APPENDIX B: METHODOLOGY

Assessment Approach

1. This assessment makes use of the methodology as set out within the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition published jointly by The Landscape Institute and Institute of Environmental Management and Assessment, 2013, as well as those as set out within the Landscape Character Assessment. Guidance for England and Scotland published jointly by The Countryside Agency and Scottish Natural Heritage, 2002.

2. GLVA 3 defines the definition of what the term 'landscape' means. Paragraph 2.2 states Since the European Landscape Convention (ELC) in 2002 which the UK has signed and ratified, the ELC adopts a definition of landscape that is now being widely used in many different situations and is adopted in this guidance: 'Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Council of Europe, 2000). GLVA 3 carries on to state that the inclusive nature of landscape was captured there [GLVA 2] in a paragraph stating that: *Landscape is about the relationship between people and place. It provides the setting for our day-to-day lives. The term does not mean just special or designated landscapes and it does not only apply to the countryside. Landscape can mean a small patch of urban wasteland as much as a mountain range, and an urban park as much as an expanse of lowland plain. It results from the way that different components of our environment - both natural (the influences of geology, soils, climate, flora and fauna) and cultural (the historical and current impact of land use, settlement, enclosure and other human interventions) - interact together and are perceived by us. People's perceptions turn land into the concept of landscape. (Swanwick and Land Use Consultants, 2002: 2)*

3. The assessment process is intended to provide an objective method of establishing the significance of effect of a proposed development on an areas landscape character and visual amenity. The sensitivity nature of landscape receptors to change, combines with a judgement of the magnitude or nature of effect a particular development is likely to cause, to provide an assessment of the potential significance of effect the proposed development may have on local landscape character and visual amenity.

4. GLVA 3 at paragraph 5.1 defines the assessment of landscape effects as being: *An assessment of landscape effects deals with the effects of change and development on landscape as a resource.*

5. GLVA 3 at paragraph 6.1 defines the assessment of visual effects as being: *An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity.*

6. This study identifies and evaluates and quantifies the main landscape and visual effects associated with the proposed development are quantified, however the

nature of landscape and visual impact assessment requires interpretation by professional judgement. In order to provide a level of consistency to the assessment, the prediction of magnitude and assessment of significance of the residual landscape and visual impacts have been based on pre-defined criteria.

Landscape and Visual Baseline

7. GLVA 3 at paragraph 3.15 states that the initial step in LVIA is to establish the baseline landscape and visual conditions. The information collected will, when reviewed alongside the description of the proposed development, form the basis for the identification and description of the changes that will result in the landscape and visual effects of the proposal: *For the landscape baseline the aim is to provide an understanding of the landscape in the area that may be affected - its constituent elements, its character and the way this varies spatially, its geographic extent, its history..., its condition, the way the landscape is experienced, and the value attached to it. For the visual baseline the aim is to establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points*.

Establishing the Landscape Baseline

8. GLVA 3 at paragraph 5.3 states that Baseline studies for assessing landscape effects require a mix of desk study and fieldwork to identify and record the character of the landscape and the elements, features and aesthetic and perceptual factors which contribute to it. They should also deal with the value attached to the landscape.

9. In addition, GLVA 3 at paragraph 5.4 states *that In rural landscapes..., Landscape Character Assessment (LCA) is the key tool for understanding the landscape and should be used for baseline studies. There is a well-established and widely used method for LCA, which is set out in current guidance documents. This should be used to identify and describe: The elements that make up the landscape in the study area, including*

- *physical influences - geology, soils, landform, drainage and water bodies;*
- *land cover, including different types of vegetation and patterns and types of tree cover;*
- *the influence of human activity, including land use and management, the character of settlements and buildings, and pattern and type of fields and enclosure;*
- *the aesthetic and perceptual aspects of the landscape - such as, for example, its scale, complexity, openness, tranquillity or wildness;*
- *the overall character of the landscape in the study area, including any distinctive Landscape Character Types or areas that can be Identified, and the particular combinations of elements and aesthetic and perceptual aspects that make each distinctive, usually by identification as key*

characteristics of the landscape.

Establishing the Visual Baseline

10. With regard to the Visual Baseline the assessment process concentrates on the publicly accessible areas. To this end a series of viewpoints were selected for use in verifying the potential effects of the proposed development upon the visual amenity of the study area.

11. GVLA 3 at paragraph 6.20 states, the selection of the final viewpoints used for the assessment should take account of a range of factors, including:

- the accessibility to the public;
- the potential number and sensitivity of viewers who may be affected;
- the viewing direction, distance (i.e. short-, medium- and long-distance views) and elevation;
- the nature of the viewing experience (for example static views, views from settlements and views from sequential points along routes);
- the view type (for example panoramas, vistas and glimpses);
- the potential for cumulative views of the proposed development in conjunction with other developments.

12. Typically, receptors considered to be representative of viewpoints within the study area include:

- Residential receptors;
- Recreational/leisure receptors including anglers, walkers, water users and cyclists; and
- Road and rail users.

13. GVLA 3 at paragraph 6.24 states that the visual baseline should focus on information that will help to identify significant visual effects.... *A baseline report should combine information on:*

- *the type and relative numbers of people (visual receptors) likely to be affected, making clear the activities they are likely to be involved in;*
- *the location, nature and characteristics of the chosen representative, specific and illustrative viewpoints, with details of the visual receptors likely to be affected at each;*
- *the nature, composition and characteristics of the existing views experienced at these viewpoints, including direction of view;*
- *the visual characteristics of the existing views, for example the nature and extent of the skyline, aspects of visual scale and proportion, especially with respect to any particular horizontal or vertical emphasis, and any key foci;*
- *elements, such as landform, buildings or vegetation, which may interrupt,*

filter or otherwise influence the views.

14. GLVA 3 at paragraph 6.3 states that Baseline studies for visual effects should establish*..., the area in which the development may be visible, the different groups of people who may experience views of the development, the viewpoints where they will be affected and the nature of the views at those points. Where possible it can also be useful to establish the approximate or relative number of different groups of people who will be affected by the changes in views or visual amenity, while at the same time recognising that assessing visual effects is not a quantitative process. In addition, GLVA 3 at paragraph 6.4 also states that These factors are all interrelated and need to be considered in an integrated way rather than as a series of separate steps...*

15. GLVA 3 at paragraph 6.6 states that *Land that may potentially be visually connected with the development proposal - that is, areas of land from which it may potentially be seen - must be identified and mapped at the outset.... Visibility mapping is an important tool in preparing the visual effects baseline but does not in its own right identify the effects. It can also play an important part in the different stages of the iterative design process. It can, for example, contribute to the early stages of site design and assessment to determine the potential visibility of a site.... It can also be used to help in the consideration of concept layout and design alternatives in response to the potential visibility of different options.*

The Assessment Process

16. GLVA 3 at paragraph 4.16 states that *the characteristics of projects, and hence the possible landscape and visual effects they may have, are likely to vary throughout the life of the project. The construction, operation, decommissioning and restoration/reinstatement phases of a development are usually characterised by quite different physical elements and activities. A separate, self-contained description of the development at each stage in the life cycle is therefore needed to assist in understanding the scheme and then in prediction of landscape and visual effects.*

17. The landscape and visual assessment process consists of a number of stages as set out below:
    - Identification of the source/aspects of the development likely to give rise to effects during the different stages in the life of the project (construction, operation, decommissioning and restoration phases).

    - Identification of components/receptors most likely to be affected by the development (this will vary during the different stages in the life of the project).

    - Description of the interaction of the receptors with aspects of the development (this will vary during the different stages in the life of the project).

- Assessment of the Nature of the Landscape and Visual Receptors (Sensitivity) in relation to the identified aspects of the development.

- Assessment of the Nature or Magnitude of Effects in light of both the primary and secondary Mitigation Measures adopted (see below).

- Assessment of the Significance of Residual Effects. Nature or Sensitivity of Landscape Receptors

Nature of Sensitivity of Landscape Receptors

18. Assessment of receptor sensitivity involves an evaluation of the 'Nature of the Receptor' (Sensitivity), in respect of the identified aspects of the development likely to give rise to effects. The receptors Sensitivity is considered to be dependent upon the susceptibility to change of the receptor with respect to the permitted or proposed development and on the value attached to either the landscape (landscape assessment) or view (visual assessment).

19. Susceptibility to change can be defined as being 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 proposed development without undue consequences for the maintenance of the baseline situation.

20. The Value of a landscape or view can be defined as consisting of a number of factors that help identify how a particular landscape can be valued. This can include, but not limited to:

    - <u>It's quality or condition</u> as a measure of the physical state of the landscape. <u>Scenic quality</u> used to describe landscapes that appeal primarily to the senses (primarily visual).
    - <u>Rarity</u> or the presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type.
    - <u>Representativeness</u> and whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.
    - <u>Planning Designations and Conservation Interests</u> where value attached to particular landscapes are recognised through International, National or Local designations including the presence of features of wildlife, earth science or archaeological, historical or cultural interest which can add to the value of the landscape.
    - <u>Recreational Value</u> where the physical experience of the landscape is important.
    - <u>Perceptual Aspects</u> where a landscape may be valued for its perceptual qualities, such as wildness and/or tranquillity.

- Physical or Literary Indicators/Associations where 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, or the value attached to particular locations/views are recognised, for example through appearances in guidebooks or on tourist maps, or the provision of facilities for their enjoyment such as parking places, sign boards and interpretive material.

21. Criteria used to determine the degree of susceptibility of landscape receptors to change and their perceived value are given below in Tables A-1 and A-2 respectively. NOTE: These scales are generic and therefore capable of being modified by the type of development being assessed, including size, scale and distance.

22. An assessment was made of both susceptibility and value based on a five point textual scale: *Very Low, Low, Medium, High and Very High*. This information is then combined to arrive at an overall sensitivity of the receptor as a whole which is also expressed as a five-point textual scale Very Low to Very High. See Table A-5 below.

Table A-1: Criteria used to determine the Susceptibility of the Landscape Receptor

Landscape Receptor	**Susceptibility to Change**
Very open, expansive and cohesive landscapes with long views allowing views into and out of the landscape. Landscapes that are uncluttered with natural skylines without man made elements. Landscapes which retain a high degree of intactness, in very good condition and high quality which are not subject to change. Landscapes often associated with rural and/or a historic character and of cultural importance. These types of landscape may be subject to or contain various historic or nature conservation designations	Very High 
Open cohesive landscapes with medium to long views allowing views into and out of the landscape. Landscapes that are generally uncluttered with mainly natural skylines without man made elements. Landscapes which retain a degree of intactness, in good condition and quality and which are infrequently subject to change. Landscapes may be associated with some degree of rural and/or a historic character and of cultural importance.	
Complex rural landscapes and/or suburban areas with medium to distant scale views – containing both open and enclosed aspects generally intact and in good condition. Settlement and built form are elements of the landscape with few man- made structures such as power lines and telecommunication masts present.	
Simple rural landscapes and/or suburban areas with local to medium scale views – containing both open and enclosed aspects somewhat intact and	

in medium condition. Settlement and built form common elements of the landscape with manmade structures such as power lines and telecommunication masts present.	 Very Low
Dynamic, complicated landscapes in which change frequently occurs and generally in poor condition and no strong vernacular style. Long views are limited and often truncated. Landscapes may have complex skylines and/or dominated by man-made structures and subject to frequent change. These types of landscape are often, although not exclusively associated with industrial and/or urban areas/fringes.	

Table A-2: Criteria used to determine the Value of the Landscape Receptor

Landscape Receptor	**Susceptibility to Change**
Internationally valued landscapes such as World Heritage Sites, nationally valued landscapes (National Parks, Areas of Outstanding Natural Beauty, National Scenic Areas or other equivalent areas).	Very High  Very Low
Locally valued landscapes, for example local authority landscape designations or landscapes assessed as being of equivalent value (Special Landscape Areas), or strong presence other designations linked to historic, natural or cultural elements (Scheduled Ancient Monuments, Historic Parks and Gardens, Ancient Semi Natural Woodlands, Conservation Areas, Listed Buildings).	
Local landscapes that are not nationally or locally designated but are valued as a resource for recreation, outdoor activities and scenic value.	
Local landscapes that are not nationally or locally designated, or judged to be of equivalent value, but are nevertheless valued at a community level.	
Degraded and industrial landscapes. Landscape dominated by commercial development and communications networks.	

Nature or Sensitivity of Visual Receptors

23. As described in the previous section above, the nature or sensitivity of visual receptors is again dependent upon the susceptibility to change of the receptor with respect to the proposed development and on the value attached to the view.

24. These two aspects can include a number of factors such as:

    a. Location and context of the viewpoint;

    b. Expectation, occupation or activity of the receptor;

    c. The value placed on the landscape within which the receptor is located

    d. The importance of the view (which may be determined with respect to its popularity or numbers of people affected, its appearance in guidebooks, on tourist maps and in the facilities provided for its enjoyment); and

    e. Whether the receptor is static or transitory and likely speeds they are likely to be travelling in relation to the latter.

25. Those receptors most susceptible to change include local residents, particularly those dwellings that have been designed to maximise views across the surrounding landscape, such as large gardens, patios, conservatories, picture windows etc. Other highly susceptible receptors include users of outdoor recreational facilities including strategic recreational footpaths and cycleways, Open Access Areas and other Rights of Way, where their attention is likely to be focused on the landscape and/or important landscape features with physical, cultural or historic attributes. Users of viewpoints of importance to the setting or enjoyment of residential environments or located at beauty spots or picnic areas may also be highly susceptible to change.

26. Those receptors less likely to be susceptible to change include pedestrians not focused on the landscape or views and people travelling through the landscape on roads, trains or other transport routes.

27. Those receptors considered to have the least susceptible to change include people engaged in outdoor sports or other activity based recreation, or those focused on work activities.

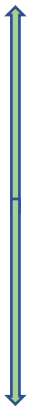
28. Criteria used to determine the degree of susceptibility of visual receptors to change and their perceived value are given below in Tables A-3 and A-4 respectively. NOTE: These scales are generic and therefore capable of being modified by the type of development being assessed, including size, scale and distance.

Table A-3: Criteria used to determine the Susceptibility of Visual Receptor Groups

Receptors		Comments	Susceptibility
Residential Buildings			
Housing/Isolated dwellings/ Farms	**Ground Floor/ Upper Floors/ Gardens**	Containing windows on ground or upper floors designed to take advantage of specific views, such as living rooms, dining rooms and/or kitchens where people may spend significant periods of waking time. Gardens likely to be used for leisure purposes.	**High**
Other Buildings			
Schools	**Classrooms**	Windowsill heights often limit views out of classrooms	**Medium**
	Grounds/ Playing Fields	Primarily sport orientated but may have views out towards countryside	**Medium**
Hospitals	**Wards**	Windowsill heights often limit views out of wards	**Medium**
	Grounds	Some wards may have windows designed to exploit particular views.	**Medium**
Places of Worship and Public/ Guest Houses/ Hotels	**Ground Floor, Upper Floors, Gardens/ Grounds**	Unlikely to be particularly sensitive to off-site views but may include grounds/gardens for outdoor activities and/or enjoyment.	**Medium**
Commercial Premises			
Industrial Units		Unlikely to be sensitive to off-site views	**Very Low**
Retail Units and Offices		Unlikely to be overly sensitive to off-site views but may contain aspects where outward looking views are possible.	**Low**
Transport/ Recreational Routes/ Public Open Space			
Footpaths, Bridleways, Commons and Open Access Areas		Rural paths/bridleways heavily influenced by residential areas and/or major transport routes and/or with limited views used for general recreational access to the open countryside.	**Low**
		Rural paths/bridleways used for general recreational purposes capable of gaining views across open countryside.	**Medium**
		Rural paths/bridleways/open access land used for general recreational	**High**

		purposes capable of gaining elevated views across open countryside or subject to additional levels of designation such as AONBs or NSAs.	
		Rural paths/bridleways/open access land used for general recreational purposes capable of gaining elevated views across open countryside and within promoted landscapes or subject to additional high levels of designation such as NPs.	**Very High**
Public Open Space- Rivers/ Urban Parks/ Golf Clubs/ Car Parks/ Beaches etc.		Open Space that is primarily used for sporting activities and subject to intermittent use.	**Low**
		Open Space that is primarily used for sporting activities and subject to continuous daily use.	**Medium**
		Public Open Space that may have views out towards the open countryside and subject to continuous daily use.	**High**
Cycleway/ Roads/ Railway	**National Cycle Routes**	Roads and/or tracks within a rural location and promoted as a national route for the enjoyment of the open countryside and to take in panoramic views	**High**
	Unclassified/ Minor Roads/ Local Rail Network/ Private Drives	Rural location and relatively slow traffic speeds, possibly in conjunction with greater use by cyclists or walkers may influence sensitivity to visual impacts.	**Medium**
	Unclassified/ Minor Roads/ main Roads/ Trunk Roads/ Motorways/ High Speed Rail links	Traffic speed and primary use likely to limit sensitivity to visual effects.	**Low**

Table A-4: Criteria used to determine the Value of Visual Receptor Groups

Visual Receptor/ Nature of View	Value
Open and long range views associated with promoted landscapes, public viewpoint associated with heritage assets, coastlines etc. Close range views associated with historical and or townscape settings. Views over designated landscapes and landscapes with international/national cultural associations.	**Very High**  **Very Low**
Open, generally unrestricted long range views over open countryside, seascapes or open parkland including public open space, open access land and footpaths and/or with local/national cultural associations.	
Partially restricted and/or oblique views over open countryside, seascapes or parkland. Partially restricted or oblique views of open streetscapes, avenues and boulevards and/or with local cultural associations.	
Restricted and/or oblique views over open countryside, seascapes or parkland. Restricted or oblique views of narrow streetscape, truncated views of urban built environments or longer distant views over Industrial/ commercial landscapes communications networks etc.	
Very restricted views over open countryside, seascapes or parkland. Restricted views over very degraded rural landscapes and/or close range views of industrial/ commercial landscapes.	

29. As with the Nature of Landscape Receptors described above, an assessment of the Nature or Sensitivity of Visual Receptors was made of both susceptibility and value based on a five point textual scale: Very Low, Low, Medium, High and Very High. This information is then combined to arrive at an overall sensitivity of the receptor as a whole which is also expressed as a five-point textual scale Very Low to Very High. See Table A-5 below.

Table 5 A-5: Landscape and Visual Receptors: Overall Nature of Receptor (Sensitivity)

		Value of the Landscape/ Visual Receptor				
		Very High	**High**	**Medium**	**Low**	**Very Low**
	Very High	Very High	Very High	High	Medium	Medium
	High	Very	High	High	Medium	Medium

Susceptibility of the Landscape/ Visual Receptor.		High				
	Medium	High	High	Medium	Medium	Low
	Low	High	Medium	Medium	Low	Low
	Very Low	Medium	Medium	Low	Low	Very Low

Nature or Magnitude of Change

30. Following an assessment of the nature or sensitivity of the landscape/visual receptor an assessment was made of the nature or magnitude of effects associated with the proposed development. Those elements of the development that may affect landscape character and visual amenity can be defined as occurring during two main stages of the development and can be either associated with direct or indirect effects.

31. Direct and indirect effects on the landscape and visual amenity of an area potentially affected by the development can be defined as comprising:

32. Direct physical changes to the actual fabric of the landscape, including loss or changes to individual elements such as landform, agricultural fields, trees, hedges, ditches, paths etc.

33. Direct or indirect effects caused by the development to the overall character of the landscape and changes to the key characteristics that help define and create the distinctiveness of the local landscape, including aesthetic and/or perceptual aspects.

34. In relation to those elements of the development that may affect landscape character and visual amenity during two main stages of the development occur either:

- During the operational life of the quarry, including site preparation works and
- Following progressive and/or final restoration.

35. Differing components of the development will cause differing and varying levels of effect during these two stages of the development.

36. Those components of the development most likely to affect landscape character and visual amenity are identified and an assessment made as to likely interactions between the landscape and visual receptors identified and these components.

37. The level of interaction identified enables an assessment to be made as to the nature, or magnitude of effects associated with those aspects of the development as identified.

38. In relation to Magnitude of effects GVLA 3 at paragraph 5.48 states that Each effect on landscape receptors needs to be assessed in terms of its size or scale, the geographical extent of the area influenced, and its duration and reversibility.

39. The assessments in relation to Size/Scale is expressed in terms of Neutral or Very Small or Small or Medium or Large or Very Large; Geographical Extent is expressed in terms of Neutral or Very Small or Small or Medium or Large or Very Large; Duration is expressed as either Short or Medium or Long or Permanent; and Reversibility is expressed as either Fully or Partially or Permanent.

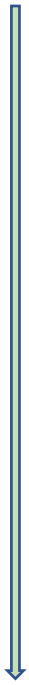
40. These results were then combined to arrive at an evaluation of the overall nature or magnitude of effects on individual receptors or character areas/types. The effects were considered according to whether they were adverse, neutral or beneficial. These effects were again based on a five point textual scale: Very Low, Low, Medium, High and Very High.

41. The criteria for this overall assessment are detailed in Table A-6 below:

Table A-6: Nature of Effects (Magnitude) on Landscape Receptors

Summary of Effect	Criteria
Very High Adverse 	The proposed site is very damaging to the landscape in that: • At considerable variance with the landform, scale and pattern of the landscape. • It is likely to degrade, diminish, or even destroy the integrity of a range of characteristic features and elements and their setting. • It is substantially damaging to a high quality or highly vulnerable landscape, causing it to change and be considerably diminished in quality. Likely to be in a High sensitive landscape. • It is unable to be mitigated. • It is in serious conflict with policy in respect to enhancing landscape character and set out in current or emerging LDP's. • Very High Adverse • The cumulative operations of other developments results in an unacceptable loss or detriment to character. • It is adverse to several of the key issues/priorities or strategies for the LCA.
	The proposed site is damaging to the landscape in that: • At variance with the landform, scale and pattern of the landscape. • It is likely to degrade or diminish the integrity of a range of characteristic features and elements and their setting. • It is damaging to a high quality or highly vulnerable landscape, causing it to change and be diminished in quality. Likely to be in a High

 Very low Adverse	sensitive landscape. • It is unable to be adequately mitigated. • It is in conflict with policy in respect to enhancing landscape character and set out in current or emerging LDP's. • The cumulative operations of other proposed sites results in a substantial loss or detriment to character. • It is adverse to some of the key issues/priorities or strategies for the LCA.
	The site is out of scale with the landscape, or at odds with the local pattern and landform in that: • Probably not possible to fully mitigate for, that is mitigation will not prevent the scheme from scarring the landscape in the longer term as some features of interest will be partly destroyed or their setting reduced or removed. Likely to be in a High or Medium sensitive landscape. • In conflict with policy to respect and enhance landscape character across a range of character themes, or current or emerging LDP's. • The potential cumulative operations of other proposed sites results in a moderate loss or detriment to character. • Adverse to a few (at least 2) of the issues/priorities or strategies for the LCA. •
	The site does not fit the landform and scale of the landscape in that: • The proposal can probably not be completely mitigated for because of the nature of the proposal itself or the character of the landscape it is in. Likely to be in a High or Medium sensitive landscape. • In conflict with policy to respect and enhance landscape character across few character themes and set out in current or emerging LDP's. • There is a potential of some cumulative impacts of other proposed sites. • At variance with some aspects of the LCA descriptions.
	The site does not quite fit the landform and scale of the landscape in that: • The proposal can almost be completely mitigated for because of the nature of the proposal itself or the character of the landscape it is in. Likely to be in a Medium or Low sensitivity landscape. • In partial conflict with policy to respect and enhance landscape character across few character themes and set out in current or emerging LDP's. • There is a very slight potential of cumulative operations of other proposed sites. • At variance with some minor aspects of the LCA descriptions.
Neutral Effect	The proposal is likely to be able to complement and fit the scale, landform and pattern of the landscape in that:

	• Mitigation measures are likely to ensure that the scheme will blend in well with surrounding landscape character components. • Will probably maintain existing landscape character with specific planning conditions and in a Medium to Low sensitivity landscape. • Likely to be in a degraded landscape or one with a restoration objective (identified in LCA assessments). • Likely to be an isolated, or small site with no cumulative effect from neighbouring operations.
Very Low Beneficial   **High Beneficial**	The proposal will probably fit in the landform, pattern and historical use of the area. • By incorporating measures for mitigation, it will ensure that landscape character is marginally enhanced and improved, such as habitat creation, restoration of previously degraded landscape. Likely to be in a Medium or Low Sensitivity Landscape. • Could partially incorporate policy to enhance landscape character (on restoration) as set out in current or emerging LDP's. • Likely to be isolated or small site with no likely cumulative effect from neighbouring operations.
	The proposal will probably fit well in the landform, pattern and historical use of the area. • By incorporating measures for mitigation, it will ensure that landscape character is enhanced and improved, such as habitat creation, restoration of previously degraded landscape. Likely to be in a Medium or Low Sensitivity Landscape. • Could incorporate policy to enhance landscape character (on restoration) as set out in current or emerging LDP's. • Likely to be isolated or relatively small site with no cumulative effect from neighbouring operations.
	The proposal will fit well in the landform, pattern and historical use of the area. • By incorporating measures for mitigation, it will ensure that landscape character is materially enhanced and improved, such as habitat creation, restoration of previously very degraded landscape. Likely to be in a Medium Sensitivity Landscape. • Incorporates a wide range of policies to enhance landscape character (on restoration) as set out in current or emerging LDP's. • Likely to be an isolated or small site with no cumulative effect from neighbouring operations.
	The proposal will fit well in the landform, pattern and historical use of the area. • By incorporating measures for mitigation, it will ensure that landscape character is materially enhanced and improved, such as habitat creation, restoration of previously very degraded landscape. Likely to be in a High Sensitivity Landscape. • Incorporates a wide range of policies to enhance landscape character (on restoration) as set out in current or emerging LDP's.

	• Likely to be an isolated or small site with no cumulative effect from neighbouring operations.

Nature of Effects (Magnitude) on Visual Receptors

42. The magnitude of effects in relation to identified visual receptors was determined according to the criteria set out in Table A-7 below.

Table A-7: Nature of Effects (Magnitude) on Visual Receptors: Definitions

Adverse			**Neutral**	**Beneficial**	
Very Higt/ High	**Medium/ Low**	**Very Low/ Minor**	**Neutral**	**Very Low/ Low**	**Medium/ High**
Permanent alteration of key elements such that it significantly and detrimentally affects local or wider character or amenity. Views are open, from close proximity and detrimentally affected in a pronounced or very pronounced manner. Forms a significant or very significant element in the landscape.	Permanent (or long term) or temporary change in a key element or permanent change in less important element, creating negative effects on character or amenity. Detrimental views are partially screened and/or viewed as part of the wider landscape.	Permanent (or long term) or temporary change of minor element, causing a minor or very minor negative alteration in character or amenity. Detrimental views are screened and/or are at oblique angles and/or at a great distance.	No perceived change in character or amenity or changes are not perceived to be either adverse or beneficial in nature	Permanent or temporary alteration of minor element, causing a minor improvement in local character or amenity. Views are improved but screened and/or are at oblique angles.	Permanent or temporary change in a key element or permanent change in less important element, noticeably improving local character or amenity. Views are improved but partially screened and/or viewed as part of the wider landscape.

Mitigation of Landscape and Visual Effects

43. GLVA 3 at paragraph 4.21 states that In accordance with the EIA Regulations, measures proposed to prevent/avoid, reduce and where possible offset or remedy (or compensate for) any significant adverse landscape and visual effects should be

described. In practice, such mitigation measures are now generally considered to fall into three categories:

a. Primary measures, developed through the iterative design process, which have become integrated or embedded into the project design;
b. Standard construction and operational management practices for avoiding and reducing environmental effects;
c. Secondary measures, designed to address any residual adverse effects remaining after primary measures and standard construction practices have been incorporated into the scheme.

44. The scheme as proposed generally incorporates primary measures which have been incorporated as an integral part of design process. Secondary measures include additional landscape enhancement including extensive tree/hedgerow planting/infilling works to be undertaken within adjacent land that seeks to integrate the restoration of the site into the surrounding landscape.

Significance of Residual Effects

45. Following the assessment of the Nature of Effect (Magnitude) an assessment of the Overall Significance of Effects was carried out by combining the level of the Nature of Effect with the assessed values of the Nature of Receptor (Sensitivity) present. This is presented in the form of a matrix table (see Table A-8). The table was used to provide an indication of the level of the Overall Significance of Effects resulting from the development in relation to the localities landscape character or visual amenity. The effects were considered according to whether they were adverse, neutral or beneficial.

Table A-8: Significance of Impacts: Correlation of Nature of Effect with Nature of Landscape or Visual Receptors

			NATURE of the Landscape/ Visual Receptor (Sensitivity)				
			Very High	**High**	**Medium**	**Low**	**Very Low**
NATURE OF Effect (magnitude)	Adverse	**Very High**	Severe	Major	Substantial	Notable	Moderate
		High	Major	Substantial	Notable	Moderate	Slight
		Medium	Substantial	Notable	Moderate	Slight	Very Slight
		Low	Notable	Moderate	Slight	Very Slight	Minimal
		Very Low	Moderate	Slight	Very Slight	Minimal	Negligible
	Neutral	**Neutral**	Neutral	Neutral	Neutral	Neutral	Neutral

	Beneficial	**Very Low**	Moderate	Slight	Very Slight	Minimal	Negligible
		Low	Notable	Moderate	Slight	Very Slight	Minimal
		Medium	Substantial	Notable	Moderate	Slight	Very Slight
		High	Major	Substantial	Notable	Moderate	Slight

46. The above matrix is not used as a prescriptive tool and the methodology and analysis of potential effects at any particular location must allow for the exercise of professional judgement. Thus, in some instances a particular parameter may be considered as having a determining effect on the analysis.

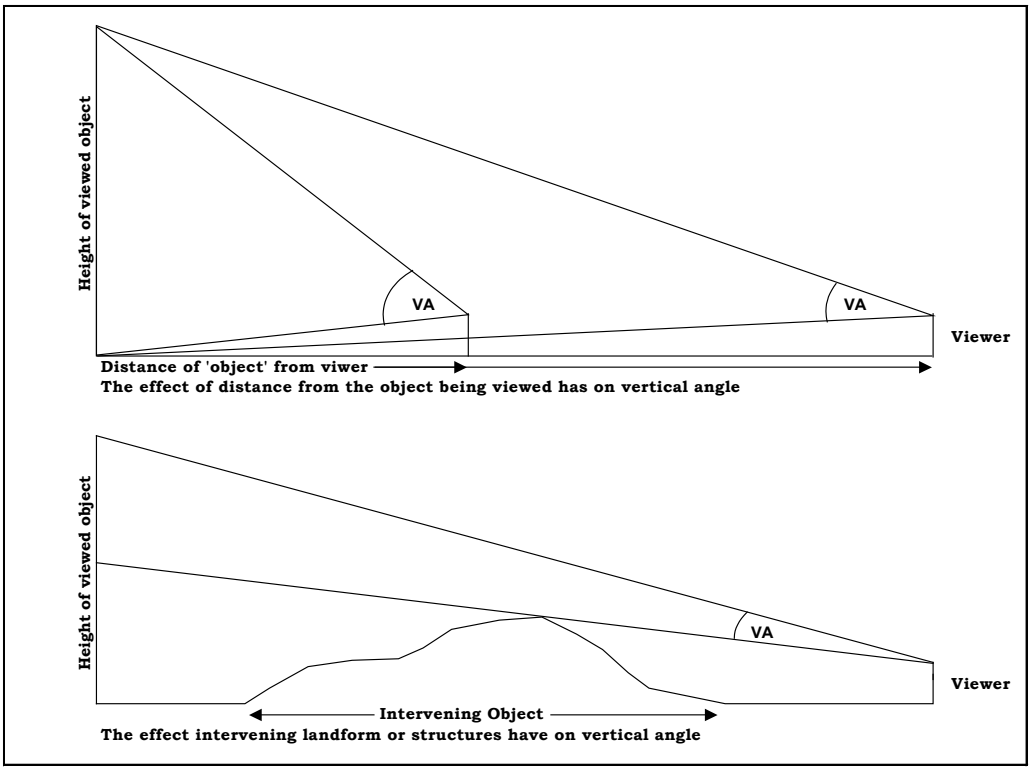
47. Where the landscape or visual impact has been classified as moderate/notable and above, this is considered to be equivalent to a significant effect as referred to in the Environmental Impact Assessment (Scotland) Regulations 2011. Zone of Theoretical Visibility

48. Computer based studies were used to establish the site's potential visual envelope. These studies used both Ordnance Survey 3D Terrain 5 Digital Terrain Modelling (DTM) data, as well as Getmapping 2m Aerial Photograph Derived Digital Surface Modelling (DSM) data. The former dataset shows in 3D the physical landform without any built structures or vegetation, based on a 10m grid of levels. The latter dataset shows in 3D all topographic features present within the landscape, including individual trees and woodland blocks, buildings, road and railway embankments and cuttings based on a 2m grid of levels.

49. Computer models used specialised software (LSS, McCarthy Taylor Systems Ltd) to generate digital models of the landform to determine the site's Zones of Theoretical Visibility (ZTV), based on mathematically generated vertical angles of view. Both landform only (DTM) and surface modelling (DSM) data was used to ascertain both the landform only ZTV, as well as modelling the surface ZTV based on existing topographic features to highlight those elements that generally obscure views where they intervene between the viewer and the viewed object. The former ZTV therefore shows a maximum effect scenario, with many of the predicted views, particularly low lying distant ones, not likely to be present. The latter ZTV therefore shows an 'actual' zone of visibility likely to be experienced by the surrounding visual receptors.

50. The computer study helps to objectively define the magnitude of visual effects the proposed development might have, by linking potential impact to the vertical angle subtended at the viewpoint by the top and bottom extremities of the object that is viewable, from which a 'contour' model is generated. This gives a visual measure of how much of a given vertical field of view is occupied by the object when viewed from different locations. This method automatically takes into account effects of distance from the site (i.e. an object close to the viewer occupies a greater vertical angle [field of view] than a feature further away). Where a zero value is returned, the viewpoint lies outside or on the edge of the Visual Envelope, delineating the areas from which views are not thought to be possible (uncoloured).

51. Figure A.1: A Diagram to Illustrate Vertical Angles



52. The following table shows how vertical angles of viewed objects relate to a person's vertical field of view and the potential for an object to impact on the viewer. This table shows the mathematical relationship between a 12 metre high object, its distance from the viewer and the vertical angle it would subtend compared to the main vertical field of view of the viewer.

Table A-9: Mathematical Table to Show the Vertical Angle a 12 metre High Object Would Visually Subtend at Various Distances

Distance from viewer of 12m high object	**Vertical Angle Subtended (Total Field of View = @ 90 °**
10.0 Km	0.07 °
6.8 Km	0.1°
3.5 Km	0.2°
2.3 Km	0.3°
1.0 Km	0.7°
0.7 Km	1.0°
0.5 Km	1.4°
0.2 Km	3.0°
0.1 Km	6.8°

53. Based on experience, photographic studies and the mathematical table, certain 'contour' values were assessed as potentially indicating differences in magnitude of effect. A classification system using six 'contour' values was used to relate vertical angles to levels of magnitude. These classifications were used to inform the assessment process to help distinguish possible differences in magnitudes of effect from various locations within the Study Area - those where the angle of view subtended the largest angle being likely to receive the highest magnitudes of effect. Conversely, those where the angle of view subtended the smallest angle being likely to receive the lowest magnitudes of effect.