RETFORD CIRCULAR ECONOMY PROJECT

TECHNICAL APPENDIX 7.1 LVIA METHODOLOGY

FEBRUARY 2023

APPENDIX 7.1: LANDSCAPE ASSESSMENT METHODOLOGY

1 LANDSCAPE ASSESSMENT METHODOLOGY

1.1 Guidance

The following documents have been considered for the assessment of potential effects of the Proposed Development on the landscape:

- Landscape Institute/ Institute of Environmental Management and Assessment (2013), 'Guidelines for Landscape and Visual Impact Assessment', 3rd Edition ('GLVIA3')[1];
- Landscape Institute (2013), GLVIA3 Statement of Clarification 1/13[2];
- Natural England (2014), 'An Approach to Landscape Character Assessment'[3];
- Landscape Institute Technical Guidance Note 21 'Assessing Landscape Value outside National Designations (May, 2021)[4]; and
- Landscape Institute (2019) Advice Note TGN 06/19 Visual Representation of Development Proposals[5].

As recommended by GLVIA3, this is not a generic LVIA methodology, but has been tailored to be proportionate to the nature, scale, and location of the proposed Scheme.

1.2 Introduction

The level of landscape effect is determined through consideration of the 'sensitivity' and 'susceptibility' of the landscape or visual receptor and the 'magnitude of change' that would be brought about by the Proposed Development should it to be constructed.

The time period for the assessment covers the construction of the plant and associated infrastructure, operational use to completion of the phased extraction works (up to 2046), and then following final restoration and aftercare (up to 2060).

The assessment has involved a process of iterative design and re-assessment of any remaining residual effects that could not otherwise be mitigated or 'designed out'. The type of effect is also considered and may be direct or indirect; temporary or permanent (reversible); cumulative; and positive (beneficial), neutral or negative (adverse). The landscape and visual assessment unavoidably involves a combination of both quantitative and qualitative assessment and wherever possible a consensus of professional opinion has been sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach.

1.3 Terminology

A description of the terms used in this LVIA are provided below.

[1] Landscape Institute/ Institute of Environmental Management and Assessment (2013), 'Guidelines for Landscape and Visual Impact Assessment', 3rd Edition ('GLVIA3');
[2] Landscape Institute (2013), GLVIA3 Statement of Clarification 1/13 Available online: https://www.landscapeinstitute.org/technical-resource/glvia3-clarifications/ Accessed 07/02/2023;
[3] Natural England (2014), 'An Approach to Landscape Character Assessment' Available online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691184/landscape-character-assessment.pdf Accessed: 07/02/2023;
[4] Landscape Institute Technical Guidance Note 21 'Assessing Landscape Value outside National Designations (May, 2021) Available online: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2021/05/tgn-02-21-assessing-landscape-value-outside-national-designations.pdf Accessed: 06/02/2023;
[5] Landscape Institute (2019) Advice Note TGN 06/19 Visual Representation of Development Proposals Available online: https://www.landscapeinstitute.org/visualisation/ Accessed: 05/02/2023.

1.3.1 Sensitivity of Receptor

This is established by considering the value of the receptor and its susceptibility to change. These two aspects inform the sensitivity of landscape and visual receptors as set out in Sections 1.5.1 and 1.6.1 below. For the purposes of this LVIA, receptor sensitivity is classified on a four-point scale of: negligible, low, medium, and high (refer to Tables A1.4 and A1.11).

1.3.2 Resource / Receptor Value

For the landscape resource this is related to the value that is attached to different landscapes by society. A landscape may be valued by different people for different reasons. For the purposes of the LVIA a receptor value is classified on a four-point scale of: negligible, low, medium, and high (refer to Tables A1.1, A1.2 and A1.9).

1.3.3 Susceptibility to Change

For landscape receptors this means the ability to accommodate a proposed development without undue consequences for the maintenance of the baseline situation and/or achievement of landscape planning policies and strategies

For the purposes of this LVIA, susceptibility to change is classified on a three-point scale of: low, medium, and high (refer to Tables A1.3 and A1.10).

1.3.4 Magnitude of Change

This is gauged by assessing the type and amount of change predicted to occur in relation to the identified landscape or visual receptor. Factors influencing the magnitude of change include: size, scale and nature of change; geographical extent; and duration and reversibility of effect as set out in Sections 1.5.2 and 1.6.2 and associated tables.

For the purposes of the LVIA, magnitude of change is classified on a four-point scale of: negligible, small, medium, and large (refer to Table A1.8 and A1.14)

Where there is no change to the receptor, or indeed no view of the wind turbines, the magnitude of change is assessed as **No Change** which would result in **No Effects.**

1.3.5 Level of Effect

The level of a landscape effect is gauged by considering the magnitude of change along with the sensitivity of the receptor using professional judgement. For the purposes of the LVIA, level of effect is classified on a six-point scale of: negligible, minor, minor to moderate, moderate, moderate to major and major (Tables A1.15 and A1.16).

In line with best practice guidance set out in GLVIA3, in addition to assessing level, effects are classified as: beneficial, adverse or neutral, as well as direct and indirect. An effect is understood to be neutral when the predicted residual change would, on balance, result in neither an improvement, nor a deterioration of the landscape resource compared with the existing baseline situation.

1.4 Baseline

The landscape baseline of the assessment was established by undertaking a detailed desk study, fieldwork, and analysis of findings to create a detailed understanding of the existing baseline landscape context of both the site and surrounding landscape within the study area.

Establishing the landscape baseline included gathering data on the landscape character and how this varies through the study area; together with its geographic extent; and how it is experienced and valued. The desk-based assessment began with a review of legislation,

policy and guidance including published landscape character assessments of the area and its wider context. This developed an understanding of the baseline environment within which the 2 km radius study area is located.

The established baseline provides an understanding of the components of the landscape resource that may be affected by the development, which includes the identification of key receptors and viewpoints which represent such receptors. The baseline is of sufficient detail to enable a well-informed assessment of the likely landscape effects on the baseline conditions of the Scheme.

The desk-based assessment has involved the following key activities:

- Familiarisation with the landscape resources of the area within which the Proposed Development would be located;
- Identification of landscape resources likely to be significantly affected by the Proposed Development;
- Preparation of Zone of Theoretical Visibility (ZTV) maps;
- Identification of the location of viewpoints, informed by the ZTV, that were used to inform the assessment of effects of thr landscape resources; and
- Identification of suitable study areas for the LVIA.

Viewpoints identified through consultation and during desk studies were ground-truthed through fieldwork and their positions were fixed prior to photography being undertaken. National and regional landscape character areas and local landscape character policy areas were reviewed during fieldwork. Refer to Section 7.7.3 Landscape Character within the LVIA and Figures 7.6a and 7.6b. Descriptions contained within the published landscape character assessment were augmented where necessary. Landscape receptors were also assessed to ensure they are accurately represented through desk-based assessment.

1.5 Assessment of Landscape Effects

In accordance with GLVIA3 the assessment of landscape and visual effects are separate but linked procedures; the landscape is assessed as an environmental resource in its own right, whereas visual effects are assessed on views and visual amenity experienced by people.

Both landscape and visual effects have been assessed at construction stage, during operation and following final restoration and aftercare.

1.5.1 Sensitivity

As noted above, the sensitivity of landscape receptors is assessed through consideration of their value and susceptibility to change. The process for determining landscape sensitivity is set out below.

Landscape Value

For landscape receptors, value concerns the importance of the landscape resource as evidenced by the presence of landscape designations and professional judgement. Susceptibility is concerned with the landscapes ability to absorb change brought about by the development.

Table A1.1 below illustrates how the value has been determined.

Table A1.1: Landscape Receptor Value

Value	Recognition	Features / Quality	Condition
High	Typically, a landscape / feature of international or national recognition e.g.	A strong sense of place with landscape / features worthy	A very high-quality landscape / feature;

	World Heritage Sites, National Parks, Scheduled Monuments and Grade I and II* Listed Buildings, Registered	of conservation; Absence of detracting features.	attractive landscape / feature; exceptional
Medium	Regional recognition e.g. Conservation Areas; Grade II Listed Buildings, Registered Parks and Gardens	A number of distinguishing features worthy of conservation; evidence of some degradation and occasional detracting features.	Ordinary to good quality landscape / feature with some potential for substitution; a reasonably attractive landscape / feature.
Low	Undesignated, but locally valued landscape / features	Few landscape features worthy of conservation; evidence of degradation with some detracting features.	Ordinary landscape / feature with high potential for substitution; quality that is fairly commonplace.
Negligible	Typically, an undesignated landscape / feature.	No landscape features worthy of conservation; evidence of degradation with many detracting features.	Low quality landscape / feature with very high potential for substitution; limited variety or distinctiveness; commonplace

The European Landscape Convention[6] promotes the need to take account of all landscapes, with less emphasis on the special and more recognition that ordinary landscapes, such as landscapes valued by their local community also have their own value. The criteria used to assess undesignated (community value) landscapes are set out using Box 5.1 in GLVIA3[7], as per Table A1.2 below.

Table A1.2: Factors for Assessing the Value of Undesignated Landscapes

Factor	Criteria
Landscape Quality (condition)	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Scenic Quality	The term used to describe landscapes that appeal primarily to the senses (primarily but not wholly the visual senses).
Rarity	The presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type.
Representativeness	Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.
Conservation interests	The presence of features of wildlife, earth science or archaeological or historical and cultural interest can add to the value of the landscape as well as having value in their own right.
Recreation value	Evidence that the landscape is valued for recreational activity where experience of the landscape is important.
Perceptual aspects	A landscape may be valued for its perceptual qualities, notably wildness and/or tranquility.
Associations	Some landscapes are associated with particular people, such as artists or writers, or events in history that contribute to perceptions of the natural beauty of the area.

[6] The European Landscape Convention for the UK. Available on line at https://www.gov.uk/government/publications/european-landscape-convention-guidelines-for-managing-landscapes

[7] Landscape Institute Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, Box 5.1, Page 84.

Susceptibility of the Landscape Receptors to Change

This means the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies[8].

Susceptibility of landscape receptors to change has been assessed using the criteria set out in Table A1.3 below.

Table A1.3: Landscape Receptor Susceptibility to Change

Susceptibility	Criteria
High	The landscape receptor is highly susceptible to the development, and a low ability to accommodate the specified proposed change because the key characteristics of the landscape have no or very limited ability to accommodate the specific proposed change without undue adverse effects taking account of the existing character and quality of the landscape, and/or achievement of relevant planning policies / strategies.
Medium	The landscape receptor is moderately susceptible to the development, and a moderate ability to accommodate the specific proposed change, because the relevant characteristics of the landscape have some ability to accommodate it without undue adverse effects, taking account of the existing character and quality of the landscape, and/or achievement of relevant planning policies / strategies.
Low	The landscape receptor has low susceptibility to the development, and a high ability to accommodate the specific proposed change, because the relevant characteristics of the landscape are generally able to accommodate it with little, or no, undue consequences for the maintenance of the baseline situation, taking account of the existing character and quality of the landscape.
Negligible	Very high ability to accommodate the specific proposed change; no undue consequences for the maintenance of the baseline situation (receptor value) and/or achievement of relevant planning policies / strategies.

Landscape Sensitivity

GLVIA3 indicates that combining susceptibility and value can be achieved in a number of ways and needs to include professional judgement. However, it is generally accepted that a combination of high susceptibility and high value is likely to result in the highest sensitivity, whereas a low susceptibility and low value is likely to resulting in the lowest level of sensitivity. A summary of the likely characteristics of the different levels of sensitivity is described below in Table A1.4 below. It should be noted that the levels are indicative and in practice there is not always a clear distinction between criteria levels.

Table A1.4: Landscape sensitivity criteria

Landscape Resource Sensitivity	Characteristics
High	Landscape character, characteristics, and elements where, through consideration of the landscape resource and characteristics, there would generally be a lower landscape capacity or scope for landscape change or positive enhancement, and higher landscape value and quality. Often includes landscapes which are highly valued for their scenic quality, including most statutorily (nationally / internationally designated landscapes). Elements/features that could be described as unique or are nationally scarce.

[8] Landscape Institute Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, Paragraph 5.40, Page 88.

Landscape Resource Sensitivity	Characteristics
	Mature vegetation with provenance such as ancient woodland or mature parkland trees, and/or mature landscape features which are characteristic of and contribute to a sense of place and illustrates time- depth in a landscape and if replaceable, could not be replaced other than in the long term.
Medium	Landscape character, characteristics, and elements where, through consideration of the landscape resource and characteristics, there would be a medium landscape capacity or some scope for landscape change. Often includes landscapes of medium landscape value and quality which may be locally designated. Areas that have a positive landscape character but include some areas of alteration/degradation/or erosion of features. Perceptual/aesthetic aspects has some vulnerability to unsympathetic development; and/or features/elements that are locally commonplace; unusual locally but in moderate/poor condition; or mature vegetation that is in moderate/poor condition or readily replicated.
Low	Landscape character, characteristics and elements where, through consideration of the landscape resource and characteristics, there would be higher landscape capacity or scope for landscape change or positive enhancement. Damaged or substantially modified landscapes with few characteristic features of value. Capable of absorbing major change, and landscape elements/features that might be considered to detract from landscape character such as obtrusive man-made features (e.g. power lines, large scale developments, etc.).
Negligible	Landscape character, characteristics and elements where there is a high landscape capacity or a planned desire for landscape change. Usually applies to landscapes with a lower landscape susceptibility or higher landscape capacity for the development. May also apply to derelict landscapes, spoil heaps, and de-graded urban fringe areas that require restoration or re- development / re-planting. Areas that are relatively bland or neutral in character with few/no notable features. A landscape that includes areas of alteration/degradation or erosion of features, and/or landscape elements/features that are common place or make little contribution to local distinctiveness. Opportunities for the restoration of landscape through mitigation measures associated with the proposal.

1.5.2 Magnitude of Landscape Effects

The determination of the magnitude of landscape and visual effects combines an assessment of the size or scale of change likely to be experienced as a result of each

effect[9], the geographical extent of the area likely to be influenced and the duration and reversibility of effects.

Geographical Extent

The geographical area over which the landscape effects would be felt is also considered. This is dependent upon the nature of the proposal and the scale of effects upon the receiving landscape / landscape; however, in general effects may have an influence at the following scales:

- At the site level, within the Proposed Development site itself;
- At the level of the immediate setting of the site within the locality of Sutton-cum-Lound and Lound;
- At the scale of the landscape type or character area within which the proposal lies (i.e., IL10 Ranskill); or
- On a larger scale, influencing several landscape types or character areas (both national and regional).

Size or Scale

Judgements are needed about the size or scale of change in the landscape that is likely to be experienced as a result of each effect. GLVIA3 states that 'judgements should, for example, take account of:

- The extent of the existing landscape elements that would be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape – in some cases this may be quantified;
- The degree to which aesthetic and perceptual aspects of the landscape are altered either for example, the removal of existing components of the landscape or by the addition of new ones; and
- Whether the effect changes the key characteristics of the landscape, which are critical to its distinctive character.

Duration and Reversibility of the Landscape Effects

Duration and Reversibility are separate but linked considerations. Duration can usually be simply judged on a scale such as:

- Short-term: 0-5 years;
- Medium-term: 5-10 years; and
- Long-term: 10-40 years.

For the purposes of this assessment this Scheme has been assessed as temporary but long term.

Reversibility is a judgement about whether or not a development can be removed, and once removed can the landscape / landscape be fully restored. The examples in Table A1.7 below indicate the type of land use and the respective assessment of reversibility defined in GLVIA3. Tables A1.5 to A1.8 set out the criteria used to assess the magnitude of landscape effects. Not all aspects of a criterion need to be met for an evaluation to be given.

Table A1.5 Magnitude of Landscape Change: Reversibility

Category	Description
Permanent	Permanent, is irreversible change to the landscape, for example housing development, as it not possible to remove the Wind turbines and restore the land to the original state.

[9] Guidelines for Landscape and Visual Impact Assessment (page 90)

Category	Description
Partially Reversible	Partially Reversible, change to the landscape, where the landscape can be restored to something similar to the landscape that was removed. For example, mineral developments, as it is possible to restore the land to something similar to the original state, but not the same state.
Reversible	Reversible, change to the landscape where the landscape can be fully restored. For example, a marine fish farm development, as it is possible to wholly remove the remove the Wind turbines and to restore the landscape to the original state. This also includes construction activities which are of temporary nature.

Overall Magnitude of Landscape Change

The overall magnitude combines size and scale, geographical extent, duration and reversibility as set out in Table A1.6 below.

Table A1.6: The Assessment of Overall Magnitude of Change

Category	Description
Large	A large extent of existing landscape elements would be lost / adjusted, the proportion that this represents within the landscape is considerable and the resultant change to the landscape character resulting from such a loss is large. Large scale alteration of the aesthetic and perceptual aspects of the landscape such as the removal of existing components of the landscape or by addition of new ones – for example, removal of hedges may change a small scale, intimate landscape into a large-scale, open one, or introduction of new buildings or tall structures may alter open skylines. The effect changes the key characteristics of the landscape & landscape, which are critical to its distinctive character. The change would affect all of the landscape receptors being assessed, as the development would occupy a large geographical extent, e.g., the change would be on a large scale, influencing several landscape types or character areas. The effects are either of a long duration, permanent, or irreversible /reversible change to the landscape.
Medium	A medium extent of existing landscape elements would be lost / adjusted, the proportion that this represents within the landscape is medium and the resultant change to the landscape character resulting from such a loss is medium. Medium scale alteration of the aesthetic and perceptual aspects of the landscape such as the, removal of existing components of the landscape or by addition of new ones. The effect changes some of the key characteristics of the landscape & landscape, which are critical to its distinctive character. The change would affect a medium extent of the landscape receptors being assessed, as the development would occupy a moderate geographical extent, e.g., at the scale of the landscape type or character area within which the proposal lies. The effects are either of a long / or medium duration, permanent, or irreversible /reversible change to the landscape.
Small	A small extent of existing landscape elements would be lost / adjusted, the proportion that this represents within the landscape is low and the resultant change to the landscape character resulting from such a loss is low. Small scale alteration of the aesthetic and perceptual aspects of the landscape such as the, removal of existing components of the landscape or by addition of new ones. The effect changes a small number of the key characteristics of the landscape & landscape, which are critical to its distinctive character. The change would affect a small part of the landscape receptors being assessed, as the development would occupy a small geographical extent, e.g., at the level of the immediate setting of the site.

Category	Description
	The effects are either of a Medium / or short duration and reversible change to the landscape.
Negligible	A barely perceptible extent of landscape features and elements of importance to the character of the baseline are lost / adjusted. There is a barely discernible change to aesthetic and / or perceptual attributes of landscape & landscape character and such changes occurs across a very limited geographical area and / or proportion of the landscape receptor. The effect changes a barely discernible number of the key characteristics of the landscape, which are critical to its distinctive character. The change would affect only a negligible part of the landscape receptors being assessed, as the development would occupy a limited geographical extent, e.g., the site level, within the development site itself. The effects are of short duration and reversible.
No Change	The proposals would not affect any of the landscape receptors being assessed

1.6 Nature of Effect

The nature of an effect is also assessed. This is dependent on a number of criteria which vary between effects upon the landscape as a resource and effects on visual amenity. Effects are classified as beneficial, neutral or adverse according to the following definitions:

- **Beneficial** effects contribute to the landscape resource through the enhancement of desirable characteristics or the introduction of new, positive attributes. The removal of undesirable existing elements or characteristics can also be beneficial, as can their replacement with more appropriate components;
- **Neutral** effects occur where the Proposed Development neither contributes to nor detracts from the landscape resource or where the effects are so limited that the change is hardly noticeable. A change to the landscape and visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation; and
- **Adverse** effects are those that detract from or weaken the landscape resource through the introduction of elements that contrast in a detrimental way with the existing characteristics of the landscape and visual resource, or through the removal of elements that are key in its positive characterisation.

The LVIA describes the overall effects on receptors and explains the justification for each assessment. For each assessed effect, a conclusion has been drawn on whether the effect is beneficial, neutral or adverse.

1.7 Significance of Landscape Effects

The level of landscape and visual effect and whether it is significant or not has been assessed based on the sensitivity of the affected resource / receptor, and the magnitude of change caused by the Proposed Development, as set out for each of the above in the preceding tables.

The combined sensitivity and magnitude used to determine the level of effect and whether significant or not is summarised within Table A1.11 below. Note that effects can be either positive or negative, and in some cases, neutral (neither positive, nor negative).

Table A1.11 Matrix for Determining Significant of Effect

		Sensitivity (value / importance)			
		High	**Medium**	**Low**	**Negligible**
Magnitude of change	**Large**	**Major**	**Moderate – Major**	Minor – Moderate	Negligible
	Medium	**Moderate – Major**	**Moderate**	Minor	Negligible
	Small	Minor – Moderate	Minor	Negligible – Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

In accordance with Infrastructure Planning (Environmental Impact Assessment) (England) Regulations 2017 (EIA Regulations)[10] it is important to determine whether the predicted landscape effects arising from the development are likely to be significant. The dark grey shaded cells are generally considered to be significant in the context of the EIA Regulations. Significant landscape effects highlighted in bold in the text, relate to all those effects which result in a **Major**, **Moderate – Major**, and **Moderate** landscape or visual effect. Moderate levels of landscape and visual effect could also be considered significant, and explanation is provided by the assessor where these occur.

Unshaded cells denote effects that would be 'not significant' and therefore ones which are generally considered to be not material to the planning decision.

It should be noted that the above matrix is intended as a framework for assessment only and that the level of effect (significance) would vary depending on the circumstances, the type and scale of development proposed, the baseline context and other factors. The gradations of magnitude of change and level of effect used in the assessment represent a continuum; the assessor has used professional judgement when gauging the level of effect and determining whether or not an effect should be considered significant.

Table A1.12 below provides a more detailed summary of the categories of effect.

Table A1.12 - Categories of Landscape Effect

Level of Effect	Description of Landscape Effect	Description of Visual Effect
Major	Considerable change over an extensive area of a highly sensitive landscape, fundamentally affecting the key characteristics and the overall impression of its character.	The development would become a prominent feature and would result in a very noticeable change to an existing highly sensitive and well composed view.
Moderate	Small or noticeable change to a highly sensitive landscape or more intensive change to a landscape of medium or low sensitivity, affecting some key characteristics and the overall impression of its character.	The development would introduce some enhancing or detracting features to an existing highly sensitive and well composed view, or would be prominent within a less well composed and less sensitivity view, resulting in a noticeable improvement or deterioration of the existing view.
Minor	Small change to a limited area of landscape of high or medium sensitivity or a more widespread	Where the proposed development would form a perceptible but not enhancing or detracting feature within a view of high

[10] Infrastructure Planning (Environmental Impact Assessment) (England) Regulations 2017 (EIA Regulations). Available online: https://www.gov.uk/guidance/environmental-impact-assessment Accessed 07.02.2023

Level of Effect	Description of Landscape Effect	Description of Visual Effect
	area of a less sensitive landscape, affecting few characteristics without altering the overall impression of its character.	or medium sensitivity or would be a more prominent feature within a poorly composed view of low sensitivity, resulting in a small improvement or deterioration of the existing view.
Negligible	No discernible improvement or deterioration to the existing landscape character.	No discernible improvement or deterioration in the existing view.
No Effect	The development would not affect the landscape receptor.	The development would not affect the view
Major	Considerable change over an extensive area of a highly sensitive landscape, fundamentally affecting the key characteristics and the overall impression of its character.	The development would become a prominent feature and would result in a very noticeable change to an existing highly sensitive and well composed view.