth. Both are coded so that they change their appearance depending on several factors, such as the direction of the VRaySun; which was dynamically linked and georeferenced to the real-world position of the Site, the time, day and month.
- 1.2.30 Using this lighting system, alongside the physically accurate material properties, the software calculates the effects of the sun and sky conditions on the appearance of the proposed scheme, illustrating the anticipated real-world impact.
- 1.2.31 Once the rendering stage is complete, the images are brought into Adobe Photoshop to superimpose the Scheme onto the digital images of the DCO Site. The foreground details such as trees, buildings or topography are then overlaid as masks; ensuring the depth of the various items was represented correctly. If required, the rendered image will be further edited to accurately match the colour, saturation and environmental effects shown in the photograph.