ENVIRONMENTAL STATEMENT – VOLUME 3 – APPENDIX 9.3

LVIA Methodology

Drax Bioenergy with Carbon Capture and Storage

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(a)

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1.1. INTRODUCTION

1.1.1. The methodology for the Landscape and Visual Assessment (LVIA) has been produced in accordance with best practice by suitably qualified Landscape Architects that are Chartered Members of the Landscape Institute (CMLI).

1.1.2. The assessment considers two distinct but closely related themes, landscape character and visual amenity.

- **a.** The landscape assessment considers the effects of the Proposed Scheme on landscape character and landscape as a resource; and
- **b.** The visual assessment considers the views that are available to people (visual receptors) who may be affected by a proposed development and their perception and responses to changes in these views.

1.2. GUIDANCE

1.2.1. The primary source of guidance for the LVIA is the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3) (The Landscape Institute with the Institute of Environmental Management and Assessment, 2013). The following sources have also been referred to in the preparation of the methodology for the LVIA and production of visual representations:

- **a.** Natural England (2014). An Approach to Landscape Character Assessment (Natural England, 2014); and
- **b.** Landscape Institute (2019). Visual Representation of Development Proposals: Landscape Institute Technical Guidance Note 06/19 (Landscape Institute, 2019).

1.3. GUIDELINES FOR LANDSCAPE AND VISUAL IMPACT ASSESSMENT, 3RD EDITION (GLVIA3)

1.3.1. The methodology is consistent with the approach and process set out in the flow diagram on page 39 of GLVIA3, and summarised in below:

1.3.2. The assessment involves the following key stages:

- **a.** Establishment of the baseline conditions; the landscape character and visual context of the receiving environment and the sensitivity to change of these resources
- **b.** Contributions to the iterative process of design and mitigation based on understanding the nature, form and features of the Proposed Scheme in relation to the key landscape and visual sensitivities.
- **c.** An evaluation of the magnitude of change likely to result from the Proposed Scheme, both during construction and in operation on visual amenity and the landscape.

d. An evaluation of the cumulative magnitude of change likely to result from the Proposed Scheme in conjunction with other similar existing or future developments, both during construction and in operation on visual amenity and the landscape resource.

e. An assessment of the significance of landscape and visual effects considering the sensitivity of resources and the magnitude of change.

f. An assessment of the cumulative significance of landscape and visual effects considering the sensitivity of resources and the magnitude of change.

1.3.3. The future baseline with relevance to LVIA is considered in descriptive terms highlighting where significant effects are likely to arise in relation to the future baseline as far as can be reasonably predicted. This may include schemes under construction and consented schemes but also other changes, for example the modification of land use and settlement pattern, forestry practice and potential landscape change due to disease and pathogens or climate change.

1.3.1. For both the landscape and visual assessments, including cumulative assessment, the significance of effect is derived from consideration of the anticipated magnitude of change in relation to the sensitivity of a landscape or visual receptor. Criteria Matrices are used to inform the decision-making process for the assessor, although these serve as an aid to professional judgement and are not a prescriptive tool. There are circumstances where assessment conclusions may, upon application of professional judgement, differ from those suggested by a significance matrix.

1.4. STUDY AREA

1.4.1. The Study Area defines the area in which significant effects are likely to occur.

1.4.2. GLVIA 3 states that study areas should be determined on a project specific basis. Paragraph 5.2 of GLVIA 3 states that the study area extent should *be "… Based on the extent of Landscape Character Areas likely to be significantly affected either directly or indirectly*" or "*on the extent of the area from which the development is potentially visible, defined as the Zone of Theoretical Visibility, or a combination of the two*." (Landscape Institute, 2019)

1.4.3. For the purposes of this assessment, the Study Area for assessing potentially significant landscape and visual effects was set out for the scoping stage at a maximum of 10km radius from the Order Limits. The Study Area was refined as part of the preliminary landscape impact assessment, which was reported in the Preliminary Environmental Information Report (PEIR), to 3 km radius. A 3 km Study Area will be used for the LVIA as it not anticipated that significant effects will be experienced beyond the 3 km Study Area. The landscape effects consider the impacts on the LCAs in their entirety.

1.4.4. The proposed Study Area is based on an analysis of the maximum height parameters set out within **Chapter 2** and the extent of the Proposed Scheme, as defined in **Figure 9.3 (ZTV)** (document reference 6.2.9.3), in combination with professional judgement and as well as subsequent field visits.

1.5. INFORMATION AND DATA SOURCES

1.5.1. The first stage of the process was to collect data through a desktop study of the Site and the Study Area. This research identified information such as landscape related planning designations, landscape character typology, other infrastructure in the area, and views from key locations such as routes and settlements.

1.5.2. Geographical Information Systems (GIS) and Google Earth were used to explore the potential visibility of the Proposed Scheme. The Zone(s) of Theoretical Visibility (ZTV) and Google Viewshed tool informed the identification of landscape and visual receptors that are likely to be pertinent to the assessment.

1.6. STAGES OF DEVELOPMENT

1.6.1. The assessment considered the Proposed Scheme and associated infrastructure from construction to decommissioning, with the assessment divided into three stages of development as follows:

CONSTRUCTION

1.6.2. This part of the assessment considers the short term and temporary effects arising from construction activities including the presence of temporary site compounds, car parks, laydown areas and the removal of vegetation.

OPERATIONAL PERIOD

1.6.3. This part of the assessment considers the medium to long-term permanent effects that persist through the operational life of the Proposed Development. The removal of vegetation during construction is also relevant to the operational phase

DECOMMISSIONING

1.6.4. This part of the assessment considers the landscape and visual effects of the Proposed Development after 25 years (Design Life). Its operational life and future decommissioning may however take place after the expiry of the Design Life.

LEVEL OF EFFECT

1.6.5. The level of landscape and visual effect is gauged by considering the magnitude of proposed change along with the sensitivity of the receptor using professional judgement. For the purposes of the LVIA, level of effect is classified on a scale of: negligible, minor, moderate and major.

1.6.6. In line with best practice guidance set out in GLVIA3, the level of effects are classified as: positive (beneficial), negative (adverse) or negligible 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 and visual resource compared with the existing situation.

EFFECT SIGNIFICANCE

1.6.7. The Infrastructure Planning (Environmental Impact Assessment) (England) Regulations (HM Government, 2017) require that a judgement is made on whether an environmental effect is 'significant' or not.

1.6.8. For the purposes of this LVIA, the landscape and visual effects which are assessed as moderate or major are considered to be significant, whilst effects of minor or less are considered to be not significant.

ASSESSMENT OF EFFECT

1.6.9. 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.

1.6.10. Both landscape and visual effects have been assessed at construction stage, Year 0 and Year 15 from completion, allowing for the establishment of any landscape mitigation measures.

1.7. LANDSCAPE ASSESSMENT

1.7.1. Landscape effects are defined by the Landscape Institute in GLVIA3, paragraphs 5.1 and 5.2 as follows:

> *"An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character" (*paragraph 5.1*)*

1.7.2. Landscape effects can be defined as the changes in the character and quality of the landscape as a result of a development, through:

a. The impact on the landscape fabric (changes a proposed development may cause to specific features and elements that make up the landscape);

b. The impact on the overall patterns of elements and on the perceptual and aesthetic aspects that give rise to landscape character and regional and local distinctiveness; and

c. The impact on valued landscapes such as public open space, designated landscapes or otherwise valued landscapes including wild land.

1.7.3. The sensitivity of these receptors has been determined by considering the landscape receptor value and the landscape susceptibility of the receptor to the change proposed, with reference to **Tables 1.1** and **1.2** below. These are employed as a guide to professional judgement and have been used as far as possible to give an objective evaluation of sensitivity.

LANDSCAPE SUSCEPTIBILITY

1.7.4. Landscape susceptibility is defined in GLVIA3 to mean 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" (paragraph 5.40).

1.7.5. Judgements on landscape susceptibility include references to both physical and aesthetic characteristics, and the potential scope for mitigation which would be in character with the landscape. Landscape susceptibility varies according to different areas of landscape character, factors that commonly indicate lower landscape susceptibility include landscape characteristics of larger scale, uniformity, simple landform and skylines with limited landscape features.

Table 1.1 - Susceptibility to Proposed Change

Susceptibility to Proposed Change	
High	Low ability to accommodate the specific proposed change; undue consequences for the maintenance of the baseline situation (receptor value) and/or achievement of relevant planning policies / strategies.
Medium	Moderate ability to accommodate the specific proposed change; some undue consequences for the maintenance of the baseline situation (receptor value) and / or achievement of relevant planning policies / strategies.
Low	High ability to accommodate the specific proposed change; little or no undue consequences for the maintenance of the baseline situation (receptor value) and / or achievement of relevant planning policies / strategies.
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

Source: Derived from GLVIA3

LANDSCAPE VALUE

1.7.6. This includes the consideration of a range of features which may include the presence or absence of landscape designation, landscape and scenic qualities, rarity / representativeness, conservation interests, recreational value, perceptual qualities such as tranquillity and historical or cultural associations. The importance attached to a landscape, often as a basis for designation or recognition, which expresses

national or local consensus, because of its quality including cultural associations, scenic or aesthetic qualities.

1.7.7. Landscape value may be indicated by the presence or absence of a landscape planning designation such as a National Park, Area of Outstanding Natural Beauty, Country Parks or Registered Parks and Gardens, indicating a landscape of national or local value accordingly

1.7.8. The absence of a landscape planning designation does not necessarily mean that an area is of 'low' landscape value. Undesignated areas are often valued locally. Indications of this may be present in the form of local cultural or natural heritage records and works of art, observation or records of scenic or aesthetic qualities such as wildness, or the presence of viewing platforms or benches.

1.7.9. It should be noted that a landscape of high value may not always equate to areas of high landscape quality and that areas of low landscape value may contain areas of higher landscape quality. The state of repair or condition of the elements of a particular landscape, its integrity and intactness and the extent to which its distinctive character is apparent are also relevant. Landscapes of lower quality tend to include those under intensive agriculture, forestry or urban fringe situations where the landscape elements and patterns have been eroded.

Table 1.2 - Landscape Receptor Value

Value	Recognition	Features	Quality / Condition
High	Typically, a landscape / feature of international or national recognition e.g.: World Heritage Sites, National Parks, Scheduled Monuments and Grade I and II* Listed Buildings, Registered	Typically, a strong sense of place with landscape / features worthy of conservation; no or few detracting features.	A very high-quality landscape / feature; attractive landscape / feature; exceptional / distinctive.
Medium	Regional recognition e.g.: Conservation Areas; Grade II Listed Buildings, Registered Parks and Gardens	Typically, contains distinguishing features worthy of conservation; evidence of some degradation and / or some detracting elements.	Ordinary to good quality landscape / feature with some potential for substitution; a reasonably attractive landscape / feature; fairly typical and commonplace.

Value	Recognition	Features	Quality / Condition
Low	Typically, undesignated landscape / features	Few landscape features worthy of conservation, evidence of degradation with many detracting features.	Ordinary landscape / feature with high potential for substitution; quality that is typically commonplace and unremarkable; limited variety or distinctiveness.
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.

Source: Derived from GLVIA3

LANDSCAPE SENSITIVITY

1.7.10. 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 3**. It should be noted that the levels are indicative and in practice there is not a clear distinction between criteria levels.

Table 1.3 - Landscape Sensitivity

Landscape Resource Sensitivity	Typical Characteristics
High	Areas of landscape character that are highly valued for their scenic quality (including most statutorily designated landscapes). Elements / features that could be described as unique or are nationally scarce.

Landscape Resource Sensitivity	Typical Characteristics
	Mature vegetation with provenance such as ancient woodland or mature parkland trees. 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. No, or limited, scope for substitution or positive enhancement.
Medium	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. Some scope for substitution or positive enhancement.
Low	Damaged or substantially modified landscapes with few characteristic features of value. Capable of absorbing major change. Landscape elements/features that might be considered to detract from landscape character such as obtrusive man-made artefacts (e.g., power lines, large scale developments, etc.). Scope for substitution or positive enhancement.
Negligible	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 commonplace or make little contribution to local distinctiveness. Opportunities for the restoration of landscape through mitigation measures associated with the proposal.

Source: Derived from GLVIA3

1.8. VISUAL ASSESSMENT

1.8.1. Visual assessment is defined by the Landscape Institute in GLVIA 3, paragraphs 6.1 as follows:

> *"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements."*

1.8.2. Visual effects relate to changes in available views of the landscape and the effect of those changes on people, including:

- **a.** The direct effects of a proposed development on the content and character of views through the intrusion or obstruction and / or the change or loss of existing elements.
- **b.** The overall effect on visual amenity, be it degradation or enhancement.

1.8.3. Visual effects are identified for different receptors (people) who will experience the view at their places of residence, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:

- **a.** Visual effect: a change to an existing static view, sequential views, or wider visual amenity as a result of the introduction of a proposed development or the loss of particular landscape elements or features already present in the view.
- **b.** Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a greater effect than any one individual development.

1.8.4. The visual assessment aims to determine where the Proposed Scheme can be seen from; this is known as the visual envelope or, when determined by computer modelling, the Zone of Theoretical Visibility ('ZTV'). Once determined, a series of representative and key viewpoints (publicly accessible places from where it may be possible to see the Proposed Scheme) were chosen to illustrate the assessment, such as residential areas, public open spaces, Public Rights of Way ('PRoW') / public footpaths and roads.

1.8.5. In predicting the effects of the Proposed Scheme on the visual receptors from specific viewpoints being assessed, GLVIA3 (para 6.27) states that it is helpful to consider (but not restricted to) the following issues:

- **a.** Nature of the view (full, partial or glimpsed);
- **b.** Proportion of the Proposed Scheme visible (full, most, part or none);
- **c.** Distance of the viewpoint from the Proposed Scheme and whether it would be the focus of the view or only a small element;
- **d.** Whether the view is stationary, transient or sequential; and

e. The nature of the changes to the view.

1.8.6. Additionally, the seasonal effects of vegetation have been considered, in particular the varying degree of screening and filtering of views.

VISUAL SUSCEPTIBILITY

1.8.7. To determine visual effects both the susceptibility of the visual receptor and the magnitude of change must be considered. Determining visual sensitivity is the combination of susceptibility to change and value of a view. The value, susceptibility to change and resultant sensitivity of a visual receptor are broadly categorised based on the following **Table 1.4** and **Table 1.5** below. It should be noted that the levels are indicative: in practice there is not a clear distinction between criteria levels.

1.8.8. The susceptibility of visual receptors to changes in the view and visual amenity is related to the activity they are engaged in and the extent to which their attention is focused on the views and visual amenity at that location. As such those receptors most sensitive to change are likely to include people engaged in outdoor activities where an appreciation of the landscape is the focus and residential receptors, as GLVIA3 paragraph 6.36 states,

1.8.9. *"it is important to recognise that residents may be particularly susceptible to changes in their visual amenity - residents at home, especially using rooms normally occupied in waking or daylight hours, are likely to experience views for longer than those briefly passing through an area"*

1.8.10. Conversely, those considered least sensitive to change include (but are not restricted to) people engaged in outdoor sports or recreation where there is no focus on the surrounding landscape/views and people at their place of work where the focus is on the work activity. See **Table 1.4** below for a full description of the criteria used to assess the susceptibility of viewpoints.

Table 1.4 - Susceptibility to Change

Susceptibility to Change	
High	~ Residents at home; ~ Walkers on long distance trails, well used Public Rights of Way and cycle routes (where the attractive nature of the countryside is a significant factor in the enjoyment of the experience); ~ Visitors along scenic routes and to recognised viewpoints; ~ Visitors to landscape and heritage resources and other attractions where views of the surroundings are an important contributor to appreciation, experience and / or enjoyment.
Medium	~ Users of waterways, Public Rights of Way / footpaths / disused airfields used locally and passing through the landscape and well used footpaths within settlements;

Susceptibility to Change	
	~ General road users where there are clear / open views across the landscape and low levels of traffic; ~ Passengers on rail lines where the trains run at low or moderate speeds; ~ Users of public open spaces including country parks, grounds of places of worship, educational facilities and golf courses where the nature of the surroundings is not a significant factor in the enjoyment of the activity; ~ Visitors to landscape and heritage resources and other attractions where views of the surroundings are a minor contributor to appreciation, experience and / or enjoyment.
Low	~ People at their workplace or shopping; ~ Users of high speed roads (except where there are open clear views) and other roads where the focus is on the road ahead owing to traffic conditions and / or the context or composition of the view; ~ Passengers in trains running at high speeds; ~ Users of public open space and footpaths where the nature of the surroundings is irrelevant to the enjoyment of the activity.
Negligible	~ Users of indoor facilities where the view is irrelevant to their activity.

Source: Derived from GLVIA3

1.8.11. In making judgements about the value of each view, the assessment should take into account the following:

a. Recognition of the value to a particular view, e.g., in relation to heritage assets or planning designations.

b. Indicators of the value attached to views by others, e.g., in guidebooks, tourist maps, literary references, painting etc.

1.8.12. **Table 1.5** below shows some examples of the value of a view, its recognition and indicators of value. Views of low are from unattractive non-designated landscapes which unlikely to be visited specifically to experience the view available. Similarly views of negligible value are where the view is irrelevant to the receptors experience or reasons of being there.

Table 1.5 - Value of the View

Value	Recognition	Indicators of value
High	Recognised views from nationally or internationally important landscape or heritage resources, Scheduled Monuments; may be identified in planning policies or statutory documents.	High value / celebrated view; referred to in national or international guidebooks, tourist guides etc.; literary and art references; presence of interpretive facilities (e.g. visitor centre).
Medium	Recognised views from local or regionally important landscape or heritage resource, such as Local Landscape Areas or Conservation Areas; may be identified in local planning policies or supplementary planning documents.	Moderately valued view; referred to in local or regional guidebooks, tourist maps etc.; local literary and art references; presence of some interpretive facilities (e.g. parking places or sign boards)
Low	Locally recognised views, usually informal.	Valued view but no formal references, may include informal footpaths that indicate well used routes by locals. Likely to be common where views are typical of the location with little distinctiveness, lacking in attractors or detractors.
Negligible	Little to no recognition	Not known locally for its views, places that lack evidence of people actively seeking use and therefore any associated views.

Source: Derived from GLVIA3

VISUAL SENSITIVITY

1.8.13. Susceptibility and value are considered in combination to form a judgement about the visual sensitivity of a given receptor. 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 result in the lowest level of sensitivity.

1.8.14. However, whilst a valued view may serve to increase the overall sensitivity of the visual receptor, a low value will not necessarily reduce overall sensitivity. Whilst it would be anticipated that visual receptors considered highly susceptible to the proposed change would be considered to be of high sensitivity, this wouldn't be the case if there were reasons associated with the value of the view that lead to a reduction in sensitivity. For example, a resident at home would generally have a high sensitivity to the proposed change, but if the view they currently experience is of a low value degraded and industrial landscape it can be expected that their susceptibility to a proposed change of a similar industrial nature would be reduced.

1.8.15. Similarly, receptors considered of low or medium susceptibility are usually in the same category of sensitivity, unless there are reasons associated with the value of the view which suggest an increase in sensitivity. When determining overall visual sensitivity, it should be noted that the levels are indicative and fall on a sliding scale from high to negligible; professional judgement is necessary to determine the overall level of sensitivity.

1.8.16. Any visual receptors assigned a negligible level of sensitivity will not be further considered as part of the assessment on the basis that significant effects are highly unlikely (as demonstrated by **Table 1.6**).

1.8.17. Visual sensitivity criteria are summarised in **Table 1.6** below.

Table 1.6 - Visual Sensitivity Criteria

Visual Sensitivity	
High	A view or overall visual amenity which is an important reason for receptors being there (and therefore most views or overall visual amenity for highly susceptible receptors). A well-balanced view containing attractive features and notable for its scenic quality. A view which is experienced by a large number of people and / or recognised for its scenic qualities.
Medium	A view or overall visual amenity which plays a relatively small part in the reason why a receptor would be there (and therefore most views or overall visual amenity for receptors of medium susceptibility). An otherwise attractive view that includes noticeable discordant features or overall visual amenity where there are noticeable visual detractors.
Low	A view or overall visual amenity which is unlikely to be part of the receptor's experience or reasons for being there (and therefore

Visual Sensitivity	
	most views or overall visual amenity for receptors of low susceptibility). An unattractive view or overall visual amenity where there are many visual detractors.
Negligible	A view or overall visual amenity which is irrelevant to the receptor's experience or reasons for being there.

Source: Derived from GLVIA3

1.9. ASSESSING MAGNITUDE OF CHANGE

1.9.1. The magnitude of landscape and visual change depends upon a combination of factors including:

- **a.** The size, scale and nature of change in relation to the context;
- **b.** The geographical extent of the area influenced; and
- **c.** It's duration and reversibility.

SIZE / SCALE OF CHANGE

1.9.2. The size / scale of change to the landscape and to visual receptors that would arise because of the Proposed Scheme.

Landscape:

1.9.3. The extent of loss or alteration to key existing landscape characteristics and landscape fabric / elements and for designated areas – special qualities and / or purpose of designation;

- **a.** The proportion of total extent represented and the contribution this element makes to the landscape;
- **b.** The scale of the receiving landscape and whether it can accommodate the Proposed Scheme;
- **c.** The distance of the landscape receptor from the Proposed Scheme; and
- **d.** The landscape context within which the Proposed Scheme is located.

Visual:

- **a.** the scale of change in the view (addition or loss of features) and changes to its composition and depth of view;
- **b.** the degree of contrast or integration of new features or characteristics into the landscape considering form, scale, mass, height, colour and texture; and

c. the nature of the view of the Proposed Scheme, the time over which it will be experienced and changes in the experience from, for instance full, partial, glimpsed to screened.

Table 1.7 - Magnitude of Landscape and Visual Change

Magnitude	Size, scale and nature	Geographical Extent	Duration and Reversibility
large	~ Occupies much of the view. ~ Obstructs a significant portion of the view. ~ Forms a large or very noticeable or discordant element in the view. ~ Considerable change to key features or many existing landscape elements of the landscape. ~ Introduces elements considered totally uncharacteristic to the existing landscape. ~ A very noticeable change to the character of the landscape.	~ Ranging from notable change over an extensive area to intensive change over a more limited area.	~ Long term; permanent / non- reversible or partially reversible.
medium	~ Occupies a noticeable portion of the view. ~ Obstructs a significant portion of the view. ~ Forms a large or very noticeable or discordant element in the view. ~ Some considerable change to existing landscape elements and /or landscape character; discernibly	~ Moderate changes in a localised area.	~ Medium term; semi-permanent or partially reversible.

Magnitude	Size, scale and nature	Geographical Extent	Duration and Reversibility
	changes the surroundings of a receptor, such that its baseline is partly altered. ~ Readily noticeable.		
small	~ Occupies a small portion of the view; ~ Small change to existing landscape elements and / or landscape character; ~ Slight, but detectable impacts that do not alter the baseline of the receptor materially. ~ Not readily noticeable.	~ Minor changes in a localised area.	~ Short term / temporary; partially reversible or reversible.
negligible	~ Occupies little or no portion of the view; ~ Hardly noticeable. ~ Limited or no change in existing landscape elements and / or landscape character; ~ Barely distinguishable change from baseline conditions.	~ No change discernible.	~ Short term / temporary reversible.

Source: Derived from GLVIA3

1.10. SIGNIFICANCE OF EFFECT AND CRITERIA

1.10.1. The level of landscape / visual effect, and whether it is considered significant or otherwise, will be assessed on the basis of the sensitivity of the affected resource / receptor and the magnitude of change caused by the Proposed Scheme. Outcomes are summarised within **Table 1.8** below. Note that effects can be either positive or negative and, in some cases, negligible (neither positive, nor negative).

1.10.2. Matrix entries with more than one outcome (for example, **major** or **moderate**) allow flexibility for the assessor to make an informed judgement on the level of effect, given the combination of receptor sensitivity and the magnitude of change anticipated.

Table 1.8 - Matrix for Determining Significance of Effect

	Sensitivity				
Magnitude of Change		**High**	**Medium**	**Low**	**Negligible**
	Large	**Major**	**Major or Moderate**	**Moderate** or Minor	Minor or Negligible
	Medium	**Major or moderate**	**Moderate**	Minor	Negligible
	Small	**Moderate** or Minor	Minor	Minor or Negligible	Negligible
	Negligible	Minor or Negligible	Negligible	Negligible	Negligible

1.10.3. The assessments within this chapter consider effects of moderate and greater to be significant (as shown in bold in **Table 1.8**) while those less than moderate to be not-significant.

1.10.4. Any receptors assigned an overall negligible level of effect at year 0 will not be further considered or assessed in year 15, on the basis that effects are highly unlikely to increase to a level of significance at year 15 given year 0 is considered to present the worst-case scenario at operation.

1.10.5. **Table 1.9** below provides a more detailed summary of the categories of effect.

Table 1.9 - Categories of Landscape and Visual 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 Proposed Scheme would be a prominent feature or a noticeably discordant or enhancing feature substantially affecting overall visual amenity or would result in a clearly noticeable change to a highly sensitive and well composed existing view.

Level of Effect	Description of Landscape Effect	Description of Visual Effect
		A clearly noticeable or substantial improvement or deterioration of the existing 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 Proposed Scheme would be a noticeable feature or a somewhat discordant or enhancing feature affecting overall visual amenity or would result in a noticeable change to a highly sensitive and well composed existing view or would be prominent within a less well composed and less sensitivity view. 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 area of a less sensitive landscape, affecting few characteristics without altering the overall impression of its character.	The Proposed Scheme would be a visible but not particularly noticeable feature or a slightly discordant or enhancing feature affecting overall visual amenity or would result in a small change to a highly sensitive and well composed existing view or would be noticeable within a less well composed and less sensitivity view. 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 Proposed Scheme would not affect the view

Source: Derived from GLVIA3

1.11. CUMULATIVE ASSESSMENT

1.11.1. The methodology for the assessment of cumulative effects is essentially the same as for the assessment of the stand-alone landscape and visual effects, in that the level of landscape and visual effect is determined by assessing the combination of sensitivity of the landscape or visual receptor (ranging from high to negligible) and the magnitude of change (ranging from large to no change / negligible). These are defined as:

a. Cumulative Landscape Effects: Where more than one type of development may have an effect on a landscape designation or particular area of landscape character.

b. Cumulative Visual Effects: Where the cumulative or incremental visibility of similar types of development combined generate a change in visual effect.

1.11.2. Types of cumulative effect are defined as follows:

a. Simultaneous or combined: where two or more developments may be viewed from a single fixed viewpoint simultaneously, within the viewer's field of view and without requiring them to turn their head.

b. Successive or repetitive: where two or more developments may be viewed from a single viewpoint successively as the viewer turns their head or swivels through 360°.

c. Sequential: where a number of developments may be viewed sequentially or repeatedly at increased frequency, from a range of locations when travelling along a route within the study area.

1.11.3. The methodology for cumulative assessment follows that contained within GLVIA3. GVLIA3 (para 7.8) and requires that the baseline includes additional changes to the baseline landscapes or visual resources as a result of other development.

1.11.4. Existing similar types of developments have been included within the baseline description, and cumulative effects of consented and Proposed Scheme have been considered separately.

MAGNITUDE OF CUMULATIVE CHANGE

1.11.5. Cumulative landscape and visual effects may result from additional changes to the baseline landscape or visual resources, as a result of the Proposed Scheme, in conjunction with other developments.

1.11.6. The principle of magnitude of cumulative change thus makes it possible for the Proposed Scheme to have a major effect on a particular receptor, while having only a minor cumulative effect in conjunction with other existing developments.

1.11.7. The cumulative landscape and visual magnitude of change is determined with reference to the criteria set out above and the following considerations:

a. The number of visible existing and / or potentially visible proposed developments.

b. The distance to existing and / or proposed developments.

SIGNIFICANCE OF CUMULATIVE EFFECTS

1.11.8. Determination of the significance of cumulative landscape and visual effects has been undertaken by employing professional judgement to combine and analyse the cumulative magnitude of change against the identified sensitivity to change. It should be noted that the cumulative assessment is the result of the addition of the Proposed Scheme to the identified cumulative baseline scenario.

1.12. PHOTOGRAPHY AND VISUALISATIONS

ACCURATE VISUAL REPRESENTATIONS

1.12.1. Field verified visualisations / photomontages / Accurate Visual Representations have been prepared for nine agreed viewpoints to illustrate the likely visual effects of the Proposed Scheme at Year 0.

1.12.2. The field verified wireline representations are to LI Type 4, Level 1 and detailed the location and size of the Proposed Scheme. The field verified photomontages are to LI Type 4, Level 3 and detailed not only the size and location of the Proposed Scheme but also the degree of visibility and the architectural form. The following viewpoints were selected in agreement with the LPAs:

a. Wireline representations cover viewpoints 4 and 10.

b. Day time photomontage images cover viewpoints 2, 3, 5, 7 and 9.

c. Night-time photomontage images cover viewpoints 2 and 7.

1.12.3. The methodology used was compliant with relevant sections of:

a. 'Guidelines for Landscape and Visual Impact Assessment' Third Edition, Landscape Institute and the Institute of Environmental Assessment, 2013 (GLVIA3).

b. Technical Guidance Note 06/19 - Visual Representation of Development Proposals, Landscape Institute, 17 September 2019.

1.12.4. The outputs of images are on A3 PDF documents as shown on **Figure 9.5 (Viewpoint Location Plan) (**document reference 6.2.9.5) and **Figure 9.6 (Viewpoint Photography) (**document reference 6.2.9.6) which contains baseline photography and wireline / photomontage images.

PHOTOGRAPHIC SURVEY

1.12.5. All photography (with the exception of Viewpoint 3) was carried out by Photo Energy; a specialist in LVIA photography. Field verified views were taken using a Nikon D750 Mega Pixels full frame sensor with a 50 mm f1.4 lens, a Manfrotto 055 x ProB tripod with a Sunwayfoto DYH-66i levelling plate, Sunwayfoto DDP-64M rotator, Arca swiss clamp nodal slide rail and GPS Reader. The camera viewpoint position was at a height of 1.5 m and stabilised using the tripod. Camera settings were locked to ensure aperture and shutter speed were consistent in each batch of photographs and 360 degree views taken except where vegetation / structures obscured the view.

1.12.6. Viewpoint 3 photography was carried out by Troopers Hill, in March 2022. Field verified views were taken using a Canon EOS 5DS R camera with a Canon EF 50 mm f1.4 USM lens, a Manfrotto 303 tripod with indexed panoramic head and a Manfrotto 438 tripod head levelling base. Camera settings were locked to ensure aperture and shutter speed were consistent in each batch of photographs.

1.12.7. A log was kept of the time, date and weather conditions that the photographs were taken so that lighting conditions could be recreated in the visualiser's software. A GPS reading was taken to mark the position of the camera, and these were then converted into National Grid co-ordinates. A photograph to record the exact location of the tripod is also taken for the project record. The photographs were combined into panoramas using 'PTgui version 11.28' software.

3D GROUND MODELLING

1.12.8. All necessary information regarding the Proposed Scheme was supplied to Troopers Hill (THL), a specialist in LVIA visualisations. All of the supplied information was modelled in appropriate professional modelling software.

POSTPRODUCTION

1.12.9. Each base photograph has had a level of basic colour correction applied to it so that it best represents the impression of the scene as the photographer experienced it in person.

1.12.10. This processing is predominately done to the 16bit RAW file using Adobe Camera Raw and Photoshop. It includes, but is not limited to, adjustments in; colour temperature and tint; levels such as exposure and contrast; shadow and highlight recovery; sky recovery through the use of gradient corrections; and other post processing effects such as sharpening and noise reduction.

OS Feature Extraction

1.12.11. A wide area of existing landform was modelled using EA DSM LiDAR data. Other relevant contextual features visible on the photography and featured on OS mapping were modelled for use as features to align the Proposed Scheme model to the existing photography.

The Proposed Scheme

1.12.12. THL imported a 3D model of the proposed development from an FBX model. The model contained existing, proposed and demolition features.

1.12.13. The model was checked for accuracy and subsequently aligned to the OSGB36 co-ordinate system.

THE ALIGNMENT PROCESS

1.12.14. The modelled existing feature data and camera location data was imported into the 3D model environment (relative to the OSGB36 co-ordinate system).

1.12.15. At each photo-viewpoint location a virtual camera was set up in the 3D software using the camera OS coordinates and then refined using triangulated measurements taken on site. The scene was aligned by matching the contextual features to the photograph. To do this, for each photo-viewpoint, two renders[1] were made from the 3D model from the same virtual camera: one render showed only the development (in the chosen method of presentation); the other showed only the extracted OS and existing feature data and DSM LiDAR data.

1.12.16. Using a photo editing package, the photography, existing feature and DSM LiDAR data render and Proposed Scheme renders were aligned.

1.12.17. With the rendered proposals aligned to the photography, a mask was applied to hide aspects of the Proposed Scheme that would be occluded by existing features and those that would be demolished. This process was performed on all views.

PRODUCING THE PHOTOMONTAGE

1.12.18. The following describes the process of producing of photomontage:

a. The JPEGs were lens corrected and then stitched into a panorama using a cylindrical projection using Adobe Photoshop.

b. The renders of the 3D model were superimposed onto the baseline panorama in Photoshop. The foreground of the existing photos visible in front of the Proposed Scheme were then carefully copied and masked to ensure the render of the 3D model sat accurately within the depth of the view. The compositing process involved digitally removing existing features such as trees that were within the extents of the proposed development.

c. The textured render of the 3D model was then further adjusted to match the resolution, colouring and saturation of the photograph captured to create an accurate impression of what the textured elements of the Proposed Scheme would look like.

PHOTOMONTAGE PRESENTATION LAYOUTS

1.12.19. The following describes how each photomontage is presented:

a. The standard layout is A1 Landscape with a horizontal field of view of 90° with an image size of 820 x 250 mm minimum (height as appropriate).

b. Each view is annotated with specific camera and viewpoint information as required in TGN-06-19 Appendix 10.

[1] Rendering is the process of generating an image from a model (or models in what collectively could be called the 3D environment), by means of computer programs - in this case Chaos Group V-Ray 5 plug-in for Autodesk 3Ds Max 2021.

1.12.20. When printing there should be no scaling or fit to page options selected as this would alter the size of the image. A high-quality print setting with a minimum resolution of 300 dpi should be used.