8 Landscape and Visual

Introduction

8.1 This chapter provides an assessment of the effects that the proposed Solwaybank Wind Farm (hereafter referred to as 'the proposed wind farm'), is predicted to have on the landscape and views from the surrounding area, during construction, operation and decommissioning.

8.2 Effects on the landscape include physical changes to the landscape as well as changes in landscape character. Effects on the landscape may also include effects on areas designated for their scenic or landscape qualities, at a national, regional or local policy level. Effects on visual amenity relate to changes in views, and the appearance and prominence of the wind farm in those views.

8.3 The landscape and visual assessment (LVIA) was undertaken following published guidance, including the *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute 2002), and guidance published by Scottish Natural Heritage (SNH). The approach used was approved by SNH during consultation. A cumulative landscape and visual assessment (LVIA) was also carried out, taking into consideration existing and consented wind farm developments, as well as submitted applications.

8.4 This chapter is supported by Figures 8.1 to 8.36 and these are referenced in the text. These can be found in Volume 3 of this Environmental Statement (ES).

8.5 This assessment has been undertaken by Land Use Consultants (LUC), the original assessment was not carried out by LUC. This assessment has been carried out by three landscape architects at LUC, all members of the Landscape Institute.

Legislation and Policy Context

Legislation and Policy

8.6 General planning policies relating to the wind farm development and those specifically related to landscape and visual issues are outlined in **Chapter 2: Planning Policy Context**. The 35 km study area includes land within the Dumfries and Galloway and Scottish Borders administrative areas, and Cumbria and Carlisle and Northumberland administrative areas, although the 'Zone of Theoretical Visibility' (ZTV) does not extend into Northumberland.

8.7 SNH (2009) *Strategic Locational Guidance for Onshore Windfarms in Respect of the Natural Heritage*, contains guidance with respect to the sensitivity of different parts of Scotland in terms of its natural heritage, based on a desk assessment of landscape and natural heritage designations. Areas of high, medium and low sensitivity are identified across Scotland, as well as intermediate areas (map 5 of the document). The Solwaybank Wind Farm site lies in an area shown as low sensitivity on map 5 of the document.

8.8 The recently produced draft *Dumfries and Galloway Interim Planning Policy (IPP)*[1] contains information relating to sensitivity to wind farm development, based on landscape character areas. According to the Interim Planning Policy, the site lies within the 'Annandale Foothills' landscape unit. In the IPP, this area has 'high-medium' landscape sensitivity and 'high' visual sensitivity to wind farms of a scale similar to the proposed wind farm. Map 3A of the document indicates that the site lies within a 'Cumulative Sensitivity Zone'. Elsewhere, it states that "*the Annandale foothills are considered to be close to reaching capacity for larger typologies*[2]*…where multiple developments of large wind turbines would be likely to form a dominant rather than an incidental feature across the landscape unit*"'[3].

Effects Assessed in Full

8.9 Effects on the following topics have been assessed:

- landscape character and resources;
- designated landscapes;
- views and visual amenity (including settlements and routes); and
- cumulative effects.

Effects Scoped Out

8.10 On the basis of guidance, desk based research and survey work undertaken and the professional judgement of the Environmental Impact Assessment (EIA) team, the following effects have been 'scoped out':

- effects on areas within the 35 km study area with minimal predicted visibility, such that there is no likelihood of significant effects, including effects on landscape character types, designations, viewpoints, settlements or routes.

Issues Identified during Consultation

8.11 Consultation has been carried out with SNH, Dumfries and Galloway Council (DGC), Scottish Borders Council, Cumbria County Council and Carlisle City Council. Consultation has focused on the selection of viewpoints and cumulative developments to be considered in this assessment. Issues identified during consultation are set out in Table 8.1. The table also sets out issues raised during the consultation in 2009, and how these have been addressed in the LVIA.

Table 8.1: Issues Identified during Consultation

Consultee	Scoping/Other Consultation	Comments from Statutory Consultees (dated)	Response/Action Taken
2010-2011 Consultation			
SNH	Meeting held to discuss	Viewpoints discussed at meeting (2.3.2011), Viewpoint at Criffel too	Proposal and viewpoints introduced at the meeting.

[1] DGC (2011) *Dumfries and Galloway Interim Planning Policy (draft)*

[2] Typologies referred to in this document are windfarms of different scale and numbers of turbines. "*Large: Turbines above 80m in height to blade tip. These are more likely to comprise developments of over 10 turbines but could also include single turbines or smaller groups*" (DGC (2011) *Dumfries and Galloway Interim Planning Policy (draft)*, paragraph 3.2)

[3] DGC (2011) *Dumfries and Galloway Interim Planning Policy (draft)*, paragraph B13.

Consultee	Scoping/Other Consultation	Comments from Statutory Consultees (dated)	Response/Action Taken
2010-2011 Consultation			
	viewpoint selection, plus subsequent correspondence	distant. Lockerbie Golf Course may not have visibility. Final list of viewpoints agreed (3.5.2011).	Criffel viewpoint omitted. Lockerbie Golf Course viewpoint omitted after finalised layout (no visibility).
	Cumulative consultation	(July 2011) No further response.	LUC referred to SNH windfarm map (dated February 2011).
DGC	Consultation regarding viewpoint selection	No in house landscape advice for viewpoints. No issues with selected list following SNH confirmation of viewpoints (meeting with RES, January 2011). Final list of viewpoints agreed (1.7.2011).	Kept DGC informed of progress regarding viewpoint selection and SNH comments.
	Cumulative consultation	(July 2011) No further response.	
Scottish Borders Council	Consultation regarding viewpoint selection	Confirmed viewpoint locations within Scottish Borders area, Roan Fell, White Coomb and Langholm Monument (11.2.2011). Sequential cumulative effects should be considered, including potential effects along the A7 and A74(M).	Sequential cumulative effects are considered for these routes.
	Cumulative consultation	Provided information about five developments, Earlshaugh, Glenkerie and Corbie Shank (11.2.2001), Windy Edge and Cummings Hill (28.7.2011).	Sites included in CLVIA.
Cumbria County Council	Consultation regarding viewpoint selection	No issues, content with viewpoint at Bowness on Solway (11.2.2011).	Viewpoint at Bowness on Solway assessed.
	Cumulative consultation	Provided list of cumulative developments (11.2.2011). Agreed cumulative viewpoint selection, provided information on two further developments (1.8.2011).	Wind farm developments considered in CLVIA.
Carlisle City Council	Consultation regarding viewpoint selection	Confirmed viewpoints at Todhills and Banks, and omission of viewpoint at Carlisle city centre. Suggested viewpoint at Castle Carrock (10.3.2011). Final list of viewpoints agreed (27.4.2011).	No additional viewpoints included, as views from Carlisle and Castle Carrock area can be represented by viewpoints at Banks and Todhill.
	Cumulative consultation	List of wind farm developments in Carlisle area supplied (18.8.2011).	Wind farm developments considered in CLVIA.
2009 Consultation			
Landscape Architect for DGC (Sept 2009 and undated)	Comments on ES of 2009	• Errors and lack of clarity in visualisations. • Insufficient analysis in LVIA. • Minor roads within 5-10km of the site not assessed. • Cumulative viewpoints too few and too distant. • Lack of focus on local landscape effects.	• Updated visualisations. • Discussion of all effects in LVIA. • Several local routes considered, including minor road skirting the site, from West Linnbridgeford to Kennedy's Corner, then east to Barnglieshead, as well as viewpoints close to the site. • Justification for the selection of cumulative viewpoints is provided. • Assessment of *Foothills* LCT includes Annandale area.
Forestry Commission (July 2009)	Comments on ES of 2009	• Effect on woodland cover of site not clarified. • Compensatory planting required.	• Set out in **Chapter 6: Forestry**. • Forestry replanting, discussed in **Chapter 6: Forestry**.
SNH (Oct 2009)	Comments on ES of 2009	• Comments on visualisations did not follow *Visual Representation of Windfarms* (2006). • Concerns about cumulative effects, including sequential effects. • Lack of assessment of borrow pits and infrastructure elements	• Visualisations updated. • Cumulative assessment updated including sequential effects. • Infrastructure elements assessed.

Assessment Methodology

Baseline Characterisation

8.12 Desk studies were undertaken to provide information about the baseline landscape and visual amenity and to inform the field work and evaluation of effects. Data sources included Ordnance Survey (OS) topographic and geological maps, as well as references specific to designated areas and landscape character.

8.13 Field survey work was carried out during several visits between August 2010 and August 2011 under differing weather conditions. Records were made in the form of field notes and photographs.

Method of Assessment (including Significance Criteria)

Study Area

8.14 The study area for the assessment was defined as 35 km from the outermost turbines of the proposed wind farm in all directions, and is shown on Figure 8.1. The study area of 35 km radius was based on recommendations in current best practice guidance for turbines of 100 m to blade tip or higher[4]. The cumulative search area comprised a 60 km radius, for the analysis of broad patterns

[4] SNH (2006) *Visual Representation of Windfarms, Good Practice Guidance.*

of cumulative development, in accordance with relevant guidance[5]. The detailed assessment of cumulative effects considered an area of 35 km radius, following the same guidance.

Data Sources and Guidance

8.15 The methodology for the landscape and visual assessment was informed by policy, current guidelines, and other documents as appropriate, including:

- Landscape Institute and the Institute of Environmental Assessment (Second Edition, 2002) *Guidelines for Landscape and Visual Impact Assessment*.
- Countryside Agency and SNH (2002) Landscape Character Assessment Guidance for England and Scotland
- SNH (2004) Topic Paper 6. Techniques and Criteria for Judging Capacity and Sensitivity.
- University of Newcastle (2002) *Visual Assessment of Windfarms: Best Practice*, SNH Commissioned Report.
- Scottish Government (February 2011) Web Based Renewables Advice: *Onshore Wind Turbines* http://www.scotland.gov.uk/Resource/Doc/212607/0113647.pdf.
- Scottish Government, (2010) *Scottish Planning Policy* (SPP).
- SNH (2001) Guidelines on the Environmental Impacts of Windfarms and Small Scale Hydroelectric Schemes.
- SNH (2009) Assessing the Cumulative Effect of Onshore Wind Energy Developments (consultative draft).
- SNH, Scottish Renewables Forum and the Scottish Society of Directors of Planning (2006) *Visual Representation of Windfarms*, Good Practice Guidance.
- Landscape Institute (2011) Advice Note 01/11: Photography and Photomontage in Landscape and Visual Impact Assessment.

8.16 The principal sources of information about the landscape character of the study area are:

- SNH (1994) Dumfries and Galloway Landscape Assessment.
- SNH (1998) The Borders Landscape Assessment.
- Natural England National Character Areas (www.naturalengland.org.uk).
- Cumbria County Council (1995) Cumbria Landscape Classification.

8.17 Sources of information on designated landscapes include:

- Countryside Commission for Scotland (1978) *Scotland's Scenic Heritage*.
- The Landscape Character Assessments covering the study area.
- Scottish Natural Heritage (2009) Strategic Locational Guidance for Onshore Windfarms in Respect of the Natural Heritage. Policy Statement 02/02.
- Structure and Local Plans covering the study area.
- Landscape Character Assessments for The Borders (1998) Dumfries and Galloway (1994) and Cumbria Landscape Classification.
- Hadrian's Wall World Heritage Site *Management Plan 2002-2007 Summary*.
- OS maps (1:50,000 and 1:25,000).

8.18 Sources used for the modelling included the following digital data:

- Landform Panorama Data at 1:50,000 which contain 3-D contour information at 10 m intervals, reported as being accurate to ±3 m.
- Raster Data at 1:50,000 which show surface details such as roads, forest and settlement detail equivalent to the 1:50,000 scale Landranger maps.
- Raster Data at 1:250,000 which provided a more general location map.

Significance Criteria

Levels of Significance

8.19 The EIA Regulations[6] require that the significance of each potential effect is identified. In this assessment, four levels of effect were used: Major, Moderate, Minor and Negligible. Moderate and Major effects are considered to be significant for the purpose of the EIA Regulations. The assessment of level of effect was based on professional judgement considering both the sensitivity of the receptor and the predicted magnitude of change resulting from the proposed wind farm. A higher level of effect was generally attached to higher magnitude changes affecting higher sensitivity resources or receptors.

8.20 Table 8.2 provides a description of the levels of effects used in the assessment of landscape and visual effects. The table does not define the thresholds between the effect levels, as this would not be appropriate given the multifaceted nature of the assessment.

Table 8.2: Levels of Landscape and Visual Effects

	Effects on designated landscapes	Landscape effects	Visual effects
Major	Substantial changes affecting the character of the designated landscape or the reason for which it was designated.	Substantial changes affecting the character of the landscape or the elements therein.	The development results in substantial changes in the view.
Moderate	Changes affecting the character of the designated landscape or the reason for which it was designated.	Changes affecting the character of the landscape or the elements therein.	The development results in clearly visible changes to the view.
Minor	Slight changes affecting the character of the designated landscape or the reason for which it was designated.	Slight changes affecting the character of the landscape or specific elements therein.	The development results in slight changes to the view.
Negligible	No or minimal perceptible changes affecting the character of the designated landscape or the reason for which it was designated. Note that this includes no effect.	No or minimal perceptible changes affecting the character of the landscape or specific elements therein. Note that this includes no effect.	The development results in hardly perceptible or no changes to the view. Note that this includes no effect.

[5] SNH (2011) *Assessing the Cumulative Effect of Onshore Wind Energy Developments (consultative draft).*

[6] Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations (2011)

8.21 The following sections set out aspects of the methodology specific to the type of effect being considered, and describe how sensitivity of the receptor or resource and the magnitude of change were identified.

Assessment of Short Term Landscape and Visual Effects due to Construction

8.22 The potential effects on the landscape and views resulting from construction of the proposed wind farm and associated infrastructure were assessed by combining observations and information collected from site visits, photographs and detailed plans with information regarding the construction process.

8.23 The site was considered in terms of its sensitivity to the loss or change to features, or to change in character of its landscape. Sensitivity was classified as either being High, Medium or Low (see Table 8.3).

Table 8.3: Definitions of Sensitivity of the Landscape

Landscape Sensitivity	Description
High	Key features/characteristics that make up the landscape are likely to be affected by introduction of the Development.
	A landscape in good condition, whose characteristics or elements make a strong positive contribution to landscape character.
	A landscape containing characteristics/elements that would be difficult to replace.
	NB: Not all aspects noted above are required to apply concurrently to result in a high landscape sensitivity.
Medium	Some key features/characteristics that make up the landscape are likely to be affected by introduction of the Development.
	A landscape in moderate/fair condition, whose characteristics or elements make some positive contribution to wider landscape character.
	A landscape containing characteristics/elements that are likely to be replaceable to some extent.
	NB: Medium landscape sensitivity may also apply to different combinations of high and low value, condition and contribution to character.
Low	Key features/characteristics that make up the landscape are unlikely to be affected by introduction of the Development - landscape character is unlikely to change.
	A landscape in poor condition, whose characteristics or elements do not contribute positively to wider landscape character.
	A landscape containing characteristics/elements that are likely to be easy to replace.
	NB: Not all aspects noted above are required to apply concurrently to result in a low landscape sensitivity.

8.24 Landscape effects due to construction result from physical changes and perceived changes. Physical changes were assessed by considering both the loss of landscape features and the introduction of new landscape features. Perceived changes to landscape were assessed by considering: changes to the character of the landscape, including the sense of openness or exposure, the duration of the effect, and the distance to which the effect would extend across the landscape. The magnitude of change was classified as being either High, Medium, or Low (see Table 8.4).

Table 8.4: Magnitude of Landscape Change

Magnitude of Change	Description
High	Obvious change in landscape elements, character and/or quality.
Medium	Discernable but not obvious changes to landscape elements, character and/or quality.
Low	Slight or imperceptible change in landscape elements, character and/or quality.

8.25 The sensitivity of views within, and around, the site was classified as being High, Medium or Low in accordance with the criteria for the operational assessment (see Table 8.8). The magnitude of change to views and visual amenity was classified as being either High, Medium or Low (see Table 8.9).

Operational Effects on Landscape Character

8.26 Landscape Character Assessments (LCAs) are systematic assessments of the landscape that are usually carried out at a regional or local scale. They include descriptions of the landscape, by reference to its key characteristics and sensitivities. The Landscape Character Types (LCTs) identified from the published LCAs within the study area were reviewed, including consideration of specific landscape features contributing to landscape character. The assessment of potential effects of the proposed wind farm on landscape character considered those LCTs shown to have potential visibility on the ZTV. LCTs with very little or no area falling within the ZTV were scoped out, as any effects were considered unlikely to be significant or absent altogether.

8.27 Localised landscape effects have been considered through the effects on the landscape of the site, and effects on the local area of the LCT that contains it. As the LCT that covers the site (Foothills) is extensive and occurs in several places across the study area and beyond, the effects on the local area of the LCT occurrence that covers the site has been assessed. As a result, both effects on the local area of the LCT and effects on the LCT 'as a whole'[7] have been assessed for that LCT.

Sensitivity

8.28 Sensitivity of each LCT to the loss, or change, of key features or land cover and its susceptibility to landscape change was considered. Some LCAs provide information as to the sensitivity of the LCT to different types of development, including wind farms (i.e. judgements regarding the potential sensitivity of the LCT to the introduction of turbines into the landscape). Other LCTs do not discuss sensitivity to wind farms, but may offer guidance in relation to masts or other tall structures which can be considered relevant. The Dumfries and Galloway IPP (draft 2011) also contains information about landscape sensitivity[8].

8.29 The criteria for judging sensitivity to wind farm development were drawn from guidance contained in the Countryside Agency and SNH (2002) *Landscape Character Assessment Guidance for England and Scotland* and SNH (2004) Topic Paper 6. *Techniques and Criteria for Judging Capacity and Sensitivity*. Topic Paper 6 states that "*Judging landscape character sensitivity requires professional judgement about the degree to which the landscape in question is robust, in that it is*

[7] This refers to the full geographical extent of the LCT within the study area.
[8] DGC (2011) *Dumfries and Galloway Interim Planning Policy (draft)*

able to accommodate change without adverse impacts on character. This means making decisions about whether or not significant characteristic elements of the landscape will be liable to loss... and whether important aesthetic aspects of character will be liable to change"[9].

8.30 Attributes of landscape character that may indicate sensitivity to wind farm development include those listed in Table 8.5. Sensitivity of landscape character types was described as High, Medium, or Low according to Table 8.3.

Table 8.5: Criteria to Determine Landscape Character Sensitivity to Wind Turbines

Landscape Sensitivity Assessment Criteria			
Characteristic/ attribute	**Aspects indicating lower sensitivity to wind energy development**	⟷	**Aspects indicating higher sensitivity to wind energy development**
Scale	Large scale	⟷	Small scale
Landform	Absence of strong topographical variety Featureless, convex or flat	⟷	Presence of strong topographical variety or distinctive landform features
Landscape pattern and complexity	Simple Regular or uniform	⟷	Complex Rugged and irregular
Settlement and man-made influence	Presence of contemporary structures e.g. utility, infrastructure or industrial elements	⟷	Absence of modern development Presence of small scale, historic or vernacular settlement
Skylines	Non-prominent /screened skylines Presence of existing modern man-made features	⟷	Distinctive, undeveloped skylines Skylines that are highly visible over large areas or exert a large influence on landscape character Skylines with important historic landmarks
Inter-visibility with adjacent landscapes	Little inter-visibility with adjacent sensitive landscapes or viewpoints	⟷	Strong inter-visibility with sensitive landscapes Forms an important part of a view from sensitive viewpoints
Perceptual aspects	Close to visible or audible signs of human activity and development	⟷	Remote from visible or audible signs of human activity and development

Magnitude of change

8.31 The magnitude of change to landscape character relates to both physical and perceptual changes in landscape character. The following factors all contribute to the magnitude of change (see Table 8.4):

- loss of specific landscape elements such as moorland or forest, either as direct changes to the landscape itself, or as changes occurring outside the character area that affect the perception of character (indirect effects);
- the scale of the wind farm in the landscape;
- the position of the wind farm relative to features characteristic of a landscape character type, e.g. against a characteristic skyline;
- the presence of other existing vertical and man-made elements in the view;
- changes to key characteristics of the landscape;
- the geographic extent to which a landscape character type would be affected, i.e. regional, local or site level; and
- with respect to 'non-host'[10] LCTs, whether the key characteristics of those LCTs specifically make reference to views across the wider area.

Operational Effects on Designated Landscapes

8.32 Some areas are recognised through the planning system for their scenic or landscape qualities and as such were designated to give them particular planning status or protection. The designated areas range from those of national importance to those of regional or local importance.

8.33 The assessment of effects on designated landscapes was based on desk studies, and visits to key sites during field work. Several viewpoints used in the visual assessment are also located within designated landscapes.

8.34 The assessment of operational effects on Gardens and Designed Landscapes was undertaken by CFA Archaeology, and the findings are reported in **Chapter 11: Cultural Heritage and Archaeology**.

Sensitivity and Magnitude of Change

8.35 For the assessment of effects on designated landscapes, the following factors were considered to contribute to the sensitivity (High, Medium or Low) of the landscape to change (see Table 8.6):

- the policy importance of the designation;
- the physical extent of the designated area;
- the directions of principal views (from and to the designated area);
- the characteristics of the area (e.g. open hills or enclosed woodlands); and
- the reasons for the designation including any identified 'special qualities'.

Table 8.6: Sensitivity of Designated Landscapes

Landscape Sensitivity	Description
High	A highly valued landscape (e.g. forming part of a National Park, National Scenic Area, Area of Outstanding Natural Beauty or Garden/Designed Landscape on Historic Scotland's Inventory), or containing highly valued components.
Medium	A moderately valued landscape (e.g. covered by a local landscape designation such as a Regional Scenic Area or Area of Great Landscape Value), or containing moderately valued components.
Low	An undesignated landscape.

8.36 To determine the magnitude of change (see Table 8.7), the following factors were considered:

- the distance from the site;
- the theoretical visibility and potential changes to principal views or vistas from the designated area; and

[9] SNH (2004) *Topic Paper 6. Techniques and Criteria for Judging Capacity and Sensitivity*, Paragraph 4.2, Page 5.

[10] i.e. those LCTs that do not cover the site.

- the potential changes to the perceived character of the landscape as a result of the wind farm with respect to the integrity of the designated landscape and the extent to which it could affect the reasons for its designation.

Table 8.7: Magnitude of Change to Landscape Designations

Magnitude of Change	Description
High	Obvious change in landscape elements, character and/or quality affecting the reasons for designation.
Medium	Discernable but not obvious changes to landscape elements, character and/or quality affecting the reasons for designation.
Low	Slight or imperceptible change in landscape elements, character and/or quality, without affecting the reasons for designation.

Assessment of Long Term Effects on Visual Amenity during Operation

8.37 The assessment of visual effects considered the appearance of the proposed wind farm during the operational phase, and how it would change existing views towards the site and around the surrounding area. Visual effects were assessed using views from static locations (represented by viewpoints) and consideration was also given to the visual experience from settlements, and when travelling through the area (routes/sequential views).

8.38 Evaluation of the theoretical extent to which the wind farm would be visible across the study area was undertaken by establishing a 'Zone of Theoretical Visibility' (ZTV), using specific computer software designed to calculate the theoretical intervisibility between the proposed wind farm and its surroundings. ReSoft WindFarm and Arcmap GIS computer software were used to generate the ZTV. These programmes calculate areas from which the turbines are potentially visible. This is performed on a 'bare ground' computer terrain model, which does not take account of potential screening by buildings or vegetation. The model uses a 50 m x 50 m grid which means that the computer calculates the number of turbines visible from the centre point of each 50 m x 50 m square. It should be noted that the programme uses point height data, rather than continuous data, and assumes straight line topography between data points, and is not able therefore to take account of small scale topographic features. As it uses a 'bare ground' model, it is considered to over emphasise the extent of visibility of the proposal and therefore represents a 'maximum potential visibility' scenario.

8.39 The visual assessment was based largely on field visits, and was aided by computer modelling used to produce the ZTV, wireframe diagrams and photomontages that represent the appearance of the proposed wind farm in selected views.

8.40 The desk study relating to the visual characteristics of the study area made use of the ZTV, and Ordnance Survey maps. The field survey involved extensive travel across the study area to verify the extent of the computer generated ZTV and included assessment at all viewpoint locations. This allowed for interpretation of the potential visibility of the proposed wind farm, based on the realities of visual experiences, including factors such as screening, seasonality and weather, which may all affect visibility. It also allowed consideration of the relationship between distance from the site and the relative prominence of the proposed turbines in the wider landscape.

Viewpoint Selection

8.41 The viewpoints used for this assessment were chosen according to the following criteria:

- being publicly accessible;
- having a reasonably high potential number of viewers or being of particular importance to the viewer(s) affected;
- providing a representative range of viewing distances (i.e. short, medium and long distance views) and elevations;
- representing a range of viewing experiences (i.e. static views and points along sequential routes);
- representing a range of view types, (e.g. panoramas, vistas, glimpses);
- representing views with different extents of the proposed wind farm visible (i.e. the proposed wind farm in full, or just blades visible); and
- representing locations with potential cumulative views of the proposed wind farm in conjunction with other cumulative developments.

8.42 The viewpoints chosen lie within the calculated ZTV, and locations with the clearest views of the proposed wind farm have been sought intentionally. These locations therefore represent some of the 'maximum case' views rather than typical views across the study area.

Visualisations

8.43 Visualisations are illustrations that aim to represent an observer's view of a proposed wind farm. *Visual Representation of Wind Farms: Good Practice Guidance* (SNH, 2006) stresses that "*visualisations, whether they are hand drawn sketches, photographs or photomontages will never appear 'true to life'. Rather they are merely tools to inform an assessment of impacts, and like any tool, their application requires careful use*"[11]. It is important therefore to note that the computer generated images, including the ZTVs, wireframes and photomontages are tools to provide an illustration of the potential effects of the proposed wind farm. They are not a substitute for the actual review of likely visual changes in the field, which formed a key part of the assessment methodology.

8.44 The methodology for production of the visualisations was based on the *Guidelines for Landscape and Visual Impact Assessment* (2002)[12], SNH (2006) *Visual Representation of Wind Farms: Good Practice Guidance* and Landscape Institute (2011) *Advice Note 01/11: Photography and photomontage in landscape and visual impact assessment*. Further information about the approach is provided in paragraphs 8.46 – 8.56.

8.45 The ZTV (described earlier) was calculated to show the number of turbines visible to blade tip or hub height, representing the maximum visibility scenario. The ZTV calculated to blade tip height is shown in Figure 8.2 (including Figures 8.2a-i), and is used in subsequent figures including cumulative figures; the hub height ZTV is shown in Figure 8.3.

[11] SNH (2006) *Visual Representation of Windfarms, Good Practice Guidance*, Page 10, paragraph 7.
[12] LI & IEA (2002) *Guidelines for Landscape and Visual Impact Assessment*, chapter 8.

Photography

8.46 The camera used for the photography is a Nikon D70s digital SLR with a fixed 35 mm focal length lens (equivalent to a 52.5 mm focal length lens on a 35 mm film camera). These focal lengths are in accordance with recommendations contained in guidance[13].

8.47 A tripod with vertical and horizontal spirit levels was used to provide stability and to ensure a level set of adjoining images. A panoramic head was used to ensure the camera rotated about the no-parallax point of the lens in order to eliminate parallax errors[14] between the successive images and enable accurate stitching of the images. The camera was moved through increments of 15 degrees and rotated through a full 360 degrees at each viewpoint. In total, 24 photographs were taken for each 360 degree view. This enabled a 90 degree angle, centred on the view towards the proposed wind turbines, to be cut from the overall 360 degrees in accordance with SNH guidance[15].

8.48 The location of each viewpoint was recorded in the field in accordance with SNH *Visual Representation of Wind Farms: Good Practice Guidance*[16].

8.49 Weather conditions and visibility were considered an important aspect of the field visits for the photography. Where possible, visits were planned around clear days with good visibility. Viewpoint locations were visited at times of day to ensure, as far as possible, that the sun lit the scene from behind, or to one side of the photographer. South facing viewpoints can present problems particularly in winter when the sun is low in the sky. Photographs facing into the sun were avoided where possible to prevent the wind turbines appearing as silhouettes. Adjustments to lighting of the turbines were made in the rendering software to make the turbines appear realistic in the view under the particular lighting and atmospheric conditions present at that time.

Photograph Stitching, Wireframes and Photomontages

8.50 Photograph stitching software (The Panorama Factory) was used to piece together the adjoining images.

8.51 The software package ReSoft Wind Farm version 4.2 was used to view the proposal from selected viewpoints in wireframe format[17]. Ordnance Survey Landform Panorama data (equivalent to 1:50,000 scale mapping with 10 m contour intervals) was used to model the landform seen in the wireframe view. Turbine locations, type and size, and viewpoint location coordinates were entered. Photomontages have been constructed to show the largest likely rotor diameter for a turbine with this overall tip height. The Wind Farm software includes a default viewer height of 2 m above ground level. The pre-prepared 90 degree photos were imported into the Wind Farm software and the wireframe views overlaid onto the photographs.

8.52 All views from viewpoints have been represented using photographs and wireframes, in accordance with guidance[18]. Also following this guidance, viewpoints within 15 km of the proposed wind farm were also represented with fully rendered photomontages. The presentation of fully rendered photomontages involved a number of additional stages as outlined below.

8.53 The Wind Farm software was used to render the turbines, taking account of the sunlight conditions and the position of the sun in the sky at the time the photograph was taken. Blade angle and orientation adjustments were also made to represent a realistic situation[19]. Fixed features on the ground, for example buildings and roads, were located in the wireframe model and used as markers to help line up the wireframe ground model with the photograph.

8.54 The final stage required the rendered turbines to be blended into the actual view. This was carried out using Photoshop software and allowed the turbines to be located behind foreground elements that appeared in the original photograph. For some viewpoints that have clear views of the site, the changes in forestry have also been modelled, using maps overlaid on the terrain model and rendering using Photoshop software.

8.55 Autodesk AutoCAD software was used to present the figures. For each view, the first page shows a location plan indicating the viewpoint and viewing angle. To provide context for the actual photomontage, the second page presents an original photograph from the viewpoint above a wireframe image, both above a photomontage, and all showing 90 degree included angle of view. The third page contains a 50 degree wireframe and 50 degree photomontage, at image heights and viewing distances above the minimum recommended by SNH[20]. The final page shows a photomontage only, at 50 degrees included angle of view.

Sensitivity and Magnitude of Change

8.56 Viewpoints are used in this assessment to analyse the potential effects on views that are seen by people at those locations. Viewpoint sensitivity has been used as a proxy for the sensitivity of different people at each location. Determining viewpoint sensitivity involves considering the existing character of each view, and making a judgement against the following criteria:

- whether the viewpoint represents views from a settlement, tourist destination, designated landscape, an advertised viewpoint, or a location where people gather;
- the scenic qualities of the view, including the presence of other existing vertical and manmade elements (including turbines) in the view to which the proposed turbines might relate; and
- the likely number of viewers.

8.57 The likely number of viewers was judged on the basis of other indicators, such as the size and the function of roads, the presence of settlement, or tourist or visitor attractions. Numerical data was not used. Generally, minor, local access or dead-end roads and remote areas including hill tops were judged to have relatively low numbers of viewers, whereas busy routes, settlements and destination points such as castles or gardens open to the public were judged to have relatively high numbers of viewers.

8.58 In all cases, the sensitivity of views from settlements was judged to be High given the potentially high numbers of residential and visitor viewers and because although settlements are not generally identified as locations for viewing the wider landscape on Ordnance Survey maps, they are places

[13] SNH (2006) *Visual Representation of Windfarms, Good Practice Guidance*.
[14] Parallax is the difference between what is seen through the viewfinder and what the camera records on film.
[15] SNH (2006) *Visual Representation of Windfarms, Good Practice Guidance*, Page 63, Paragraph 121.
[16] SNH (2006) *Visual Representation of Windfarms, Good Practice Guidance*, Page 63, Paragraph 111 and Table 8.
[17] A wireframe model is a visual presentation of a three dimensional or physical object in 3D computer graphics. It is created using lines to reveal the structure of a 3D model and is therefore relatively simple and quick to produce.
[18] SNH (2006) *Visual Representation of Windfarms, Good Practice Guidance*.
[19] The depicted rotation of the blades in wireframes was set with one blade vertically upwards to illustrate full tip height, but was set at random for photomontages to represent a more realistic image. The orientation of rotors was set to be perpendicular to the direction of view at the centre of the proposed wind farm for wireframes. For photomontages, the orientation of the rotors was set as for the wireframes (perpendicular to the centred direction of view), except where there were other operational wind farms in the view, in which case rotor orientation was set to mimic the orientation of the existing turbines, and therefore the wind direction at the time of photography.
[20] Viewing distance is the distance at which the image should be viewed to provide a representation of the 'real life view'.

where people congregate and spend time. The scenic quality of views from settlements varies and this was noted during site visits as appropriate.

8.59 The sensitivity of views from roads and railways was judged to be Low as the purpose of using the route is for travel. For designated tourist routes, cycle paths, footpaths and long distance walking routes, the purpose of using the route is likely to include the attention of the user being on the landscape. These routes were judged to be of higher sensitivity.

Table 8.8: Sensitivity of Viewpoints

Viewpoint Sensitivity	Description
High	An advertised view or designated viewpoint of high scenic quality (this may include views across, or within, a National Park, National Scenic Area, or Garden/Designed Landscape on Historic Scotland's Inventory[21]).
	A viewpoint in a residential area where viewers have potential prolonged viewing opportunities.
	A view experienced by a large number of receptors and of particular importance to the viewers affected.
	NB: Not all aspects noted above are required to apply concurrently to result in a high viewpoint sensitivity.
Medium	A viewpoint from which there is a view with some scenic quality (this may include views across, or within, a landscape designated in the Local Plan for its scenic quality).
	A view including some overt or intrusive man-made elements.
	A view experienced by a moderate number of receptors.
	NB: Different combinations of aspects noted in the high and low sensitivity categories may combine to produce medium viewpoint sensitivity.
Low	A viewpoint from which there is a view with low scenic quality.
	A view including a number of overt or intrusive man-made elements in the view.
	A view experienced by a small number of receptors.
	NB: Not all aspects noted above are required to apply concurrently to result in a low viewpoint sensitivity.

8.60 In the assessment of effects on visual amenity, the terms High, Medium or Low were used to describe the magnitude of change in the view (see Table 8.9 for descriptions). Whilst this was influenced by the distance at which the proposed wind farm is seen, factors such as the role of the proposed wind farm in the view, the proportion of the proposed wind farm visible, and the prominence or dominance of other focal features within the view were also considered. There were therefore no distance defined thresholds between the levels of magnitude.

Table 8.9: Magnitude of Change to Visual Amenity

Magnitude of Change	Description
High	The proposed wind farm forms a key/defining element of the view.
Medium	The proposed wind farm is clearly visible but does not have a key/defining role in the view.
Low	The proposed wind farm is discernable and forms a minor element of the view, the proposed wind farm may go unnoticed as a very minor element of the view, or is not visible.

Assessment of Cumulative Effects

8.61 The cumulative landscape and visual assessment (CLVIA) considered the effects of introducing the proposed wind farm into the area, with a baseline that included existing, consented and other proposed wind farms (i.e. at the submitted application stage or beyond), according to SNH guidance.

8.62 The CLVIA considered the effect of introducing the proposed wind farm in addition to other developments that do not yet exist in the current landscape but which may exist in the future. Although not all proposals will necessarily gain consent, it was assumed for the purposes of the assessment that all these developments will be present in the landscape in future, as this represents the 'maximum development scenario'.

8.63 The *Guidelines for Landscape and Visual Impact Assessment* (2nd edition, 2002) define cumulative effects as: '*landscape and visual effects* [that] *result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future*'[22].

Differences between CLVIA and LVIA

8.64 Although both LVIA and CLVIA look at the effects of the proposed wind farm on views and on the landscape character of the surrounding area, there are differences in the description of the baseline against which the assessments are carried out.

8.65 For CLVIA, the baseline is partially speculative. This is because developments considered include those which are consented but not yet built and also those awaiting determination by the relevant consenting authority.

8.66 The assessment does not include developments at EIA scoping stage, although some observations regarding their potential visibility are made. SNH guidance states that *"The location of proposals that are at the scoping stage may helpfully be identified in baseline information but generally scoping proposals will not form part of the assessment process. Under certain scenarios, for example when neighbouring or nearby developments may be heading towards a near concurrent application, cumulative assessment of development which has only reached the scoping stage may be appropriate. This should be undertaken at the developer's discretion and in agreement with the determining authority"*[23].

8.67 SPP (2010) states that projects that are built, those with permission and those the subject of valid but undetermined applications should be considered, emphasising that planning decisions should not be unreasonably delayed because other schemes in the area are at a less advanced stage[24].

[21] Gardens and Designed Landscapes are considered in Chapter 11: Cultural Heritage and Archaeology. Historic Scotland (2007) *List of Gardens and Designed Landscapes* (on website)

[22] LI and IEMA (2002) *Guidelines for Landscape and Visual Impact Assessment*, Page 85, Para 7.12.
[23] SNH (2009), *Assessing the Cumulative Effect of Onshore Wind Energy Developments*, Draft for Consultation November 2009
[24] SPP (2010) *Scottish Planning Policy*,Page 38, Para 188.

8.68 It was agreed with SNH that developments at the scoping stage would not be included in the assessment, although their locations would be shown on maps.

8.69 This assessment therefore considered developments that are submitted applications or consented schemes, and those that exist or which are in the process of being constructed, as of a 'cut-off' date of 1 August 2011, agreed with all consultees.

8.70 Two stages in the identification of the study area were considered in the CLVIA. The initial search area was taken as 60 km from the proposed wind farm site. This allowed for the identification of developments across the study area and across the wider landscape, with potential views of wind farms up to 35 km in opposite directions. Geographic trends or patterns in wind farm development could be identified at this scale. However, given the number of developments likely to occur within an area this large, it was not considered meaningful to assess the cumulative effects of the proposed wind farm at this scale. The detailed CLVIA includes those developments within 35 km of the proposed wind farm, with potential to have significant cumulative relationships with it. This staged approach was carried out in consultation with SNH.

8.71 To construct the cumulative ZTVs (CZTVs), the ZTVs to tip height for each development were generated to a 35 km radius. These were then combined with the proposed wind farm ZTV (35 km radius) to create the CZTV. The CZTV was constructed to show the number of wind farms (rather than the number of turbines) visible.

8.72 The CZTVs were colour coded to distinguish between areas where the proposed wind farm is predicted to be visible (either on its own, or in conjunction with other developments), and areas where other wind farms would be visible but the proposed wind farm would not. The CZTVs do not identify which other wind farms would be visible.

8.73 Cumulative wireframes were generated for five viewpoints selected to represent cumulative effects, in which all wind farms were modelled. The cumulative wireframes were set up in the same way as for the LVIA, except that the included angle of view was increased to illustrate all of the developments in the panorama.

Types of Potential Cumulative Effects

8.74 As advised by SNH, it is the *additional* effects arising from introducing the proposed wind farm into the landscape, assuming that all other considered developments are already present in that landscape, which is discussed in this cumulative assessment. The assessment does not consider the total effects (as if introducing all developments into the landscape at once). The assessment looks at the effects due to any synergistic or potential antagonistic relationships between the proposed wind farm and cumulative developments. Two or more adjacent schemes may complement one another, or may be at odds with one another, and it is the level of significance of effects which arises as a result of this that is examined here.

8.75 Three types of cumulative effects on visual amenity were considered in the assessment: combined, successive and sequential:

- Combined effects occur where a static receptor is able to view two or more developments from a viewpoint within the receptor's arc of vision (assumed to be about 120 degrees for the purpose of this assessment) at the same time.
- Successive effects occur where a receptor is able to view two or more developments from a viewpoint, but needs to turn to see them.

8.76 The locations from where combined and successive cumulative effects may be experienced are indicated by the areas of overlap between the ZTVs, where one or more schemes would potentially be seen at the same time as the proposed wind farm.

8.77 Sequential effects occur when a receptor is moving from one area to another, for instance when a person is travelling along a road or footpath, and is able to see two or more developments at the same, or at different times as they pass along the route. Frequent sequential effects occur when a development appears intermittently with short time lapses between points of visibility, depending on the speed and distance. Occasional sequential effects occur where long periods of time lapse between views of the developments, due to a lower speed of travel and/or longer distances between the points of visibility.

8.78 Sequential effects can potentially affect views from routes over a much wider area, as different wind farms or groups of wind farms become apparent in views when moving through the landscape.

Sensitivity and Magnitude of Change

8.79 The assessment of significance of cumulative landscape effects considered the sensitivity of the landscape or view (as identified in the LVIA, see Tables 8.3 and 8.8), and the magnitude of change (see Tables 8.10 and 8.11). Magnitude of change was assessed considering:

- the arrangement of wind farms in the view, e.g. developments seen in one direction or part of the view, or seen in all directions;
- the relationship of scale of the wind farms, including turbine size and number of turbines;
- the position of the wind farms in the view, e.g. on the skyline, against the backdrop of land; and
- the distances, from the viewer, and between wind farms.

Table 8.10: Magnitude of Cumulative Landscape Change

Magnitude of Change	Description
High	Obvious additional change, in conjunction with other developments, affecting the character of the landscape or the elements therein.
Medium	Discernable additional change, in conjunction with other developments, affecting the character of the landscape or the elements therein.
Low	Slight additional or imperceptible change, in conjunction with other developments, affecting the character of the landscape or the elements therein.

Table 8.11: Magnitude of Cumulative Visual Change

Magnitude of Change	Description
High	Obvious additional change, in conjunction with other developments, affecting the view.
Medium	Discernable additional change, in conjunction with other developments, affecting the view.
Low	Slight or imperceptible additional change, in conjunction with other developments, affecting the view.

8.80 The judgement of level of significance of cumulative effect was informed by the CZTVs, cumulative wireframes and fieldwork. The judgement considered magnitude of change and the relationships between the wind farms (illustrated by the computer modelling) in conjunction with sensitivity of the receptor.

Assessment of Effects During and After Decommissioning

8.81 The potential effects resulting from decommissioning of the proposed wind farm and after decommissioning were assessed using the methodologies set out in paragraph 8.14 – 8.25.

Baseline Conditions

Current Baseline

8.82 This section sets out the existing conditions in relation to the site and surrounding area, and describes the baseline against which landscape and visual change was assessed. The study area is illustrated in Figure 8.1. Baseline landscape designations and landscape character are illustrated in Figures 8.5 and 8.6 respectively.

The Site

8.83 The site lies approximately 8 km south west of Langholm, south of the B7068 road and on the southern edge of the Southern Uplands. The topography is generally undulating, although several narrow, shallow gullies can be found around watercourses to the east of the site. The site consists of a subtle ridge to the east of Kirtleton and includes land to the south of the B7068 over Gowd Muir (247 m AOD); and extends south and south-east to Allfornought Hill (223 m AOD) to the west of, but not including Collin Hags; and extends to the south-east of Allfornought Hill to the minor road between Solwaybank and Pingle. The site ranges in elevation from 247 m AOD on Gowdmuir Hill, down to 115 m AOD at the minor road near the Woodside Burn at the southern extremity of the site.

8.84 The southern part of the site is drained by Palling and Woodside Burns, which run into the River Sark. The northern part of the site is drained by a number of small burns that run into the Kirtle Water. Both the River Sark and the Kirtle Water flow into the Solway Firth near Gretna.

8.85 The northern part of the site is covered by coniferous forestry, with forest tracks and firebreaks between planting stands. The southern part of the site contains blanket bog and a range of grassland habitat types. There are a few small parcels of mixed woodland on the slopes bellow Allfornought Hill and along the Palling Burn, but this part of the site is open in character, with few fence field boundaries and rough tracks running up onto the plateau from Allfornought and Woodside. Further information about the landcover of the site is contained in **Chapter 9: Ecology**.

The Surrounding Area

Geology and Landform

8.86 The geology of the wider area is primarily formed by a series of geological faults running south-west – north-east, and these in combination with glacial erosion, have given rise to the range of hills known as the Southern Uplands. The most significant of these faults is the Southern Upland Fault, which runs from New Cumnock, past Crawfordjohn and Robertson, north of the study area. The site sits on the southern edge of these sedimentary formations in an area of Silurian sedimentary rocks. Peat and boulder clay on the summits, and within the break of slopes, overlay to varying extents the Silurian bedrock, and give rise to a fairly uniform geology and landform over the immediate site. The notable change in geology from the sedimentary (foothills and uplands) to carboniferous limestone (low-lying land) is reflected in the change in elevations and land use.

8.87 The valleys draining the Southern Uplands can be river-cut, V-shaped valleys, typically of smaller tributaries, or deeper, wider glacially-cut U-shaped valleys. A number of the smaller V-shaped valleys are associated with the burns that drain the site. Outside the immediate site but forming a notable setting to the immediate hills of the site are a number of valleys. The U-shaped valley of the River Esk which runs to the east of the site is most pronounced and has steep slopes and a relatively flat valley floor. The larger U shaped valley of Annandale lies to the west of the site. In all cases, the communications network, including road, rail and overhead power routes, has exploited these lines of 'least resistance' through the upland landscape.

8.88 As a result of the topography of the area, views across the hills at high level are often extensive, whilst views within the steep sided valleys can be very contained, particularly where the valleys themselves are winding and narrow, such as experienced along Eskdale.

Landscape Elements and Landcover

8.89 Across the wider study area the land use is very varied. On the higher ground, which occupies the northern part of the study area, it is relatively uniform with the landcover typified by open grassland, moorland and bog, with some extensive areas of forest comprising the south-western ranges of the Southern Uplands. In contrast, the southern half of the study area has a varied landcover in response to the change in elevation and changes in agricultural practice. On the lower slopes, large fields of rough grazing give way to smaller hedge-enclosed fields on the lower slopes and in narrow valleys. These are interspersed with irregular copses and groups of deciduous trees. As the land flattens out adjacent to the Solway and main tributary rivers there is a marked change in the field pattern, becoming more regular and larger, often with post and wire fencing. Immediately adjacent to the Solway, the landscape is of flat open fields and often boggy ground giving way to the estuarine flats. The wider valleys and lowlands also have a higher settlement density.

8.90 Commercial forest is extensive across the northern part of the study area. The Forest of Ae, Eskdalemuir Forest and Craik Forest are the largest plantations, with Castle O'er Forest extending southwards close to the site itself. Many of these forests are now undergoing felling and restructuring as the trees reach maturity. Along the river valleys, the agriculture and settlements are set within a wider framework of deciduous woodland and shelterbelts, often associated with more extensive policy woodlands.

Wind Farms, Communications and Infrastructure

8.91 At the time of this assessment, there were four operational wind farms in the study area; Minsca, Craig (Carlesgill), Dalswinton and Great Orton Wind Farms. Craig Wind Farm Extension and Harestanes Wind Farm had been approved but not yet constructed. Further wind farms were undetermined applications, as detailed in Tables 8.15 and 8.16.

8.92 The study area stretches from the middle of the Southern Uplands range of hills, southwards across the Solway Firth, to the northern boundary of England and the Cumbrian Coastline. As a result, the communications networks are primarily geared towards navigating the Solway Firth and crossing the Rivers Esk, Lyne and Eden, accessing the Dumfries and Galloway coastline, and crossing the Southern Uplands to connect the Scottish Central Belt with the Scottish Borders and England.

8.93 The road network across flatter land around Dumfries and Carlisle forms a radial route pattern extending outwards from the main settlements into the wider hinterland. Many of these radial roads also form the main routes which cross northwards over the Southern Uplands, including the A701, A708, A7, B709, and B6357 and smaller roads which link between main route corridors and settlements.

8.94 The lower landscapes around Dumfries, Lockerbie, Gretna and Carlisle have many more medium to small roads, creating a dense network of routes connecting the more abundant settlements.

8.95 Overlaying this is the principal route corridor of the A74(M) which runs from the north-west of the study area down the broad Annandale valley, crossing the broad flat flood plains at the head of the Solway before linking into the M6 at Carlisle. Rail lines across the study area follow the major valleys and rivers, and include the West Coast Main Line adjacent to the A74(M) (that follows the Annan Water and the River Clyde from Carlisle to Glasgow as a route through the Southern Uplands) and along Nithsdale (from Carlisle and Dumfries to Ayr).

8.96 Around the site, the B7068 runs past the northern site boundary, linking the A74(M) at Lockerbie to the A7 at Langholm. To the south, the B6357 links the A74(M) at Kirkpatrick Fleming to the A7 via Milltown to the south of the site.

8.97 The Southern Upland Way (SUW) crosses the northern part of the study area, over the Lowther Hills to Moffat, and north-east along the Ettrick Water valley. The SUW is approximately 27 km away from the site at its closest point, by Loch Fell above Ettrick Head.

8.98 There are a number of large-scale electricity transmission lines across the study area, the most notable being the lines that run along Annandale parallel to the A74(M).

Settlement

8.99 The pattern of settlement across the study area closely follows the topography, with larger and more frequent settlements on areas of lowland. This is particularly evident to the south of the study area where the lowlands along the Solway Firth and Nith Estuary are relatively densely settled, with Dumfries and Carlisle interspersed with a number of smaller towns including Annan, Gretna and Longtown. Elsewhere within the study area, settlements are limited to villages or small towns along river valleys or at bridging points of rivers. As the road network also follows these valleys, settlements and major road junctions coincide at valley junctions and river crossing points.

8.100 The nearest small settlements to the site include Kirtleton, Milltown, Evertown, Waterbeck, Canonbie, and Eaglesfield whilst the nearest larger settlements include Langholm, Gretna and Lockerbie.

8.101 As settlements are located on lower ground and in valleys, views to the site are generally restricted by high ground between the settlement and the site. The theoretical visibility of the proposed wind farm from settlements in the study area is illustrated in Figure 8.2 (the ZTV) and considered later in the assessment (visual effect on settlements). Several settlements were specifically represented by the selection of viewpoints.

Climate and Weather Conditions

8.102 In addition to the physical features of the landscape, climate and weather conditions affect perception and experience of the landscape.

8.103 The main weather and seasonal influences are exposure, sunshine, precipitation and day length. Generally, Scotland is fairly cloudy due to the frequency of low-pressure systems from the Atlantic Ocean. In addition, day length varies with the seasons. Precipitation (rainfall and snowfall) in Scotland is very variable and is determined by topography and geographic location. The site is near the south-eastern fringe of the Southern Uplands hill range, and can therefore expect frequent wet, cloudy conditions.

8.104 Scotland can also have periods of excellent visibility, as the greater part of the country is remote from the more industrial and populous areas of Great Britain and mainland Europe where buildings and pollution can limit visibility. These conditions are generally experienced for a limited time across the study area, due to the prevailing climatic influences.

Climate Change

8.105 Present-day Scottish landscapes have been formed by a wide range of influences, including climatic processes. Ice ages have had a major influence in sculpting today's landforms through glacial spread and retreat. Similarly, the warming of the planet and changing in patterns of rainfall have, over time, influenced the land's agricultural capacity and the flora of today.

8.106 Climate can be viewed as having been a highly influential factor in the development of today's landscapes; and it is widely accepted that due to anthropological activities, climates are changing. Whilst there appears to be no certainty of what the effects of such climatic changes will be in the future, it is clear that these changes will affect the landscape. These concerns have been recognised in a number of papers in recent years.

8.107 The Countryside Agency and SNH (2000) Topic Paper No 9: Cli*mate Change and Natural Forces: the consequences for landscape character* explored some of these issues. The document states that "*It is important to recognise that perceptual and aesthetic characteristics of landscapes may also be affected by climate change*"[25].

8.108 Natural England's Climate Change Policy[26] states that "*Climate change represents the most serious long-term threat to the natural environment*". The policy document states that "*climate change is already occurring*", and stresses the "*urgent need to develop strategies to enable the natural environment to adapt to the impacts of 'locked in' climate change*", i.e. the effects of past activity that are yet to manifest in the climate system.

8.109 Wind farms can play a part in helping to reduce anthropologically generated climate change, although wind farms themselves will contribute to on-going landscape change. Landscapes have always changed and will continue to change through time. Landscape character is not static, but is evolving. In this context, wind farms are one part of the potential package of measures to address the issue of climate change.

Forces for Landscape Change

8.110 Forces for change are those factors affecting the evolution of the landscape and which may, consequently, affect the perception of the proposed wind farm in the near or distant future. Although prediction of these is necessarily speculative, some are discussed briefly in paragraphs 8.111 to 8.113.

[25] CA and SNH (2000) *Topic Paper No 9: Climate Change and Natural Forces: the consequences for landscape character*, Paragraph 31.
[26] Natural England (2008): The natural environment: Adapting to climate change. Available at http://naturalengland.etraderstores.com/NaturalEnglandShop/NE118.

8.111 Wind farm development is a clear force for change. There are currently four operational wind farms in the study area, one under construction (Hell Rig Wind Farm), with consent given for further developments at Harestanes and Ewe Hill Wind Farms (six turbines consented at Ewe Hill (hereafter referred to as Ewe Hill '6'), with the remaining 16 turbines still undetermined (hereafter referred to as Ewe Hill 'Section 36')) and an additional turbine at Craig Wind Farm (See Tables 8.15 and 8.16). There are also a number of proposals for wind farms at the planning stage. Given the wind resource in this area, there are likely to be further applicaitons for wind farm development in this part of the Southern Uplands.

8.112 An area of commercial forestry exists across the north of the site and other extensive areas are located within the study area to the north. Many of these forests, for example Castle O'er Forest and the Eskdalemuir and Craik Forests, are in the process of being restructured as rotation felling and restocking occurs. This is an important influencing factor for the foreseeable character of the landscape with respect to colour and textures, and the qualities of openness and enclosure. Any present screening effect of woodland may change in the future and has potential to affect the extent of visibility of the proposed wind farm, particularly if plantations adjacent to the proposed wind farm are felled.

8.113 Other infrastructure elements that contribute to landscape change include roads, access tracks, electricity transmission lines and electrical substations. These can be associated with wind farms or other types of development.

Baseline Landscape Character

Character of the Site

8.114 The site is located on the southern edge of the Southern Uplands hill range that crosses Dumfries and Galloway, and encompasses an area of undulating land around Gowd Muir and Collin Hags, east of Kirtleton to the south-west of Langholm. At a local level, the area around the site conforms with the descriptions of *Foothills, Upland Fringe* and *Flow Plateau* Landscape Character Types (LCTs) in the *Dumfries and Galloway Landscape Character Assessment* (LCA), being of undulating rounded hills with rounded peaks or rolling elevated pastures, dissected by incised valleys. The site itself is of varied topography, with a number of pronounced, rounded hills along its northern boundary, and an undulating lower plateau, with narrow, shallow gullies cut by watercourses to the east. The site is unenclosed and is principally of semi-improved grassland. A large block of coniferous forest covers the north-western area of the site, and small parcels of mixed woodland are interspersed across the lowland southern area of the site.

8.115 Buildings and structures around the site include a number of isolated farmsteads. A minor road runs to the south of the site, with the B7068 immediately to the north. There are a limited number of tracks on and around the site, for example farm tracks.

Landscape Character of the Study Area

8.116 Numerous LCTs are found within 35 km of the proposed wind farm site. The Dumfries and Galloway, and Borders LCAs in Scotland, and National Landscape Areas in England[27] provide a summary of the key characteristics of the landscape within the study area. It is important to recognise that there are local variations within the regional scale LCTs described, and that there have been changes to the landscape since the LCAs were published, including the construction of wind farms.

8.117 The study area is covered by LCTs, as shown on Figure 8.5. A proportion of the wider study area is occupied by urban areas, which are discussed in the assessment of visual effects on settlements. Types of landscape which lie within the study area but from which the proposed wind farm would be imperceptible (i.e. those LCTs not within the ZTV, see Figure 8.5b) have not been assessed. In addition, areas classified into LCTs where the ZTV indicates that there would be very little potential for perception of the proposed wind farm, at some distance away, are not assessed, as there is no likelihood of significant effects. Areas classified into LCTs in the study area are listed below, and those which have potential to be affected by the introduction of the proposed wind farm are described in Table 8.12.

- Coastal Flats – Subtypes Coastal Plain and Estuarine Flats;
- Narrow Wooded River Valleys (visibility only along the Kirtle Water);
- Lower Dale (limited theoretical visibility);
- Middle Dale (limited theoretical visibility);
- Coastal Plateau;
- Flow Plateau;
- Upland Fringe;
- Foothills;
- Intimate Pastoral Valleys (limited theoretical visibility);
- Upland Glen (no theoretical visibility);
- Foothills with Forest;
- Southern Uplands;
- Southern Uplands with Forest/Scattered Forest (limited theoretical visibility);
- Upland Valley with Pastoral Floor (no theoretical visibility);
- Borders Moor and Forest;
- Solway Basin;
- Eden Valley (distant theoretical visibility);
- North Pennines (distant theoretical visibility);
- Tyne Gap and Hadrian's Wall (distant theoretical visibility).

Table 8.12: Landscape Character Types

LCT (LCA reference[28])	**Key characteristics and sensitivities[29]**	**Sensitivity** (based on the criteria set out in **Table 8.5**)
Coastal Flats (D&G:2)	This LCT is subdivided in the LCA, but is considered as a whole for this assessment. The Coastal Flats landscape type is most commonly found adjacent to river mouths. Generally lies between sea level and 50m AOD. Five subtypes have distinctive character, but share lowland coastal location as a unifying influence. Much of the land is exposed, with long views across coastal flats as they merge into the waters of the Solway. Subtypes include coastal plain, estuarine flats, intimate coastal parkland, coastal moss and merse.	Low

[27] Natural England website.

[28] SNH (1998) *The Borders Landscape Assessment and SNH (1994) Dumfries and Galloway Landscape Assessment*;

[29] Where italicised, descriptions are quoted from LCA.

LCT (LCA reference[28])	Key characteristics and sensitivities[29]	Sensitivity (based on the criteria set out in **Table 8.5**)
Narrow Wooded River Valleys (D&G:4)	*Narrow incised valleys with wooded slopes enclosing pasture floors;* *Small pastures and arable fields enclosed by hedges/fences in lower reaches and drystone dykes in upper reaches;* *Dominant broadleaf (semi-natural) woodland character with conifers on higher slopes;* *Lush, trough-shaped river valleys with pasture/arable floors enclosed by deciduous wooded slopes;* *Riparian trees and woodlands following meandering river courses in lower reaches;* *Narrow lanes following valleys and linking isolated houses, occasional settlements, and providing access to higher moorland; and* *Intimate unspoilt landscape focusing on river views with some adjacent policy landscape.*	High
Coastal Plateau (D&G:14)	*Mostly flat and gently rolling topography with an incline towards the coast;* *Elevated long views over the Solway Firth;* *Improved pastures with large rectilinear fields;* *Small geometric plantations and shelterbelts forming dark visual horizons;* *Hedgerow field enclosures with some hedgerow trees;* *Straight roads; and* *Farmsteads at the ends of straight access lanes.*	Low
Flow Plateau (D&G:15) Access tracks from the proposed wind farm lie in this LCT	*Mostly flat and gently rolling topography with an incline towards the Solway;* *Occasional long views over the Solway;* *Waterlogged rush infested pastures, ochre green and brown;* *Large fields with hedgerows in poor condition and fences;* *Cattle grazing;* *Shelterbelts and small informally shaped plantations;* *Riparian woodlands; and* *Scattered farmsteads.*	Medium
Upland Fringe (D&G:16) Access tracks from the proposed wind farm lie in this LCT	*Elevated rolling pastures;* *Improved and rough grassland in close proximity;* *Hedgerow banks and treelines along roads in some lower areas;* *Dry stone dykes;* *Squared forest blocks, increasing aforestation evident;* *Contrast between wide open areas and more intimate landform;* *Panoramic views over valley lowlands;* *Small bridges over incised burns; and* *Iron Age fortifications.*	Medium
Foothills (D&G:18) Turbines from the proposed wind farm lie in this LCT	*Generally undulating land between 170 & 250 metres, with rounded peaks. Higher in the west, up to 350m with craggier peaks;* *foothills dissected by incised valleys;* *Semi improved pasture enclosed in medium-large fields by stone walls. Grazed by sheep & cattle. Some rough pastures and heath on higher ground;* *Trees in sheltered pockets with some copses on top of hills;* *Many scattered farmsteads and small settlements;* *Network of minor roads; and* *Numerous archaeological sites particularly Iron Age defensive and Roman monuments.*	Medium
Foothills with forest (D&G:18a)	*Dark green blanket of forest covering undulating foothills;* *Various stages of forest rotation evident in landscape - young plantation, clearfell and deep ploughing;* *Tall mature conifers at roadside;* *Semi improved pasture with walled enclosures on open ground; and* *Some evidence of archaeological remains;*	Low
Southern Uplands (D&G:19)	*Large, smooth dome/cone shaped hills, predominantly grass covered;* *Open and exposed except within incised valleys;* *Distinctive dark brown/purple colour of heather on some of the higher areas;* *Pockets of woodland in incised valleys;* *Stone dykes occasionally define lower limit; and* *Legacy of lead and other mining activity.*	High
Solway Basin (NCA:6)	*Raised beaches, dunes, pebble beaches, and sandy shores along the Irish Sea coast.* *Estuarine intertidal mudflats and salt marshes, with wintering and migrating waders and wildfowl, on the fringes of the Solway Firth.* *Fragmented areas of relatively intact raised peat bogs, or lowland raised mires, of high nature conservation value.* *Flat to gently undulating lowland plain, intensively managed predominantly for pasture.* *Medium to large fields enclosed by windswept hedgerows and stone-faced hedgebanks.* *Dense network of highly managed rivers, streams and ditches.* *Limited woodland cover.* *Rich historic, cultural and archaeological heritage.* *Victorian coastal resorts, small market towns, and villages. Considerable variety of building styles and materials.* *Primary transport routes radiating from Carlisle and rectilinear pattern of minor roads and lanes.*	Low

LCT (LCA reference[28])	Key characteristics and sensitivities[29]	Sensitivity (based on the criteria set out in **Table 8.5**)
Borders Moors and Forests (NCA:5)	*Large scale landscape of high, rolling or undulating plateau with expanses of sweeping moorland, extensive coniferous woodlands and large reservoirs, sparsely populated and with no major settlements.* *Exposed moorland areas heavily grazed by sheep and characterised by mixed heather and unimproved grassland, on broad hills which offer extensive long distance views.* *Extensive plantations mainly consisting of a patchwork of felled areas and different age classes of non-native conifers.* *Few broadleaved trees, mainly restricted to small woodland blocks, hedgerows and remnant semi-natural woodland in the more sheltered valleys.* *Network of small rivers in narrow gorges, streams, loughs and mires, with sandstone crags.* *Farmland of semi-improved pasture or rough grazing land in large rectangular windswept fields, often poorly drained, and subdivided by wire fences and dry stone walls; in-bye of semi-improved and improved pastures in sheltered valleys.* *Archaeological landscapes with evidence of settlements, tracks, field systems, shielings, burial areas, Roman forts and marching camps.* *Military training establishments in part of Spadeadam Forest and at Otterburn, affecting perceptions of remoteness and solitude.*	Medium

Designated Landscapes

8.118 There are no areas of designated landscape within the site boundary.

8.119 There are a number of designated landscapes across the 35 km radius study area, including a National Scenic Area (NSA), Areas of Outstanding National Beauty (AONBs), Regional Scenic Areas (RSAs) and a Landscape of County Importance. Gardens and Designed Landscapes, Historic Parks and Gardens and Conservation Areas are assessed in **Chapter 11: Cultural Heritage and Archaeology**. There is also a World Heritage Site (WHS) within the study area, with a buffer zone designated to protect the landscape setting of the site. This area has also been assessed in the LVIA.

8.120 The designated areas considered are shown on Figure 8.6, and are described in Table 8.13. The ZTV was used to identify designated areas with potential views of the proposed wind farm, to be assessed in full. Those which would have no views, minimal views, or where views would only be at great distance (upwards of 30 km) were not considered further, as there is no likelihood of significant effects.

Table 8.13: Designated Landscapes

Designated Area	Physical Extent and sensitivity	Reasons for designation (quoted)
Nith Estuary NSA	Extending westwards along the coast from Clarencefield to the west side of the River Nith, and northwards up the Nith Estuary as far as Kingholm Quay. High sensitivity.	NSAs were originally identified by the Countryside Commission for Scotland as areas of *"…unsurpassed attractiveness…"* and *"designated due to their outstanding beauty and in order to safeguard them as part of Scotland's national heritage"*[30]. *The Management Strategy identifies scenic qualities contributing to the scenic value of the Nith Estuary: the relationship of the land and water, the large scale of the landscape, and views across the Solway to Cumbria*[31].
Langholm Hills RSA	From Canonbie, north to the head of the Ewes Water Valley at Mosspaul, and Eskdale as far as Bentpath, and including the surrounding hills. Medium sensitivity.	*Combinations of Upland Glen and other attractive valley landscapes of Eskdale and the Ewes Water Valley, and the adjacent Southern Uplands.*[32]
Torthorwald Ridge RSA	A north-west – south-east oriented ridge of hills, between Nithsdale and Annandale, from Shieldhill to Carrutherstown. Medium sensitivity.	*A prominent ridge area overlooking Nithsdale and Annandale, and easily accessible from the main settlements. An attractive and less extensively forested example of the Upland Fringe LCT*[33].
Terregles Ridge RSA	Scoped out due to minimal theoretical visibility	
Solway Coast RSA	An extensive area covering much of the Dumfries and Galloway coast, from Powfoot to the Nith Estuary within the study area. Medium sensitivity.	*This area embraces the varied coastlines of western Dumfriesshire and the Stewartry, stretching from the Fleet Valley and the Galloway Hills RSA in the west to Powfoot in the east. It encompasses the estuaries of the Fleet, Dee, Rough Firth/Auchencairn Bay and Nith and the contrasting intervening rugged shores and associated coastal uplands.*[34]
Moffat Hills RSA	Scoped out due to minimal theoretical visibility	

[30] Countryside Commission for Scotland (1978) *Scotland's Scenic Heritage.*
[31] Dumfries and Galloway Council (2008) *Nith Estuary Management Strategy.*
[32] Dumfries and Galloway Council (1999) *Technical Paper 6: Identification of Regional Scenic Areas.*
[33] Dumfries and Galloway Council (1999) *Technical Paper 6: Identification of Regional Scenic Areas.*
[34] Dumfries and Galloway Council (1999) *Technical Paper 6: Identification of Regional Scenic Areas.*

Designated Area	Physical Extent and sensitivity	Reasons for designation (quoted)
Solway Coast AONB	The AONB follows the coast from Sarkfoot Point to Skinburness, extending up to 4 km inland. High sensitivity.	*The distinguishing qualities of the AONB are the combination, sequence and contrasting scales of landscape types and the elements within them: the vast open expanse of sea, river channels, saltmarsh and intertidal flats; sand dunes, coastal mosses and areas of more sheltered agricultural hinterland. … The special scenic qualities of the AONB relate to the wide, open and distinctive views across the Solway Firth to the Scottish coast and the distinctive hill of Criffel, and to the northern Lakeland Fells that rise above the Solway basin to the south*[35].
North Pennines AONB	Scoped out due to limited theoretical visibility	
Liddell Water Landscape of County Importance	Running along the wooded Liddel Water valley in a narrow band from Netherby to Kershopefoot, immediately south of the national border. Medium sensitivity.	*Part of the north western boundary of the District between Kershopefoot and Longtown forms an attractive valley through which the Liddel runs. Extensive areas of conifer plantation on both sides define the edge of the valley, whilst lower down is mostly rough grazing with scattered cottages and irregular fields. The river itself runs through a rocky gorge frequently bordered by woodland.*[36]
Hadrian's Wall World Heritage Site Buffer Zone	Hadrian's Wall extends from Bowness on Solway in the west, to Wallsend in the east. The WHS includes all of Hadrian's Wall and its associated installations, and includes the forts, fortlets and towers that extend beyond Bowness down the Cumbrian coast. It also includes a buffer zone extending 2 to 5 km either side of the wall, except where it extends 10 km north of the Wall at Gretna. High sensitivity.	*Hadrian's Wall was inscribed in 1987 as the best preserved frontier of the Roman Empire.* *Article 1 of the World Heritage Convention, under Cultural Criteria, gives the reasons for designation, including archaeological and cultural value, and sets out the importance of landscape and setting*[37].

Baseline Visual Amenity

Visual Receptors

8.121 Likely viewers or receptors include:

- residents living in any of the settlements or individual residences within the ZTV of the proposed wind farm;
- people working in the countryside or in any of the towns, villages or settlements within the ZTV of the proposed wind farm;
- tourists visiting, staying in, or travelling through, this part of the UK;
- travellers (including tourists, workers or local people) using transport routes passing through the study area; and
- recreational users of the landscape, including those using golf courses, cycle routes and footpaths.

Viewpoints

8.122 The viewpoints used in the 2009 ES[38] were reviewed in the light of changes to the layout and therefore the regional visibility of the proposed wind farm, and to ensure that cumulative issues are represented. Eighteen viewpoints were selected for this assessment, in agreement with the consultees, SNH, DGC, Scottish Borders Council, and Carlisle City and Cumbria County Councils. These are detailed in Table 8.14 and their location shown in Figure 8.7. Further information about the selection of viewpoints is contained in **Appendix 8.1: Viewpoint Selection**, including discussion of viewpoints omitted from this assessment due to lack of visibility following revisions to the layout.

Table 8.14: Viewpoints for Assessment

No.	Viewpoint (VP) Name	Distance[39]	OS Grid Reference	Rationale for selection/Type of view	Viewpoint sensitivity
1	High Stenries	1.6 km	328964 577272	Minor road close to site to south.	Low
2	Collin Burn	1.6 km	330167 581529	Minor road close to site. Suggestion from Archaeologists (CFA) that VP should be on Cock Law near cairn. However, Cock Law has been planted up with conifers. VP at roadside by Collin Burn.	Low
3	B7068 west of Fallford	2.1 km	326379 580524	Assessed in 2009, retained.	Low
4	Milltown	4.9 km	333488 575510	B6357 near Milltown, relatively close to site from south-east. Can be used to represent Cannonbie also.	Medium
5	B725 between Middlebie and Waterbeck	5.7 km	323316 577108	Assessed in 2009, retained.	Low
6	Kirkpatrick Fleming	8.4 km	326981 570780	Assessed in 2009, moved to near Newton Farm on B7076 road travelling through settlement.	High
7	Corrie Common	9.1 km	321403 585650	Assessed in 2009, retained but moved to eastern edge of village.	Medium
8	Malcolm Monument, Langholm	9.4 km	337925 584686	Assessed in 2009, retained.	High

[35] LUC (2010) *Solway Coast AONB Landscape and Seascape Character Assessment*.
[36] Carlisle City Council (2008) *Carlisle District Local Plan 2001-16*
[37] UNESCO (1972) *World Heritage Convention*

[38] RES (2009) Solwaybank Environmental Statement

[39] Distance is measured from the viewpoint to the nearest turbine.

No.	Viewpoint (VP) Name	Distance[39]	OS Grid Reference		Rationale for selection/Type of view	Viewpoint sensitivity
9	Burnswark	9.7 km	318697	578831	Assessed in 2009, retained.	High
10	The Old Smithy, Gretna Green	10.4 km	332104	568636	Assessed in 2009, moved to north edge of car park.	High
11	Longtown	12.0 km	337262	569364	Assessed in 2009, moved to A75 by Sandbed Farm.	Medium
12	Repentance Tower	14.8 km	315551	572260	Assessed in 2009, retained.	High
13	M6, Todhills	17.7 km	337084	562649	Assessed in 2009, retained.	Low
14	Bowness-on-Solway	17.8 km	321943	562635	Assessed in 2009, retained.	High
15	Roan Fell	20.2 km	345005	593008	Assessed in 2009, retained.	Low
16	Caerlaverock Castle	29.2 km	302634	565920	Assessed in 2009, retained.	High
17	Banks, Hadrians Wall	29.3 km	355729	564566	Assessed in 2009, retained, represents views from Hadrian's Wall.	High
18	White Coomb	37.2 km	316325	615088	Assessed in 2009, retained, represents views from further to the north within the Southern Uplands, and from near AGLV and RSAs.	High

Settlements

8.123 Visual effects on settlements within the study area which are likely to have views of the proposed wind farm were considered. The settlements included were as follows:

- Kirtleton, Fallford and West Linnbridgeford;
- Milltown and Evertown;
- Waterbeck;
- Langholm;
- Eaglesfield and Kirtlebridge;
- Gretna;
- Longtown;
- Annan;
- Carlisle; and
- Brampton.

8.124 Other settlements across the study area, including Canonbie, Lockerbie, Lochmaben, Dumfries, Moffat, Newcastleton, Wigton and others, were not predicted to be affected by a change in views (as represented by the ZTV in Figure 8.2) and were therefore not assessed further.

Routes

8.125 For the assessment of effects on sequential experiences when travelling around the study area, the routes considered(as shown on Figure 8.1) were as follows:

- the A74(M), M6 and the West Coast Main Line railway and National Cycle Route which run parallel (through Moffat to Carlisle and on);
- the A7 (Carlisle to Hawick);
- the A75 and the Carlisle to Kilmarnock railway(Gretna to Dumfries);
- the B7068 (Lockerbie to Langholm);
- the B6357 (Annan to Canonbie and Newcastleton);
- the B722 (Annan to Falford);
- the minor road skirting the site, from West Linnbridgeford to Kennedy's Corner, then east to Barnglieshead;
- the Cumbrian Coastal Way/Hadrian's Wall Path;
- the National Cycle By-Way; and
- Annandale Way (Moffat to Annan).

8.126 Other routes across the study area were not predicted to be affected by a change in views (as represented by the ZTV) and therefore were not assessed further. These include the A709 from Lockerbie to Dumfries, which only falls within the ZTV very briefly around Lochmaben, and the A701, which is over 20 km distant, and is therefore unlikely to experience potentially significant effects. The B709, which passes close to the site, was also not assessed further, as its valley situation precludes visibility. The Southern Upland Way passes through Moffat, but has no theoretical visibility, as illustrated by the ZTV.

Cumulative Baseline Information

8.127 There are a large number of existing or proposed wind farm in the 60 km radius area around the proposed wind farm site. These are listed in Table 8.15 in order of distance from the proposed wind farm, and include wind farms that are existing, are consented or under construction, applications awaiting determination, and those at scoping stage. This list has been compiled through consultation and desk research, with a cut-off date of 1 August 2011. The locations of these wind farms are shown in Figure 8.26.

Table 8.15: Existing and Proposed Wind Farms to 60 km of the site

Wind Farm	Status	Wind Farm	Status
Ewe Hill (6 turbines)	Consented	Barnbackle	Application Submitted
Ewe Hill (Section 36)	Application Submitted	Langhope Rig	Consented
Craig	Operational	Wharells Hill	Operational
Craig Phase 2	Consented	Plascow	Application Submitted
Craig Phase 3	Application Submitted	Doonhill	Application Submitted
Minsca	Operational	Clyde	Under Construction
Beck Burn	Application Submitted	Clyde Extension	Design/Scoping
Newfield	Application Submitted	Standhill	Application Submitted
Hallburn[40]	Application Submitted	Glenkerie	Under Construction
Newbie Wind Turbines	Design/Scoping	Robin Rigg Offshore	Operational
Great Orton	Operational	Siddick	Operational
Pirelli	Consented	Twentyshilling Hill	Design/Scoping
Minnygap	Application Submitted	Gelston	Design/Scoping

[40] Hallburn Wind Farm, which was refused on the 19th August 2011, has been included in this assessment as the status of all wind farms was considered at the time of the 'cut-off' date of 1 August 2011, as agreed with all consultees.

Wind Farm	Status	Wind Farm	Status
Hell Rig	Under Construction	Oldside	Operational
Harestanes	Consented	Leadhills	Design/Scoping
Harestanes Extension	Design/Scoping	Blackcraig Hill	Consented
Dalswinton	Operational	South Mains	Application Submitted
High Pow	Operational	Culnaightrie	Application Submitted
High Pow Extension	Design/Scoping	Whitton	Application Submitted
Auchencairn	Design/Scoping	Margree	Application Submitted
Daer Reservoir (Section 36)	Design/Scoping	Blaewearie	Design/Scoping
Earlshaugh	Application Submitted	Barcloy	Design/Scoping
Hyndehope	Design/Scoping	Wether Hill	Operational

8.128 Table 8.16 lists the developments which, in addition to the proposed wind farm, are included in the detailed assessment of cumulative effects. This selection includes those within 35 km of the proposed wind farm that are beyond scoping/design stage. This list has been agreed with the consultees: SNH, DGC, Scottish Borders Council, and Carlisle City and Cumbria County Councils. The locations of these developments are shown in Figure 8.27. It is important to note that four of these wind farms are operational and are therefore included within the existing baseline (and in photographs), against which the proposed scheme is assessed.

Table 8.16: Existing and Proposed Wind Farms examined for Cumulative Effects

Wind Farm	Status[41]	Number of Turbines	Blade Tip Height
Ewe Hill (6 turbines)	Consented	6	111.50 m
Ewe Hill (Section 36)	Application Submitted	16	111.50 m
Craig	Operational	4	100.00 m
Craig Extension	Consented	1	100.00 m
Craig Extension (2nd)	Application Submitted	1	100.00 m
Minsca	Operational	16	122.50 m
Beck Burn	Application Submitted	9	125.00 m
Newfield	Application Submitted	21	126.50 m
Hallburn[42]	Application Submitted	6	126.50 m
Great Orton	Operational	6	68.50 m
Minnygap	Application Submitted	10	125.00 m
Hell Rig	Under Construction	4	119.33 m
Harestanes	Consented	71	125.00 m
Dalswinton	Operational	15	121.00 m

[41] Cut-off date for inclusion of wind farms in the CLVIA was 1st August 2011.
[42] Status as of 1st August 2011.

8.129 The Ewe Hill Wind Farm and Newfield Wind Farm overhead line (hereafter referred to as Ewe Hill and Newfield OHL) that will pass close to the site (as shown on Figure 8.27) is also discussed in the cumulative assessment.

Future Baseline ('Do-nothing Scenario)

8.130 In the absence of the proposed wind farm, it is likely that the land would continue to be grazed by sheep and used for commercial forestry, and the character of the site is therefore unlikely to change significantly. However, the surrounding landscape and visual amenity is likely to be influenced by a number of 'forces for change', as set out in paragraphs 8.110 to 8.113. With regard to felling operations, it is expected that the majority of the site would be felled over the next 5 to 15 years even in the absence of the proposed wind farm although some replanting is possible (refer to **Chapter 6: Forestry** for further details).

Wind Farm Layout Considerations

8.131 Landscape and visual considerations have played a key role in the progression of the layout of the proposed wind farm. The design strategy underpinning the proposed wind farm layout is detailed in **Chapter 3: Site Selection, Design Evolution and Alternatives**. The overall aim was to create a wind farm with a cohesive design that relates to the surrounding landscape. However, during each layout iteration, landscape advice was provided to ensure a balanced layout was achieved, for example by ensuring appropriate spacing between turbines to avoid inconsistent spacing of turbines from views whenever possible. The layout of associated infrastructure was also considered.

8.132 Changes to the layout since the 2009 submitted scheme include reduction of turbine numbers, and a reduction in spread of the wind farm. These changes were made with the aim of removing turbines from within the *Upland Fringe* LCT. The turbines of the proposed wind farm are all contained within the *Foothills* LCT.

Potential Effects

8.133 This assessment considers the potential effects of the proposed wind farm as described in **Chapter 4: Development Description**. This includes:

- 15 turbines of up to 126.5 m high (80 m hub, 93 m rotor diameter as per the candidate turbine specified for the purposes of this assessment);
- The substation, access tracks, construction compound, and additional infrastructure, as shown on Figure 4.1.

8.134 The turbine dimensions given above represent a maximum case scenario in terms of visibility. The turbine model would be selected at the time of construction, as explained in **Chapter 4: Development Description**.

Potential Construction Effects

8.135 The effects of the construction of the proposed wind farm would include:

- the removal of forestry and subsequent replanting on the northern part of the site (refer to **Chapter 6: Forestry**);

- the additional disturbance of areas of land and surface vegetation at the locations of the turbine bases, and along the access track routes;
- the introduction of construction activity and vehicular/personnel movements around the site and on local roads;
- the introduction of tracks, crane pads at each turbine site and a substation compound including temporary construction compound at ground level;
- the construction and use of two temporary construction compounds/laydown areas;
- the introduction of tall vertical structures (turbines and monitoring masts) with the use of cranes.

8.136 The northern part of the site is currently covered with coniferous forest plantations, with a few tracks and fences. The plantations are not all of the same planting age. The landform of the site is one of a subtle ridge with intervisibility with the surrounding area, particularly away from the higher ground to the north. The forestry land use of the site diminishes the sense of scale of the landscape by enclosing it in trees. The site is relatively remote, with moderate exposure despite the tree cover. The sensitivity of the site to development is judged to be Low.

8.137 During the construction period, tall structures including cranes and partially constructed turbines would theoretically be visible from most of the ZTV. Ground level disturbances and structures would be visible over shorter distances. Construction activities would give rise to changes to the site of High magnitude, and **Major** effects on the landscape and visual amenity of the site over the duration of construction activity, primarily due to forestry operations, excavations and track construction, and the presence of tall cranes and partially built towers, during turbine erection. Whilst construction activities are temporary in nature, there would be infrastructure remaining after completion of construction works, as part of the operational wind farm. The construction effects would be 'superseded' by operational effects once the construction stage was completed.

Potential Operational Effects

Potential Effects on the Proposed Wind Farm Site

8.138 Following construction of the proposed wind farm, the forested part of the site would be altered to become an open area with tracks running across it, leading to turbines. It would therefore change from being coniferous forest to become a wind power generating site. The magnitude of change would be High, and the effect would be **Major**. Given the proximity of the elements of the proposed wind farm to all parts of the site, significant effects of this nature are inevitable on the site itself. Mitigation will take the form of replanting of forestry, as discussed in paragraph 8.156.

Potential Effects on the Landscape Character Type Covering the Site

8.139 The turbine area of the site is covered by the *Foothills* LCT, as described in the *Dumfries and Galloway* LCA (see Table 8.12). The assessment of effects arising from the proposed wind farm on this landscape type is set out below.

LCT	**D&G 18: Foothills**
Representative viewpoints	**VPs 2, 3, 7**
Extent within the study area: This LCT occurs across the north-west to the centre of the study area, interrupted by valleys. The landscape unit that contains the site (Annandale) extends from Langholm to Boreland.	
Extent outside the study area: This LCT occurs in several locations throughout Dumfries and Galloway.	
Changes: The proposed wind farm would create a localised change of Medium magnitude to the landscape character of this unit, by introducing large-scale vertical structures, movement through rotating blades, and associated structures. However, these built elements are not new features, being present at Minsca Wind Farm, which is located in the same landscape unit as the proposed wind farm. Over the regional wider spread of the LCT within the study area, there would be a Low magnitude of change.	
Landscape Effect: With respect to the key characteristics of the LCT set out in Table 8.12, the proposed wind farm would not alter the landform; current land use of the site would continue below the turbines, with coniferous forestry replanted between the turbines where possible; scattered trees would not be affected; scattered settlement and minor roads would be unaffected; archaeological sites are considered in **Chapter 11: Cultural Heritage and Archaeology**. The introduction of the proposed wind farm would have a **Moderate** effect on the immediate landscape character. In combination with Minsca Wind Farm, the proposed wind farm may redefine the local landscape unit of 'Annandale' as 'Foothills with scattered Wind Farms'. However, given the presence of Minsca Wind Farm nearby and the wide-spread occurrence of this LCT within the study area and beyond, the effect on the type as a whole is judged to be **Minor**.	
Conclusion: Effect on local landscape unit (Annandale): **Moderate** Effect on LCT as a whole: **Minor**	

Potential Effects on Landscape Character Types in the Wider Study Area

8.140 Beyond the site boundary, the ZTV extends to include other LCTs. These are described in Table 8.12 and their locations shown on Figure 8.5. Effects on the character types that cover the ZTV shown in Figure 8.5b are considered in Table 8.17.

Table 8.17: Operational Effects on Landscape Character Types

LCT **Distance**[43] **Viewpoints** **Sensitivity**	**Theoretical visibility and discussion of operational landscape effects**	**Effect**
Coastal Flats (D&G:2) 6 km VPs 10, 13, 16 Low	This LCT occurs along the north shore of the Solway Firth, from Gretna to Dumfries. The LCT also extends beyond the study area along the coast, as far as around Stranraer and Wigtown. The relationship of the LCT to the site is one of an intermediate land in front of the visual backdrop of the Langholm Hills. A key characteristic of the LCT is the open views along the coast with more limited views inland, and consequently the character is strongly defined by the Solway Firth, with the distant hills having less influence. Although vertical structures of the proposed wind farm would be visible in the backdrop landscape between Minsca and Craig Wind Farms, the proposed wind farm would not affect the key characteristics and the appreciation of scale or openness of this LCT. Low magnitude of change.	Minor

[43] Approximate distance to the nearest turbine from the nearest point of the LCT.

LCT Distance[43] Viewpoints Sensitivity	Theoretical visibility and discussion of operational landscape effects	Effect
Narrow Wooded River Valleys (D&G:4) 4 km VP 6 High	This LCT occurs in two narrow valleys within the study area, the Kirtle Water closest at 4 km from the site, and the River Esk closest at 7 km near Langholm. The LCT also occurs in other parts of Dumfries and Galloway. The narrow character of the valleys limits views to the wider landscape. The ZTV illustrates that the River Esk valley would have no visibility to the wind farm, but theoretical visibility would extend to parts of the Kirtle Water valley. As such, turbines may be visible on the skyline where views are possible from the generally wooded valley, but the key characteristics would not be affected for the LCT as a whole. Low magnitude of change.	Negligible
Coastal Plateau (D&G:14) 9km VP 12 Low	This LCT occurs in two places to the south-west of the site; to the north and north-west of Annan, around Creca and Carrutherstown respectively. Key characteristics include views over the Solway Firth. The pattern of theoretical visibility illustrates the undulating character of the LCT, from where the proposed wind farm would be visible beyond Minsca Wind Farm, inland to the north-east. The additional turbines in the backdrop to this landscape would not affect the key characteristics of this LCT. Low magnitude of change.	Negligible
Flow Plateau (D&G:15) Includes part of the site VPs 1, 4 Medium	This LCT occurs in one area within Dumfries and Galloway, extending from Kirkpatrick Fleming to Canonbie. The LCT covers a small part of the proposed wind farm site, but no infrastructure or turbines would be located within the LCT. The turbines would be located approximately 1 km from the LCT to the north. The relationship of the turbines to this LCT is one of a transitional area leading up to the backdrop of the Southern Uplands. The proposed wind farm would form a feature on the nearby foothills, closer than Craig and Minsca Wind Farms. Views towards the Solway Firth would not be affected. Other key characteristics, including the flat topography and the incline towards the Solway Firth, would be unaffected by the presence of the proposed wind farm. However, given the proximity of the proposed wind farm to the Flow Plateau area, it is likely to affect the perception of the areas immediately around the LCT, and affect the character of the backdrop to the north. Low magnitude of change.	Minor
Upland Fringe (D&G:16) Includes part of the site VPs 5, 9 Medium	This transitional LCT is extensive across both the study area and Dumfries and Galloway. It extends from the lower flanks of the foothills on which the site is located, extending to within 500 m of the turbine locations. Key characteristics include panoramic views over valley lowlands. The access track from Pingle on the minor road to the south of the site would cross this LCT. There would be direct effects related to the introduction of an additional track across this LCT. However, given the existence of other tracks in the LCT, this is judged to be a Low magnitude of change and a Negligible direct effect. Theoretical visibility across those areas within the study area is relatively limited, and reflects the undulating character and changing orientation of slope. Typically though, the proposed wind farm would be viewed on the upland horizon at varying distances, as a discrete group from Minsca or Craig Wind Farms, but the key characteristics of this LCT as a whole would not be affected. Low magnitude of change to the LCT as a whole.	Negligible direct effect; Minor indirect effect.
Foothills with forestry (D&G:18a) 8km (No viewpoints) Low	This LCT occurs in three locations within the study area, and extensively across Dumfries and Galloway. Blanket forestry is a key characteristic of this LCT. Theoretical visibility across those areas within the study area is limited to the more elevated areas of slope, but, due to the forest cover, the actual visibility would be minimal. Low magnitude of change.	Negligible
Southern Uplands (D&G:19) 3 km VPs 8, 15, 18 High	This LCT occurs extensively across the Southern Uplands Hill range, where the landscape is not occupied by forestry. Within the study area, this includes the Langholm Hills and the Moffat Hills. Craig Wind Farm lies within this LCT. The ZTV indicates that there would be limited visibility from the summits of the hills in the LCT, with visibility on south facing slopes across the southern edge of the area to the west of Langholm, which is closest to the site. The proposed wind farm would appear as an additional group of turbines on lower land below the LCT, in a similar relationship to that of the LCT with Minsca Wind Farm. Low magnitude of change.	Minor
Solway Basin (NCA:6) 7 km (No viewpoints) Low	This extensive area stretches from the English border south to Kirkcambreck, Carlisle, Wigtown and beyond the study area to the south-west. It includes many lowland and coastal landscapes, and views often extend to the Cumbrian Mountains or the Southern Uplands, which form a distant backdrop to the north. Great Orton Wind Farm lies within this LCT. The ZTV indicates that there would be extensive visibility of the proposed wind farm across the area. Actual visibility would be much reduced by local features including buildings, trees, hedgerows and woodlands. The proximity of Great Orton Wind Farm turbines to many locations within the LCT, and the distance to the site (most of the area is over 10 km away), mean that the proposed wind farm would not affect the local character of this LCT, although it would be present as a distant feature in views to the north. Low magnitude of change.	Minor
Borders Moors and Forests (NCA:5) 13 km (No viewpoints) Medium	This extensive area stretches from the English border eastwards, north of the River Irthing valley, and beyond the study area boundary. It includes the extensive Kielder Forests. The ZTV indicates that there would be some visibility from the western part of this LCT, although actual visibility would be reduced by forest cover. For the majority of the LCT however, there would be no views of the proposed wind farm. The magnitude of change is judged be Low.	Negligible

Potential Effects on Designated Landscapes

8.141 The assessment of effects on designated landscapes is set out in Table 8.18; baseline information is contained in Table 8.13 and Figure 8.6.

Table 8.18: Operational Effects on Designated Landscapes

Designation	Distance[44] Viewpoints[45] Sensitivity	Theoretical visibility	Assessment	Effect
Scottish Designations				
Nith Estuary NSA	23 km VP 16 High	The ZTV covers the eastern part of the NSA, from Clarencefield to Caerlaverock and Bankend, and to the west of the River Nith, from south of Overton and around Kirkconnel.	This designation relates to scenic qualities and views focused on the Nith Estuary and across the Solway Firth. The view towards the site is not the principal direction of views from this NSA. Theoretical visibility is limited and the site is distant. Where the proposed wind farm would be visible (taking into account local screening by woodlands and shelterbelts) it would appear as a distant feature on the low hills to the east, seen beyond the existing Minsca Wind Farm. The proposed wind farm would not compromise the reasons for which the NSA was designated. Low magnitude of change.	Negligible
Langholm Hills RSA	5 km VPs 8, 15 Medium	Theoretical visibility extends across higher ground to the west of the Ewes Water Valley, closer to the site. High west facing slopes to the east of Langholm would have views, including from Whita Hill, Bruntsheil Hill, Tinnis Hill and Black Edge and Roan Fell. Views from north of the River Esk valley would be limited to summits. On lower ground, views would be limited to the west side of the valley between Canonbie and Langholm.	The proposed wind farm would be seen from distances ranging from 5 km to 20 km, on similarly high hills to the west of the designated area. Turbines would not be new features in the landscape around this area, due to the presence of Craig and Minsca Wind Farms. The proposed wind farm would introduce an additional group of turbines on the hills to the west. The proposed wind farm would not compromise the reason for which the RSA was designated, namely the local combinations of hill and glen landscapes. Overall, whilst the magnitude of change to certain views from hilltops closer to the wind farm would be High or Medium, the magnitude of change to the RSA as a whole is judged to be Low.	Minor
Torthorwald Ridge RSA	18 km No viewpoints Medium	The ZTV indicates theoretical visibility from the east facing slopes along the length of the ridge.	The proposed wind farm would be viewed in the wider context of the managed agricultural lowland landscape, with other hill ranges and wind farms on the hills. It is considered that the special qualities of the RSA, in terms of the views of Nithsdale and Annandale, would not be affected by the proposal. Low magnitude of change.	Negligible
Solway Coast RSA	18 km VP 16 Medium	The ZTV covers the eastern part of the NSA, from Powfoot to Caerlaverock and Bankend, and to the west of the River Nith, from south of Overton and around Kirkconnel.	There would be limited visibility of the proposed wind farm from the eastern end of the extensive RSA, and views would be distant. The coastal views, which are key to this designation, would not be affected. Low magnitude of change.	Negligible
English Designations				
Solway Coast AONB	13 km VP 14 High	There is theoretical visibility of the proposed wind farm over almost all of the AONB which falls within the study area.	Views from much of this designated landscape are wide and open, with the Galloway and Langholm Hills in the distance. The proposed wind farm would be seen as a distant feature on the horizon to the north beyond the Solway Firth. Turbines would not be new features in these views, and the proposed wind farm would be seen in the context of other existing wind farms across the Solway Firth. The proposed wind farm would not alter the experience of the Cumbrian coastal landscape. Low magnitude of change.	Minor
Liddel Water Landscape of County Importance	12 km (VP 11) Medium	Theoretical visibility extends across the east facing slopes of the Liddel Water valley, although limited north of Nook.	Views are focused along the valley and any intermittent views out of the valley are further limited by the well wooded valley sides. Where the proposed wind farm would be visible, it would be seen as a feature on the distant backdrop, potentially in the same views as Craig or Minsca Wind Farms. Low magnitude of change.	Negligible

[44] Approximate distance to the nearest turbine from the nearest point of the designated area.
[45] VPs listed in brackets indicate viewpoints that do not lie within the designated area, but are of relevance to it.

Designation	Distance[44] Viewpoints[45] Sensitivity	Theoretical visibility	Assessment	Effect
Hadrians Wall WHS Buffer Zone	17 km VPs 14, 17 High	Theoretical visibility extends over most of the section of the Wall Buffer Zone that lies within the study area. This includes from Bowness on Solway to Carlisle, and from Carlisle to Newton. East of Newton, ZTV coverage is more limited.	Of the 117 km length of the Wall, 45 km of Wall is within the study area, where it crosses the flat coastal plain and coastal edge to the Solway Firth. It is likely that visibility of the proposed wind farm from the Wall itself and the buffer zone would be reduced by foreground trees and buildings in the surrounding farming landscape of the coastal plain. Where the Wall runs directly along the coast, there are typically open views to the Galloway and Langholm Hills at a distance. However, the panoramic nature of these views take in a number of built structures and infrastructure that have developed over time in the immediate and wider landscape, including Craig and Minsca Wind Farms, the chimneys at Chapelcross, the settlement of Annan and transmission masts. Views south also sometimes include Great Orton Wind Farm. The proposed wind farm would be seen at a distance, and would appear as part of the wider landscape as an additional group of turbines on hills to the north, without affecting the appreciation of the Wall, its setting or its original function. Low magnitude of change.	Negligible

Visual Effects During Operation

Visual Amenity

8.142 The assessment of visual effects considers the appearance of the proposed wind farm, and how it would change existing views. Visual effects are assessed using views from static locations (viewpoints) and also considering the visual experience from settlements, or when travelling through the area (sequential views).

Analysis of the ZTV and Overall Visibility of the Proposed Wind Farm

8.143 The ZTV is a tool which can be used to calculate the theoretical visibility of the proposed wind farm. It is important to note that visibility is considerably reduced by screening afforded by buildings and woodland, particularly from built up and lowland areas. Views from along roads and in rural areas are often filtered by woodland and hedgerows. This can be seasonal when trees are deciduous.

8.144 The ZTVs (Figures 8.2 and 8.3) shows the theoretical visibility of the proposed wind farm. Field survey has been undertaken to verify potential views on the ground and to appraise the overall likely visibility of the proposed wind farm. As expected, there is a strong contrast in the patterns of potential visibility illustrated by the ZTV map. Given the north-east to south-west grain of the topography, potential visibility immediately north is scattered along the high tops and their south facing slopes. East and west of the proposed wind farm, visibility is indicated in long bands running along the hillsides. In contrast, there is a 'cone' of theoretical visibility which expands as the topography flattens out across the Solway Firth. This begins to break up towards the southern edge of the study area, as the landscape begins to increase in height. This assessment considers close, mid-range and distant views of the proposed wind farm from the surrounding area, as follows.

Close Views (0-5 km)

- Turbines would potentially be visible from almost all areas within the site boundary except from down by the B7068 near Pingle.
- Ridge top locations and their immediate slopes only would have potential views of all or most of the wind farm; valley locations would have views only of the nearest turbines, and hubs and rotating blades of the more distant turbines.
- There would be potential views of much of the proposed wind farm from the area within 5 km of the site, noticeably reducing eastwards due to the screening effect of Glentenmont Height, Calkin Rig, Standingstone Edge and associated high ground.
- Hill tops and ridges around the site, particularly to the south and west, including Whitecastles Hill, Newland Hill, Newhall and Grange Fell, would have potential views of the proposed wind farm.
- Valley locations would have potential views of fewer turbines, in particular from the Water of Milk valley to the west, along which runs a minor road, and from the Logan Water valley to the east. However, to the south, the ZTV indicates an increasing potential visibility when moving south, away from the site and out of the visual shadow of the immediate hills.

Mid-Range Views (5-15 km)

- There would be potential views of the proposed wind farm from much of the middle distance area.
- Much of the wind farm would be potentially visible from the hill tops and fortified settlements around the site, including around Whita Hill and the Langholm Hills and ridgeline to the east.
- From many of the elevated tops and plateau within the Eskdalemuir and Castle O'er Forests to the north there would be potential views, although the extensive coniferous forest within these areas typically restricts views.
- From the south and west, there would be theoretical visibility of all or part of the proposed wind farm from the lower broad ridges and local hilltops, including Corrie Common and the east facing slopes of the ridgeline west of Lockerbie.
- To the south-east, the ZTV shows patterns coinciding with ridgelines running south from Whita Hill to Warb Law and Bloch Hill, and further out along the tops of Roan Fell, Watch Hill down to Tinnis Hill. South of these ridgelines, theoretical visibility increases as the topography reduces in height although the ZTV is patchy.
- The ZTV indicates increased theoretical visibility to the south of the study area as the topography flattens towards the Solway Firth.
- To the east and west, the principal valleys, including Annandale, Eskdale, the Ewes Water Valley (A7 corridor) and Liddesdale, would generally not have views of the proposed wind farm.

Distant Views (15-35 km)

- There would be potential distant views of the proposed wind farm from the east facing slopes which run down to Annandale.
- Distant views would also potentially be possible from the north facing slopes of the valley sides of Liddesdale and the River Lyne valley.
- Distant views would also potentially be possible from the Solway Firth basin, the Dumfries and Galloway and Cumbrian coastlines, and the associated floodplain to the Rivers Esk, Lyne and Eden north of Carlisle.

8.145 The ZTV in Figure 8.4 shows the theoretical visibility of the proposed wind farm, as well as visibility of the existing wind farms, Craig (formerly Carlesgill), Dalswinton, Minsca and Great Orton Wind Farms. Field surveys were undertaken to verify potential views on the ground:

- across central, eastern, southern and northern parts of the study area, a small number of wind farms are seen from high areas, typically one to two developments;
- Annandale and Eskdale have areas with visibility of other wind farms but not the proposed wind farm;
- to the south of the study area, across the open Solway Firth basin, views are typically of multiple wind farms (three to four wind farms); and
- the green areas on Figure 8.4, showing where the proposed wind farm theoretically is visible alone, are very restricted, due to the proximity of Minsca and Craig Wind Farms to the proposed wind farm site.

Effects on Visual Amenity as Represented by Specific Viewpoints

8.146 Figures 8.8 to 8.25 illustrate the views from each viewpoint by means of a photograph of the existing view, a wireframe illustrating the wind farm, and a photomontage. The photomontages are presented at two different sizes, to be viewed at 25 cm and 45 cm viewing distances (the optimum distance between the page and the eye calculated to best represent the actual view). Information about the viewpoint, photography and visualisation is included on each figure and is not repeated in the text.

Viewpoint 1: High Stenries			
Grid Reference	328964, 577272	Figure Number	8.8
LCT	D&G: Flow Plateau	Landscape designation	None
Direction of view	North	Distance to nearest turbine	1.6 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: This viewpoint is on the minor road that runs to the south of the site, between Kennedy's Corner and Solwaybank, as it passes over the open moorland. The viewpoint is located at the gateway to High Stenries Farm, with open views north, and is one of the closest publicly accessible locations to the south of the site. Viewers include road users and local residents. The viewpoint sensitivity is judged to be Low due to the relatively limited number of viewers likely.			
Context: This minor road runs over the undulating plateau landscape below the foothills to the north, at higher elevation than the coastal farmland around the Solway Estuary.			
Current View: The view is over open moorland that extends uninterrupted to the woodlands along the Woodside Burn, which is flanked by improved fields further upstream. Beyond the Woodside Burn, the land rises to open moorland with a large forestry plantation to the north. The horizon is formed the open hill tops of Haggy Hill and Doe's Hill and by this plantation, and the open moor profile interrupted by middle ground trees. Minsca and Craig Wind Farms are visible as turbines on the horizon to the north-west and north-east respectively.			
Changes: The proposed wind farm would be seen as a relatively regular array of turbines on the high ground to the north of the viewpoint. The site covers the forestry plantation, which would be partly felled to accommodate the wind turbines. The forestry plantation would therefore become fragmented, with disturbed ground potentially visible. Tracks and transformers my therefore also be visible where the site ground is seen. The magnitude of change is judged to be High.			
Visual Effect: **Moderate**			

Viewpoint 2: Collin Burn			
Grid Reference	330167, 581529	Figure Number	8.9
LCT	D&G: Foothills	Landscape designation	None
Direction of view	South-west	Distance to nearest turbine	1.6 km
Number of hubs theoretically visible	13	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: This viewpoint is located on the B7068 near the Collin Burn, to the east of the site. There are relatively few viewers at this location, but these include road users and local residents. The viewpoint is judged to be of Low sensitivity.			
Context: The Collin Burn is a tributary of the Wauchope Water which drains to the north-east towards Langholm where it joins the River Esk. The B7068 runs over the foothills between the Kirtle Water Valley and the Wauchope Water Valley, to the north of the proposed wind farm site.			
Current View: The B7068 is a minor road that runs over moorland and between forestry blocks. The view from the viewpoint is from a minor road, looking up the shallow moor covered valley of the Collin Burn, towards a forested horizon. A pole mounted power line crosses the foreground. The land to the north of the road is disturbed ground with evidence of recent forestry felling. There has also be a recent planting in the area, although the young trees are not visible from this location. Craig Wind Farm is visible on the horizon to the north.			
Changes: The proposed wind farm would be seen as a regular array of turbines on the horizon at the head of the Collin Burn valley. Some of the forestry on the horizon would be removed during the construction period, but replanting would be carried out. The turbines would be seen close to the viewpoint on elevated land, and would appear large in this view. No infrastructure other than turbines would be visible from this location due to the site being just over the horizon. The turbines would not be new features in the view from this location, but would be seen closer to the viewpoint than those of Craig Wind Farm. The magnitude of change is judged to be High.			
Visual Effect: **Major**			

Viewpoint 3: B7068 west of Fallford			
Grid Reference	326379, 580524	Figure Number	8.10
LCT	D&G: Foothills	Landscape designation	None
Direction of view	East	Distance to nearest turbine	2.1 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is located on the B7068 to the west of, and overlooking, Fallford. Viewers include road users and although local residences maybe afforded similar views, many properties are located within the Kirtle Water valley, with reduced views to the site. The viewpoint is judged to be of Low sensitivity.

Context:

Fallford is located in the Kirtle Water valley just upstream of Kirtleton, in the southern fringe of the Southern Upland hill range. The B7068 crosses the ridge between the Kirk Burn and the Kirtle Burn, before dropping down to the settlement.

Current View:

The viewpoint overlooks Fallford from a minor road running through improved pasture fields. The Kirtle Water valley is visible as a wooded valley before the land rises through more pasture fields to a uniform forested horizon. The horizon forestry is that on the eastern slopes of Collin Haggs, and includes the site. Minsca Wind Farm is visible to the west, looking away from the site.

Changes:

The proposed wind farm would be seen as an irregular array of turbines on the horizon above Fallford. Forestry felling would be evident, and some sections of track may be visible. The blanket forestry seen on the horizon would be interrupted with open areas and turbines. Although turbines would not be new features in the view from this location, the proposed turbines would be considerably closer than those of Minsca Wind Farm.

The magnitude of change is judged to be High.

Visual Effect: **Major**

Viewpoint 4: Milltown			
Grid Reference	333488, 575510	Figure Number	8.11
LCT	D&G: Flow Plateau	Landscape designation	None
Direction of view	North-west	Distance to nearest turbine	4.9 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is located on the B7357 to the east of Milltown. The location is representative of views from local residences, although views from the settlement are restricted by its location in a small valley. Viewers are road users, and similar views may be obtained by local residents. The viewpoint is judged to be of Medium sensitivity, as although it is within a small settlement, there are relatively few likely viewers.

Context:

Milltown is located at a bridging point on the River Sark, which flows across this plateau area from the foothills to the north.

Current View:

The view is across an open field to the east of the village. The view is of a gently undulating landscape with low hills visible in the distance. Beyond the foreground field, there are undulating pasture fields with hedges, trees and woodlands. The low horizon is made up of those trees, and more distant forestry blocks and low moorland hill profiles. A pole mounted power line crosses the foreground field. Craig Wind Farm is visible on the distant hills to the right of the view, and Minsca Wind Farm is visible above the trees to the left of the view.

Changes:

The turbines would be visible on the horizon on the low moorland hills. The lines of the layout would mean that the proposed wind farm would be seen as three overlapping groups of turbines. The turbines would not be new features in the view, and would be seen closer to the viewpoint than those of Minsca or Craig Wind Farms.

Sections of access tracks would be visible as the site is visible from this location. It is unlikely that other infrastructure elements would be visible from this distance. The magnitude of change is judged to be Medium.

Visual Effect: **Moderate**

Viewpoint 5: B725 between Middlebie and Waterbeck			
Grid Reference	323316, 577108	Figure Number	8.12
LCT	D&G: Upland Fringe	Landscape designation	None
Direction of view	North-east	Distance to nearest turbine	5.7 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is located on the B725 to the west of Waterbeck. Viewers include road users and similar views can be obtained from local residences, although some views from Waterbeck are screened by local vegetation or buildings. The viewpoint is judged to be of Low sensitivity.

Context:

Waterbeck is located on the northern side of the Annandale valley, in a valley in the fringes of the uplands. The viewpoint lies in the broad valley of the Mein Water.

Current View:

The view is an open panorama along a straight, hedged lined road that runs across a broad shallow valley. The valley is of pasture and ley fields with fences and hedges and occasional trees along the Mein Water. Scattered farms can be seen with large sheds, and a pylon line runs across the view. The subtle ridge that defines the edge of the valley is notable for numerous trees and shelterbelts, in contrast to few trees within the valley. Above the houses and trees at the edge of Waterbeck, there is a framed view of low forested hills. These hills that form the horizon are High Muir and the slopes of Collin Haggs (the proposed wind farm site).

The turbines of Minsca Wind Farm are visible to the north-west, perpendicular to the view towards the proposed wind farm site.

Changes:

The proposed wind farm would be visible as an array of turbines on the horizon, located on the slopes of Collin Haggs that forms the distant hills in the view. The forestry on the site would be felled, so that the distant hills would change from blanket forestry to more open ground with turbines. Turbines would not be new features in views from this location, but the proposed wind farm would be seen in a focal part of the view, on the framed distant hills directly ahead of eastbound travellers.

Tracks between the turbines may be visible from this location but it is unlikely that other infrastructure would be visible.

The magnitude of change is judged to be Medium.

Visual Effect: **Moderate**

Viewpoint 6: Kirkpatrick Fleming			
Grid Reference	326981, 570780	Figure Number	8.13
LCT	D&G: Narrow wooded river valleys	Landscape designation	None
Direction of view	North	Distance to nearest turbine	8.4 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is located on the main street through Newton and Kirkpatrick Fleming, the B7076. Viewers include road users and local residents, and similar views can be obtained from the A74(M) corridor and railway line. The sensitivity is judged to be High as the viewpoint is located within a settlement. Most locations along the B7076 through Newton and Kirkpatrick Fleming have contained views, or views open to the south; this viewpoint is at the only location with open views north.

Context:

Kirkpatrick Fleming is a settlement located in the Annandale Valley, adjacent to the major transport corridor of the A74(M). The B7076 runs along the course of a Roman road. The settlements of Newton and Kirkpatrick Fleming are on the north side of the narrow incised Kirtle Water valley.

Current View:

The view north from the road side is across flat grazing fields in the gap between Newton and Kirkpatrick Fleming, with Newton Farm behind. The motorway is seen on a raised embankment in the foreground, partly screened by trees. Beyond the motorway, undulating pasture and arable fields continue, with field boundaries of fences and patchy or overgrown hedges and tree lines or shelterbelts. No more distant land is visible, although forestry is seen in the distance over the low horizon formed by the fields and trees of the middle ground. Minsca Wind Farm is not visible from this location.

Changes:

The proposed wind farm would be visible on the low horizon beyond the motorway. The turbines would emerge above the horizon without the context of the hills on which they sit. They would form a relatively regular array of turbines, beyond the hedges and trees of the middle ground pasture.

No infrastructure other than the turbines would be visible.

The magnitude of change is judge to be Low.

Visual Effect: **Minor**

Viewpoint 7: Corrie Common			
Grid Reference	321403, 585650	Figure Number	8.14
LCT	Dumfries & Galloway: 18 Foothills	Landscape designation	None
Direction of view	South-east	Distance to nearest turbine	9.1 km
Number of hubs theoretically visible	3	Number of turbines theoretically visible	13

Location, Receptors and Sensitivity:

This viewpoint is located on the eastern outskirts of Corrie Common on the minor road just beyond a recently felled area of coniferous forest. Corrie Common itself is screened for the most part from this view by the adjacent forest, as is Corriestand. Receptors to this view are users of the minor road travelling east, local residents and cyclists accessing the cycle trails around Whitecastles Hill. Similar views would be gained from local residences. The sensitivity of this viewpoint is judged to be Medium.

Context:

Viewpoint 7: Corrie Common
Corrie Common is located on the ridgeline that forms the western slopes to the narrow valley of the Water of Milk. This ridgeline is part of the foothills area below the Southern Uplands hill range. The surrounding slopes are principally open slopes used for rough grazing, and coniferous forest plantations.
Current View: The view is a wide, open panoramic view along the minor road, flanked either side with large scale fields of rough grazing, enclosed by stone dykes. The Stidriggs Burn and the Water of Milk valleys define a ridge in the middle ground, before the ground rises up to the hills that form the horizon. The middle-distant hills are dominant in the view and take up the full spread of the view, gently dropping in elevation from the north to the south (left to right) in the view. Small blocks of forest sit within the open field pattern and are prominent in an otherwise smooth uniform moorland/ grassland. Geometric blocks of forest on Ewe Hill, and running down the slopes to the foreground, are prominent in the view. Minsca Wind Farm is visible as a group of turbines to the south, forming an eye-catching feature of the view.
Changes: The proposed wind farm would be introduced as turbine blades seen low on the horizon to the left (north-east) of Minsca Wind Farm, and left of the steeper sided and forest covered form of Grange Fell, and beyond Crawthat Hill. As the turbines would be largely screened from view by the landform of Crawthat Hill, the turbine blades passing over the horizon would go unnoticed in many lighting conditions. However, in conditions of good visibility, the proposed wind farm would be seen as an additional group of turbines beyond hills and further from the viewpoint than Minsca Wind Farm. No infrastructure other than turbines would be visible. The magnitude of change is judged to be Low.
Visual Effect: **Minor**

Viewpoint 8: Malcolm Monument, Langholm			
Grid Reference	337925, 584686	Figure Number	8.15
LCT	D&G: Southern Uplands	Landscape designation	Langholm Hills RSA
Direction of view	South-west	Distance to nearest turbine	9.4 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is located on Whita Hill, adjacent to the Langholm Monument. It lies within the Langholm Hills RSA, and is a popular walker destination. Receptors are walkers, who may include local residents and visitors. The sensitivity of the viewpoint is judged to be High.

Context:

Whita Hill is in the Southern Uplands hill range, and forms the southernmost top in a ridge to the east of the Ewes Water valley. The Ewes Water drains a large area of the Southern Uplands, and joins the River Esk at Langholm below Whita Hill, before running out to the Solway Firth at Gretna.

Current View:

The summit has a 360°panoramic view, with the hills of the Southern Uplands dominating the views to the east, north and west, although to the south, the flat plain of the Solway is backed by the rugged skyline of the distant Cumbrian Mountains. The principal focus of the panorama is westwards. The eye is drawn down to the settlement of Langholm, and then up the pronounced valleys of the Wauchope Water to the left (south-west) and River Esk to the right (north-west), or south downstream towards the open lowlands. The hills around the site are broad and gently undulating, often with a fringe of dark green coniferous forest visible over the ridgelines. Below Whita Hill, the built forms of Langholm and irregular lines of deciduous woodland are prominent, occupying the valley floor and extending up the slopes. The site is visible as an area of lower lying moorland with forestry, to the south of the Southern Upland hills, to the south-west of the viewpoint.

Craig Wind Farm is visible on the undulating hills above Langholm to the west beyond the River Esk Valley, and

Viewpoint 8: Malcolm Monument, Langholm
Minsca Wind Farm is also visible on the more distant hills along the southern edge of the Southern Uplands to the south-west.
Changes: The proposed wind farm would be seen on the lower land to the south-west, on the far side of the River Esk valley. The turbines would be seen as a regular array made up of five groups of three turbines, which corresponds to the rows within the layout. The proposed wind farm would be further away from the viewpoint than Craig Wind Farm, but closer than Minsca Wind Farm, such that the turbines would appear intermediate in size, and the perspective of distance would be perceptible. From this viewpoint, the proposed wind farm would be clearly seen on lower land than the other wind farms in the view, which may create a sense of turbines spreading to different parts of the landscape. No infrastructure other than turbines would be visible. The magnitude of change to the view is judged to be Medium.
Visual Effect: **Moderate**

Viewpoint 9: Burnswark			
Grid Reference	318697, 578831	Figure Number	8.16
LCT	D&G: Upland Fringe	Landscape designation	None
Direction of view	East	Distance to nearest turbine	9.7 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: The viewpoint is located at the Burnswark Roman Fort Scheduled Monument. It is a popular landmark hill within the wider landscape to the south-west of the site. Views from the fort are also representative of views from dwellings and minor roads which are situated on the more elevated landscape to the immediate north-east of the fort. Sensitivity of this viewpoint is judged to be High, given the scenic qualities to the view from the landmark hill.			
Context: Bunswark Hill is a prominent flat-topped hill rising from the broad Annandale valley. Extensive views are possible from the top, and the hill forms a landmark visible from long distances.			
Current View: The 360° panorama from this location extends to Carlisle and across the Solway with Great Orton Wind Farm visible in the lowlands beyond Carlisle, to the Cumbrian Mountains, and out across the Solway Firth. North of the Solway Firth, the panorama continues, to Criffel on the north coast, across the Southern Uplands with Dalswinton Wind Farm visible, to Queensberry and up Annandale. East of Annandale, the views extend to the Moffat Hills and Hart Fell, White Coomb, and the Castle O'er and Lanholm Hills with Minsca and Craig Wind Farms to the east of the viewpoint. It is therefore a location that gives the viewer a strong sense of place and position within the wider landscape context. The full panoramic view is complex, taking in a number of different landscapes and landscape elements from open intense agriculture on the flatter floodplains, to the more undulating farmland with tree lines and woodland blocks, to the broad communication corridor with traffic visible on the A74(M). The site is visible to the right (south) of Minsca Wind Farm, over land with improved agricultural fields. The site is seen as a large coniferous plantation over a lower plateau than the Southern Upland Hills and Burnswark itself. The site is also perceptibly lower than the site of Minsca Wind Farm, the turbines of which are close to the viewpoint, and appear as large structures on a nearby hill of similar elevation to the viewpoint. Craig Wind Farm is visible as a more distant group of turbines on the horizon beyond Minsca Wind Farm.			
Changes: The proposed wind farm would be seen to the right (south) of Minsca Wind Farm, with coniferous forestry on the site removed. The turbines would be seen as a relatively regular array, with the turbines partially over the horizon, and partially seen against the backdrop of land beyond. The proposed wind farm would be further from the viewpoint than Minsca Wind Farm, but closer than Craig Wind Farm. From this viewpoint, the proposed wind farm would be clearly seen on lower land than the other wind farms in the view, which may create a sense of turbines spreading to different parts of the landscape. It is unlikely that infrastructure other than turbines would be visible from this distance, although given the elevation of the viewpoint, some sections of track may be visible, and temporary construction activities may be visible. The magnitude of change is judged to be Medium.			
Visual Effect: **Moderate**			

Viewpoint 10: Old Smithy, Gretna Green			
Grid Reference	332104, 568636	Figure Number	8.17
LCT	D&G: Coastal Flats	Landscape designation	None
Direction of view	North	Distance to nearest turbine	10.4 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: This viewpoint is located at the northern edge of the car park to the Old Smithy, a popular tourist destination at Gretna Green, adjacent to Springfield. The main settlement of Gretna is sited south of the confluence of several main transport routes including the A74(M), A75 and railway. Viewers include tourists and visitors to the Old Smithy, as well as local residents of Gretna Green and Springfield. Similar oblique views would also be available from Gretna and other local settlements and residences, and from the A74(M) and A75 and other local roads, in particular when the roads are elevated on embankments. This viewpoint is also representative of the 'gateway' views as people travel across the national border into Scotland. Sensitivity is judged to be High, given the number of viewers.			
Context: Gretna Green is situated on the flat low-lying coastal landscape which runs down to the Solway estuary and floodplains. The low lying fertile agricultural landscape has clear open views to the backdrop of hills to the north which is reinforced by the large scale of the intensive agricultural landscape.			
Current View: The current view is panoramic across the flat open agricultural plain, interrupted by hedgerow trees and shelterbelts. The distant horizon is formed by the Southern Uplands to the north. The view is a wide panorama from east to west and is contained by the proximity of trees at either side of the view. Chapelcross Chimneys are prominent features on the skyline, whilst the Langholm Monument and telecommunication masts are also visible. Minsca Wind Farm is visible on the horizon to the north-west, and Craig Wind Farm is also visible to the north in conditions of good visibility. Great Orton Wind Farm, although theoretically visible, is screened by the buildings of Gretna Green to the south.			
Changes: The turbines of the proposed wind farm would be seen as a regular array on a ridge of land seen below, and in front of, the hills that form the horizon to the north. These would be closer to the viewer than the turbines of Minsca and Craig Wind Farms, forming an additional group of turbines in the backdrop of this view. Turbines would not be new features in this view, and there would be the same number of turbines as Minsca Wind Farm. No infrastructure other than the turbines would be visible from this viewpoint. Overall, the magnitude of change is judged to be Low, as the proposed wind farm would not affect the perception of the open view across the Gretna Green area, nor would it affect the perception of the distant hills with wind farms as a backdrop to this view.			
Visual Effect: **Minor**			

Viewpoint 11: Longtown			
Grid Reference	337262, 569364	Figure Number	8.18
LCT	NCA: Solway Basin	Landscape designation	None
Direction of view	North-west	Distance to nearest turbine	12.0 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is located on the A75 to the north of Longtown, adjacent to the entrance to Sandbed Farm. No suitable viewpoints are found withinin Longtown. Viewers include road users, and similar views may be obtained from local residences including Sandbed Farm and Longtown. The viewpoint is judged to be of Low sensitivity, as although it is used to represent views from Longtown, it is located on a busy road with very limited opportunities for stopping.

Context:

Longtown is a settlement located on the east bank of the River Esk, which drains from the Southern Uplands carrying water from Eskdalemuir across to the Kielder area. Longtown is located on the broad flat coastal area about 5 km from where the River Esk emerges and joins the River Eden to form the Solway Firth.

Current View:

The view is along a straight stretch of the A75, which runs almost directly towards the site northbound. The foreground of the view is taken up by the road and the hedges and pasture fields either side. In the middle distance, the open fields give way to woodland and hedgerow trees filter views. A distant horizon of low hills can be seen just above the trees in the middle ground. Minsca and Craig Wind Farms are visible, and the Langholm Monument is also visible to the north.

Changes:

The proposed wind farm would be seen low on the horizon to the north-west but would be partly screened by the middle ground trees, such that only the blades of turbines would be visible.

No infrastructure other than turbines would be visible.

The proposed wind farm would be closer to the viewpoint than Minsca or Craig Wind Farms. Given the screening by trees in this view the magnitude of change is judged to be Low.

Visual Effect: **Negligible**

Viewpoint 12: Repentance Tower			
Grid Reference	315551, 572260	Figure Number	8.19
LCT	D&G: Coastal Plateau	Landscape designation	None
Direction of view	North-east	Distance to nearest turbine	14.9 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is at the north-east side of Repentance Tower within the curtilage of the stone walls adjacent to the outbuildings. Views from the main entrance are locally screened by a coniferous shelterbelt adjacent to the tower. Repentance Tower itself, although uninhabited, is orientated due north. The viewpoint represents static views to the north-east from a popular visitor destination and views from some local residences on high ground. The sensitivity is judged as High.

Context:

Repentance Tower and the viewpoint are situated on the north-east facing slopes of a localised ridge consisting of Repentance Hill and Woodcock Air, between the River Annan and the wider coastal plateau landscape around Annan. Hoddom Castle lies to the north of the viewpoint on the banks of the River Annan.

Viewpoint 12: Repentance Tower

Current View:

Panoramic views are available from Repentance Tower by walking around the tower. Views around the Tower are primarily defined by the visual horizons of the immediate topography of the knoll to the west and the wooded slopes of Woodcock Air to the east. North and east to the site, the view is one of gently undulating slopes in the foreground running into the broad Annandale valley with a patchwork of improved pasture enclosed by hedgerows and trees. Deciduous tree lines and groups exist in the lower valley with a scatter of coniferous shelterbelts running up from the valleys onto the hills. The main building and towers of Hoddom Casle are a prominent feature in the foreground, set within its surrounding policies. The view is panoramic looking over, and along, the valley of the River Annan to the distant horizon made up of moorland and forested hills of the Southern Uplands. Burnswark Hill is visible as a landmark to the left of view, and Minsca Wind Farm can be seen to the right (east) of it, with Craig Wind Farm visible on clear days. The views south of the Tower are much more extensive, opening down slope and out over the thin band of the Solway to the distant Cumbrian mountains. This panoramic view is broadly contained between the prominent chimneys of Chapelcross Power Station to the left and Criffel to the right.

Changes:

The proposed wind farm would be visible to the right (south) of Minsca and Craig Wind Farms, of a similar size and extent to Minsca Wind Farm. The rows of the layout would line up in this view, such that the turbines would be seen in a series of overlapping groups.

No infrastructure other than turbines would be visible.

The magnitude of change is judged to be Low.

Visual Effect: **Minor**

Viewpoint 13: M6, Todhills			
Grid Reference	337084, 562649	Figure Number	8.20
LCT	NCA: Solway Basin	Landscape designation	None
Direction of view	North-west	Distance to nearest turbine	17.7 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15

Location, Receptors and Sensitivity:

This viewpoint is located on the bridge over the M6 near Todhills. Viewers include road users, and similar views can be seen from local residences. The sensitivity of this viewpoint is judged to be Low.

Context:

The M6 in this location links Gretna to Carlisle across the broad flat Solway Basin east of the Solway Firth.

Current View:

The view is dominated by the motorway and its ancillary structures. The view is framed by woodlands either side of the bridge, and views from the motorway itself are contained by the palisade fencing along the east side of the motorway. In the distance to the north, beyond woodlands near the motorway, distant low lying moor and forest covered hills can be seen. Craig Wind Farm is visible on distant hills from this location, and Minsca Wind Farm, although screened by trees from the bridge, is visible from nearby stretches of the M6.

Changes:

The proposed wind farm would be visible as a distant group of turbines partly with the backdrop of land beyond, but emerging above the low horizon. The turbines would not be new features in this view, and would not be seen as being much closer to the viewpoint than Minsca and Craig Wind Farms.

No infrastructure other than turbines would be visible.

Given the distance to the site and the activity and motorway infrastructure in the foreground, the magnitude of change is judged to be Low.

Viewpoint 13: M6, Todhills
Visual Effect: **Negligible**

Viewpoint 14: Bowness-on-Solway			
Grid Reference	321943, 562635	Figure Number	8.21
LCT	NCA: Solway Basin	Landscape designation	Solway Coast AONB
Direction of view	North-east	Distance to nearest turbine	17.8 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: This viewpoint is located at the small car park on the coast at the western side of Bowness-on-Solway. Viewers include local residents, road users and visitors to the western end of Hadrian's Wall. The viewpoint is judged to be of High sensitivity due to the number of local residences and scenic qualities of the view across the Solway Firth.			
Context: Bowness-on-Solway is located on the coast, at the northernmost point of the land to the south of the Solway Firth. Rampart Head at Bowness-on-Solway marks the western end of Hadrian's Wall.			
Current View: The view from the small informal car park is a 180° panorama across the Solway Firth, with buildings and garden boundaries of the settlement screening views inland. The view is an open panorama from the grassy shore with gorse and scrub along the coast. There are extensive mudflats at low tide. The view is open across the Solway to Annan, with a series of large houses or other buildings close to the north shore, with industrial buildings around Newbie and east of Annan. To the north of the Solway, it appears to be a wooded landscape with more undulating landform inland. The power station at Chapelcross is visible as eight towers, with Minsca Wind Farm seen behind, on rising hills in the distance. Burnswark Hill is seen to the left (west) of the power station. The distant horizon is made up of low lying hills, including Criffel to the west, and the Southern uplands to the north, with the Langholm hills to the north-east.			
Changes: The proposed wind farm would be seen as a distant group of turbines on the horizon to the north-east. They would be further from the viewpoint than Minsca Wind Farm. The proposed wind farm would be a small feature to this view, and would not affect the visual amenity of the view across the Solway Firth. No infrastructure other than turbines would be visible. The magnitude of change to the view is judged to be Low.			
Visual Effect: **Minor**			

Viewpoint 15: Roan Fell			
Grid Reference	345005, 593008	Figure Number	8.22
LCT	D&G: Southern Uplands	Landscape designation	Langholm Hills RSA
Direction of view	South-west	Distance to nearest turbine	20.2 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: This viewpoint is located at the summit of Roan Fell, in the Langholm Hills. Views include walkers, and similar views can be obtained from other hill tops and high slopes in the area. The sensitivity of the viewpoint is judged to be High.			
Context: Roan Fell is a prominent hill in the Southern Uplands hill range that runs across southern Scotland. Roan Fell forms part of the boundary of the Langholm Hills RSA, and the boundary between Dumfries and Galloway and the Scottish Borders.			
Current View: The view from the flat summit plateau is of heather moorland with peat hags stretching away from the summit. Beyond the summit plateau, the view extends across distant moor and forest covered hills to the west, north and east along the Southern Uplands hill range, and across the lowlands of the Solway Firth to the south and south-west. The Cumbrian Mountains can be seen to the south, and Criffel stands out to the south-west. The Solway Firth is visible, with the coastal headlands of Cumbria giving way to the open sea. Craig and Minsca Wind Farms are visible, overlapping, to the south-west.			
Changes: The proposed wind farm would be seen as an array of turbines to the south-west, on lower land than Minsca or Craig Wind Farms. The turbines would be seen with the backdrop of the Solway Coast behind. The turbines would be seen to be further from the viewpoint than those of Craig Wind Farm, and would be seen as a regular array. No infrastructure other than turbines would be visible. The magnitude of change is judged to be Low.			
Visual Effect: **Negligible**			

Viewpoint 16: Caerlaverock Castle			
Grid Reference	302634, 565920	Figure Number	8.23
LCT	D&G: Coastal Flats	Landscape designation	Nith Estuary NSA, Terregles Ridge RSA.
Direction of view	East north-east	Distance to nearest turbine	29.2 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: This viewpoint is located on the entrance road to Caerlaverock Castle, off the B725 south-east of Dumfries. There are no views from the Castle due to the surrounding woodlands and trees. Viewers include visitors to the castle, and similar views can be seen from local residences and across the coastal flats. The viewpoint is judged to be of Medium sensitivity as it is not at the castle itself.			
Context: Caerlaverock Castle sits on the eastern shore of the Nith Estuary. It would have commanded a view across the estuary and the Solway Firth before the castle woods grew up. Open views can be obtained from the coastal walks south of the castle.			
Current View: The view looks out across the coastal flats from a slightly elevated position at the break of slope. The coastal flats in the middle ground are made up of fields with hedge boundaries and intermittent trees. The Lochar Water can be seen where the light catches the water. To the right of the view is the Solway Firth, and to the left of the view the land rises inland, with this view framed by Ward Law, with a Roman fort on top, picked out with trees. The Southern Uplands can be seen to the left of the view as low, distant hills beyond Ward Law. Minsca Wind Farm is visible in good viewing conditions, on the low hills in the distance.			
Changes: The proposed wind farm would be visible as a distant group of turbines to the right (south) of Minsca Wind Farm, on land lower than the Southern Uplands, but forming a skyline feature. Given the distance to the site, the proposed wind farm would be a small element in this view.			

Viewpoint 16: Caerlaverock Castle
No infrastructure other than turbines would be visible. The magnitude of change is judged to be Low.
Visual Effect: **Negligible**.

Viewpoint 17: Banks, Hadrian's Wall			
Grid Reference	355729, 564566	Figure Number	8.24
LCT	NCD: Tyne Gap and Hadrian's Wall	Landscape designation	Hadrian's Wall World Heritage Site
Direction of view	North-west	Distance to nearest turbine	29.3 km
Number of hubs theoretically visible	15	Number of turbines theoretically visible	15
Location, Receptors and Sensitivity: This viewpoint is located on the Hadrian's Wall path, to the west of Banks. Viewers include walkers and similar views can be obtained from local residences. The sensitivity of this viewpoint on the popular walking route and historic monument is judged to be High.			
Context: Hadrian's Wall crosses Britain from Newcastle to Bowness on Solway. Being for defensive purposes, the Roman wall was built to follow hilltops and ridges and north facing scarps wherever possible. At this point, the wall passes along the Craggle Hill ridge before descending to cross the Burtholme Beck upstream from Lanercost.			
Current View: The foreground of the view is of pastoral land with the Roman remains visible as ridges and ditches. Field boundaries are marked by walls and hedgerow trees. The view extends over the undulating landscape north of Brampton, west towards the Solway Basin, and beyond to the hills of south-west Scotland. Criffel is visible, and the Southern Uplands are visible with Minsca and Craig Wind Farms on the distant horizon.			
Changes: The proposed wind farm would be visible on the distant uplands to the north-west, appearing partly against the backdrop of land beyond, but interrupting the skyline. The proposed wind farm would form a small and distant feature in the view which has existing distant groups of turbines. No infrastructure other than turbines would be visible. The magnitude of change is judged to be Low.			
Visual Effect: **Negligible**.			

Viewpoint 18: White Coomb			
Grid Reference	316325, 615088	Figure Number	8.25
LCT	D&G: Southern Uplands	Landscape designation	None
Direction of view	South	Distance to nearest turbine	37.2 km
Number of hubs theoretically visible	8	Number of turbines theoretically visible	13
Location, Receptors and Sensitivity: This viewpoint is at the summit of White Coomb, above Grey Mare's Tail waterfall. The viewers are walkers who reach this summit, and similar views are possible from other summits and high slopes in the area. Views from Grey Mare's Tail and the Moffat Water valley are generally enclosed within the valley. The viewpoint is judged			

Viewpoint 18: White Coomb
to be of High sensitivity.
Context: White Coomb is a summit in the Southern Uplands, on the north side of the deep U shaped valley of the Moffat Water. To the north of White Coomb, Loch Skeen and the upper part of the Tail Burn lie within a hanging valley, which spills out at the dramatic Grey Mare's Tail waterfalls.
Current View: The view south from the summit is over the foreground slopes dropping away to the top of Coomb Crag. Below the crags lies the deep Moffat Water valley, most of which is not visible from the summit. Mid Rig and Andrewhinney Hill on the other side of the valley are visible, and lead the eye on to more distant land, across the Southern Uplands towards Annandale valley lowlands. Minsca Wind Farm is visible in good conditions.
Changes: The proposed wind farm would be seen only in good viewing conditions, as a very distant development to the south, close to Minsca Wind Farm. It would be legible, with Minsca Wind Farm, as being on the edge of the Southern Uplands hill range, and distant from White Coomb. No infrastructure other than turbines would be visible. The magnitude of change to this view is judged to be Low.
Visual Effect: **Negligible**

Visual Effects on Settlements

8.147 As settlements are generally located on lower ground and in valleys, views to the hill tops of the site are often restricted by high ground between the settlement and the site. The theoretical visibility of the wind farm from settlements in the study area is shown on Figure 8.2 and discussed in Table 8.19. Several settlements were specifically represented in the selection of viewpoints as listed in Table 8.14.

8.148 Visibility from a settlement is not uniform across the settlement. This is because views of the surrounding landscape from within the settlement are inevitably obscured by the buildings, structures, trees and vegetation of the settlement itself. Where the ZTV indicates theoretical visibility within settlements, upper storey windows of buildings are more likely to have views than locations at ground level.

8.149 The sensitivity of views from settlements is judged to be High because of the high numbers of resident and visitor viewers. Although settlements are not generally identified as locations for viewing the wider landscape on OS maps, they are places where people congregate and spend time. The scenic quality of views from settlements varies.

Table 8.19: Visual Effects on Settlements

Settlement	Location and context	Representative viewpoints[46], Distance[47]	Theoretical visibility and magnitude of change	Visual Effect
Kirleton, Fallford and West Linnbridgeford	These are small settlements located to the west of the site	VP 3 1.2km	Although the ZTV indicates visibility of the proposed wind farm from each of these settlements, the forestry that covers the rising ground between the site and these settlements, and the riparian and	Moderate

[46] VPs listed in brackets indicate viewpoints that do not lie within the settlement, but are of relevance to it.
[47] Distance to the nearest turbine from the nearest edge of the settlement.

Settlement	Location and context	Representative viewpoints[46], Distance[47]	Theoretical visibility and magnitude of change	Visual Effect
			shelterbelt woodlands within the valley will greatly reduce the actual visibility. The turbines will be seen on the hillside close to the settlement from locations where views are possible. In spite of the proximity to the site, there will be limited views of the proposed windfarm, and the magnitude of change is judged to be medium.	
Milltown	Milltown is a small settlement located to the south-east of the site, on the B6357.	VP 4 5 km	Although the ZTV indicates visibility of the proposed wind farm from the whole of Milltown, local hedges and trees would screen many views. Where possible, the proposed turbines would be seen on the horizon to the north. Magnitude of change to the settlement as a whole is judged to be Low.	Minor
Waterbeck	Waterbeck is a small settlement located on the B725 to the west of the site, in the Kirtle Water valley.	VP 5 5 km	Although the ZTV indicates visibility of the proposed wind farm from the whole of Waterbeck, local hedges and trees contain many views. Where possible, the proposed wind farm would be seen on the horizon to the north-east. The magnitude of change to the settlement as a whole is judged to be Low.	Minor
Langholm	Langholm is located in Eskdale to the north-east of the site.	VP 8 17 km	The ZTV indicates theoretical visibility from the eastern part of the settlement, on the flanks of Whita Hill. Whilst there would be some screening by settlement features, there are views from this area. The proposed wind farm would be seen as a number of turbines on the horizon along the Earshaw valley to the south-west. Craig Wind Farm is also visible in some views. The magnitude of change to the settlement as a whole is judged to be Low.	Minor
Eaglesfield and Kirtlebridge	These settlements are located to the south-west of the site in the Kirtle Water valley. Eaglesfield is a long linear settlement along the B722, and Kirtlebridge nearby is located on the south side of the A74(M).	(VP 6) 6 km	Theoretical visibility extends over these settlements, but actual visibility would be reduced by local screening of buildings and trees. Given the orientation of the B722 through Eaglesfield, there may be views of the proposed wind farm along the main street. Views from some locations include Minsca Wind Farm. The magnitude of change to these settlements is judged to be Low.	Minor
Gretna	This town, a gateway to Scotland, is located by the Solway Firth to the south of the site.	VP 10 10 km	Although the ZTV indicates visibility of the proposed wind farm from the whole of Gretna, local hedges and trees screen many views. Where visible, the proposed turbines would be seen on the distant hills to the north. Magnitude of change to the settlement as a whole is judged to be Low.	Negligible
Longtown	Longtown is located by the River Esk, to the south-east of the site.	VP 11 18 km	Although theoretical visibility of the proposed wind farm extends over the whole of Longtown, actual visibility is much reduced by local buildings, hedges and trees. Limitied views, of the proposed turbines would be seen beyond Silverhill Wood to the north-west. Magnitude of change to the settlement as a whole is judged to be Low.	Negligible
Annan	This settlement is located on the shores of the Solway Firth, at the mouth of the River Annan.	No viewpoint 14 km	Theoretical visibility extends over parts of Annan, but is much reduced by the existing features of Annan and its surroundings. If visible, the proposed wind farm would be a distant feature in the wider landscape, and the magnitude of change to the settlement is judged to be Low.	Negligible
Carlisle	Carlisle is a small English city, located to the south of the site.	(VP 13) 20 km	The ZTV indicates theoretical visibility across the northern and southern parts of the city, but does not take account of local screening. There would be few locations in the city other than upper storeys of high buildings where the proposed wind farm would be visible. Magnitude of change to the settlement as a whole is judged to be Low.	Negligible
Brampton	Brampton is located near Hadrian's Wall to the south-east of the site.	(VP 17) 28 km	Theoretical visibility extends over parts of Brampton, but would be much reduced by existing features of Brampton and its surroundings. The proposed wind farm would be a very distant feature in the wider landscape and the magnitude of change to the settlement is judged to be Low.	Negligible

Visual Effects on Routes

8.150 The theoretical visibility of the proposed wind farm from routes in the study area is illustrated in Figures 8.2 to 8.5 and the effects on sequential experiences when travelling around the study area set out in Table 8.20.

Table 8.20: Visual Effects on Routes

Route, distance[48], representative viewpoints, sensitivity	Assessment of visual effects
A74(M), M6, West Coast Main Line Railway, National Cycle Route, B7076 7.5 km VPs 6, 10, 13 Medium	The broad Annandale valley acts as a communication corridor containing the A74(M), West Coast Main Line railway and B7076 (National Cycle Route 74), running parallel to each other. The M6 runs north from Penrith, around Carlisle, to Gretna. The A74(M) connects to the M6 at Gretna, and runs north-westwards over the undulating farmland south of the site, before running into and up Annandale, near Lockerbie. It passes out of the study area near Moffat to the north-west of the site. The routes, in particular the M6/A74(M), are well-used, with high numbers of users. These routes represent the first views of Scotland for travellers heading north. Most receptors travel at speed. Travellers on the train see views perpendicular to the direction of travel. Minsca, Dalswinton, Craig and Great Orton Wind Farms are visible at different stages from the southern sections of this route giving the impression of wind farms present in the wider landscape around the route. Views of the proposed wind farm would theoretically be possible from most sections of this route corridor, south of Ecclefechan. It would be seen as an additional group of turbines on the hills to the north of the route, between Minsca and Craig Wind Farms, but would not alter the impression of wind farms present in the wider landscape. The magnitude of change to the experience of this route is judged to be Low, and the effect is judged to be **Minor**.
A7 7.0 km VPs 11, (8) Medium	The A7 runs north from Carlisle to Hawick and beyond, via Longtown and Langholm, where it passes close to the site. It is a busy route, promoted as a tourist route through the Scottish Borders. The route passes through lowland valley landscapes, before crossing the Southern Upland hill range via increasingly narrow, winding steep sided valleys. Many sections of this route are enclosed by roadside woodlands, or valley sides. Minsca, Craig and Great Orton Wind Farms are glimpsed from some lowland sections of this route but do not contribute greatly to the experience of the route. The proposed wind farm would have similarly limited visibility across the southern lowland sections of the route, and where visible, would be seen as an additional group of turbines on land to the north-west. The magnitude of change to the experience of this route is judged to be Low, and the effect is judged to be **Minor**.
A75 10.5 km VPs 10 High	The A75 runs from Gretna Green to Annan and Dumfries and beyond. This is a busy route, identified as a National Tourist Route. The route passes through lowland and coastal landscapes, along the north side of the Solway Firth. Dalswinton and Great Orton Wind Farms are visible from different sections of this route, with Minsca Wind Farm visible also to the north-east. The proposed wind farm would form an additional group of turbines beyond Minsca Wind Farm to the north-east of the route, with potential visibility (where local screening allows) between Gretna and Caruthersto wn. The magnitude of change to the experience of this route is judged to be Low, and the effect is judged to be **Minor**.
B7068 Adjacent	The B7068 runs between Lockerbie and Langholm, passing adjacent to the site to the north. The route is not heavily used. The route passes through foothills landscapes, with a mixture of valley and upland sections, with varied land use from pasture with woodlands to open moor or forestry.
B6357 5 km VPs 4, 6 Low	The B6357 runs from Annan to Kirkpatrick Fleming, via Milltown to Canonbie and north-east to Newcastleton and Bonchester Bridge. The route is not heavily used. This route passes through coastal and lowland landscapes before meeting the Liddel Water valley and crossing the Southern Uplands via narrow winding valleys. Other wind farms are visible from the southern sections of the route, particularly Minsca and Craig Wind Farms. The proposed wind farm would be seen as an additional group of turbines on the hills to the north of the route, between Minsca and Craig Wind Farms, although closer to the route than those wind farms. Potential visibility would not extend north of Rowanburn, and would be patchy along the route, depending on local screening. It is judged that the magnitude of change to the experience of the route as whole would be Low. The effect on the route would be **Minor**.
B722 1 km VPs 3, (5) Low	The B722 runs north from Annan via Eaglesfield towards the site, terminating at the junction with the B7068 at Fallford/Kirtleton. The route is not heavily used. The route passes through lowland landscapes with woodlands and trees that screen some views. Minsca Wind Farm is visible to the north-west. The proposed wind farm would be seen as an additional group of turbines on the hills to the north-east of the route, on the other side of the route from Minsca Wind Farm. Views would be possible from sections of the route running towards the site, and where woodlands permit. The south-bound journey would be likely to be unaffected. The magnitude of change to the experience of the route as whole is judged to be Low. The effect on the route would be **Minor**.
Minor roads around the site Adjacent VPs 1, 2, 3 Low	The roads that skirt round the site to the west, south and east are minor roads, single track in most places. The road to the north is the B7068. The minor roads run south from West Linnbridgeford, crossing the Kirtle Water, to a junction at Kennedy's Corner. From there, a minor road runs east to Solwaybank and Barnglieshead, and on to a junction at Kerr Plantation. From there, a minor road runs north to join the B7086 near Bloch Farm. These routes are not heavily used. Minsca Wind Farm is seen from some locations along these routes, and Craig Wind Farm is also visible. The proposed wind farm would be closer to the routes than either Minsca or Criag Wind Farms, but due to local topography, the site would be on higher ground than the routes, so that the infrastructure would not generally be visible. Potential visibility would occur from south of the site, where the roads run over high ground around Wallacehall and High Stenries. Given the proximity to the routes, the magnitude of change to the experience of these routes is judged to be Medium. The effect on these routes would be **Moderate**.
Cumbrian Coastal Way/Hadrian's Wall Path/ National Cycle	A stretch of the Cumbria Coastal Way (CCW) of approximately 44 km lies within the study area. The CCW starts south of Gretna and runs along the minor roads crossing the flood plains of the Rivers Esk and Eden. The footpath crosses the Eden in the centre of Carlisle and then joins the Hadrian's Wall Path, following the coast west to Bowness on Solway. Parts of the National Cycle Route 72 follow a similar route to the CCW using the minor

[48] Distance to the nearest turbine from the nearest point along the route.

Route, distance[48], representative viewpoints, sensitivity	Assessment of visual effects
Route R72 11 km VPs 14, 17 High	road on to Angerton. These routes are of High sensitivity. These routes pass through lowland coastal landscapes. Great Orton Wind Farm is visible from some sections, and Minsca and Craig Wind Farms are seen as distant elements on the hills to the north. The proposed wind farm would be visible in the distance to the north, between Minsca and Craig Wind Farms. The character and experience of these routes would not be affected by the introduction of the additional distant features. The magnitude of change is judged to be Low, and the effect would be **Negligible**.
National Cycle By-Way 7 km VP (8), 10, 11, (12) High	This is a national route, part of which runs from Northumberland into Cumbria and into Dumfries and Galloway from east to west, crossing the study area via Hadrian's Wall, Newcastleton, Langholm, Gretna, Annan and Dumfries. This route is of High sensitivity. The route passes through varied landscapes, along a number of minor and local roads in the study area, and is closest to the site at Langholm. The proposed wind farm would be visible from parts of this route as it passed through the study area. From these sections, it would be seen on the hill horizon, as an additional group of turbines to those of Minsca and Craig Wind Farms. The experience of this route through different types of landscapes, some of which allow views to wind farms in the surrounding landscape, would not be altered by the proposed wind farm. The magnitude of change to the experience of the route as it passes through the study area is judged to be Low. The effect on the route would be **Minor**.
Annandale Way 14 km VP 12 High	This route runs from the Devil's Beef Tub north of Moffat, down the western side of Annandale, with branches running via Lochmaben or Lockerbie. These branches reconnect to the south-west of Ecclefechan, and the route runs to the Solway Coast at the mouth of the River Annan. This route is of High sensitivity. The route passes through valley, dale, lowland and coastal landscapes, and has views of existing wind farms in the wider landscape. The proposed wind farm would be seen as an additional group of turbines on the hills to the east of the route, beyond Minsca Wind Farm, from open sections of this route between Brydekirk and Rammerscales only. The majority of the route would have no views of the proposed wind farm. The magnitude of change is judged to be Low, and the effect would be **Negligible**.

Decommissioning

8.151 There will be no significant landscape and visual effects remaining after decommissioning and restoration works have been completed and vegetation has regenerated.

Mitigation

8.152 Construction of turbines and tracks would follow an agreed Construction Method Statement, which would include arrangements for implementation of various aspects of the works such as vegetation and soil removal, storage and replacement, vegetation restoration and stream crossings, which would help to mitigate potential adverse landscape and visual effects during the works.

Mitigation of Construction Effects

8.153 To keep construction effects to a minimum, contractors would be encouraged to minimise their working areas through careful control of construction activities at the proposed wind farm site. The area of works would be written into the contract. Site design, track design and reinstatement of the ground surrounding the works would also be under strict guidance. In addition, construction work would be scheduled to require minimal after-dark work, to reduce the likelihood of effects arising from lighting on the site.

8.154 Exposed surfaces would be covered with a suitable material to reduce the potential for erosion. Erosion and run off control measures would be installed. These may include cut off drains and embankments in areas of erosion risk (See **Chapter 12: Geology, Hydrology and Hydrogeology**).

8.155 As part of the construction works it is proposed that verges, cable tracks and other disturbed ground are reinstated subject to best practice methods as appropriate. This would include stripping and storing of the peat, with vegetation intact, for use in on-site restoration. It would also include reseeding, where necessary, with a suitable seed mix for moorland.

8.156 As described in **Chapter 6: Forestry**, the proposal is to replant as much of the site as possible, with the exception of open spaces required for installation of turbines and associated infrastructure, and habitat management proposals. The details of felling and restocking proposals would be encompassed into the Forest Design Plan (FDP), to be agreed with all the forestry landowners and subsequently approved by the Forestry Commission Scotland.

8.157 Following replanting, and as the trees grow, the residual effects on the proposed wind farm site would decrease.

Mitigation of Operational Effects

8.158 There is limited scope for further mitigation of residual operational visual effects other than those that are embedded in the design, because visual effects of the turbines are unavoidable given their nature and size. As explained in **Chapter 3: Site Selection, Design Evolution and Alternatives**, the best way of mitigating potential adverse landscape and visual effects is through design, and the layout has been informed by landscape considerations.

8.159 The turbines would be matt non-reflective pale grey, which is considered to be the most effective colour to reduce visibility, appearing pale against the sky. This colour is typical of that proposed for all wind farms in Scotland, and is recommended by SNH guidance[49].

Residual Effects

Residual Construction Effects

8.160 Following construction, restoration of disturbed areas would take time, particularly in areas of slower growing vegetation, but with the implementation of a post-construction restoration plan, and the replanting set out in the FDP (as described in **Chapter 6: Forestry**), bare ground would soon become re-vegetated. The changes would affect landscapes and viewpoints close to the proposed wind farm, from where ground conditions would be discernible. These may last up to about five years (as heather and woody vegetation take about this length of time to become re-established) but levels of effect would decline over this period. Over time, a species balance which is typical of

[49] SNH (2009) *Siting and Designing Windfarms in the Landscape*

less disturbed areas would become established. It should be noted that some these effects will occur with the scheduled felling and restocking of forestry on the site, in the absence of the wind farm.

8.161 There would be no significant landscape and visual effects of construction remaining after mitigation and restoration works have been completed and vegetation has regenerated. Major effects during the works would gradually be reduced to Negligible once restoration is complete and vegetation has regrown.

Residual Operational Effects

8.162 Given the limited opportunities for mitigation, the residual effects would be the same as those identified in the discussion of operational effects. Modifications to the design of the wind farm were integrated into the proposed wind farm as embedded mitigation.

Cumulative Effects

8.163 The cumulative assessment considers the *additional* effect of introducing the proposed wind farm into the landscape, assuming that all other developments under construction, consented, or subject to a valid application, are present. Other developments considered in the cumulative assessment are listed in Tables 8.15 and 8.16. Their locations are shown on Figures 8.26 and 8.27.

8.164 Patterns in wind farm development were examined across a 60 km radius study area. Cumulative effects on the landscape and on views were assessed by examining effects on landscape character types, designated landscapes, viewpoints, settlements and key routes across the 35 km study area. The assessment focuses on highlighting significant effects which would result from the addition of the proposed wind farm into a landscape in which other developments are assumed to be present. Minsca, Craig, Great Orton and Dalswinton Wind Farms have already been considered in the LVIA, as they are existing developments within the landscape. Potential landscape and visual effects arising as a result of the construction of the proposed wind farm will relate to the visibility of the turbines (addressed through the assessments below), or will be localised effects of other infrastructure and construction activities, which will not be altered by the presence of other windfarms in the wider landscape.

Potential Cumulative Effects of Operation

Development Patterns Across the Wider Area

8.165 When considering wind farm developments up to 60 km away from the proposed Solwaybank Wind Farm, clear trends in development can be seen. Figure 8.26 shows that developments (existing and proposed) can be grouped into broad regional groups, corresponding with the hill ranges in the area. There are groups of developments on several groups of hills across Dumfries and Galloway (the Langholm Hills, the Lowther Hills and Forest of Ae, west of Thornhill and around Castle Douglas). There are also a number of developments in the Scottish Borders, to the north-east, and further developments in Cumbria, following the coastal strip between the Lake District National Park and the shore to the south-west.

8.166 The developments considered in this assessment include three within the Forest of Ae (Dalswinton, Harestanes and Minnygap Wind Farms), five within the Langholm Hills (Minsca, Craig, Newfield and two schemes at Ewe Hill Wind Farm) and four in northern Cumbria (Beck Burn, Hallburn[50], Great Orton and Hell Rig Wind Farms), representing three of the broad groups identified in paragraph 8.165.

Cumulative Zones of Theoretical Visibility

8.167 Figure 8.28 shows the cumulative ZTV (CZTV) to tip height, indicating the number of wind farms (not the number of turbines) theoretically visible from any given point on the map. The figure illustrates that:

- at least one wind farm would be visible from almost all parts of the study area except the Southern Uplands to the north-east of the study area, if all wind farms modelled in the CZTV were built;
- multiple wind farms would be visible across Annandale and the lower land around the Solway Firth; and
- more wind farms would tend to be visible from hill tops. Narrow valleys and glens would tend to have only one or no wind farms visible.

8.168 These observations show that, from locations such as settlements and roads which are located in valleys, views of multiple wind farms would be less likely. Such views would be more likely when walking over the hill tops.

Paired CZTVs

8.169 Figures 8.29 to 8.31 show 'paired' CZTVs which are CZTVs constructed to show the proposed wind farm with only one or a small group of developments that lie within 15 km of the site. Three paired CZTVs have been prepared, showing the closest developments: with Minsca and Newfield Wind Farms, being to the north-west of the proposed wind farm, with Craig and Ewe Hill Wind Farms, being to the north and north-east of the site, and with Beck Burn Wind Farm, to the south of the site.

8.170 **Solwaybank Wind Farm paired with Minsca and Newfield Wind Farms:** This CZTV (Figure 8.29) shows that for much of the southern part of the study area, and high tops, all three wind farms would be visible (shown as yellow on the figure). Areas within Annandale and across the hills to the north of the Glentenmont Height to Haggy Hill ridge, would not have views of the Solwaybank Wind Farm, but are within the ZTVs of Minsca or Newfield Wind Farms (blue). Areas within the ZTV of Solwaybank Wind Farm, to the east of the site, towards Langholm, and restricted areas elsewhere to the north-east do not have visibility of Minsca or Newfield Wind Farms (green).

8.171 **The proposed wind farm paired with Craig and Ewe Hill Wind Farms:** This CZTV (Figure 8.30) shows that because Ewe Hill and Craig Wind Farms lie on higher ground to the north of Solwaybank Wind Farm site, their ZTVs overlap with that of Solwaybank Wind Farm to the south across lower lying land (yellow), but do not overlap to the north (blue), except on high ground. Very limited areas show potential visibility of Solwaybank Wind Farm where Craig or Ewe Hill wind farms are not visible (green).

8.172 **Solwaybank Wind Farm paired with Beck Burn Wind Farm:** This CZTV (Figure 8.31) shows that there is a high degree of overlap between the ZTVs of Solwaybank and Beck Burn Wind Farms to the south of the study area (yellow). Beck Burn Wind Farm is not visible from much of the ZTV of the

[50] Hallburn Windfarm is included in the cumulative assessment as it was an undetermined application at the cut off date (1st August 2011). Planning permission has since been refused.

proposed wind farm to the north of the site (green), due to the transition to upland landforms. Along valleys to the east of the study area, views of one, other or both of the wind farms is more varied.

Cumulative Effects on the Landscape

8.173 Potential cumulative effects on the site during the operational phase of the proposed wind farm were considered. The site changes from a forest/moorland site with other developments visible (four within 10 km include Minsca and Craig Wind Farms, and two schemes at Ewe Hill), with the addition of the turbines and infrastructure; to become a forest/moorland site with turbines on it as well as visible from it. This judged to be a Medium magnitude of change. The effect would be Moderate.

8.174 Potential cumulative effects on LCTs are discussed in Table 8.21. Cumulative effects on Foothills with Forest, and Narrow Wooded River Valleys LCTs have been scoped out of the assessment as landform and woodland cover reduce the potential for significant cumulative effects on these areas.

Table 8.21: Cumulative effects on Landscape Character

LCT Sensitivity (as stated in Table 8.12)	Discussion of Magnitude of Change and Cumulative Effect
Foothills LCT (D&G:18) Medium The proposed wind farm would be located within this LCT	The Annandale landscape unit of the Foothills LCT is host to the operational Minsca Wind Farm, 12 turbines of Newfield Wind Farm and four turbines of the consented Ewe Hill '6' Wind Farm, as well as the Ewe Hill Wind Farm and Newfield Wind Farm OHL. The addition of Solwaybank Wind Farm to the landscape within the Annandale landscape unit would increase the number of turbines in the area, but would not introduce these as new features. The cumulative change would be one of an increasing presence of turbines in the landscape, with four groups of turbines on higher ground within the landscape unit. These groups would be seen in combination from many parts of the landscape, both from within, and from outside, this unit. It is likely that this relatively small unit would be described as 'Foothills LCT with windfarms'. Overall, the cumulative magnitude of change to the Annandale landscape unit is judged to be medium, and the cumulative effect is judged to be **Moderate**. The Foothills LCT as a whole, occurs in several locations across the study area and wider across Dumfries and Galloway. Other units of the LCT may contain wind farm developments, such as Minnygap Wind Farm in the Beattock landscape unit. The addition of Solwaybank Wind Farm to the Annandale landscape unit would increase the presence of turbines in that unit of the LCT, but is judged to have a low magnitude of change for the LCT as a whole, and the cumulative effect is judged to be **Minor.**
Coastal Flats (D&G:2) Low	From this area, Solwaybank Wind Farm would be seen in the context of other developments on the southern edge of the Southern Uplands hill range, and further from the area than Beck Burn Wind Farm. The addition of a further group of turbines to those present is judged to be a Low magnitude of cumulative change, and the cumulative effect is judged to be **Negligible.**
Coastal Plateau (D&G:14) Low	From this LCT, Solwabank Wind Farm would be seen in the context of other development on the southern edge of the Southern Uplands hill range, and further from the area than Beck Burn Wind Farm. The addition of a further group of turbines to those present is judged to be a Low magnitude of cumulative change, and the cumulative effect is judged to be **Negligible.**
Flow Plateau (D&G:15) Medium	The Ewe Hill Wind Farm and Newfield Wind Farm OHL crosses part of this LCT. From this LCT, the proposed wind farm would be seen in the context of other development on the southern edge of the Southern Uplands hill range, albeit close to the LCT. Beck Burn Wind Farm is also close the LCT on the south side. The addition of a further close group of turbines to those present is judged to be a low magnitude of cumulative change, and the cumulative effect is judged to be **Minor.**
Upland Fringe (D&G:16) Medium	Part of Newfield Wind Farm lies within this LCT, and the Ewe Hill Wind Farm and Newfield Wind Farm OHL crosses it near the site. Solwaybank Wind Farm would be seen in the context of other development on the southern edge of the Southern Uplands hill range, albeit close to the LCT. The addition of a further close group of turbines to those present is judged to be a low magnitude of cumulative change, and the cumulative effect is judged to be **Minor.**
Southern Uplands (D&G:19) High	The Southern Uplands LCT is host to Craig Wind Farm, the 16 turbines of the Ewe Hill 'Section 36' scheme, and part of the Ewe Hill '6' scheme. Other parts of the LCT have views of further wind farms. Solwaybank Wind Farm would be seen as an additional group of turbines outside the LCT, in the context of other groups of turbines and the Ewe Hill Wind Farm and Newfield Wind Farm OHL around the fringe of the LCT. There is judged to be a Low magnitude of cumulative change, and the cumulative effect is judged to be **Negligible.**
Solway Basin (NCA:6) Low	From the Solway Basin, which hosts Great Orton, Hallburn and Beck Burn Wind Farms, Solwaybank Wind Farm would be seen in the context of other developments on the southern edge of the Southern Uplands hill range. The addition of a further group of turbines to those present to the north, is judged to be a Low magnitude of cumulative change, and the cumulative effect is judged to be **Negligible.**
Borders Moors and Forests (NCA:5) Medium	From this area, many views are obscured by forestry. However, where views are possible, the proposed wind farm would be seen in the context of other developments on the southern edge of the Southern Uplands hill range, and north of Beck Burn and Hallburn Wind Farms. The addition of a further group of turbines to those present in the distance outside the LCT, is judged to be a Low magnitude of cumulative change, and the cumulative effect is judged to be **Negligible.**

Cumulative Effects on Designated Landscapes

8.175 From each of the designated landscapes, Solwaybank Wind Farm would be seen in the context of the other developments on the hills around the site. The addition of Solwaybank Wind Farm would increase the number of groups of turbines across the wider landscape, but would not alter the overall perception of the landscape within and around the designations. It is therefore judged that there would be no significant cumulative effects on designated landscapes arising from the addition of Solwaybank Wind Farm in the context of the developments considered.

Cumulative Effects on Visual Amenity

Cumulative Effects on Views as Represented by Selected Viewpoints

8.176 The potential cumulative effects of Solwaybank Wind Farm were considered for five viewpoints from the LVIA (viewpoint locations are shown on Figure 8.28). Cumulative wireframes are provided in Figures 8.32 - 8.36, and the assessment is presented in Table 8.22.

8.177 The selection of the viewpoints used in the cumulative assessment was agreed through the consultation process (set out in Table 8.1). The viewpoints for the cumulative assessment were

selected as they represented open panoramic views, were relatively close to the site, and had other developments potentially visible. Viewpoints with restricted panoramas would not have views of other developments, and viewpoints further than approximately 15 km from the site would be unlikely to have significant cumulative effects, as it is considered that there is greater potential for cumulative effects in the local context. The five viewpoints selected are those listed in Table 8.22.

Table 8.22: Cumulative effects on Viewpoints

Viewpoint		Developments visible within 30km	Discussion of Magnitude of Change and Cumulative Effect (sensitivity as stated in assessments of viewpoints after paragraph 8.146)
1	High Stenries (Figure 8.32, see also Figure 8.8)	Ewe Hill (6 turbines) Ewe Hill (Section 36) Craig Minsca	Minsca, Craig and Ewe Hill turbines are visible on the horizon at roughly equal distances from the viewpoint (7 to 9 km). The Ewe Hill Wind Farm and Newfield Wind Farm OHL will also pass close to this viewpoint. The proposed wind farm would be introduced close to the viewpoint (1.6 km away). The turbines would relate to the more distant wind farms, but would be legible separate from those distant developments. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Negligible**.
7	Corrie Common (Figure 8.33, see also Figure 8.14)	Ewe Hill (6 turbines) Ewe Hill (Section 36) Minsca Newfield	Minsca, Craig, Ewe Hill (both schemes) and Newfield Wind Farms are visible on the horizon from this location. The Ewe Hill Wind Farm and Newfield Wind Farm OHL will pass close to this viewpoint. The proposed wind farm, seen as turbines low on the horizon, would add to the perception of distant turbine groups in the wider landscape around this viewpoint, occurring between the Ewe Hill turbine group and Minsca Wind Farm. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Minor**.
8	Malcolm Monument, Langholm (Figure 8.34, see also Figure 8.15)	Ewe Hill (6 turbines) Ewe Hill (Section 36) Craig Minsca Beck Burn Great Orton Hell Rig	From this location, wind farms are seen both on the hills to the west of the viewpoint, and on the lower lying land in the Solway Basin. The Solwaybank Wind Farm would be seen as one of the groups on the hills, albeit on lower land than Minsca, Craig or the Ewe Hill Wind Farms. The location of Solwaybank Wind Farm on this transitional land may reduce the current distinction between wind farms on high ground and wind farms on low ground. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Minor**.
9	Burnswark (Figure 8.35, see also Figure 8.16)	Ewe Hill (6 turbines) Ewe Hill (Section 36) Craig Minsca Beck Burn Hallburn Newfield	All of the wind farms considered are visible from Burnswark. Solwaybank Wind Farm would be seen to the right (south) of Minsca Wind Farm, but whilst it would relate to the other wind farms in the view, it would not alter the impression of multiple windfarms in the wider landscape. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Minor**.
		Great Orton Minnygap Hell Rig Harestanes Dalswinton	
10	Old Smithy, Gretna Green (Figure 8.36, see also Figure 8.17)	Ewe Hill (6 turbines) Ewe Hill (Section 36) Craig Minsca Beck Burn Hallburn Newfield	These wind farms are visible on the low lying hills to the north of the viewpoint, with the exception of Beck Burn Wind Farm, lying close to the viewpoint to the east, and Hallburn Wind Farm seen behind Beck Burn Wind Farm. Solwaybank Wind Farm would be seen in the context of the more distant wind farms on the hills, and would not alter the pattern of development in this view, as it would be seen directly in front of the Ewe Hill Wind Farms. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Minor**.

Cumulative Effects on Settlements

8.178 No significant cumulative effects were predicted for settlements, largely because theoretical visibility of Solwaybank Wind Farm, as shown on the ZTV, is very limited from settlements (see Table 8.19). Where the Solwaybank Wind Farm is visible, it would be seen in the context of the surrounding developments. Multiple developments would be visible from Gretna, Longtown, and other settlements to the south, but these settlements are considered to be too distant to experience a significant cumulative effect.

Cumulative Effects on Visual Amenity along Representative Routes

8.179 The potential cumulative effects of the proposed wind farm on visual amenity as experienced when travelling along routes were examined for all routes in the LVIA, as set out in Table 8.23.

Table 8.23: Cumulative Visual Effects on Routes

Route	Discussion of Magnitude of Change and Cumulative Effect (sensitivity as stated in Table 8.20)
A74(M), M6, West Coast Main Line Railway, National Cycle Route, B7076	Most of the wind farms considered are visible at some point along this corridor. Solwaybank Wind Farm would be seen in the context of Newfield, Minsca, Ewe Hill (both schemes) and Craig Wind Farms, when travelling north. Whilst it would add a further group of turbines to the wider landscape around the route, Solwaybank Wind Farm would have a low magnitude of cumulative change to experience of the route. The cumulative effect is judged to be **Negligible**.
A7	Beck Burn, Hallburn and Craig Wind Farms are closest to this route. Solwaybank Wind Farm m would be seen in the context of other distant turbine groups to the north of the route. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Negligible**.
A75	Beck Burn Wind Farm is closest to this route, although visibility is very limited north of Longtown and Canonbie. Where visible, Solwaybank Wind Farm would be seen in the context of other distant turbine groups in the wider landscape. The cumulative

Route	Discussion of Magnitude of Change and Cumulative Effect (sensitivity as stated in Table 8.20)
	magnitude of change is judged to be low and the cumulative effect is judged to be **Negligible**.
B7068	This route runs from Lockerbie to Langholm, passing north of Minsca Wind Farm and Solwaybank Wind Farm site. Other wind farms, including Newfield, Ewe Hill (both schemes) and Craig Wind Farms, are set back from the route to the north, and may only be glimpsed. Open views to the site include Beck Burn, Hallburn and Great Orton Wind Farms. The Ewe Hill Wind Farm and Newfield Wind Farm OHL will pass close to this route to the north, and cross it near Kirtleton. Solwaybank Wind Farm would be seen in the context of other developments around the route, and would be seen in combination, and in sequence, with Minsca Wind Farm for much of the route. The cumulative magnitude of change is judged to be high and the cumulative effect is judged to be **Moderate**.
B6357	The B6357 runs from Annan to Kirkpatrick Fleming, via Milltown to Canonbie and north-east to Newcastleton and Bonchester Bridge. Views of the wind farms on the hill slopes of the Southern Uplands are possible, with views to Beck Burn and Hallburn Wind Farms to the south also. The Ewe Hill Wind Farm and Newfield Wind Farm OHL will cross this route between Chapelknowe and Milltown. Solwaybank Wind Farm would be seen in the context of other turbine groups to the north of the route. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Minor**.
B722	The B722 runs north from Annan via Eaglesfield towards the site, terminating at the junction with the B7068 at Fallford/Kirtleton. Ewe Hill (both schemes) and Minsca Wind Farms are visible from this route, and Solwaybank Wind Farm would also be visible from sections of the route. The cumulative magnitude of change is judged to be medium and the cumulative effect is judged to be **Minor**.
Minor roads around the site	Views of Minsca, Ewe Hill (both schemes) Craig, Hallburn and Beck Burn Wind Farms, together with more distant views of Great Orton, are possible from these roads. The Ewe Hill Wind Farm and Newfield Wind Farm OHL will be seen from these routes. Solwaybank Wind Farm would be seen close to the routes, and would increase the number of groups of turbines in the landscape near the routes. The cumulative magnitude of change is judged to be medium and the cumulative effect is judged to be **Minor**.
Cumbrian Coastal Way/Hadrian's Wall Path/ NCR72	Wind farms are visible in the wider landscape around this route. T Solwaybank Wind Farm would be seen in the context of other distant turbine groups to the north of the route. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Negligible**.
National Cycle By-Way	This route crosses the study area via Hadrian's Wall, Newcastleton, Langholm, Gretna, Annan and Dumfries. From different sections of this route, there are different wind farms visible, seen in the context of the Southern Upland hills, or the lower lying Solway Basin. Solwaybank Wind Farm would be seen in the context of other turbine groups in the wider landscape around the route. The cumulative magnitude of change is judged to be low and the cumulative effect is judged to be **Negligible**.
Annandale Way	This route passes along Annandale, such that Solwaybank Wind Farm would be seen in the context of Minsca and Newfield which lie closer to the route than Solwaybank Wind Farm. Whilst it would add a further group of turbines to the wider landscape to the east of the route, Solwaybank Wind Farm would have a low magnitude of cumulative change to experience of the route. The cumulative effect is judged to be **Negligible**.

Residual Cumulative Effects

8.180 Given the limited opportunities for mitigation, the residual cumulative effects would be the same as those identified in the discussion of operational cumulative effects. Modifications to the design of the wind farm were integrated into the proposed wind farm as embedded mitigation.

Summary

8.181 Table 8.24 sets out all effects identified.

Table 8.24: Summary of Potential Effects, Mitigation and Residual Effects

Receptor	Likely Significant Effect	Mitigation Proposed	Outcome/Residual Effect
Landscape and Visual Effects during Construction			
Site	Major	Construction in accordance with an agreed Construction Method Statement which will also consider the requirements for reinstatements and restoration. Felling and replanting in accordance with the agreed Forest Design Plan.	Negligible
Effects on Landscape Character during Operation			
Site	Major	None	Major
Foothills LCT	Moderate locally for Annandale unit, Minor for LCT as a whole	None	Moderate locally for Annandale unit, Minor for LCT as a whole
Coastal Flats	Minor	None	Minor
Narrow Wooded River Valleys	Negligible	None	Negligible
Coastal Plateau	Negligible	None	Negligible
Upland Fringe	Negligible direct, Minor indirect	None	Negligible direct, Minor indirect
Flow Plateau	Minor	None	Minor
Foothills with forestry	Negligible	None	Negligible
Southern Uplands	Minor	None	Minor
Solway Basin	Minor	None	Minor
Borders Moors and Forests	Negligible	None	Negligible
Effects on Designated Landscapes during Operation			
Nith Estuary NSA	Negligible	None	Negligible
Langholm Hills RSA	Minor	None	Minor
Torthorwald Ridge RSA	Negligible	None	Negligible

Receptor	Likely Significant Effect	Mitigation Proposed	Outcome/Residual Effect
Solway Coast RSA	Negligible	None	Negligible
Solway Coast AONB	Minor	None	Minor
Liddel Water Landscape of County Importance	Negligible	None	Negligible
Hadrians Wall WHS	Negligible	None	Negligible
Visual Effects on Viewpoints during Operation			
Viewpoint 1: High Stenries	Moderate	None	Moderate
Viewpoint 2: Collin Burn	Major	None	Major
Viewpoint 3: B7068 west of Fallford	Major	None	Major
Viewpoint 4: Milltown	Moderate	None	Moderate
Viewpoint 5: B725 between Middlebie and Waterbeck	Moderate	None	Moderate
Viewpoint 6: Kirkpatrick Fleming	Minor	None	Minor
Viewpoint 7: Corrie Common	Minor	None	Minor
Viewpoint 8: Malcolm Monument, Langholm	Moderate	None	Moderate
Viewpoint 9: Burnswark	Moderate	None	Moderate
Viewpoint 10: The Old Smithy, Gretna Green	Minor	None	Minor
Viewpoint 11: Longtown	Negligible	None	Negligible
Viewpoint 12: Repentance Tower	Minor	None	Minor
Viewpoint 13: A6 Todhills	Negligible	None	Negligible
Viewpoint 14: Bowness-on-Solway	Minor	None	Minor
Viewpoint 15: Roan Fell	Negligible	None	Negligible
Viewpoint 16: Caerlaverock Castle	Negligible	None	Negligible
Viewpoint 17: Banks, Hadrians Wall	Negligible	None	Negligible
Viewpoint 18: White Coomb	Negligible	None	Negligible
Visual Effects on Settlements during Operation			
Kirtleton, Fallford and West Linnbridgeford	Moderate	None	Moderate
Milltown	Minor	None	Minor
Waterbeck	Minor	None	Minor
Langholm	Minor	None	Minor
Eaglesfield and Kirtlebridge	Minor	None	Minor
Gretna	Negligible	None	Negligible
Longtown	Negligible	None	Negligible
Annan	Negligible	None	Negligible
Carlisle	Negligible	None	Negligible
Brampton	Negligible	None	Negligible
Visual Effects on Routes during Operation			
A74(M), M6, West Coast Main Line Railway, National Cycle Route, B7076	Minor	None	Minor
A7	Minor	None	Minor
A75	Minor	None	Minor
B7068	Major close to the site, minor further away	None	Major close to the site, minor further away
B6357	Minor	None	Minor
B722	Minor	None	Minor
Minor roads around the site	Moderate	None	Moderate
Cumbrian Coastal Way/Hadrian's Wall Path/ NCR72	Negligible	None	Negligible
National Cycle Byway	Minor	None	Minor
Annandale Way	Negligible	None	Negligible
Cumulative Effects on Landscape Character during Operation			
Site	Moderate	None	Moderate
Foothills LCT	Moderate locally for	None	Moderate locally for

Receptor	Likely Significant Effect	Mitigation Proposed	Outcome/Residual Effect
	Annandale unit, Minor fro LCT as a whole		Annandale unit, Minor for LCT as a whole
Coastal Flats	Negligible	None	Negligible
Coastal Plateau	Negligible	None	Negligible
Flow Plateau	Minor	None	Minor
Upland Fringe	Minor	None	Minor
Southern Uplands	Negligible	None	Negligible
Solway Basin	Negligible	None	Negligible
Borders Moors and Forests	Negligible	None	Negligible
Cumulative Effects on Designated Landscapes during Operation			
No significant effects predicted			
Cumulative Effects on Viewpoints during Operation			
Viewpoint 1: High Stenries	Negligible	None	Negligible
Viewpoint 7: Corrie Common	Minor	None	Minor
Viewpoint 8: Malcolm Monument, Langholm	Minor	None	Minor
Viewpoint 9: Burnswark	Minor	None	Minor
Viewpoint 10: The Old Smithy, Gretna Green	Minor	None	Minor
Cumulative Visual Effects on Settlements during Operation			
No significant effects predicted			
Cumulative Visual Effects on Routes during Operation			
A74(M), M6, West Coast Main Line Railway, National Cycle Route, B7076	Negligible	None	Negligible
A7	Negligible	None	Negligible
A75	Negligible	None	Negligible
B7068	Moderate	None	Moderate
B6357	Minor	None	Minor
B722	Minor	None	Minor
minor roads	Minor	None	Minor
around the site			
Cumbrian Coastal Way/Hadrian's Wall Path/ NCR72	Negligible	None	Negligible
National Cycle Byway	Negligible	None	Negligible
Annandale Way	Negligible	None	Negligible