

SUNNICA ENERGY FARM

EN010106

Volume 6

Environmental Statement

6.2 Appendix 10C: Landscape and Visual Impact Assessment

Methodology

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and
Procedure) Regulations 2009



Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms and
Procedure) Regulations 2009**

Sunnica Energy Farm

Environmental Statement

Appendix 10C: Landscape and Visual Impact Assessment Methodology

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Table of contents

Chapter	Pages
1 Introduction	1
2 Landscape and Visual Impact Assessment (LVIA) Methodology	1
2.1 Baseline Review	1
2.2 Sensitivity (nature of the receptor)	2
2.3 Magnitude of Impact (Change)	8
2.4 Significance of Effect	9
3 Zone of Theoretical Visibility Methodology	10
3.1 Type 4 Visualisations (Photomontage) Methodology	10

Table of Tables

Table 2-1: Comparison of Landscape Value.....	3
Table 2-2: Landscape Value	5
Table 2-3: Landscape Susceptibility	5
Table 2-4: Landscape Sensitivity	6
Table 2-5: Visual Value.....	7
Table 2-6: Visual Susceptibility	7
Table 2-7: Visual Sensitivity	8
Table 2-8: Landscape Magnitude of Impact.....	8
Table 2-9: Visual Magnitude of Impact	9
Table 2-10: Landscape and Visual Significance of Effect	10

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 Type 4 visualisations of the Scheme.
- 1.1.2 The assessment methodology for the definition of the Local Landscape Character Areas (LLCA) used to inform the assessment of landscape effects is set out in **Appendix 10E: Local Landscape Character Assessment** of the Environmental Statement (ES) [EN010106/APP/6.2], along with the LLCA.

2 Landscape and Visual Impact Assessment (LVIA) Methodology

- 2.1.1 The LVIA has been undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3). The LVIA assessment methodology has been revised from that presented in the Scoping Report following discussions with the Local Planning Authorities (LPA), including detailed feedback from the LPA via email on the 9th March 2021.
- 2.1.2 As an overview, the LVIA methodology involves the following stages:
- A baseline review of the existing landscape and visual context, i.e. as found during the preparation of the LVIA and consideration of any changes that would arise in the future baseline;
 - The assessment of the sensitivity (nature of the receptor) of landscape and visual receptors, via an assessment of their value and susceptibility;
 - The assessment of the impact (nature of effect) of the Scheme at the construction (winter), year 1 (winter), year 15 (summer) and decommissioning (winter) phases; and
 - The assessment of the significance of Effects of the Scheme for the above phases.

2.1 Baseline Review

- 2.1.1 in summary, the landscape and visual receptors have been identified via a desk based review of published landscape character assessments and relevant policy, computer generated ZTVs, fieldwork through site visits and discussions with the LPA, as described in the LVIA chapter and **Appendices 10D and 10E** of the ES [EN010106/APP/6.2].
- 2.1.2 The landscape baseline has reviewed the following landscape features within a 2km radius of the Order limits:
- Landform and watercourses;
 - Settlement pattern;
 - Transport routes;
 - Land use;

- e. Vegetation patterns;
- f. Public Rights of Way and other public access; and
- g. Designations.

2.1.3 The desk -based review has reviewed the following published landscape character assessments:

- a. Natural England's National Character Areas (NCA), 46: The Fens; NCA 85: The Brecks and NCA 87: East Anglian Chalk;
- b. East of England Landscape Framework;
- c. Suffolk Landscape Character Assessment;
- d. Cambridgeshire Landscape Guidelines;
- e. Norfolk and Suffolk Brecks Landscape Character Assessment;
- f. Cambridgeshire Green Infrastructure Strategy; and
- g. The Brecks Special Qualities Report.

2.1.4 The desk based review has also included a review of conservation area appraisals and village design guides, along with LLCAs defined by the Applicant.

2.1.5 The fieldwork has been undertaken from publicly accessible locations between March 2019 and April 2021 with a range of visual receptors identified, as set out in Volume 2: Appendix 10F.

2.1.6 As part of the fieldwork, visual analysis was also made in relation to horse riders on routes which they were considered to use, e.g. U6006 between Elms Road and Worlington. In order to note their views (given the additional height of horse riders) the assessors stood on a step ladder. The photography from these locations has been taken from a person's eye height as standing on the ground, to represent a pedestrian, as these were considered the more representative user of the routes.

2.2 Sensitivity (nature of the receptor)

2.2.1 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

2.2.2 The assessment of the value of each landscape receptor will be informed by GLVIA3 Box 5.1, as follows:

- a. Landscape quality;
- b. Scenic quality;
- c. Rarity;
- d. Representativeness;
- e. Conservation Interests;

- f. Recreation value;
- g. Perceptual aspects; and
- h. Association.

2.2.3 The above criteria have been reviewed in relation to the Landscape Institute’s Technical Guidance Note on ‘Assessing landscape value outside national designations’, which was published in May 2021.

2.2.4 TGN paragraph 1.3.1. states “TGN does not seek to provide an evaluative methodology that would replace those provided by other established advisory documents. It is intended to supplement existing advice to practitioners, such as guidance on Landscape Character Assessment and Landscape Sensitivity Assessment (Natural England, NatureScot, Natural Resources Wales, Marine Management Organisation), Local Landscape Designation (NatureScot, Natural Resources Wales) and Landscape and Visual Impact Assessment (the Landscape Institute and Institute of Environmental Management and Assessment). The TGN acknowledges and reflects all these important sources of guidance.” (Applicants emphasis)

2.2.5 As the criteria in TGN reflect those of GLVIA 3, the assessment methodology was considered to remain valid and in accordance with industry guidelines as demonstrated by the following review.

Table 2-1: Comparison of Landscape Value

TGN Criteria	LVIA Assessment of Value Factors	Comparison Narrative
Natural Heritage	Representativeness	TGN 02/21 defines cultural heritage as landscapes with clear evidence of archaeological, historical or cultural interest which contribute positively to the landscape. Examples of evidencing the cultural heritage include published landscape character assessments and historic characterisation. The LVIA has reviewed published landscape character assessments, historic characterisations as part of the assessment of conservation interests.
Cultural Heritage	Conservation Interests	TGN 02/21 defines cultural heritage as landscapes with clear evidence of archaeological, historical or cultural interest which contribute positively to the landscape. Examples of evidencing the cultural heritage include published landscape character assessments and historic characterisation. The LVIA has reviewed published landscape character assessments, historic characterisations as part of the assessment of conservation interests.
Landscape Condition	Landscape Quality	TGN 02/21 defines landscape condition as a landscape which is in a good physical state both with regard to individual elements and overall landscape structure. These factors are considered via the assessment of landscape quality within the LVIA.

TGN Criteria	LVIA Assessment of Value Factors	Comparison Narrative
Associations	Associations	TGN 02/21 defines associations as landscapes which are connected with notable people, events and the arts. These factors are considered via the assessment of landscape quality within the LVIA.
Distinctiveness	Rarity	TGN 02/21 defines distinctiveness as a landscape that has a strong sense of identity. The 2018 LVIA assessed the rarity of the landscape, e.g. ancient woodland, calcareous grassland or historical features. These features are considered to contribute to the sense of identity of a landscape and therefore there is sufficient parity between distinctiveness and rarity.
Recreational	Recreation value	TGN 02/21 defines recreational as landscapes offering recreational opportunities where experience of landscape is important. The LVIA assesses the recreational value of the landscape, via an analysis of Public Rights of Way or Open access land
Perceptual (scenic)	Scenic Quality	TGN 02/21 defines perceptual (scenic) value as a landscape that appeals to the senses, primarily the visual sense. The LVIA assesses the scenic quality of the landscape, based primarily on the visual senses, such that it reflects this aspect of the TGN.
Perceptual (wildness and tranquillity)	Perceptual aspects	TGN 02/21 defines this aspect of perceptual as a landscape with a strong perceptual value notably wildness, tranquillity and/or dark skies. These aspects are considered under the criteria of perceptual within the LVIA.
Functional	-	TGN 02/21 defines this aspect of value as a landscape which performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape. Examples include Green Infrastructure studies and landscape character assessments. The LVIA does not include a direct similar category. The LVIA does review the relevance of ecosystem services and landscape character assessments as part of the assessment of conservation interests and recreational value. Therefore, functionality is included in the LVIA, via the assessment of other factors of landscape value, albeit there was not a specific heading for functionality in the LVIA.

2.2.6 The assessment of value will also be informed by the information set out in the baseline, including any relevant landscape designations (including recreational or nature conservation designations), and the value of elements or characteristics of notable aesthetic, perceptual or experiential quality. Landscape value will be defined in relation to Table 2-2: Landscape Value.

Table 2-2: Landscape Value

Classification	Value Criteria
High	A landscape with elements of national or regional designation/importance or protected via legislation and / or which exhibit the key characteristics as defined by published landscape character assessments, or in their own right and/or exhibit rare landscape features including cultural or perceptual aspects.
Medium	A landscape with elements of local or neighbourhood designation or importance and / or a landscape which exhibits some of the key characteristics or distinctive features, including cultural or perceptual aspects, as defined by published landscape character assessments or in their own right.
Low	A landscape with elements of community importance and or common place features and community designation, including cultural or perceptual aspects, which exhibits few of the key characteristics as defined by published landscape character assessments or in their own right.
Very Low	A landscape with no or very few elements of importance and without designation or cultural or perceptual aspects, due to weak or discordant characteristics and one which detracts from the quality of the area, such that it does not exhibit any key characteristics as defined by published landscape character areas or in their own right.

Landscape Susceptibility

2.2.7 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.”

2.2.8 The Oxford dictionary definition of susceptibility is:

“the state or fact of being likely or liable to be influenced or harmed by a particular thing.”

2.2.9 Landscape susceptibility is therefore an assessment of whether the landscape receptor is able to accommodate the Scheme (i.e. solar panels, containers and battery storage etc), without adverse change occurring to that receptor.

2.2.10 Landscape susceptibility will be defined in relation to Table 2-3.

Table 2-3: Landscape Susceptibility

Classification	Susceptibility Criteria
High	The landscape receptor largely exhibits the key landscape elements as defined by the published landscape character assessments and includes a high degree of aesthetic, cultural and perceptual aspects, a defined pattern of landform and vegetation patterns,

Classification	Susceptibility Criteria
	such that there is limited ability to accommodate the Scheme without adverse change occurring.
Medium	The landscape receptor exhibits some of the key landscape character elements as defined by the published landscape character assessments and includes aesthetic, cultural and perceptual aspects, a coherent pattern of landform and vegetation patterns, such that there is some ability to accommodate the Scheme without adverse change occurring.
Low	The landscape receptor exhibits very few of the key landscape character elements as defined by the published landscape character assessments and includes limited aesthetic, cultural and perceptual aspects, with an altered pattern of landform and vegetation patterns, such that there is the ability to accommodate the Scheme without adverse change occurring.
Very Low	The landscape receptor exhibits none of the key landscape elements as defined by the published landscape character assessments and no aesthetic, cultural and perceptual aspects, and degraded landform, vegetation patterns and land use, such that there is a high ability to accommodate the Scheme without adverse change occurring.

Landscape Sensitivity

2.2.11 The assessment of landscape value and landscape susceptibility will be combined to define the sensitivity (nature) of the receptor as set out in Table 2-4: Landscape Sensitivity.

Table 2-4: Landscape Sensitivity

Classification	Sensitivity Criteria
High	Designated or non-designated landscapes exhibiting the landscape elements and characteristics either defined by published landscape character assessments or assessed as constituting higher value. Landscapes with a limited ability to accommodate the proposed Scheme without adverse changes.
Medium	Landscapes exhibiting some of the landscape elements, value and characteristics as defined by published landscape character assessments. Landscapes with some ability to accommodate the proposed Scheme without adverse changes.
Low	Landscapes exhibiting very few of the landscape elements and characteristics or value as defined by published landscape character assessments, community designations. Landscapes with the ability to accommodate the proposed Scheme without adverse changes.
Very Low	Landscapes exhibiting none of the landscape elements and characteristics, nor value, as defined by published landscape character assessments. Landscapes with a high ability to accommodate the proposed Scheme.

Visual

Visual Value

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

- a. *“Appearance in guidebooks our tourist maps;*

- b. *Provision of facilities, such as parking places, sign boards and interpretive materials; and*
- c. *References in literature or art.”*

2.2.13 The assessment of the value attached to 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 2-5: Visual Value.

Table 2-5: Visual Value

Classification	Visual Value Criteria
High	Publicised or iconic views across the landscape, views recognised in planning policy (e.g. East of England landscape framework or regional strategies and local plans) and/or management plans and landscape character assessments or of key landscape features and landmarks (both natural and built, e.g. pine lines or church towers).
Medium	Important views across the landscape which may be recognised at the local level, e.g. village design guides or statements and include landscape features relevant at a local level.
Low	Views across the landscape which are characterised by common landscape features and are not identified or visited specifically for the view.
Very Low	Views of damaged landscapes or mainly of detracting features within the landscape.

Visual Susceptibility

2.2.14 The criteria for assessing the susceptibility of visual receptors are set out in Table 2-6: Visual Susceptibility.

Table 2-6: Visual Susceptibility

Classification	Visual Susceptibility Criteria			
	High	Medium	Low	Very Low
Occupation or activity	People living in the area or visiting areas because of their visual value, including passing through the area on designated routes and promoted PRoW.	People passing through the secondary roads or undesignated routes	People passing through the area on main roads or railway lines	People working inside where the setting or views of the surrounding landscape is not important to their work
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 more on the activity of the receptor,	Views predominantly focused on the activity of the receptor, rather than the view

Classification	Visual Susceptibility Criteria			
	High	Medium	Low	Very Low
			rather than the view	

Visual Sensitivity

2.2.15 The assessment of visual value and visual susceptibility will be combined to define the sensitivity (nature) of the receptor as set out in Table 2-7: Visual Sensitivity.

Table 2-7: Visual Sensitivity

Classification	Visual Sensitivity Criteria
High	Activity resulting in a particular interest or appreciation of the view (e.g. residents, 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 designated view or a view of a key feature and landmark, reflecting high value features.
Medium	Activity resulting in a general interest or appreciation of the view (e.g. residents or people engaged in outdoor recreation that does focus on an appreciation of the landscape, outdoor workers, people passing through the landscape on defined scenic routes) and/or a view of local or community value reflecting high or medium value features.
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 in schools or other institutional buildings and hotels, people on main roads, people engaged in outdoor recreation that does not focus on the landscape) reflecting medium or low value features.
Very Low	Activity where interest or appreciation of the view is inconsequential (e.g. people at work) reflecting low or very low value features.

2.3 Magnitude of Impact (Change)

Landscape

2.3.1 The criteria for landscape magnitude are set out in Table 2-8: Landscape Magnitude of Impact.

Table 2-8: Landscape Magnitude of Impact

Classification	Criteria for Landscape Magnitude of Impact
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.

Classification	Criteria for Landscape Magnitude of Impact
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

2.3.2 The criteria for visual magnitude of impact is set out in Table 2-9: Visual Magnitude of Impact.

Table 2-9: Visual Magnitude of Impact

Classification	Criteria for Visual Magnitude of Impact
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 Scheme, 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.

2.4 Significance of Effect

2.4.1 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, along with professional judgement, using a matrix for a guide, as set out in Table 2-10.

Table 2-10: Landscape and Visual Significance of Effect

Receptor Sensitivity	Magnitude of Impact				
	High	Medium	Low	Very Low	None
High	Major	Major or Moderate	Moderate or Minor	Minor or Negligible	Neutral
Medium	Major or Moderate	Moderate or Minor	Moderate or Minor	Minor or Negligible	Neutral
Low	Moderate	Moderate or Minor	Minor or Negligible	Negligible or Neutral	Neutral
Very Low	Moderate or Minor	Negligible	Negligible / Neutral	Neutral	Neutral

2.4.2 Should professional judgement consider that the significance of effect is different to that in the matrix, or where the significance of an effect is represented by two descriptors, then a reasoned justification will be presented in the assessment.

2.4.3 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 has been presented in the ES chapter.

3 Zone of Theoretical Visibility Methodology

3.1.1 ZTVs have been modelled using the ‘Viewshed’ tool in ESRI ArcMap GIS Software.

3.1.2 For the ZTV prepared of the operational scheme, a 5m resolution digital terrain model (DTM) was used to create the ‘bare-earth’ ZTVs.

3.1.3 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.

3.1.4 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.

3.1 Type 4 Visualisations (Photomontage) Methodology

3.1.1 Several visualisations of the Scheme have been undertaken which superimpose the Scheme on to 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.

- 3.1.2 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.
- 3.1.3 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.
- 3.1.4 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.
- 3.1.5 Using CAD data, a three-dimensional computer model of the Scheme is augmented with added details to achieve a realistic representation of the Scheme.
- 3.1.6 Once this model is created it is positioned in 3D using the general arrangement drawings.
- 3.1.7 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.
- 3.1.8 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.
- 3.1.9 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.
- 3.1.10 Once the rendering stage is complete, the images are brought into Adobe Photoshop to superimpose the Scheme onto the digital images of the Order limits. 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.