Technical Appendix 5.1: LVIA Methodology

A5.1.1 Introduction

A5.1.1.1 This Technical Appendix sets out the detailed methodology used for the Sclenteuch Wind Farm Landscape and Visual Impact Assessment (LVIA) and Cumulative Landscape and Visual Impact Assessment (CLVIA) contained in Chapter 5: LVIA, in Volume 1 of the Environmental Impact Assessment Report (EIA Report).

A5.1.1.2 Landscape and visual assessments are separate, although linked, processes. LVIA therefore considers the likely effects of a Proposed Development on:

- Landscape as a resource in its own right (caused by changes to the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape); and
- Views and visual amenity as experienced by people (caused by changes in the appearance of the landscape).

A5.1.1.3 LVIA deals with landscape and visual effects separately, followed by an assessment of cumulative landscape and visual effects where relevant.

A5.1.1.4 This Technical Appendix also provides details of the approach to viewpoint photography, and the generation of Zone of Theoretical Visibility (ZTV) and visualisations.

A5.1.2 Guidance

A5.1.2.1 This methodology has been developed by Chartered Landscape Architects (Chartered Members of the Landscape Institute (CMLI)) at Land Use Consultants Ltd (LUC), who have extensive experience in the assessment of landscape and visual effects arising from wind energy developments.

A5.1.2.2 The methodology has been developed primarily in accordance with the principles contained within the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3). Other methodological guidance which has informed the approach to this LVIA is listed below:

- Landscape Institute and the Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition ('GLVIA3');
- Countryside Agency and SNH (2002), Landscape Character Assessment: Guidance for England and Scotland;
- SNH (2018) A Handbook on Environmental Impact Assessment, Technical Appendix 2: Landscape and Visual Impact Assessment, Version 5;
- SNH (2017) Visual Representation of Wind Farms, Version 2.2;
- NatureScot (2020) Assessing impacts on Wild Land Areas - Technical Guidance;
- NatureScot (2020) Draft Landscape Sensitivity Assessment Guidance (final version expected in 2021);
- Landscape Institute (2019) Technical Guidance Note 06/19 Visual representation of development proposals;
- Landscape Institute (2019) Technical Guidance Note 02/19 Residential Visual Amenity Assessment;
- Nature Scot (2021) Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments; and
- Landscape Institute (2021) Technical Guidance Note 02/21 Assessing landscape value outside national designations.

A5.1.3 Scope of Assessment

A5.1.3.1 An LVIA considers physical changes to the landscape as well as changes in landscape character. It also considers changes to areas designated for their scenic or landscape qualities, and the visual impacts of a Proposed Development as perceived by people.

A5.1.3.2 All potentially significant landscape and visual effects (including cumulative effects) are examined, including those relating to construction, operation and, where relevant, decommissioning.

A5.1.3.3 Where it is judged that significant effects are unlikely to occur, the assessment of effects on some receptors may be 'scoped out'. For an Environmental Impact Assessment (EIA) development this is usually agreed at scoping stage. Details of scope are provided in Chapter 5: LVIA.

A5.1.4 Assessment Methodology

Study Area

A5.1.4.1 The study area for an LVIA is determined by the nature and scale of the development proposed and the nature of the study area (e.g. complex topography or extensive tree cover leading to visually enclosed areas may limit the extent of likely significant effects).

Methodological Overview

A5.1.4.2 The key steps in the methodology for assessing landscape and visual effects are as follows:

- the landscape of the study area is analysed, and landscape receptors identified, informed by desk and field-survey;
- the area over which the development will potentially be visible is established through the creation of an initial ZTV plan;
- the visual baseline is recorded in terms of the different receptors (groups of people) who may experience views of the development (informed by the initial ZTV) and the nature of their existing views and visual amenity;
- potential assessment viewpoints are selected, as advocated by GLVIA3 to represent a range of different receptors and views, in consultation with statutory consultees:
  - *"**Representative viewpoints**, selected to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually and where the significant effects are unlikely to differ – for example, certain points may be chosen to represent the views of users of particular public footpaths and bridleways;*
  - ***Specific viewpoints**, chosen because they are key and sometimes promoted viewpoints within the landscape, including for example specific local visitor attractions, viewpoints in areas of particularly noteworthy visual and/or recreational amenity such as landscapes with statutory landscape designations, or viewpoints with particular cultural landscape associations; and*

– ***Illustrative viewpoints**, chosen specifically to demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations*" (GLVIA3, Para 6.19, Page 109).

- likely significant effects on both the landscape as a resource and visual receptors are identified; and
- the level (and significance) of landscape and visual effects are judged with reference to the nature of the receptor (commonly referred to as the sensitivity of the receptor), which considers both susceptibility and value, and the nature of the effect (commonly referred to as the magnitude of effect), which considers a combination of judgements including size/scale, geographical extent, duration and reversibility.

Direction of Effects

A5.1.4.3 As required by the EIA Regulations, the assessment must identify the direction of effect as either being **beneficial**, **adverse** or **neutral**.

A5.1.4.4 The direction of landscape, visual and cumulative effects is determined in relation to the degree to which the proposal fits with the existing landscape character or views, and the contribution to the landscape or views that the Proposed Development makes, even if it is in contrast to the existing character of the landscape or views.

A5.1.4.5 With regard to wind energy development, whilst there is a broad spectrum of response from the strongly positive to the strongly negative, an assessment is required to take an objective approach. Therefore, to cover the 'maximum effect' situation, landscape and visual effects (including cumulative effects) relating to commercial scale wind farm developments are generally assumed to be adverse (negative).

A5.1.5 Method for Assessing Landscape Effects

A5.1.5.1 As outlined in GLVIA3: *'An assessment of landscape effects deals with the effects of change and development on landscape as a resource.'* (GLVIA3, Para 5.1, Page 70). The introduction of a development could affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

A5.1.5.2 An assessment of landscape effects requires consideration of the nature of landscape receptors (sensitivity of the receptor) and the nature of the effect on those receptors (magnitude of effect). GLVIA3 states that the nature of landscape receptors, commonly referred to as their sensitivity, should be assessed in terms of the susceptibility of the receptor to the type of change proposed, and the value attached to the receptor. The nature of the effect on each landscape receptor, commonly referred to as its magnitude, should be assessed in terms of size and scale of effect, geographical extent, duration and reversibility.

A5.1.5.3 These aspects are considered together, to form a judgement regarding the overall significance of landscape effects (GLVIA3, Figure 5.1 Page 71). The following sections set out the methodology used to evaluate sensitivity and magnitude.

Sensitivity of Landscape Receptors

A5.1.5.4 Landscape receptors are the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape in different areas (GLVIA3, Para. 3.21, Page 36). The sensitivity of a landscape receptor to change is defined as **high**, **medium** or **low** and is based on weighing up professional judgements regarding susceptibility and value, as set out in the table below.

	Higher		Lower
Susceptibility	Attributes that make up the character of the landscape offer very limited opportunities for the accommodation of change without key characteristics being fundamentally altered by wind energy development, leading to a different landscape character.	← →	Attributes that make up the character of the landscape are resilient to being changed by wind energy development.
Value	Landscapes with high scenic quality, high conservation interest, recreational value, important cultural associations or a high degree of rarity. Areas or features designated at a national level e.g. National Parks or National Scenic Areas or key features of these with national policy level protection.	← →	Landscape of poor condition and intactness, limited aesthetic qualities, or of character that is widespread. Areas or features that are not formally designated.

A5.1.5.5 There may be a complex relationship between the value attached to a landscape and the susceptibility of the landscape to a specific change. For example, whilst landscape designations at an international or national level are likely to be accorded the highest value, it does not necessarily follow that such landscapes all have a high susceptibility to all types of change, and conversely, undesignated landscapes may also have high value and susceptibility to change (GLVIA3, Page 90). Therefore, the rationale for judgements of sensitivity needs to be clearly set out for each receptor. Further information on the criteria is provided below.

Susceptibility of Landscape Receptors

A5.1.5.6 Susceptibility is defined by GLVIA3 as 'the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the Proposed Development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies' (GLVIA3 paragraph 5.40).

A5.1.5.7 A series of criteria are used to evaluate the susceptibility of landscape receptors to wind energy development, as set out in the table below. These criteria or aspects are drawn from a range of published sources relating to wind farm development, including SNH's Siting and Designing Windfarms in the Landscape and GLVIA3.

	Aspects indicating reduced susceptibility to wind energy development		Aspects indicating greater susceptibility to wind energy development
Scale	Large scale	← →	Small scale
Value	Absence of strong topographical variety, featureless, convex or flat	← →	Presence of strong topographical variety or distinctive landform features
Landscape pattern and complexity	Simple	← →	Complex
Settlement and man-made influence	Regular or uniform	← →	Rugged and irregular
Skylines	Presence of contemporary structures e.g. utility, infrastructure or industrial elements	← →	Absence of modern development
Inter-visibility with adjacent landscapes	Non-prominent /screened skylines	← →	Presence of small scale, historic or vernacular settlement
Perceptual aspects	Presence of existing modern man-made features	← →	Distinctive, undeveloped skylines

A5.1.5.8 Published landscape capacity or sensitivity studies (where they exist) may be reviewed to inform the evaluation of susceptibility, in addition to fieldwork undertaken across the study area. This review includes an evaluation as to the relevance of the publication to the assessment being undertaken (e.g. consideration of the purpose and scope of the published studies and whether they have become out of date).

A5.1.5.9 Landscape susceptibility is described as being **high**, **medium** or **low**.

Value of Landscape Receptors

A5.1.5.10 The European Landscape Convention advocates that all landscape is of value, whether it is the subject of defined landscape designation or not: '*The landscape is important as a component of the environment and of people's surroundings in both town and country and whether it is ordinary landscape or outstanding landscape*' (Explanatory Report to the European Landscape Convention, Page 6). The value of a landscape receptor is recognised as being a key contributing factor to the sensitivity of landscape receptors.

A5.1.5.11 The value of landscape receptors is determined with reference to:

- Review of relevant designations and the level of policy importance that they signify (such as landscapes designated at international, national or local level); and/or
- Application of criteria that indicate value (such as scenic quality, rarity, recreational value, representativeness, conservation interests, perceptual aspects and artistic associations) as described in GLVIA3, paragraphs 5.44 - 5.47.

A5.1.5.12 Internationally and nationally designated landscapes would generally indicate landscape of higher value whereas those without formal designation (such as a widespread or common landscape type without high scenic quality) are likely to be of lower value, bearing in mind that all landscapes are valued at some level. There is however variation across both designated and undesignated areas, and so judgements regarding value are also informed by fieldwork.

A5.1.5.13 Landscape value is described as being **high**, **medium** or **low**.

A5.1.5.14 Magnitude of Landscape Effect

A5.1.5.15 The overall judgement of magnitude of landscape impact is based on combining professional judgements on size or scale of effect, geographical extent, duration and reversibility. Further information on the criteria is provided below.

Scale of Effect

A5.1.5.16 For landscape elements/features this depends on the extent of existing landscape elements that would be lost or changed, the proportion of the total extent that this represents, and the contribution of that element to the character of the landscape.

A5.1.5.17 In terms of landscape character, this reflects the degree to which the character of the landscape would change as a result of removal or addition of landscape components, and how the changes would affect key characteristics.

A5.1.5.18 The scale of the effect is described as being **large**, **medium**, **small**, or **barely perceptible**.

Geographical Extent of Effect

A5.1.5.19 The geographical extent over which the landscape effect would arise is described as being **large** (scale of the landscape character type, or widespread, affecting several landscape types or character areas), **medium** (more immediate surroundings) or **small** (site level).

Duration of Effect

A5.1.5.20 GLVIA3 states that '*Duration can usually be simply judged on a scale such as short term, medium term or long term*' (GLVIA3, Page 91). For the purposes of the assessment, duration is often determined in relation to the phases of the Proposed Development, as follows:

- **Short-term** effects are those that occur during construction, and may extend into the early part of the operational phase, e.g. construction activities, generally lasting less than 5 years;
- **Medium-term** effects are those that occur during part of the operational phase, generally lasting 5 - 10 years; and
- **Long-term** effects are those which occur throughout the operational phase, e.g. presence of turbines, or are permanent effects which continue after the operational phase, generally lasting over 10 years.

Reversibility of Effect

A5.1.5.21 In accordance with the principles contained within GLVIA3, reversibility is reported as **reversible**, **partially reversible** or **irreversible** (i.e. permanent), and is related to whether the change can be reversed at the end of the phase of development under consideration (i.e. at the end of construction or at the end of the operational lifespan of the development).

A5.1.5.22 Judgements on the magnitude of landscape effect (nature of landscape effect) are recorded as **high**, **medium** or **low** and are guided by the table below.

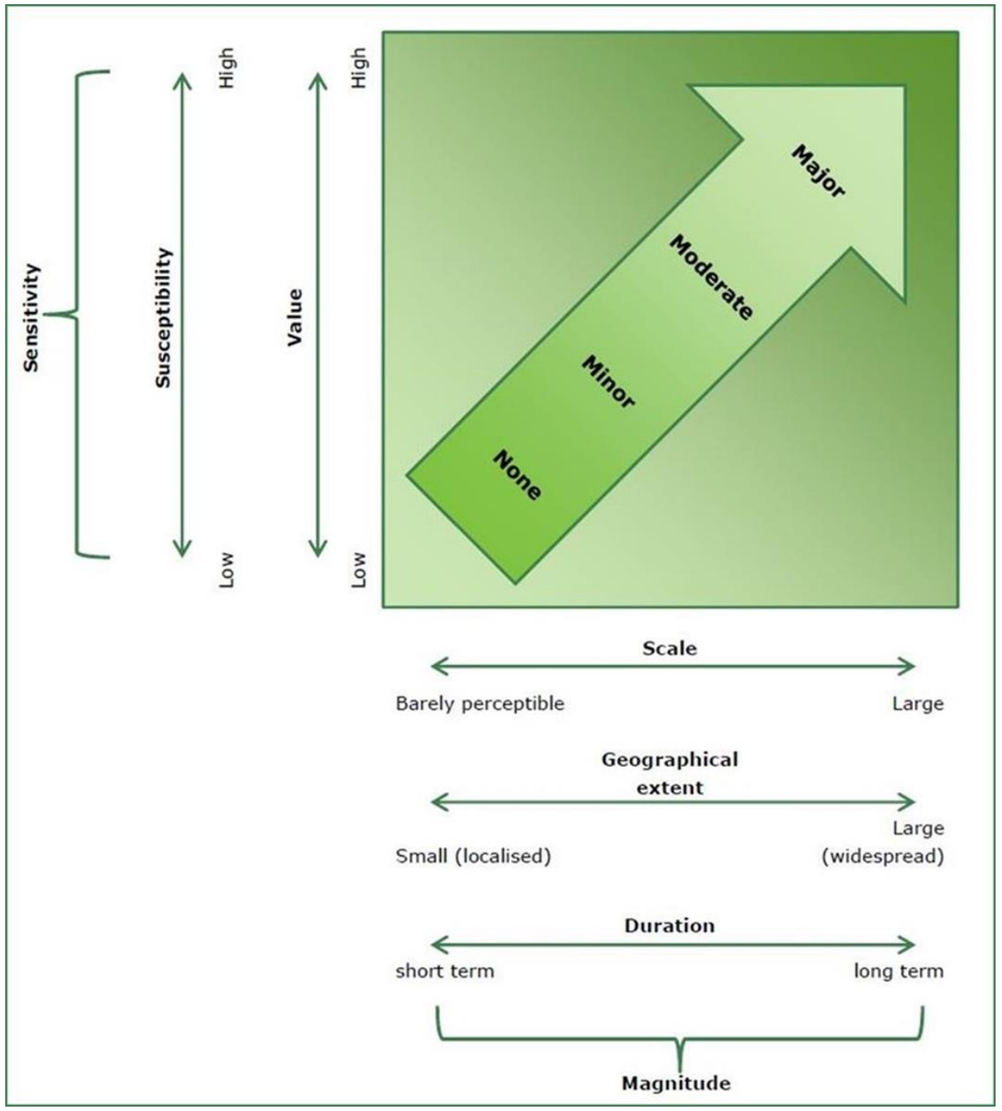
	Higher		Lower
Scale	Extensive loss of landscape features and/or elements, and/or change in, or loss of key landscape characteristics, and/or creation of new key landscape characteristics	← →	Limited loss of landscape features and/or elements, and/or change in or loss of some secondary landscape characteristics
Geographical Extent	Change in landscape features and/or character extending considerably beyond the immediate Proposed Development Area and potentially affecting multiple landscape character types/areas	← →	Change in landscape features and/or character extending contained within or local to the immediate Proposed Development Area and affecting only a small part of the landscape character type/area
Duration	Changes experienced for a period of around 10 years or more	← →	Changes experienced for a shorter period of up to 5 years
Reversibility	Change to features, elements or character which cannot be undone or are only partly reversible after a long period	← →	A temporary landscape change which is largely reversible following the completion of construction, or decommissioning of the development

Judging Levels of Landscape Effect and Significance

A5.1.5.23 The final step in the assessment requires the judgements of sensitivity and magnitude of effect to be combined to make an informed professional assessment on the significance of each landscape effect (GLVIA3, Figure 5.1, Page 71).

A5.1.5.24 Although a numerical or formal weighting system is not applied, consideration of the relative importance of each aspect is made to feed into the overall decision. Levels of effect are identified as **major**, **moderate**, **minor** or **none**. Major and moderate effects are considered significant in the context of the EIA Regulations.

A5.1.5.25 This determination requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. Judgements are made on a case-by-case basis, guided by the principles set out in Diagram 1 below. A rigid matrix-type approach, which does not take on board professional judgement and experience, and where the level of effect is defined simply based on the level of sensitivity (nature of receptor) combined with the magnitude of change (nature of effect), is not used. As such, the conclusion on the level of effect is not always the same.



A5.1.1.5 Diagram 1: Judging levels of effect – Landscape or Visual (including cumulative)

A5.1.6 Method for Assessing Visual Effects

A5.1.6.1 As outlined in GLVIA3: 'An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity' (GLVIA3, Para 6.1, Page 98). Changes in views may be experienced by people at different locations within the study area including from static locations (normally assessed using representative viewpoints) and whilst moving through the landscape (normally referred to as sequential views, e.g. from roads and walking routes).

A5.1.6.2 Visual receptors are individuals or groups of people who may be affected by changes in views and visual amenity. They are usually grouped by their occupation or activity (e.g. residents, motorists, recreational users) and the extent to which their attention is focused on the view (GLVIA3, Paras. 6.31 – 6.32, Page 113).

A5.1.6.3 GLVIA3 states that the sensitivity of visual receptors should be assessed in terms of the susceptibility of the receptor to change in views and/or visual amenity and the value attached to particular views. The magnitude of effect should be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect.

A5.1.6.4 These aspects are considered together, to form a judgement regarding the overall significance of visual effect (GLVIA3, Figure 6.1, Page 99). The following sections set out the methodology used to evaluate sensitivity and magnitude.

Sensitivity of Visual Receptors

A5.1.6.5 The sensitivity of a visual receptor to change is defined as **high**, **medium** or **low** and is based on weighing up professional judgements regarding susceptibility and value, and each of their component considerations, as set out in the table below.

	Higher		Lower
Susceptibility	Viewers whose attention or interest is focused on their surroundings, including communities/ individual residential receptors/ people engaged in outdoor recreation/ visitors to heritage assets or other attractions where views of surrounding area an important contributor.	← →	People whose attention is not on their surroundings (and where setting is not important to the quality of working life) such as commuters/ people engaged in outdoor sports/ people at their place of work.
Value	Views may be recorded in management plans, guide books, and/or which are likely to be experienced by large numbers of people.	← →	Views which are not documented or protected.

A5.1.6.6 The sensitivity of visual receptors may involve a complex relationship between a visual receptor's (e.g. person's) susceptibility to change and the value attached to a view. Therefore, the rationale for judgements of sensitivity is clearly set out for each receptor in relation to both its susceptibility (to the type of change proposed) and its value. Further information on the criteria is provided below.

Susceptibility of Visual Receptor

A5.1.6.7 The susceptibility of visual receptors to changes in views/visual amenity is a function of the occupation or activity of people experiencing the view and the extent to which their attention is focused on views (GLVIA 3, para 6.32). This is recorded as **high**, **medium** or **low** informed by the table below.

High	Medium	Low
People whose attention or interest is focussed on their surroundings, including: • communities where views contribute to the landscape setting enjoyed by residents; • people engaged in outdoor recreation (including users of cycle routes, footpaths and public rights of way whose interest is likely to be focused on the landscape); • visitors to heritage assets or other attractions where views of surroundings are an important contributor to experience; and • visitors to formal or promoted stopping places on scenic or tourist routes.	People travelling in vehicles on scenic routes and tourist routes, where attention is focused on the surrounding landscape, but is transitory; and People at their place of work whose attention is focused on the surroundings and where setting is important to the quality of working life.	People travelling rapidly on major roads, rail or transport routes (not recognised as scenic routes); People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; and People at their place of work whose attention is not on their surroundings (and where setting is not important to the quality of working life).

Value of View or Visual Amenity

A5.1.6.8 GLVIA3 also requires evaluation of the value attached to the view or visual amenity and relates this to planning designations and cultural associations (GLVIA3, Para. 6.37, Page 114).

A5.1.6.9 Recognition of the value of a view is determined with reference to:

- planning designations specific to views;
- whether it is recorded as important in relation to designated landscapes (such as views specifically mentioned in the special qualities of a National Scenic Area);
- whether it is recorded as important in relation to heritage assets (such as designed views recorded in citations of Gardens and Designed Landscapes or views recorded as of importance in Conservation Area Appraisals); and
- the value attached to views by visitors, for example through appearances in guidebooks or on tourist maps, provision of facilities for their enjoyment and references to them in literature and art.

A5.1.6.10 A designated viewpoint or scenic route advertised on maps and in tourist information, or which is a significant destination in its own right, such as a Munro summit, is likely to indicate a view of higher

value. High value views may also be recognised in relation to the special qualities of a designated landscape or heritage asset, or it may be a view familiar from photographs or paintings.

A5.1.6.11 Views experienced from viewpoints or routes not recognised formally or advertised in tourist information, or which are not provided with interpretation or, in some cases, formal access, are likely to be of lower value.

A5.1.6.12 Judgements on the value of views or visual amenity are recorded as **high**, **medium** or **low**.

Magnitude of Visual Effect

A5.1.1.6 The overall judgement of magnitude of visual effect (nature of visual effect) is based on weighing up professional judgements on size or scale of the effect, geographical extent, duration and reversibility. Further information on these criteria is provided below.

Scale of Effect

A5.1.6.13 The scale of a visual change depends on:

- the scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the Proposed Development;
- the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture; and
- the nature of the view of the Proposed Development, in terms of the relative amount of time over which it will be experienced and whether views will be full, partial or glimpses.

A5.1.6.14 All changes are assumed to be during winter, representing a 'maximum case effect' or 'worst case effect' scenario with minimal screening by vegetation and deciduous trees. Note that wireframes and ZTVs prepared to illustrate potential visual effects are calculated on the basis of bare ground and therefore demonstrate the maximum extent of visibility possible, in the absence of buildings or vegetation. Where forestry is present, consideration is given to felling regimes if levels of screening by forestry are likely to change notably during the lifetime of the Proposed Development.

A5.1.6.15 In this assessment size/scale of visual change is described as being **large**, **medium**, **small** or **barely perceptible**.

Geographical Extent

A5.1.6.16 The geographical extent of a visual change records the extent of the area over which the changes will be visible e.g. whether this is a unique viewpoint from where the proposed wind farm can be glimpsed, or whether it represents a large area from which similar views are gained. Geographical extent is described as being **large**, **medium** or **small**.

Duration

A5.1.6.17 The duration of visual effects is reported as **short-term**, **medium-term** or **long-term**, as defined for the duration of landscape effects (see above).

Reversibility

A5.1.6.18 Reversibility is reported as **irreversible** (i.e. permanent), **partially reversible** or **reversible**, and is related to whether the visual change can be reversed at the end of the phase of development under consideration (i.e. at the end of construction or at the end of the operational lifespan of the development). Operational visual effects are generally considered to be partially reversible as the decommissioning phase will remove turbines and most infrastructure at the end of the operational phase.

A5.1.6.19 Judgements on the magnitude of visual effect are recorded as **high**, **medium** or **low** guided by the table below.

	Higher		Lower
Scale	A large visual change resulting from the Proposed Development is the most notable aspect of the view, perhaps as a result of the development being in close proximity, or because a substantial part of the view is affected, or because the development introduces a new focal point and/or provides contrast with the existing view and/or changes the scenic qualities of the view.	← →	A small or some visual change resulting from the Proposed Development as a minor or generally unnoticed aspect of the view, perhaps as a result of the development being in the distance, or because only a small part of the view is affected, and/or because the development does not introduce a new focal point or is in contrast with the existing view and/ does not change the scenic qualities of the view.
Geographical Extent	The assessment location is clearly representative of similar visual effects over an extensive geographic area.	← →	The assessment location clearly represents a small geographic area.
Duration	Visual change experienced over around 10 years or more.	← →	Visual change experienced over a short period of up to 5 years.
Reversibility	A permanent visual change which is not reversible or only partially reversible following decommissioning of the Proposed Development.	← →	A temporary visual change which is largely reversible following the completion of construction, or decommissioning, of the Proposed Development.

Judging the Level of Visual Effect and Significance

A5.1.6.20 As for landscape effects, the final step in the assessment requires the judgements of sensitivity of visual receptor and magnitude of visual effect to be combined to make an informed professional assessment on the significance of each visual effect.

A5.1.6.21 A rigid matrix-type approach, where the level of visual effect is defined simply based on the level of sensitivity combined with the magnitude of effect is not used. As such, the conclusion on the level of effect is not always the same. Although a numerical or formal weighting system is not applied, consideration of the relative importance of each aspect is made to feed into the overall decision. Levels of visual effect are identified as **major**, **moderate**, **minor** or **none**. Major and moderate effects are considered significant in the context of the EIA Regulations.

A5.1.6.22 This determination requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. As such, the conclusion on the level of effect is not always the same. Judgements are made on a case-by-case basis, guided by the same principles as set out in Diagram 1 above.

A5.1.7 Cumulative Landscape and Visual Impact assessment

A5.1.7.1 The aim of a Cumulative Landscape and Visual Impact Assessment (CLVIA) is to 'describe, visually represent and assess the ways in which a proposed windfarm would have additional impacts when considered together with other existing, consented or proposed windfarms' (SNH, 2012, Para. 55).

A5.1.7.2 The cumulative assessment therefore focuses on the additional cumulative change which may result from the introduction of a Proposed Development. The cumulative assessment may also make reference to total (also referred to as combined) cumulative effects, where these have the potential to be significant. A cumulative assessment may also consider the potential interactions between different types of development (e.g. transmission infrastructure, other energy generation stations or other built development) if these are likely to result in similar landscape and visual impacts.

A5.1.7.3 As with an LVIA, a CLVIA deals with cumulative landscape and visual effects separately.

Differences between LVIA and CLVIA

A5.1.7.4 Although both LVIA and CLVIA look at the effects of a Proposed Development on the landscape and on views, there are differences in the baseline against which the assessments are carried out.

A5.1.7.5 For the LVIA, the baseline includes existing wind farm developments which are present in the landscape at the time of undertaking the assessment, which may be either operational or under construction as they form a part of the baseline situation. Their presence has the potential to influence the assessment of effects on landscape character and the assessment of effects on views. For the CLVIA the baseline is partially speculative and includes (in addition to existing wind farms):

- Scenario 1: wind farms which have been granted planning consent but are not yet constructed (consented); and
- Scenario 2: submitted valid wind farm applications which are currently awaiting determination by the relevant consenting authority, including those at appeal and in some instances those currently at scoping when specifically requested (proposed).

A5.1.7.6 A cut-off date of 30 April 2022 was applied for the inclusion of developments within the cumulative assessment.

Types of Cumulative Effects

A5.1.7.7 SNH (2012) states that 'cumulative landscape effects can impact on either the physical fabric or character of the landscape, or any special values attached to it' (SNH, 2012, Para. 48).

A5.1.7.8 Three types of cumulative effects on visual amenity are considered in the assessment: combined, successive and sequential:

- Combined effects occur where a static viewer is able to view two or more wind farms from a viewpoint within the viewers' same arc of vision (assumed to be about 90 degrees for the purpose of the assessment);
- Successive effects occur where a static viewer is able to view two or more wind farms from a viewpoint, but needs to turn to see them; and
- Sequential effects occur when a viewer is moving through the landscape 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 wind farms at the same, or at different times as they pass along the route. Frequently sequential effects occur where wind farms appear regularly, with short time lapses between points of visibility. Occasionally sequential effects occur where long periods of time lapse between views of wind farms, depending on speed of travel and distance between viewpoints.

Assessment Methodology for CLVIA

A5.1.7.9 The CLVIA considers the potential effects of the addition of a Proposed Development, against a landscape baseline that includes wind farms that may or may not be present in the landscape in the future, i.e. wind farms that are consented but not yet built, and/or undetermined planning applications. The wind farms included in each scenario are assumed to be present in the landscape for the purposes of the CLVIA.

A5.1.7.10 The methodology for the CLVIA follows that of the LVIA, which considers the introduction of a Proposed Development to a baseline which includes existing (operational and under construction) wind farms. The size and scale of cumulative change focuses on:

- the pattern and arrangement of wind farms in the landscape or view, e.g. developments seen in one direction or part of the view (combined views), or seen in different directions (successive views in which the viewer must turn) or developments seen sequentially along a route;
- the relationship between the scale of the wind farms, including turbine size and number, and if wind farms appear balanced in views in terms of their composition, or at odds with one another;
- the position of the wind farms in the landscape, e.g. in similar landscape or topographical context;
- the position of the wind farms in the view, e.g. on the skyline or against the backdrop of land; or how the Proposed Development will be seen in association with another development (separate, together, behind etc.); and
- the distances between wind farms, and their distances from the viewer.

A5.1.8 Significance of Cumulative Effects

A5.1.8.1 As for a LVIA, judging the significance of cumulative landscape and visual effects requires consideration of the sensitivity of receptors and the magnitude of effect on those receptors. The following sections set out the methodology applied for the assessment of cumulative effects for both landscape and visual receptors and explains the terms used.

A5.1.9 Method for Assessing Cumulative Landscape Effects

Sensitivity

A5.1.9.1 An assessment of cumulative landscape effects requires consideration of the sensitivity of the landscape receptors, which is recorded in the LVIA using the methodology described above.

Magnitude of Cumulative Landscape Effects

A5.1.9.2 Similar to the methodology applied for an LVIA, the magnitude of cumulative landscape effect (nature of cumulative landscape effect) is based on combining professional judgements on size or scale, geographical extent, duration and reversibility. Judgements on the magnitude of cumulative landscape effect (nature of cumulative visual effect) are recorded as high, medium or low.

Scale

A5.1.9.3 The scale of cumulative landscape change is the additional influence the Proposed Development has on the characteristics and character of the area assuming the other wind farm developments considered in the CLVIA baseline scenarios are already present in the landscape. This is influenced by:

- how the proposal fits with existing pattern of cumulative wind farm development, including the relationship to landscape character types and areas; and
- the siting and design of the Proposed Development in relation to other existing and proposed wind farm developments (including distance between wind farms, composition, size and scale).

Geographical Extent

A5.1.9.4 As for the LVIA, the geographical extent over which the cumulative landscape change will be experienced is described as being **large** (scale of the landscape character type or widespread, affecting several landscape types or character areas), **medium** (immediate surroundings) or **small** (site level).

Duration & Reversibility

A5.1.9.5 For the purpose of the cumulative landscape assessment consideration of the judgements of the duration and reversibility of landscape effects are as recorded in the LVIA.

Levels of Cumulative Landscape Effect and Significance

A5.1.9.6 The final step in the assessment of cumulative landscape effects requires the judgements of sensitivity and magnitude of cumulative landscape effect to be combined to make an informed professional assessment on the significance of each cumulative landscape effect.

A5.1.9.7 As for the LVIA, the levels of cumulative landscape effect are described as major, moderate, minor or none. Major and moderate cumulative landscape effects are considered significant in the context of the EIA Regulations.

A5.1.9.8 More significant effects are likely where:

- the Proposed Development extends or intensifies a landscape effect;
- the Proposed Development 'fills' an area such that it alters the landscape resource; and / or
- the interaction between the Proposed Development and other wind farm developments means that the total effect on the landscape is greater than the sum of its parts.

A5.1.9.9 GLVIA 3 states *'The most significant cumulative landscape effects are likely to be those that would give rise to changes in the landscape character of the study area of such an extent as to have major effects on its key characteristics and even, in some cases, to transform it into a different landscape type. This may be the case where the project being considered itself tips the balance through its additional effects. The emphasis must always remain on the main project being assessed and how or whether it adds to or combines with the others being considered to create a significant cumulative effect'* (GLVIA 3, Para 7.28).

A5.1.9.10 This determination of cumulative landscape effects requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. Judgements are made on a case-by-case basis, guided by the same principles as set out in Diagram 1 above.

A5.1.10 Method for Assessing Cumulative Visual Effects

Sensitivity

A5.1.10.1 The assessment of the significance of cumulative visual effects requires consideration of the sensitivity of the visual receptors. This requires consideration of susceptibility and value, and is as recorded in the LVIA.

Magnitude of Cumulative Visual Effects

A5.1.10.2 As for cumulative landscape effects and the methodology for the LVIA, the magnitude of cumulative visual effect (nature of cumulative visual effect) is based on combining professional judgements on size or scale; geographical extent; duration and reversibility. Judgements on the magnitude of cumulative visual effect (nature of cumulative visual effect) are recorded as **high**, **medium**, **low** or **barely perceptible**.

Scale

A5.1.10.3 The scale of cumulative change to views depends on the additional influence the Proposed Development has on views assuming the other wind farm developments are already present in the landscape. This is influenced by:

- whether the Proposed Development introduces development into a new part of the view so that the proportion of the developed part of the view increases;
- the relationship between the Proposed Development and other wind farm developments in terms of design, size and layout;
- the apparent visual relationship of cumulative wind farm developments to landscape character types and or landscape character areas; and/or
- in the case of magnitude of change to routes, the relative duration of views of wind farm developments from routes.

A5.1.10.4 There has to be clear visibility of more than one wind farm development, of which one must be the Proposed Development, for there to be a cumulative effect (given this is an assessment of the effects of the Proposed Development and not a broader CLVIA of combined cumulative effects). Where the Proposed Development is clearly visible and other wind farm developments are not, the effect is likely to be the same as recorded in the LVIA (i.e. the effect is not a cumulative effect).

Geographical Extent

A5.1.10.5 As for the LVIA, the geographical extent of cumulative visual changes records the extent of the area over which the changes will be visible e.g. whether this is a unique viewpoint from where the proposed wind farm can be glimpsed, or whether it represents a large area from which similar views are gained from large areas. Geographical extent is described as being **large**, **medium** or **small**.

Duration & Reversibility

A5.1.10.6 For the purpose of the cumulative visual assessment consideration of the judgements of the duration and reversibility of visual effects are as recorded in the LVIA.

Levels of Cumulative Visual Effect and Significance

A5.1.10.7 The final step in the assessment of cumulative visual effects requires the judgements of sensitivity and magnitude of cumulative visual effect to be combined to make an informed professional assessment on the significance of each cumulative visual effect.

A5.1.10.8 As for the LVIA, the levels of cumulative visual effect are described as **major**, **moderate**, **minor** or **none**. Major and moderate cumulative visual effects are considered significant in the context of the EIA Regulations.

A5.1.10.9 More significant effects are likely where:

- the Proposed Development extends or intensifies a visual effect;
- the Proposed Development 'fills' an area such that it alters the view/ visual amenity;
- the interaction between the Proposed Development and other developments means that the total visual effect is greater than the sum of its parts; and/or
- the Proposed Development will lengthen the time over which effects are experienced (sequential effects).

A5.1.10.10 This determination of cumulative visual effects requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. Again, as for the assessment of landscape and visual effects, judgements are made on a case-by-case basis, guided by the same principles as set out in Diagram 1 above.

A5.1.11 Approach to Visualisations

A5.1.11.1 The following sections present the approach to the production of the visualisations which accompany the Sclenteuch Wind Farm LVIA. Figures referred to in this Technical Appendix are located in Volume 2b and Volume 2c of the EIA Report.

A5.1.11.2 The methodology for the production of visualisations was based on current good practice guidance from NatureScot (formerly SNH) and the Landscape Institute:

- Scottish Natural Heritage (2017). Visual Representation of Wind Farms, Version 2.2.
- Landscape Institute (2019). Advice Note 01/11 Photography and photomontage in landscape and visual impact assessment.

Data Sources

A5.1.11.3 Data used for generating maps and visualisations:

- OS Terrain 50 Digital Terrain Model (DTM);
- Ordnance Survey 1:25,000 raster data (to provide detailed maps for viewpoint locations);
- Ordnance Survey 1:50,000 raster data (to show surface details such as roads, forest and settlement detail equivalent to the 1:50,000 scale Landranger maps); and
- Ordnance Survey 1:250,000 raster data (to provide a more general location map).

Zone of Theoretical Visibility (ZTV) Mapping

A5.1.11.4 Evaluation of the theoretical extent to which the wind farm would be visible was informed by establishing a ZTV, using specific computer software designed to calculate the theoretical visibility of the proposed turbines within its surroundings. ESRI's ArcMap 10.5.1 software was used to generate the ZTV. The Spatial Analyst/Viewshed tool does not use mathematically approximate methods. This program calculates areas from which the turbine hubs and maximum blade tip height are potentially visible. This is performed on a 'bare ground' computer generated terrain model, which does not take account of potential screening by buildings or vegetation. It should be noted that the software uses raster height data,**1** but while it is displayed as continuous data (with each grid square referred to as a 'cell'), it assumes a single height value from the centre of that cell for the whole cell. Therefore, any height variations between centre points of cells will not be recognised.

A5.1.11.5 The DTM used for the LVIA analysis is OS Terrain® 50 height data, obtained from Ordnance Survey in 2020. The DTM data has not been altered (i.e. by the addition of local surface screening features) for the production of the ZTV. We have not identified any significant discrepancies between the used DTM and the actual topography around the Study Area. The effect of earth curvature and light refraction has been included in the ZTV analysis and a viewer height of 2m above ground level has been used. As it uses a 'bare ground' model, it is considered to over-emphasise the extent of visibility of the Development and therefore represents a 'maximum potential visibility' scenario. The ZTV is used as a starting point in the assessment to provide an indication of theoretical visibility. This information is verified in the field so that the assessment conclusions represent the actual visibility of the proposals reasonably accurately.

A5.1.11.6 The ZTV was calculated to show the potential number of turbines visible to maximum blade tip height (200m) and maximum hub height (125m). The ZTV calculated to blade tip height is shown on Figure 5.1.2a and Figure 5.1.2b, the hub height ZTV is shown in Figure 5.1.3a and Figure 5.1.3b. Subsequent figures which include the ZTV make use of the ZTV to maximum blade tip height.

A5.1.11.7 To construct cumulative ZTVs (CZTVs) to illustrate the cumulative visibility of the Development in conjunction with other wind farms, the ZTV to tip height of each wind farm was generated (based on the tip height of each turbine to an applicable maximum radius in accordance with the current guidance (SNH, 2017)), and then combined with the Development ZTV (45km radius). The CZTVs are colour coded to distinguish between areas where the Development is predicted to be visible (either on its own, or in conjunction with other wind farms), and areas where other wind farms would be visible, but the Development would not.

Viewpoint Photography

A5.1.11.8 The methodology for photography is in accordance with guidance from NatureScot and the Landscape Institute referred to above. The focal lengths used are in accordance with recommendations contained in guidance and are stated on the figures. Photography was undertaken by LUC between November 2021 and May 2022. A Nikon D750 and a D700 full frame sensor digital single lens reflex (SLR) camera, with a fixed 50mm focal length lens, was used to undertake photography from all viewpoint locations.

A5.1.11.9 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 between the successive images and

[1] Raster data is a matrix of cells (or pixels) which contain a value representing information.

enable accurate stitching of the images. The camera was rotated through a full 360˚ at each viewpoint.

A5.1.1.10 The location of each viewpoint and information about the conditions was recorded in the field in accordance with NatureScot (SNH, 2017) and LI guidance (LI, 2019).

A5.1.1.11 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. Photography opportunities 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 the photography was taken.

Visualisations

A5.1.1.12 Wirelines are computer generated line drawings which show outlines of the proposed turbines and the bare earth topography. Photomontages are computer generated images of the Proposed Development modelled into the actual baseline photography. Wirelines and photomontages are assessment tools and are not a substitute for site visits. They do not convey turbine movement and are representative of particular views, but cannot represent visibility at all locations.

Photographic Stitching, Wirelines and Photomontages

A5.1.1.13 Photographic stitching software PTGui© 11.19 was used to stitch together the adjoining frames to create panoramic baseline photography. A selection of identical control points has been created within each of the adjoining frames to increase the level of accuracy when stitching the 360˚ panoramic photography.

A5.1.1.14 The software package ReSoft© WindFarm version 4 was used to create a digital terrain model (DTM) from OS Terrain® 5 height data. The DTM includes the Proposed Development Area, viewpoint locations and all landform visible within the baseline photography. Turbine and viewpoint location coordinates were entered. Photomontages have been constructed to show the candidate turbine with the specified tip and hub height. A default viewer height of 1.5 m above ground level has been set in the ReSoft© software, however on limited occasions this viewer height has been increased by a small increment to achieve a closer match between the terrain data and photographic landform content.

A5.1.1.15 Wind farm layouts included within the cumulative assessment have been added to the ReSoft© WindFarm model.

A5.1.1.16 The panoramic baseline daytime photographic images were imported into ReSoft© WindFarm software. From each viewpoint the wireline views of the landform model with the proposed turbines were carefully adjusted to obtain a match. Fixed features on the ground, such as buildings and roads, were located in the model and used as markers to help with the alignment process where necessary. Each view was rendered taking account of the sunlight 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.

A5.1.1.17 The exported renders were imported into Adobe Photoshop© where they were aligned and composited with the baseline photography. Turbines or sections of turbines which were located behind foreground elements in the photograph were masked out (removed) to create the photomontage. Where visible, forest removal and infrastructure associated with the Development are generally modelled into photomontages, within 5 km.

A5.1.1.18 Finally, where applicable, the images were converted from Cylindrical Projection to Planar Projection using PTGui© 11.19 software.

A5.1.1.19 3ds Max software was used to render the turbines with the aviation lighting proposed for the development. Real-time camera data was imported into the 3DS Max physical camera setups within the 3D models environment including F-stop and FOV (field of view) values. Depth of field (Bokeh) and vertical & horizontal lens shift data was also used to give additional accuracy to the placement of the views and enhance the depth and light level distortion from the required viewpoints. The sunlight and daylight system created within the software was set to accurately simulate the natural light still present at the date, time and geographical location of night-time photography. The turbines in the night views are orientated with the hub facing the viewer (and not obscured by turbine blades). Candela (cd) values show a maximum brightness (2000 cd) and reduced brightness (200 cd) scenario, reflecting CAA guidance on obstruction lights. The candela values shown are reduced according to the vertical angle of view, based on standard values that are also used to calculate a lighting intensity ZTV. This ensures that the images show the maximum visibility of lighting that would realistically be seen.

A5.1.1.20 As with the daytime images the exported renders were then composited with the baseline photographic view using Adobe Photoshop© software and converted from Cylindrical Projection to Planar Projection using PTGui© software.

Figure Layout

A5.1.1.21 The visualisation figures for the viewpoints produced in accordance with NatureScot requirements are presented in Volume 2c of the EIA Report.

A5.1.1.22 Adobe InDesign© software was used to present the figures. The dimensions for each image (printed height and field of view) are in accordance with NatureScot requirements. Photography information and viewing instructions are provided on each page where relevant.

A5.1.1.23 The elongated A3/A1 width format pages for each viewpoint are set out as follows. This follows NatureScot visualisation standards:

- The first A3 page contains OS 1:250,000 and 1:50,000 scale maps showing the viewpoint location, direction of the 90˚ baseline photography, wireline views and 53.5˚ photomontage view(s). Wind turbine locations for the Development and cumulative schemes are also shown when visible in the map view;
- The following page contains 90˚ baseline photography and wireline to illustrate the wider landscape and visual context. These are shown in cylindrical projection and presented on an A1 width page. Additional pages in the same format are provided where relevant to illustrate wider cumulative visibility up to 360˚; and
- The subsequent two pages contain a 53.5˚ wireline and photomontage. These images are both shown in planar projection and presented on an A1 width page.

Technical Appendix 5.2: Assessment of Effects on Landscape Receptors

A5.2.1 Introduction

A5.2.1.1 Each of the following assessment tables discusses one landscape receptor, starting with the Proposed Development Area itself, and continuing with relevant LCTs and designated landscapes as listed in Table A5.2.1. Effects on the Merrick Wild Land Area are set out in Technical Appendix 5.6 Wild Land Assessment. Effects on the Galloway Dark Sky Park are considered in Technical Appendix 5.5 Aviation Lighting Assessment and Technical Appendix 5.7 Turbine Lighting Analysis. Effects on Gardens and Designed Landscapes are considered in Chapter 6 Cultural Heritage.

A5.2.1.2 LCTs are illustrated on Figure 5.1.4 and designated landscapes are illustrated on Figure 5.1.6.

A5.2.1.3 Effects arising from construction activity have only been assessed for the Proposed Development Area itself, as short-term construction activity is unlikely to affect the character of wider areas to a significant degree.

Table A5.2.1: Landscape Receptors

Landscape Receptor	Reference
Landscape of the Proposed Development Area	Table A5.2.2
LCTs	
17b Foothills with Forest west of Doon Valley	Table A5.2.3
10 Upland River Valley (River Doon)	Table A5.2.4
4b Brown Carrick Hills	Table A5.2.5
7c East Ayrshire Lowlands	Table A5.2.6
7d South Ayrshire Lowlands	Table A5.2.7
9 Lowland River Valley (River Doon)	Table A5.2.8
12 Middle Dale (Girvan Water)	Table A5.2.9
17a Foothills with Forest & Opencast Mining	Table A5.2.10
17d Maybole Foothills	Table A5.2.11
17c Foothills with Forest & Wind Farm	Table A5.2.12
20c Southern Uplands & Forestry	Table A5.2.13
21 Rugged Uplands, Lochs & Forest	Table A5.2.14
Designated Landscapes	
Doon Valley SLA	Table A5.2.15
Water of Girvan Valley LLA	Table A5.2.16
High Carrick Hills LLA	Table A5.2.17
Doon Valley LLA	Table A5.2.18
Brown Carrick Hills & Coast LLA	Table A5.2.19

Table A5.2.2: Effects of Construction and Operation on the Proposed Development Area

Landscape Receptor	Landscape of the Proposed Development Area
Location and extents	The area within the boundary of the Proposed Development Area.
Baseline description	See paragraphs 5.7.2 - 5.7.6 of Chapter 5: Landscape and Visual.
Landscape susceptibility	The Proposed Development Area forms part of a landscape with simple gently undulating landform and a simple land cover pattern of moorland and extensive coniferous plantations. The eastern part of the Proposed Development Area forms the skyline from the Doon Valley including from the settlements of Patna and Dalmellington. Human influences within the Proposed Development Area include forestry and tracks as well as the overhead line (OHL) that passes through the western part of the Proposed Development Area. Taking these considerations into account, susceptibility is judged to be **medium-low**.
Landscape value	The eastern part of the Proposed Development Area is located within the Doon Valley SLA. The Proposed Development Area is also intervisible with a number of nearby designated landscapes including the Water of Girvan Valley LLA, which borders the Proposed Development Area to the south. However, the landscape of the Proposed Development Area is peripheral to these designations. There are no long distance footpaths or cycle routes within the Proposed Development Area although two core paths pass through the western part of the Proposed Development Area indicating local recreational value. Overall, the landscape value of the Proposed Development Area is judged to be **medium**.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, overall sensitivity is judged to be **medium**.
Magnitude of landscape change (construction)	Construction activities will result in direct effects on the landscape of the Proposed Development Area. The main construction activities with the potential to affect the Proposed Development Area include: felling works; excavations and track construction/upgrading; the working of borrow pits; the presence of tall cranes and partially built towers whilst turbines and met masts are being erected; construction of the substation and control building and the movement of construction vehicles and plant. There will be **large-scale** changes within the Proposed Development Area relating to construction activity. The geographical extent of these changes will be at the **site level (small)** with areas of retained forestry around the Proposed Development Area helping to contain effects associated with lower level construction activity. The construction works are expected to last approximately 18 months, so will **short-term**. The level of reversibility will be varied. Effects associated with construction activity will cease on completion of the works. Restoration of the Proposed Development Area will partly reverse effects of excavation, albeit that vegetation will take some time to recover, while felling will result in more permanent effects. Overall, the magnitude of change during construction is judged to be **high**.
Overall level of effect and significance (construction)	Overall, taking account of the judgements for landscape sensitivity and magnitude of change the landscape effect of construction on the Proposed Development Area will be **Major (Significant**). These effects will be temporary and largely contained within the geographical extent of the Proposed Development Area. Most effects will cease following the 18 month construction period.
Magnitude of landscape change (operation)	There will be large-scale changes to the Proposed Development Area relating to the physical loss of forestry (up to 57.1 ha) and the introduction of new features including up to 9 turbines and associated access roads and turning areas, hard standings, substation, battery storage and control building. This will change the character of the Proposed Development Area from upland moorland and forestry to upland moorland and forestry with a wind farm. Felled forestry will be replanted as shown in Figure 12.7, including areas of broadleaf woodland as well as commercial conifers. The change will be experienced within a **small** geographical extent. The change will be long-term and reversible, as removal of the turbines and other infrastructure will largely return the Proposed Development Area to its original character. The overall magnitude of change is judged to be **high**.
Overall level of effect and significance (operation)	Overall, taking account of the judgements for landscape sensitivity and magnitude of change, the effect on the Proposed Development Area during operation will be **Major** and **Significant**.
Potential for future cumulative effects:	There are no other consented or proposed wind farm developments within the Proposed Development Area or its immediate context. As such **no significant additional or total cumulative landscape effects** are predicted.

Table A5.2.3: LCT 17b Foothills with Forest west of Doon Valley (host)

Landscape Receptor	LCT 17b Foothills with Forest west of Doon Valley (host)
Location and extents	This LCT contains the Proposed Development Area and extends across a band of hills to the west of the Doon Valley. The north-eastern part of the LCT is located within East Ayrshire Council and the south-western part of the LCT is located within South Ayrshire Council. The LCT extends from the head of the Girvan Valley, approximately 4 km to the south of the nearest turbine, to just north of Patna, approximately 4 km to the north of the nearest turbine.
Baseline description	This LCT is characterised by moorland and forest covered undulating plateau and hills. Key characteristics include: • *"The landform of these uplands is generally simpler to the north, comprising a lower, gently undulating plateau with indistinct rounded hills and shallow basins which are largely masked by forestry;* • *More pronounced hills lie on the outer fringes of the southern part of these foothills…and these form 'landmark' features seen from the adjacent well-settled valleys of the Girvan Water and Doon Valley;* • *Land cover is simple, with coniferous forestry dominating the northern plateau and heather and grass moorland and enclosed pastures on outward-facing hill slopes on the more open hills to the south;* • *The operational Dersalloch wind farm occupies more gently undulating ground in the southern part of these hills;* and

	• *This landscape is very sparsely settled although the B741 is aligned through the hills and there are popular hill walks to Auchenroy Hill and the Craigengowan* [Craigengower] *Monument on the periphery of these uplands"*[1]
Landscape susceptibility	This LCT has a simple landcover and a relatively simple landform. Dersalloch Wind Farm is located within this LCT and forestry activity and overhead power line also contributes to human influences within this landscape. Whilst there is visibility of built development in the Doon Valley to the east and the B741 passes through this LCT, the LCT is very sparsely settled and generally isolated, particularly the interior of this landscape. More pronounced hills lying on the outer fringes of the LCT form "*highly visible 'landmark' features*". The uplands located within this LCT are limited and lie close to settled areas and popular hills. The overall susceptibility of the landscape is judged to be **medium**.
Landscape value	The LCT includes parts of both the Doon Valley SLA and the Water of Girvan Valley LLA, although it is peripheral to both. Other than the 'landmark hills' there are fewer indicators of value, and the LCT is considered to be of **medium** value overall.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium**.
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates that there is theoretical visibility from across most of the host LCT unit, particularly in the central and northern parts of the host unit from slopes facing the Proposed Development Area and areas of low gently undulating plateau. Direct operational effects will arise through the introduction of all 9 turbines and associated infrastructure including tracks, met masts, substation and control building, as well as well as the removal and replacement of approximately 113.5 ha of forest within the Proposed Development Area. The Proposed Development will be in the more simple interior plateau of the northern part of the LCT. It will avoid the more sensitive pronounced hills that lie on the outer fringes to the south. Although the turbines will be visible from the adjacent settled valleys, they will not detract from these 'landmark features'. As shown on Figure 12.7, forestry around the edge of the Proposed Development Area will be retained, thereby providing containment of the Proposed Development. The Proposed Development will be a noticeable feature within the host LCT unit, as turbines will often be seen on the skyline, particularly from the B741. The Proposed Development will extend the existing influence of turbines within the LCT, northward into the forested interior of the plateau. A **large** scale of change will be experienced within the Proposed Development Area and the surrounding area within the north of the LCT as the turbines will influence the character of this part of the LCT. The remaining parts of the LCT will experience a **small** scale change as the landscape in the southern part has already been altered by Dersalloch Wind Farm, and is separated from the Proposed Development Area by rising ground. The geographical extent of effects will be **medium** across an area extending east and west to the edges of the LCT, north to Patna Hill, and south to the ridge formed by Largs Hill, Black Hill and Turgeny. The change will be **long-term** and **partially reversible**, as physical changes to the land will be permanent, while turbines and other structures can be removed. Overall, the magnitude of change is judged to be **high** within this area, reducing to **low** within the southern parts of the LCT due to the existence presence of Dersalloch Wind Farm and more limited theoretical visibility.
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Major and Significant** within the Proposed Development Area and the north and north-eastern parts of the LCT, reducing to **Minor and Not Significant** within the southern parts of the LCT.
Potential for future cumulative effects:	There are currently no consented or proposed wind farm developments located within the LCT, or that are nearby and would affect its character. As such **no significant additional or total cumulative landscape effects are predicted.**

Table A5.2.4: LCT 10 Upland River Valley (River Doon)

Landscape Receptor	LCT 10 Upland River Valley (River Doon)
Location and extents	This LCT is located across five units to the east and north-east of the Proposed Development within East Ayrshire. The north-eastern tip of the Proposed Development Area is located within the River Doon LCT unit. The River Doon LCT unit extends from just north of Patna southwards along the River Doon to Loch Doon.
Baseline description	This LCT is characterised as a broad river valley contained by adjacent upland landscapes. Key characteristics include: • *"Rivers Nith and Doon have open flat floodplains which are patterned with wetlands and water bodies – these being particularly diverse and extensive within the Doon valley;* • *Valley sides are often steep but also comprise gentler lower slopes and occasional broader terraces;* • *Mixed policy woodlands create a strong pattern on the southern slopes of the Irvine valley and are also associated with the Craigengillan designed landscape in the Doon valley;* • *Small woodlands and small to medium-sized fields, enclosed by stone dykes, hedges and shelterbelts, occur throughout these valleys while semi-improved pastures and more open grass moorland and coniferous woodlands are also present on upper valley sides;* and • *These valleys contain a number of settlements including Dalmellington and Patna…and small farms and dwellings are commonly positioned on lower hill slopes above the floodplain"*[2]

[1] Carol Anderson Landscape Associates (2018a) East Ayrshire Landscape Wind Energy Capacity Study, Character Type 17b: Foothills West of The Doon Valley

[2] Carol Anderson Landscape Associates (2018a) East Ayrshire Landscape Wind Energy Capacity Study, Character Type 10: Upland River Valley (River Doon)

Landscape susceptibility	This LCT is generally a confined and small scale landscape. The River Doon forms an "*open flat*" floodplain with "*diverse and extensive*" wetland and water bodies. There are no operational wind farms in this LCT however there is intervisibility with the Dersalloch Wind Farm located in the adjacent 17b Foothills with Forest west of Doon Valley LCT to the west. The LCT is influenced by human development including the settlements of Patna, Waterside and Dalmellington, the A713 that runs adjacent to the River Doon through the LCT, a heritage railway, and evidence of the previous mining industry within the LCT. Given the scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **medium**.
Landscape value	The LCT is located within the Doon Valley SLA and the south-western extent of the LCT is located within the Craigengillan Garden and Designed Landscape (GDL). The landscape has some scenic, recreational and conservation value, more so to the south of Dalmellington. The LCT is considered to be of **medium-high** value.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium** to the north of Dalmellington, and **medium-high** further south.
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates theoretical visibility of up to 9 turbines across most of the LCT, particularly from the site-facing eastern slopes of the Doon Valley. Direct operational effects will arise through the introduction of new access track and the Proposed Development Area entrance within this LCT. Effects from turbines and the remaining associated infrastructure will be indirect. Turbines will be visible on the skyline in views from the LCT but are clearly set back from the valley edge. Turbines will not appear overbearing or dominant in views along or across the Doon Valley. The key characteristics of the LCT will not be affected. Within the south-western part of the LCT, there are areas with no visibility due to the intervening slopes of Auchenroy Hill and Auldcraigoch Hill that screen views towards the Proposed Development Area from these locations. There will be no change to the character of this southern part of the LCT, which includes the Craigengillan designed landscape. A **medium** scale of change will be experienced from the northern part of this LCT. The change will affect the section of the valley around Patna and Waterside, a **medium** geographical extent. Further south, the scale of change will reduce to **small**. The change will be **long-term** and **reversible**, as turbines can be removed in future. Overall, the magnitude of change is judged to be **medium** within the area around Patna and Waterside, reducing to **low** further south**.**
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Moderate and Significant** within the area around Patna and Waterside, reducing to **Minor and Not Significant** to the south of Waterside**.**
Potential for future cumulative effects:	There are no consented or proposed wind farm developments within the LCT (scenario 1). Knockkippen will introduce turbines on the eastern side of the Doon Valley and to the immediate east of the LCT under Scenario 2. Knockkippen will be visible from the LCT in successive views with the Proposed Development as illustrated by the CZTV in Figure 5.1.9c. The Proposed Development will introduce turbines on the western side of the LCT and will result in the LCT being overlooked by turbines in both the east and west. Although Sclenteuch turbines will be set back from the valley, this will result in a **medium** scale of change experienced over a **medium** geographical extent. The cumulative magnitude of change will be **high** and as such, the additional cumulative effect under Scenario 2 is considered to be **Moderate and Significant**, again reducing to **Minor and Not Significant** to the south of Waterside**.**

Table A5.2.5: LCT 4b Brown Carrick Hills

Landscape Receptor	LCT 4b Brown Carrick Hills
Location and extents	This LCT is located approximately 9.5 km to the west from the nearest turbine and forms a group of coastal headland hills within the western part of the study area.
Baseline description	This LCT is characterised by a cluster of rugged hills and undulating upland plateau. Key characteristics include: • *"Cluster of rugged, prominent landmark hill summits which are easily recognisable and widely visible over Ayrshire and the outer Firth of Clyde;* • *Provides the immediate backdrop to a number of smaller scale and lower lying character types;* • *Provides the backdrop to Ayr and contributes to the setting of Culzean castle* • *The landform is rugged and can be complex, with varied interlocking terrain, shallow valleys and steep slopes;* • *The vegetation pattern ranges from open wet moor and occasional conifer woodland on the upper slopes to semi-natural broadleaved woodland, enclosed fields, riparian woodland and, to the east, policies associated with larger houses overlooking the Doon valley;* and • *Only the lower hill slopes and more sheltered inland valleys are settled, with small settlements as well as farms and single houses connected by a network of narrow roads."*[3]
Landscape susceptibility	This LCT is generally medium scale, characterised by irregular landform created by rugged hills, ridges and shallow valleys. The hills within this LCT form a prominent "*landmark hill*" group and are "*widely visible*" from the surrounding landscapes and the Firth of Clyde to the west. Shallow valleys within the LCT create areas of enclosure whilst elsewhere on hill summits and broad slopes the landscape is more open. There are no operational wind turbines within this LCT, however the landscape is influenced by human development, namely scattered farmsteads and properties, the B7024 and networks of minor roads, and masts located on hill summits. Generally, there is intervisibility from hill summits and the elevated interior of the LCT, offering with distant and panoramic views across the neighbouring landscapes and Firth of Clyde. The overall susceptibility of the landscape is judged to be **medium**.
Landscape value	The majority of the LCT is located within the Brown Carrick Hills & Coast LLA. NCN Route 7 also passes through the LCT. The LCT is therefore considered to be of **medium** value overall.

[3] Carol Anderson Landscape Associates (2018b) South Ayrshire Landscape Wind Energy Capacity Study, Character Type 4b: Brown Carrick Hills

Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium**.
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates theoretical visibility of up to 9 turbines will be possible across a large extent of this LCT at distances between 9.5 and 15 km from the nearest turbine, namely within the eastern and central parts of the LCT. Within these areas, visibility is available from site-facing slopes and hill summits, including Brown Carrick Hill, as well as from parts of the road network within the eastern and central parts of the LCT. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. While the Proposed Development has the potential to affect views to and from the individual hills and slopes within this LCT, the wind farm will be a relatively distant feature within inland views. The key characteristics indicate that LCT has important visual relationships with the lowlands and coast to the north and west, away from the Proposed Development Area. Overall, a **small** scale change will be experienced within 15 km of the nearest turbine, i.e. a **medium** geographical extent **.** The change will be **long-term** and **reversible**, as turbines can be removed. Overall, the magnitude of change is judged to be **low.**
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	There are currently no consented or proposed wind farm developments located within the LCT. The Proposed Development will be seen in inland views alongside other wind farms, and will be seen as part of the established pattern of development. As such **no significant additional or total cumulative landscape effects are predicted.**

Table A5.2.6: LCT 7c East Ayrshire Lowlands

Landscape Receptor	LCT 7c East Ayrshire Lowlands
Location and extents	This LCT is located across four units within East Ayrshire. The closest unit is located approximately 5 km from the nearest turbine, to the north, and forms a transitional landscape between the forested uplands to the south and the lowland river valleys of the Lugar Water and the River Ayr to the north. A further two units are located within 20 km to the north-east and the fourth unit is located over 25 km to the north, and these are not considered within this LVIA.
Baseline description	This LCT is characterised as diverse and transitional landscape with variable landform. Key characteristics include: • *"A variable landform which although generally undulating, can be more complex and rolling in some areas;* • *Small areas of flatter remnant moss on more elevated areas close to the North Ayrshire border;* • *A diverse landscape with small pastures, enclosed by intact hedgerows, small woodlands and field trees and a regular pattern of small farms enriching the overall composition;* and • *Broader hill slopes with a less densely settled character occur at the transition with the larger scale upland landscape of the Foothills with Forestry and Opencast Mining (17a) to the south and the Rugged Upland Farmland…in the north-east of this character type."*[4]
Landscape susceptibility	This LCT is generally small to medium scale, characterised by a mix of both gentle rolling landform and more complex landform created by enclosing narrow valleys and drumlins. There are no operational wind farms in this LCT however there is intervisibility with wind farms in surrounding LCTs. Additionally, there is a dense pattern of farmsteads and properties within the LCT as well as some small settlements and a concentrated network of roads and OHLs. Given the scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **medium**.
Landscape value	The majority of the LCT does not overlap within any designated landscape, although small parts of the LCT are within the River Ayr SLA. The LCT has some scenic and recreational value, and is considered to be of **medium** value.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium**.
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates theoretical visibility of up to 9 turbines will be possible at varying degrees across this LCT from areas of elevated landform and site-facing slopes at distances between 5 and 20 km from the nearest turbine. Theoretical visibility is across an area around Hollybush, within 10 km of the nearest turbine, and from an area of higher ground between Drongan and Ochiltree, including a stretch of the A70 and railway line between 10 and 15 km. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect views to and from elevated open areas that offer "*extensive views across this and adjacent landscapes*"[3] as a result of introducing tall man-made features into the surrounding landscape to the south. The views of the wind turbines will be relatively distant and will be seen in the context of other operational wind farms at similar distances. Views will be sporadic across the LCT, and will be further reduced by the woodlands and field trees within this landscape. None of the key characteristics will be directly affected, and there will be no effect on the important landscape transition with LCT 17a. Overall, a **small** scale change will be experienced over a **medium** geographical extent. The change will be **long-term** and **reversible**, as turbines can be removed from the view. The overall magnitude of change is therefore judged to be **low.**
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	There are no consented or proposed wind farm developments within the LCT. The consented North Kyle Energy Project, Polquhairn and Overhill Wind Farms in the adjacent LCT 17a will be visible in combination with the Proposed Development under Scenario 1, as illustrated by the CZTV in Figure 5.1.9b. Visibility of the

[4] Carol Anderson Landscape Associates (2018a) East Ayrshire Landscape Wind Energy Capacity Study, Character Type 7c: East Ayrshire Lowlands

	Proposed Development will be limited as noted above, and would be visible at a greater distance than the North Kyle Energy Project, Polquhairn and Overhill Wind Farms. As such, the additional cumulative effect on landscape character will be **Minor** and **Not Significant** under Scenario 1. Under Scenario 2, the proposed Polquhairn (application), Overhill (Appeal/Public Inquiry), Greenburn Wind Park (application) and Knockkippen (scoping) in the adjacent LCT 17a will be visible in combination with the Proposed Development, and North Kyle. As with Scenario 1, visibility of the Proposed Development will be limited and will be visible at a greater distance in comparison to the proposed wind farms. In particular Polquhairn and Knockkippen will form prominent features in outward views to the south from this LCT, on the transition with LCT 17a. As such, the additional cumulative effect on landscape character will be **Minor** and **Not Significant** under Scenario 2.

Table A5.2.7: LCT 7d South Ayrshire Lowlands

Landscape Receptor	LCT 7d South Ayrshire Lowlands
Location and extents	This LCT is located across four units to the north of the Proposed Development and is located in South Ayrshire. The LCT forms the edge to smaller scale river valleys and forms the backdrop to the coastal settlements of Ayr, Prestwick and Troon. The closest unit is located approximately 6.5 km from the nearest turbine to the north. The remaining unit - two within 15 km to the north and the fourth within 20 km to the north – are not considered in this LVIA.
Baseline description	This LCT is characterised as a diverse landscape with variable landform. Key characteristics include: • *"Variable landform which although gently undulating, forming low ridges and valleys, can be more complex and rolling in some areas with some locally prominent small hills;* • *Small interlocking hills form prominent skylines, particularly seen from the Ayr and Doon valleys;* • *Diverse landscape with small pastures, enclosed by intact hedgerows, small woodlands and field trees and a regular pattern of small farms enriching the overall composition;* • *Occasional small estates surrounded by wooded policies lie at the foot of the Lowland Hills (16) and the Craigs of Kyle and are more widely dispersed across the remainder of this landscape;* • *Higher, more open hills occur to the south-east in the Craigs of Kyle area at the transition with the larger scale East Ayrshire Lowlands (7c) and Foothills with Forestry and Opencast Mining (17a); and* • *Fragmented by larger scale built infrastructure where it abuts the settlements of Ayr, Prestwick and Kilmarnock."*[5]
Landscape susceptibility	This LCT is generally small to medium scale, characterised by a mix of both gentle rolling landform and more complex landform, as well as and small distinct hills that form "*prominent skylines*". There are no operational wind farms in this LCT however there is intervisibility with wind farms in surrounding LCTs from elevated open areas of the LCT. Human influence is also evident through the regular and dense patterns of farmsteads, properties, roads and OHLs within the LCT, as "*the landscape becomes more fragmented by roads, industry and other built infrastructure…*"[5]. Given the scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **medium**.
Landscape value	The southern fringes of the closest LCT unit are located within the Doon Valley LLA. Additionally, the LCT has some intervisibility with sensitive landscapes including the River Ayr SLA to the east of the LCT units and the Doon Valley SLA to the south-east. The LCT is therefore considered to be of **medium** value.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium**.
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates theoretical visibility of up to 9 turbines will be possible across areas of open elevated landform and site-facing slopes between approximate distances of 6 and 15 km from the nearest turbine. The main area of visibility is from south-facing slopes of agricultural land to the east of Hollybush, south-east facing slopes above Dalrymple and from south-east facing slopes surrounding Fergus Loch. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect views to and from elevated open areas that offer extensive views to the wider surrounding landscape as a result of introducing tall man-made features into the surrounding landscape to the south-east. The views of the wind turbines will be relatively distant, and will be seen across the Doon Valley in the context of other operational wind farms at similar distances. Views will be limited to parts of the LCT, and will be further reduced by the woodlands and field trees within this landscape. None of the key characteristics will be directly affected, and there will be no effect on the important landscape transitions with LCT 7c and LCT 17a. Overall, a **small** scale change will be experienced over a **medium** geographical extent, as the Proposed Development will be visible in the context of existing human development from scattered areas from within the LCT**.** The change will be **long-term** and **reversible**, as turbines can be removed from the view. The overall magnitude of change is therefore judged to be **low.**
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	There are currently no consented or proposed wind farm developments located within the LCT. Consented and proposed wind farms within the adjacent LCT 17a will be visible in combination with the Proposed Development under Scenarios 1 and 2. As set out for LCT 7c above, the Proposed Development will be both less visible and more distant than other schemes, and effects will be similar as for LCT 7c. As such **no significant additional or total cumulative landscape effects are predicted.**

[5] Carol Anderson Landscape Associates (2018b) South Ayrshire Landscape Wind Energy Capacity Study, Character Type 7d: South Ayrshire Lowlands

Table A5.2.8: LCT 9 Lowland River Valley (River Doon)

Landscape Receptor	LCT 9 Lowland River Valley (River Doon)
Location and extents	This LCT is located across four units to the north of the Proposed Development and is located in both East and South Ayrshire. The unit being considered in this LVIA is the River Doon unit, located approximately 3.8 km from the nearest turbine to the north and extending westwards along the River Doon from just north of Patna to the south-eastern settlement edge of Ayr.
Baseline description	This LCT is characterised as narrow river valleys that merge with adjacent rolling landform. Key characteristics include: • *"Valleys are incised and often feature steep side slopes and a complex contorted course of main river and tributaries which is seen in elevated views from settlement and roads;* • *The Doon, Ayr, Lugar Water and Water of Coyle are particularly well wooded with a mix of semi-natural riparian woodland and extensive wooded policies associated with the many large estates sited on lower slopes;* • *Woodlands, together with small rolling hedged fields on side slopes, more open floodplain pastures, individual trees, parkland and small buildings, contribute to the intimate scale of these river valleys;* and • *Well settled and contain a number of architecturally interesting settlements and historic built features"*[6]
Landscape susceptibility	This LCT is a small and intimate scale landscape, located along the River Doon forming a narrow and entrenched valley with extensive policy woodlands. There are no operational wind farms in this LCT. It is a farmed, managed and well settled landscape, including the settlement of Dalrymple. Given the small scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **medium**.
Landscape value	The eastern part of the LCT is partially covered by the Doon Valley SLA and includes the Skeldon House GDL. The majority of the western part of the LCT is covered by the Doon Valley LLA. The LCT is therefore considered to be of **medium-high** value.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium-high**.
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates extensive theoretical visibility of up to 9 turbines, at distances between 4 and 12 km from the nearest turbine. Visibility is greatest on the upper slopes of the Doon Valley where there are "*many elevated views from settlement and major roads on the more open upper valley sides*"[6], including from Dalrymple. Visibility from lower valley slopes and the valley floor is reduced due to the intervening valley slopes and woodland that screen most exterior views. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect views to and from upper valley slopes that have open outward views, as a result of introducing tall man-made features into the surrounding landscape. The turbine will be seen within views to the south and south-east and will not effect interior views within the Doon Valley. The turbines will be several kilometres from the valley, and will not appear on skylines as seen from within the valley. Overall, a **small** scale change will be experienced over a **medium** geographical extent, as turbines will be visible from most of the upper valley slopes of the small LCT. The change will be **long-term** and **reversible**, as turbines can be removed from the view. The overall magnitude of change is therefore judged to be **low.**
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	There are currently no consented or proposed wind farm developments located within the LCT, or which would be close enough to affect its character. As such **no significant additional or total cumulative landscape effects are predicted.**

Table A5.2.9: LCT 12 Middle Dale (Girvan Water)

Landscape Receptor	LCT 12 Middle Dale (Girvan Water)
Location and extents	This LCT is located within South Ayrshire, at its closest approximately 1 km to the west of the nearest turbine. It extends from Straiton to Old Dailly along the Girvan Water.
Baseline description	This LCT is characterised as a broad river valley contained by surrounding foothills. Key characteristics include: • *"A narrow floodplain within the valley floor is covered with farmland, woodlands and parkland associated with the many designed landscapes that are a key feature of this landscape;* • *Lower valley sides are more complex and rolling and are often well wooded;* • *Strongly enclosed small fields and mature field trees contribute to the diverse and often intricate land-cover pattern of this landscape;* • *Clustered or planned settlements including Kirkmichael and Straiton and small traditional farms also regularly pattern valley sides; and* • *Less settled upper valley sides generally have a simpler landform and land-cover at the transition with these upland landscapes."*[7]
Landscape susceptibility	This LCT is generally small to medium scale, formed by a broad valley of "*lush rolling pastures*"[7], small villages and designed landscapes that give a "*distinctly rural character*"[7]. There are no operational wind farms in this LCT although there

[6] Carol Anderson Landscape Associates (2018a) East Ayrshire Landscape Wind Energy Capacity Study, Character Type 9: Lowland River Valley (River Doon)

[7] Carol Anderson Landscape Associates (2018b) South Ayrshire Landscape Wind Energy Capacity Study, Character Type 12: Middle Dale (Girvan Water)

	is visibility of Hadyard Hill Wind Farm, approximately 1 km to the south in the adjacent 17c Foothills with Forest & Wind Farm LCT. It is a farmed and managed landscape with settlements including Straiton, Kirkmichael, Crosshill and Dailly. A number of B class roads pass through the LCT as well as a network of minor roads and the Ayr to Girvan railway line that follows the Girvan Water. The overall susceptibility of the landscape is judged to be **medium-high**.
Landscape value	The LCT is located within the Water of Girvan Valley LLA and there are three GDLs within the LCT, including Blairquhan, Kilkerran and Bargany. The LCT is considered to be of **medium-high** value.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium-high**.
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates extensive theoretical visibility of up to 9 turbines across the LCT, at distance between 1 and 18 km from the nearest turbine. Visibility is greatest on the upper and northern slopes of the valley where there are open views from the "*elevated roads which cross into the adjacent Foothills*"[7] and from around Straiton. There is reduced visibility from the southern, interior facing slopes due to the intervening slopes of Hadyard Hill and Barony Hill, which screen views to the north-east towards the Proposed Development Area. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect views to and from upper valley slopes that have open outward views, as a result of introducing tall man-made features into the surrounding landscape. It may also affect the transition between the valley and adjacent upland landscapes. A **medium** scale change will be experienced from the eastern extent of the LCT, at the transition to the adjacent LCT 17b. From within the valley itself, the turbines are set back from the edge, and will not have an overt influence on the key characteristics described above. The scale of change will be **small** within the remainder of the LCT. Changes will be experienced over a **small** geographical extent in the eastern part of the LCT. The change will be **long-term** and **reversible**, as turbines can be removed from the view. The magnitude of change is therefore judged to be **medium** for the eastern part of the LCT and **low** for the remaining parts of the LCT.
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be locally **Moderate and Significant**, within the westernmost transitional part of the LCT formed by Sclenteuch Moor, reducing to **Minor and Not Significant** across the majority of the LCT.
Potential for future cumulative effects:	There are no consented or proposed wind farm developments within the LCT The consented Kirk Hill – Kirkoswald Wind Farm is located within the adjacent LCT 17d and will be visible in outward views to the north from this LCT. Combined and successive views of Kirk Hill – Kirkoswald Wind Farm and the Proposed Development will be limited from most of this LCT. The additional cumulative effect on landscape character under Scenario 1 will be locally **Moderate and Significant** as above, but **Minor and Not Significant** elsewhere. In Scenario 2, Carrick, Knockcronal and Craiginmoddie wind farms may be visible 2-4 km to the south of this LCT. The addition of the Proposed Development to this baseline will result in further successive views of wind farms from the upper valley, albeit that most views of the Proposed Development will be limited. The additional cumulative effect on landscape character under Scenario 2 will be locally **Moderate and Significant** as above, but **Minor and Not Significant** elsewhere.

Table A5.2.10: LCT 17a Foothills with Forest & Opencast Mining

Landscape Receptor	LCT 17a Foothills with Forest & Opencast Mining
Location and extents	This LCT is located within East Ayrshire, approximately 3.6 km to the north-east of the nearest turbine. The LCT extends eastwards from the upper eastern slopes of the Doon Valley across forested hills to Glaisnock Moss, approximately 15 km to the east.
Baseline description	This LCT is characterised as an extensive upland plateau with a land cover of moorland and plantation forest. Key characteristics include: • *"Generally simple landform of gently rounded hills and shallow mossy basins;* • *This landscape forms a long, low and fairly even upland skyline to the north where it adjoins the East Ayrshire Lowlands (7c);* • *Occasional more pronounced hills lie on the south-western edge and include Benquhat Hill which is prominent in views from the upper Doon Valley;* • *Land cover is simple, dominated by extensive coniferous forestry and with some grass moorland and moss;* • *Excavations, large spoil heaps and lagoons from former and current mine workings are clearly evident on the outer fringes of this plateau and these give this landscape a fragmented and degraded character;* and • *These uplands are very sparsely settled and their interior is not readily visible from public roads and settlement in the surrounding area."*[8]
Landscape susceptibility	This LCT is large scale with a simple undulating landform and dominance of moorland and forest cover. There are no operational wind farms in this LCT however the landscape is influenced by human development, namely through commercial forestry and mining activity, particularly along the periphery of the LCT. Given the scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **low**.
Landscape value	The majority of the LCT is not located within any designated landscapes although the western fringe is located within the Doon Valley SLA. The LCT has limited scenic or recreational value, and is considered to be of **medium-low** value overall.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium-low.**
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates that there is extensive theoretical visibility of up to 9 turbines from the site-facing slopes along the western edge of the LCT, extending to a distance of approximately 8 km from the nearest turbine. There is also visibility of up to 6 turbines from hill slopes within the interior and eastern parts of the LCT beyond 10 km. From the remainder of the LCT, there is no

[8] Carol Anderson Landscape Associates (2018a) East Ayrshire Landscape Wind Energy Capacity Study, Character Type 17a: Foothills with Forest & Opencast Mining

	theoretical visibility due to undulations within the terrain that screen views towards the Proposed Development Area. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has limited potential to affect its character due to the human influence and the existing views of operational turbines, including Dersalloch and South Kyle (under construction). Key characteristics of the landscape will not be altered. A **medium** scale change will be experienced from the western edge of the LCT within around 5 km of the nearest turbine. The scale of change will be **small** from the rest of the LCT due to limited theoretical visibility. Changes will therefore be experienced over a **small** geographical extent. The change will be **long-term** and **reversible**, as turbines can be removed from the view. The magnitude of change is judged to be **medium** for the western part of the LCT within 5 km and **low** for the remainder of the LCT.
Overall level of effect and significance	The effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	The consented North Kyle Energy Project, Polquhairn and Overhill Wind Farms are located within this LCT. North Kyle Energy Project and Overhill Wind Farms will sit as two overlapping schemes in the centre of the LCT with Polquhairn sitting on its own in the northern extent of the LCT. The Proposed Development will be visible in successive views with these schemes and in combined views with the operational Dersalloch and South Kyle Wind Farms to the south. Given the location of consented schemes within this LCT, the addition of the Proposed Development will not result in any additional significant cumulative effects on landscape character. As such, the additional cumulative effect on landscape character will be **Minor** and **Not Significant** under Scenario 1. Under Scenario 2, the proposed Polquhairn (application), Overhill (Appeal/Public Inquiry), Greenburn Wind Park (application) and Knockkippen (scoping) will be located within this LCT. Greenburn Wind Park Will extend the consented and proposed cluster formed by the North Kyle Energy Project and Overhill into the north-eastern part of the LCT unit. Knockkippen will be located within the western extents of the LCT. The Proposed Development is likely to be viewed in successive views with these wind farms and in combined views with Dersalloch and South Kyle Wind Farms to the south and south-west, which has already influenced views in this direction. The addition of the Proposed Development to this baseline will result in a **Minor** and **Not Significant** additional cumulative effect. The total cumulative effect on this LCT as a result of the introduction of the schemes under Scenario 2, both within and beyond the LCT, is judged to be **Significant.**

Table A5.2.11: LCT 17d Maybole Foothills

Landscape Receptor	LCT 17d Maybole Foothills
Location and extents	This LCT is located within South Ayrshire, approximately 3 km to the north-west of the nearest turbine. The LCT extends from the Doon Valley across low undulating foothills to Turnberry, approximately 20 km to the west.
Baseline description	This LCT is characterised by a band of low rolling foothills lying between the Doon Valley and Girvan Valley and the coast. Key characteristics include: • *"A 'stand-alone' band of relatively low hills;* • *These hills form highly visible backdrops and skylines to the coast (including Culzean Castle and its extensive policies) and the richly diverse Doon and Girvan valleys;* • *Generally gently undulating with long ridges cut by valleys,* • *A number of 'landmark' hills occur on the periphery of these foothills - the most distinctive of these being the steep-sided basalt outcrops of Mochrum and Kildoon hills;* • *Landform becomes notably more complex in the north-east, forming drumlin-like small interlocking hills separated by pockets of flatter ground;* • *Lower hill slopes and valleys are farmed with pastures enclosed by hedges and with roadside trees, small woodlands and shelterbelts contributing to an often, rich land cover pattern;* • *Some large coniferous plantations occur within broader elevated basins and a number of hill tops feature more semi-natural heathery moorland, gorse and bracken with rough walled pastures on upper slopes;* and • *Relatively well-settled with dispersed farms sited across much of the area apart from the wetter more elevated basins lying at the core of these hills."*[9]
Landscape susceptibility	This LCT is medium scale, comprising low undulating hills bisected by valleys. Land cover is mixed with unimproved grassland, moorland and commercial forestry on higher hill slopes and hedges, shelterbelts and riparian woodland on lower slopes. There are no operational wind farms in this LCT however the operational Dersalloch Wind Farm is likely to be visible from parts of the LCT in views to the south-east. The landscape is well settled. Maybole is located within the centre of the LCT with a network of roads converging at the settlement, including the A77 which crosses the LCT. There are also many scattered farmsteads and properties throughout the LCT within the sheltered valleys. Given the scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **medium**.
Landscape value	The majority of the LCT is not located within any designated landscapes however parts of the south of the LCT are located within the Water of Girvan Valley LLA, parts of the north-eastern fringes are located within the Doon Valley LLA and parts of the north-western fringes are located within the Culzean LLA. NCN Route 7 also passes through the centre of this LCT. The LCT is therefore considered to be of **medium** value overall.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium.**

[9] Carol Anderson Landscape Associates (2018b) South Ayrshire Landscape Wind Energy Capacity Study, Character Type 17d: Maybole Foothills

Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates that there is extensive theoretical visibility of up to 9 turbines across this LCT from site-facing hill slopes, including Mochrum Hill and from Maybole, which is located on a south facing slope. Within the north-eastern and north-western extents of the LCT, theoretical visibility becomes more scattered due to enclosed pockets of landform that are screened by the surrounding undulating hill ridges. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect views from the higher ground and slopes and may also effect the "*dramatic elevated views from open roads and settlement*"[9]. From parts of the LCT however, some exterior views, particularly those within 15 km, are already altered by the operational Dersalloch Wind Farm. The key characteristics of this landscape will be unaltered by the Proposed Development. Overall, a **small** scale change will be experienced from parts of the LCT within 15 km, though these areas will be interspersed with areas with no visibility of the Proposed Development. Effects will be experienced over a **medium** geographical extent. The change will be **long-term** and **reversible**, as turbines can be removed from the view. The magnitude of change is therefore judged to be **low**.
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	The consented Kirk Hill – Kirkoswald Wind Farm is located within this LCT and will be seen in combined and successive views with Chapelton Farm Wind Farm which is under construction within this LCT. Both of these wind farms are located within the western part of the LCT and are likely to appear as two individual schemes. To the east and south-east the Proposed Development will be seen in successive views with these schemes but will be seen in combined views with the operational Dersalloch Wind Farm which has already altered views in these directions. As such, the cumulative effect on landscape character will be **Minor** and **Not Significant** under Scenario 1. There are currently no proposed wind farm developments located within the LCT, therefore effects under Scenario 2 will be the same as for Scenario 1.

Table A5.2.12: LCT 17c Foothills with Forest & Wind Farm

Landscape Receptor	LCT 17c Foothills with Forest & Wind Farm
Location and extents	This LCT is located within South Ayrshire, approximately 4 km to the south-west of the nearest turbine. The LCT extends westwards from the Girvan Valley across forested hills to upper eastern slopes of the Doon Valley across forested hills to Girvan, approximately 23 km to the west.
Baseline description	This LCT is characterised as a gently undulating upland plateau with a landcover dominated by commercial forestry and moorland. Key characteristics include: • *"Foothills are larger in extent to the east but form a relatively narrow band of hills between the valleys and close to the coast to the west;* • *Landform is generally gently undulating with indistinct rounded hills and lower-lying basins characterising the core of this landscape;* • *Some more pronounced, higher hills lie on the outer fringes of these foothills and form 'landmark' features seen from the adjacent well-settled Stinchar and Girvan valleys;* • *Land cover is simple, dominated by extensive coniferous forestry and grass moorland;* • *Very sparsely settled although a number of minor public roads, one of these designated as National Cycle Route 7, cross the core of these hills;* and • *The operational wind farm of Hadyard Hill is located in a shallow basin within a relatively narrow band of foothills in the west of this character type and the Tralorg and Assel Valley wind farms are sited on a more prominent group of hills close to Girvan and the coast."*[10]
Landscape susceptibility	This LCT is large scale with a simple undulating landform and dominance of moorland and forest cover. The operational Hadyard Hill, Assel Valley and Tralorg Wind Farms are located within the western part of the LCT and form a cluster of visible wind farms to the south-west of the Proposed Development. Further influence of human development includes the wide expanse of commercial plantation forest, particularly within the eastern part of the LCT, and the B734 that crosses the western part of the LCT. Given the scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **low**.
Landscape value	The eastern extent of the LCT is located within the Galloway Dark Skies Park. In addition, a small extent of the northern fringes is located within the Water of Girvan Valley LLA, a small extent of the southern fringes are located within the Stinchar Valley LLA and a small extent of the eastern fringes are located within the High Carrick Hills LLA. NCN Route 7 also passes through the eastern part of the LCT. The LCT is therefore considered to be of **medium** value overall.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium-low.**
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates that theoretical visibility is intermittent across the LCT and is most extensive within 5 to 10 km of the Proposed Development. Areas of theoretical visibility within 10 km include site-facing slopes and summits such as Glenalla Fell. Beyond 10 km, theoretical visibility becomes more intermittent with visibility limited to hills summits and site-facing slopes such as Hadyard Hill and Camregan Hill, located approximately 15.5 and 20.5 km from the nearest turbine respectively. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect views of the surrounding landscape, particularly from the eastern part LCT within 10 km. The Proposed Development will be viewed at a greater distance than the operational Hadyard Hill, Assel Valley and Tralorg Wind Farm located within the LCT. Key characteristics of the LCT will be unaltered by the Proposed Development. A **small** scale change will be experienced from the eastern part of the LCT, reducing to negligible around the operational wind farms. Changes will be experienced over a **medium** geographical extent due to the intermittent nature of

[10] Carol Anderson Landscape Associates (2018b) South Ayrshire Landscape Wind Energy Capacity Study, Character 17c: Foothills with Forest & Wind Farm

	visibility. The change will be **long-term** and **reversible**, as turbines can be removed from the view. The magnitude of change is therefore judged to be **low** for the eastern part of the LCT.
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	There are no consented wind farm developments within this LCT (scenario 1). The proposed Craiginmoddie, Carrick and Knockcronal Wind Farms (all at application stage) are located within this LCT. These schemes will extend the existing cluster of the operational Hadyard Hill, Tralorg and Assel Valley wind farms within this LCT into the eastern part of the LCT. Theoretical visibility of the Proposed Development is largely intermittent across the LCT with much of the LCT not having any visibility of the Proposed Development. From areas where the Proposed Development is visible to the north-east, it is likely to be seen in successive views with the proposed schemes located within the LCT and in combined views with the operational Dersalloch Wind Farm also to the north-east. The addition of the Proposed Development to this baseline will result in a **Minor** and **Not Significant** additional cumulative effect. The introduction of all these schemes under Scenario 2 will increase the influence of wind farm development within this LCT such that the total cumulative effect on this LCT is judged to be **Significant.**

Table A5.2.13: LCT 20c Southern Uplands & Forestry

Landscape Receptor	LCT 20c Southern Uplands & Forestry
Location and extents	This LCT is located within East Ayrshire, approximately 6.6 km to the east of the nearest turbine. The LCT extends from the east of Dalmellington across Carsphairn Forest forested hills to Struther's Brae, approximately 19 km to the east.
Baseline description	This LCT is characterised as an extensive area of upland hills with a land cover dominated by plantation forest. Key characteristics include: • *"Predominantly rounded hills of this character type are largely covered with commercial coniferous forestry which masks their landform;* • *Steep-sided narrow ridges and deep valleys;* • *A few of the highest hill tops are open and these are seen in views from the lower Loch Doon area and also backdrop the settlement of Dalmellington in the Doon Valley* • *Very sparsely settled with occasional farms sited on lower outward facing slopes;* • *The B741 and A713 are aligned on the periphery of this landscape although views from these roads are restricted by landform and forestry; and* • *Operational and consented wind farms, sited in both East Ayrshire and neighbouring Dumfries and Galloway, are a key feature of this landscape."*[11]
Landscape susceptibility	This LCT is large scale with a simple landform and a land cover of extensive commercial forestry. The operational Afton Wind Farm is located along the eastern boundary of the LCT and the under construction South Kyle Wind Farm is partially located within the centre of the LCT. Further influence of human development includes the wide expanse of commercial plantation forest across the LCT. Given the scale of the landscape and the existing presence of human influences, the overall susceptibility of the landscape is judged to be **low**.
Landscape value	The western fringes of the LCT are located within the Doon Valley SLA and the eastern part of the LCT is located within the Southern Uplands SLA. The LCT is therefore considered to be of **medium** value overall.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium-low.**
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates that theoretical visibility is intermittent across the LCT and is most extensive within 15 km of the Proposed Development. Areas of theoretical visibility within 15 km include site-facing slopes and summits such as Windy Standard and Enoch Hill. Beyond 15 km, theoretical visibility is limited to occasional hill summits including Strandlud Hill and Milray Hill. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect views of the surrounding landscape, particularly from the western part LCT within 15 km. From some parts of the LCT, the Proposed Development will be viewed in the context of the under construction South Kyle Wind Farm. The key characteristics of the LCT will not be altered by views of the Proposed Development. A **small** scale change will be experienced from the western part of the LCT within 15 km of the Proposed Development. Changes will be experienced over a **medium** geographical extent as effects will be most likely from the slopes and summits within the western part of the LCT. The change will be **long-term** and **reversible**, as turbines can be removed from the view. The magnitude of change is therefore judged to be **low** for the western part of the LCT.
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant**.
Potential for future cumulative effects:	The consented Pencloe and Enoch Hill Wind Farms are located within this LCT. These wind farm developments will extend the existing cluster of wind farm development in this LCT formed by the under construction South Kyle Wind Farm and the operational Brockloch Rig Wind Farm that meets the eastern boundary of the LCT. Pencloe Wind Farm will partially infill the gap between South Kyle and Brockloch Rig Wind Farms. The Proposed Development will be visible to the west in successive views with these schemes, in combined views with the operational Dersalloch Wind Farm and will extend the influence of wind farms in westerly views. The Proposed Development will be clearly separate from this group and outside the LCT, so that the addition of the Proposed Development will result in a **Minor** and **Not Significant** additional cumulative effect. It is likely that the total cumulative effect on this LCT in Scenario 1 will be **Significant.**

[11] Carol Anderson Landscape Associates (2018a) East Ayrshire Landscape Wind Energy Capacity Study, Character Type 20c: Southern Uplands & Forestry

	There are currently no proposed wind farm developments located within the LCT, therefore effects under Scenario 2 will be the same as for Scenario 1.

Table A5.2.14: LCT 21 Rugged Uplands, Lochs & Forest

Landscape Receptor	LCT 21 Rugged Uplands, Lochs & Forest
Location and extents	This LCT is located within both East and South Ayrshire and is located approximately 4.2 km to the south-east of the nearest turbine at its closest point. The LCT extends across the Carrick Forest from Fell Hill in the west to Loch Doon in the east.
Baseline description	This LCT is characterised by a complex upland landscape of rugged hills and ridges, lochs and forestry. Key characteristics include: • *"An extensive upland tract which includes the high hills of Merrick and the Rhinns of Kells;* • *Dramatic craggy mountainous scenery, which is a feature of the granite hills lying at the core of this landscape, is enhanced by a band of smoother, more rounded but steep-sided hills lying to the west;* • *Loch Doon and other smaller lochs which lie within a rough basin of moorland, wetland and forest to the east;* • *The complex landform and land cover, including the varied pattern of lochs and mature woodland and heather moor, is more reminiscent of a typically Highland landscape and this character type is highly scenic and a popular destination for recreation;* and • *Sparsely settled and, although it features some commercial forestry and impounded lochs, a strong sense of seclusion and naturalness can be experienced, particularly within the rugged hills lying at its core."*[12]
Landscape susceptibility	This LCT is small to medium scale with a complex landform of rugged hill ridges and summits dissected by narrow valleys and contained loch basins, forming a remote "*Highland*"[12] appearance. There are no operational wind farms in this LCT and human influence within this landscape is limited to commercial forestry, occasional farmsteads and estate properties and minor roads. Given the scale of the landscape and the lack of human influences, the overall susceptibility of the landscape is judged to be **medium-high**.
Landscape value	The LCT is partially located within the Galloway Dark Skies Park. In addition, the eastern part of the LCT is located within the Southern Uplands SLA and the western part of the LCT is located within the High Carrick Hills LLA. The LCT is also popular for recreational activity including walking and cycling and NCN Route 7 passes though the western extent of the LCT. The LCT is therefore considered to be of **medium-high** value overall.
Landscape sensitivity	Taking account of the judgements of susceptibility and value, the sensitivity of the LCT is judged to be **medium-high.**
Magnitude of landscape change	The ZTV (Figure 5.1.5) indicates that theoretical visibility is intermittent across the LCT and is most extensive within 15 km of the Proposed Development. Areas of theoretical visibility within 15 km include site-facing slopes and summits such as Cornish Hill, located approximately 12.5 km from the nearest turbine. Beyond 15 km theoretical visibility is limited to occasional hill slopes and summits including Shalloch on Minnoch and Mullwharchar. Effects on the character of the LCT will be indirect, resulting from changes in how the character of the LCT is perceived. Visibility of the Proposed Development from this LCT has the potential to affect the long distance "*elevated views*" offered by high summits and the LCT's "*strong sense of seclusion*"[12] as a result of introducing tall man-made features into the surrounding landscape. The turbines will be relatively distant features as seen from this landscape, and will be viewed behind the operational turbines of Dersalloch wind farm. The key characteristics, including sense of seclusion, would not be altered by the Proposed Development. A **small** scale change will be experienced from parts of the LCT with visibility of the turbines. Changes will be experienced over a **large** geographical extent as effects will occur from a number of elevated areas and summits across approximately 10 km. The magnitude of change is therefore judged to be **low**.
Overall level of effect and significance	Overall, the effect of the Proposed Development on this LCT is judged to be **Minor and Not Significant.**
Potential for future cumulative effects:	There are currently no consented or proposed wind farm developments located within the LCT. In Scenario 1, the consented Benbrack wind farm may be visible to the east in the context of South Kyle wind farm. In Scenario 2, the proposed Knockcronal, Carrick and Craiginmoddie wind farms would be visible to the north, in combined views with Dersalloch and the Proposed Development. The turbines of the Proposed Development will continue to be seen behind the existing wind farm. As such, additional cumulative effects are predicted to be **Minor and Not Significant** in both scenarios.

A5.2.2 Designated Landscapes

Table A5.2.15: Doon Valley SLA

Landscape Receptor	Doon Valley SLA
Location and extents	The Doon Valley SLA is located within East Ayrshire and includes the eastern part of the Proposed Development Area. It extends from Dalrymple in the north to the hills above Loch Doon in the south.
Baseline description and sensitivity	There is no detailed citation for this SLA, although reasons for its designation in relation to landscape character are provided in an LDP background paper[13]. Key characteristics and sensitivities are presented in relation to the LCTs that contribute to the character of the SLA, as follows: Upland River Valley (LCT 10) • *"The Doon Valley is an attractive upland valley, which provides a scenic entrance into East Ayrshire;*

[12] Carol Anderson Landscape Associates (2018a) East Ayrshire Landscape Wind Energy Capacity Study, Character Type 21: Rugged Uplands, Lochs & Forest

[13] East Ayrshire Council (2015) East Ayrshire Local Development Plan Background Paper: Sensitive Landscape Areas

	• *It contains a wide range of landscape features including complex knolly hill patterns in its most upland section, several water bodies and wetlands, landmarks hills and Craigengillan Estate;* • *The east side of the Doon Valley has been affected by the coal industry, making the appropriate management of the remaining valley of significant importance;* Rugged Uplands with lochs and forestry LCT (LCT 21) • *The landscape is unique in East Ayrshire terms, due to its remote and little modified nature;* • *Loch Doon, East Ayrshire's largest water body, adds to the diversity and interest of the landscape;* • *The sparsely settled landscape gives a strong sense of seclusion and naturalness;* • *It has a high scenic value and for this reason is also important for recreation and tourism;* Foothills West of the Doon Valley (LCT 17b) • *The relatively constrained band of upland landscape, forms an important role in providing the backdrop and setting for the Doon Valley and the Girvan Valley in South Ayrshire; and* • *The landmark hills in the southern part of the landscape form the backdrop to Dalmellington and Craigengillan Estate, whilst the more gentle northern section contributes positively to the setting of Patna and Waterside as well as the entrance into East Ayrshire on the A713."*[13] The SLA offers a diverse range of views. These include views from within the valley upwards towards the surrounding uplands, as well as open and expansive long distance views from hill summits, particularly within the southern part of the SLA around Loch Doon, including Craiglee and Mullwharchar. There are no operational wind farms within this SLA however the operational Dersalloch Wind Farm, located <1 km to the west, is visible from the SLA. The under construction South Kyle Wind Farm located approximately 2.2 km to the east of the SLA is also likely to be visible from many parts of the SLA, particularly from the highest summits within the southern part of the SLA in views to the north and north-east.
Changes	The Proposed Development is partially located within the SLA therefore effects will be direct. Direct operational effects will arise through the introduction of 7 turbines and associated infrastructure including tracks, met masts, substation and control building, as well as removal of forest within the Proposed Development Area. The landscape assessment found significant effects on parts of two LCTs within the SLA: locally Major effects on the northern part of LCT 17b Foothills West of the Doon Valley (see Table A5.2.3); and locally Moderate effects on LCT 10 Upland River Valley, between Patna and Waterside (see Table A5.2.4). Effects within LCT 21 will not be significant. Within LCT 17b, major effects are predicted within the Proposed Development Area and the north and north-eastern parts of the LCT, reducing to minor south of the ridge formed by Largs Hill, Black Hill and Turgeny. The 'landmark hills' noted in the key sensitivities will not be affected, nor will the backdrop to Dalmellington and Craigengillan. There will be some change to the backdrop to the northern part of the Doon Valley, and the setting of Patna and Waterside. The wind turbines have been set well back from the valley edge, to avoid having an overbearing effect on the valley landscape. Within LCT 10, moderate effects are predicted for the area around Patna and Waterside. It is not considered that there would be any effects on the key sensitivities noted for this LCT. Direct effects on the SLA landscape will be limited to the Proposed Development Area, which is peripheral to the SLA and not recognised within its key sensitivities. The presence of the Proposed Development will have some effect on the setting of part of the Doon Valley, around Patna and Waterside, but will not have wider effects on the more scenic southern part of the SLA represented by LCT 21. The Proposed Development will not affect the overall integrity of the SLA.
Potential for future cumulative effects:	The cumulative assessments note the potential for Moderate and Significant cumulative effects on the northern part of LCT 10, in Scenario 2 only, arising primarily from the combination of the Proposed Development with Knockkippen wind farm to the east. This will further affect the setting of the northern part of the Doon Valley, and the setting of Patna and Waterside. However, the more scenic southern part of the SLA will remain unaffected.

Table A5.2.16: Water of Girvan Valley LLA

Landscape Receptor	Water of Girvan Valley LLA
Location and extents	The Water of Girvan Valley LLA is located within South Ayrshire and borders the southern boundary of the Proposed Development Area. It extends from Old Dailly in the west to just east of Straiton in the east.
Baseline description and sensitivity	The special qualities of the LLA relevant to this assessment include the following, taken from the 'Description of character and special qualities' section of the Statement of Importance: • *"The Water of Girvan LLA has a settled, pastoral character which is strongly influenced by the presence of several estates;* • *Extensive policy woodland and parkland, as well as buildings such as castles, country houses, lodges, estate walls and other landscape features;* • *The setting for these policy landscapes is formed by the ridges of high land which frame the valley. Some of the ridges have strongly undulating forms which create distinctive horizons and are capped with moorland;* • *The openness of the hills contrast with farmed and heavily wooded slopes and the undulating valley floor, contributing to the richly scenic composition of this landscape;*

	• *The upper part of the valley is narrower and feels more intimate in scale than the lower part;* • *Flat pastoral fields divided by hedges or boulder walls sit below rugged grassy hills. The Water of Girvan is fast-flowing at this point, and there are waterfalls where its tributaries descend the steep valley sides, sometimes within wooded glens;* and • *This LLA is a popular area for walking and cycling. There are locally promoted walking routes around Straiton and Dailly, and some local infrastructure to support walkers. The climb up to the Hunter-Blair monument above Straiton (325m) is rewarded with exceptional panoramic views. On clear days, Ailsa Craig forms a focus on the western horizon."*[14] Views from within the LLA are varied. These include views focussed along the valley with open views up towards the surrounding uplands, enclosed views within intimate wooded glens and wide open long distance views from hill summits such as from Colonel Hunter Blair's Monument, Craigengower (Viewpoint 7). There are no operational wind farms within this LLA however the operational Dersalloch Wind Farm meets the eastern boundary and the operational Hadyard Hill and Tralorg and Assel Valley Wind Farms are located within 1.5 km to the south-west of the LLA. Each of these wind farms are visible from the LLA at varying degrees, particularly from the upland edges of the LLA, such as from Barony Hill and Hadyard Hill on the southern edge of the designation.
Changes	The Proposed Development is not located within the LLA, therefore potential effects will be indirect. The landscape of the LLA is varied and includes several character types, including the following LCTs which have been considered as part of the assessment: • 12 Middle Dale (Girvan Water); • 17b Foothills with Forest west of Doon Valley; • 17c Foothills with Forest & Wind Farm; and • 17d Maybole Foothills. The landscape assessment found significant effects on parts of two LCTs within the LLA: locally Major effects on the northern part of LCT 17b Foothills with Forest West of the Doon Valley (see Table A5.2.3); and locally Moderate effects on the eastern transitional edge of LCT 12 Middle Dale (see Table A5.2.9). Effects within LCTs 17c and 17d will not be significant. The ZTV indicates that theoretical visibility of the Proposed Development from within the LLA will be widespread within 15 km including from Straiton, Dailly, stretches of the B741 and along valley floors and from and hill summits on the upper edges of the LLA. There will be effects on the "*exceptional panoramic views"* afforded from some hill summits within the LLA, including Colonel Hunter Blair's Monument, Craigengower (Viewpoint 7), although the main focus of this view on the Girvan Valley and Arran will not be affected. The presence of turbines on the skyline in views from the valley floor will be limited at closer distances due to the turbines being set well back (e.g. Viewpoint 8, Viewpoint 10). In longer views such as Viewpoint 14, the turbines will be visible but will be a smaller feature in the view. The Proposed Development has been designed so as not to appear "*prominent on containing skylines*", recognising that these skylines form the setting for settlement and policy landscapes within the LLA. Where visible, the Proposed Development may also "*affect views and the character of this scenically rich valley*", though the wooded nature of the valley restricts many views, and as noted above the turbines are set back so as not to be prominent in key views. Overall, the Proposed Development will have significant effects on the character of a small peripheral part of the LLA landscape, and will have limited effects on the qualities for which it has been designated. It is considered that the Proposed Development will not compromise the overall integrity of the designation.
Potential for future cumulative effects:	There are no consented or proposed wind farm developments in the LLA. The consented Kirk Hill – Kirkoswald Wind Farm to the north of the designation will be visible from the LLA in successive views with the operational Hadyard Hill, Tralog and Assel Valley Wind Farms which are located immediately to the south of the LLA. Combined and successive views of Kirk Hill – Kirkoswald Wind Farm and the Proposed Development will be limited from most of the LLA. The Proposed Development will not have a significant additional cumulative effect on the special qualities of the LLA in Scenario 1. Under Scenario 2 the proposed Carrick, Knockcronal and Craiginmoddie Wind Farms may be visible 2-4 km to the south of this LLA. The addition of the Proposed Development to this baseline will result in further successive views of wind farms from the upper valley, albeit that most views of the Proposed Development will be limited. The proposed wind farms have potential to affect the perception of the *"ridges of high land which frame the valley"*. The Proposed Development will be seen to the east in successive views and will read as a separate scheme to this group. The Proposed Development will not have a significant additional cumulative effect on the special qualities of the LLA in Scenario 1. Given the proposed addition of three new wind farm developments along the southern boundary of the LLA, it is considered that the total cumulative effect under Scenario 2 will be significant.

Table A5.2.17: High Carrick Hills LLA

Landscape Receptor	High Carrick Hills LLA
Location and extents	The High Carrick Hills LLA is located within South Ayrshire, approximately 4.7 km to the south of the nearest turbine. It extends from the head of the Girvan Valley, approximately 18 km south-westwards, meeting the Galloway Forest Park in the south and Fell Hill in the south-west.
Baseline description and sensitivity	The special qualities of the LLA relevant to this assessment include the following, taken from the 'Description of character and special qualities' section of the Statement of Importance: • *"A long and narrow ridge of high, open hills is aligned north/south in the eastern part of this landscape. Beyond the boundary of South Ayrshire this ridge continues southwards to the Merrick, becoming more complex where spurs extend to the west;*

[14] Carol Anderson Landscape Associates (2018) South Ayrshire Local Landscape Designations Review - Final Report December 2018, Water of Girvan Valley LLA

	• *A series of small peaty lochs lie within boggy basins, littered with rocky outcrops in this area;* • *There is a mountain bothy at Tunskeen east of Shalloch on Minnoch, mountain biking and walking on an extensive network of forest tracks and forest drives promoted by the Forestry Commission;* • *National Cycle Route 7 is aligned through this LLA and this, and other minor roads which cross the area, are popular with local cycling groups;* • *The south-eastern part of this LLA forms part of the Merrick Wild Land Area. A particularly strong sense of wildness is associated with the Shalloch on Minnoch area due to the lesser influence of forestry and the long walk to the ridge from the public road;* • *This landscape also lies within the Galloway Dark Sky Park which was one of the first in the UK to be recognised by the International Dark Sky Association;* • *While forestry restricts long views from roads and lower walking routes, expansive views to the Merrick range and over the hills and valleys of South Ayrshire to the Firth of Clyde and Ailsa Craig are possible from open hill summits;* and • *This upland landscape also forms a dramatic grouping of high hills seen across parts of South Ayrshire, for example near Maybole and from the popular walk to the Hunter-Blair monument near Straiton."*[15] The LLA offers long distance, expansive views of the surrounding landscape from open hills summits within the north-eastern, central and south-eastern parts of the LLA, such as from the Shalloch on Minnoch. At lower elevations however, many views are screened by surrounding coniferous forestry. There are no operational wind farms within this LLA however the operational Dersalloch Wind Farm, located approximately 1.6 km from the LLA, is visible in distant views from open hills summits. Additionally, the operational Hadyard Hill and Tralorg and Assel Valley Wind Farms, located within 10 km to the north-west are visible in distant views from hill summits within the western parts of the LLA.
Changes	The Proposed Development is not located within the LLA, therefore potential effects will be indirect. The landscape of the LLA is varied and includes several character types, including the following which have been considered as part of the assessment: • 17c Foothills with Forest & Wind Farm; and • 21 Rugged Uplands, Lochs & Forest. Tables A5.2.12 and A5.2.14 set out the assessment of effects on these LCTs, and confirm that there will be no significant effects on the character of these areas.
	The ZTV indicates that theoretical visibility of the Proposed Development from within the LLA will be widespread within 15 km including from the eastern slopes that overlook Loch Bradan, Eldrick Hill, the lower northern and eastern slopes of the Rig of the Shalloch and the Shalloch on Minnoch. Beyond 15 km, visibility becomes more infrequent and is limited to scattered hills summits and slopes within the southern and western extents of the LLA. Where visible, the Proposed Development will be seen directly behind the operational Dersalloch Wind Farm. The Statement of Importance notes that the landscape within the LLA is "highly sensitive" to turbines including "*those sited in adjacent upland areas where they would intrude on views from open hill tops and diminish the sense of wildness experienced*"[15]. As the Proposed Development will be seen behind Dersalloch, it is not considered to intrude into unaffected views, or to diminish any sense of wildness. Given that there will be no direct effects on the LLA and that operational turbines have already altered views from the LLA, it is considered that the Proposed Development will not have a significant effect on any of the qualities for which the LLA has been designated, and will not compromise its overall integrity.
Potential for future cumulative effects:	As there will be no significant effects on this LLA as a result of the Proposed Development, it is not considered likely that the Proposed Development would give rise to any significant cumulative effects on the designation or the qualities for which it has been designated.

Table A5.2.18: Doon Valley LLA

Landscape Receptor	Doon Valley LLA
Location and extents	The Doon Valley LLA is located within South Ayrshire, approximately 4.6 km to the north of the nearest turbine. It extends from the south of Hollybush westwards along the River Doon to meet the Brown Carrick Hills & Coast LLA to the south of Ayr.
Baseline description and sensitivity	The special qualities of the LLA relevant to this assessment include the following, taken from the 'Description of character and special qualities' section of the Statement of Importance: • *"A shallow wide valley to the north-west with the river flowing in a series of wide lazy meanders through arcs of floodplain pastures as it approaches Alloway. To the east, however, the valley becomes much narrower, hemmed in by steep wooded banks;* • *The long steep slopes on the western side of the Doon south of Alloway adjoin the Brown Carrick Hills and Coast LLA. These slopes feature a distinct pattern of long narrow mixed woodlands filling the glens of tributary burns;*

[15] Carol Anderson Landscape Associates (2018) South Ayrshire Local Landscape Designations Review - Final Report December 2018, High Carrick Hills LLA

	• *Extensive policy woodlands are a key characteristic of the Doon valley and are associated with the estates of Nether Auchendrane, Monkwood and Cassilis;* • *Rolling farmland, with small pastures enclosed by a mix of stone walls and hedges, lies either side of the valley.* • *An area of more open floodplain occurs close to the settlement of Dalrymple which lies in East Ayrshire;* • *As the valley narrows eastwards from Cassillis Estate it is contiguous with, and physically and visually greatly influenced by the wooded policies of Skeldon, Hollybush, Auchendoon and Boreland;* and • *While much of the valley is difficult to access, the river is used by kayakers and anglers. The Alloway area is also popular with visitors because of its Burn's connections."*[16] Views within and from the LLA are generally contained by development in the western extent, woodland and the steeply incised slopes of the valley within the eastern extent. There are no operational wind farms within this LLA, however the northern fringes of the designation are heavily developed with suburban housing on the southern edge of Ayr.
Changes	The Proposed Development is not located within the LLA, therefore potential effects will be indirect. The LLA includes the following character types which have been considered as part of the assessment: • 4b Brown Carrick Hills; • 7d South Ayrshire Lowlands; • 9 Lowland River Valley (River Doon); and • 17d Maybole Foothills. Tables A5.2.5, A5.2.7, A5.2.8, and A5.2.11 present the assessment of effects on these LCTs, and confirm that there will be no significant effects on any of these LCTs. The ZTV indicates that theoretical visibility of the Proposed Development from within the LLA within 10 km will be limited to small scattered patches, due to the deeply incised valley slopes that screen most outward views. Between 10 – 15 km, theoretical visibility will be more widespread as the floodplain of the River Doon opens out with more gently undulating topography forming the valley sides, allowing more outward views towards the Proposed Development Area. This part of the LLA however as already been altered by development, including roads, railways and housing. Given that there will be limited effects on the character of the LLA and that most theoretical visibility will be beyond 10 km from the nearest turbine, it is considered that the Proposed Development will not compromise the overall integrity of the designation by significantly affecting the qualities for which it has been designated.
Potential for future cumulative effects:	As there will be no significant effects on this LLA as a result of the Proposed Development, it is not considered likely that the Proposed Development would give rise to any significant cumulative effects on the designation or the qualities for which it has been designated.

Table A5.2.19: Brown Carrick Hills & Coast LLA

Landscape Receptor	Brown Carrick Hills & Coast LLA
Location and extents	The Brown Carrick Hills & Coast LLA is located within South Ayrshire, approximately 10.5 km to the north-west of the nearest turbine. It extends from the B7024 to the west coast and is bordered by the Doon Valley LLA to the north-east and the Culzean LLA to the south-west.
Baseline description and sensitivity	The special qualities of the LLA relevant to this assessment include the following, taken from the 'Description of character and special qualities' section of the Statement of Importance: • *"The Brown Carrick Hills, despite only attaining heights of less than 300m, are prominent in views across much of coastal Ayrshire;* • *Individual summits are not particularly well defined, forming instead a knolly plateau where the rough landcover of heather, bracken and grass creates a rugged character which is accentuated by clumps of gorse and wind-sheared sycamore and lines of beech;* • *Lower slopes are generally smoothly graded, falling steeply to the coast in the west but with more gently rolling landform found in the south-east;* • *Only the lower hill slopes and more sheltered inland valleys of this landscape are settled, with small settlements, as well as farms and single houses, connected by a network of narrow roads;* • *The coast is very well used for recreation with caravan parks located close to the beach and walkers using a network of routes within the hills and along the coast. National Cycle Route 7 is aligned above the coast and on the minor road crossing over the hills;* • *Both the hills and the coast offer spectacular views across the Firth of Clyde which focus on the north Arran mountains;* and • *A strong sense of naturalness and remoteness can be experienced in the less developed sections of the coast between the Heads of Ayr and Dunure."*[17]

[16] Carol Anderson Landscape Associates (2018) South Ayrshire Local Landscape Designations Review - Final Report December 2018, Doon Valley LLA

[17] Carol Anderson Landscape Associates (2018) South Ayrshire Local Landscape Designations Review - Final Report December 2018, Brown Carrick Hills & Coast LLA

	The Brown Carrick Hills offer long distance, expansive views of the surrounding landscape with a particular focus on the coast. Inland views include the Carrick hills to the south-east, where several operational wind farms are visible. There are no operational wind farms within this LLA.
Changes	The Proposed Development is not located within the LLA, therefore potential effects will be indirect. The LLA includes several character types, of which the only one that has been considered as part of the assessment is LCT 4b Brown Carrick Hills. Table A5.2.5 sets out the assessment of effects on LCT 4b Brown Carrick Hills, and identifies that there will be no significant effects on this LCT. The ZTV indicates that there is widespread theoretical visibility across the central and eastern parts of the LLA at distances between 10 – 15 km from the nearest turbine. Areas with theoretical visibility include the summits and eastern slopes of the Brown Carrick Hills as well as the gently rolling landform and stretches of road and NCN Route 7 within the eastern part of the LLA. There is no visibility from the coastal stretch of the LLA due to the intervening terrain of the Brown Carrick Hills which screens views to the south-east towards the Proposed Development Area. Where visible, the Proposed Development will be seen in inland views, and will not affect the "*spectacular views across the Firth of Clyde*" offered by the Brown Carrick Hills. Given the distances of 10 – 15 km between areas of theoretical visibility and the Proposed Development, and the existing presence of wind farms in inland views, it is considered that the Proposed Development will not affect any of the qualities for which the LLA has been designated.
Potential for future cumulative effects:	As there will be no significant effects on this LLA as a result of the Proposed Development, it is not considered likely that the Proposed Development would give rise to any significant cumulative effects on the designation or the qualities for which it has been designated.

Technical Appendix 5.3: Visual Assessment

A5.3.1 Introduction

A5.3.1.1 The assessment of visual effects from the 16 viewpoints selected to represent views of the Proposed Development (as listed in Table 5.7 in Chapter 5 and shown on Figure 5.2.1) are set out below. Visual effects from settlements and routes as listed in Tables 5.5 and 5.6 in Chapter 5 are also included in this assessment. This assessment assumes that all effects are long-term and reversible, unless stated otherwise.

A5.3.2 Viewpoint Assessment

A5.3.2.1 Accompanying visualisations for each assessment viewpoint are contained in Volumes 2c of the EIA Report. The visualisations were prepared in accordance with the methodology set out in Technical Appendix 5.1.

Table A5.3.1: Viewpoint 1: B741 at Gass

Viewpoint 1: B741 at Gass			
Grid Reference (NGR)	241782, 605869	Figure Number	5.2.1
LCT	17b Foothills with Forest west of Doon Valley	Designated Landscape or Wild Land Area	None
Direction of View	North	Distance to Nearest Turbine (km)	0.85
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

This viewpoint is located on a single-track B-road which crosses the moorland between Straiton and Dalmellington. It is located on the high point of the road (285 m), around 600 m east of Gass. The view from the road takes in grass moorland in the foreground, with single-species coniferous forestry to the north which contains the view in this direction. To the north-east and east there are views beyond the moorland and forestry to Benquhat Hill and Benbeoch on the east side of the Doon Valley and to the west there are views to low hills west of Straiton. To the south the land rises up steeply to Black Hill and Turgeny, restricting views, however a number of hubs and blades of the turbines of Dersalloch Wind Farm, located <1 km from the viewpoint, are visible as they extend above the foreground horizon in this direction.

Sensitivity:

Receptors at this location will be road users on the B741. Road users (including cyclists) are considered to be of **medium** susceptibility. This viewpoint is not located within a designated or protected landscape, and is of limited scenic interest, therefore the value of the view is considered to be **low**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of road users at this viewpoint is judged to be **medium**.

Assessment of visual effects:

The hubs and blades of all 9 turbines within the Proposed Development will be theoretically visible from this viewpoint. The turbines will be seen at close proximity, with a distance of 0.85 km between the viewpoint and the closest turbine (T8). As such, the turbines will appear as large scale features within northerly views and will break the skyline formed by the coniferous forestry within the Proposed Development Area. The turbines will occupy a large extent of the view in this direction. Forestry that will be retained within the Proposed Development Area will provide a degree of screening against the lower parts of turbine towers and tracks and ancillary infrastructure, however the hubs and blades of all 9 turbines will remain visible. The turbines will be seen in successive views with Dersalloch Wind Farm to the south and will be seen at a closer distance than Dersalloch.

Given the distance of 0.85 km between the viewpoint and the turbines, the scale of change will be **large**. The geographical extent of the change is judged to be **medium** as similar views will be gained from this stretch of the B741 between Straiton and Dalmellington which extends across 5 km.

The overall magnitude of change is judged to be **high** and taking account of the **medium** sensitivity will result in a **Major and Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, turbines within the consented North Kyle Energy Project will be theoretically visible to the north-east at a distance of approximately 8.6 km, with the tips of the consented Overhill Wind Farm visible behind appearing as part of the North Kyle Energy Project Scheme. To the east, the consented Enoch Hill and Pencloe Wind Farms will also be visible across the horizon at distances of approximately 14km and 17km respectively and will be read as part of an emerging cluster of windfarms to the east formed by the operational Hare Hill Phase 1 and 2 Wind Farms and the under construction South Kyle Wind Farm. The consented Kirk Hill - Kirkoswald Wind Farm is located approximately 15 km to the west and will be read as an individual scheme along the horizon. The addition of the Proposed Development will introduce turbines to the north, where no other existing or consented schemes are present.

Under Scenario 2, the proposed Knockkippen Wind Farm (scoping) will be visible to the north-east at a distance of approximately 4.7 km. The hubs and blades will be visible as they extend above intervening forestry that will be retained on the Proposed Development Area in the foreground view, and the scheme will appear as a separate scheme to the North Kyle Energy Project Wind Farm. The eastern extent of the Proposed Development will be visible in front of Knockkippen and in closer proximity to the viewpoint, increasing the number of turbines occupying north and north-easterly views. To the east, the tips of the proposed Overhill (appeal/public inquiry) and Greenburn Wind Park (application) wind farms will be theoretically visible along the horizon, although at a distance over 10 km, the tips will be barely perceptible. Similarly, to the south-west, the tips of Carrick Wind Farm (application) will be theoretically visible however at a distance of over 7 km these are also likely to be barely perceptible.

The addition of the Proposed Development in combination with the schemes under both Scenario 1 and 2 will introduce a **large** scale change over a **medium** geographical extent, resulting in a **high** magnitude of change. The additional and total cumulative visual effect will be **Major and Significant** under both Scenario 1 and 2.

Table A5.3.2: Viewpoint 2: Waterside, Doon Valley Railway

Viewpoint 2: Waterside, Doon Valley Railway			
Grid Reference (NGR)	243994, 608395	Figure Number	5.2.2
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	West and south-west	Distance to Nearest Turbine (km)	2.0
Number of hubs theoretically visible	6	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

This viewpoint is located on a railway bridge which gives access to the former iron works at Waterside, now used as a heritage centre. The centre is open periodically during summer and offers steam train rides along the Doon Valley.

From the bridge, the view to the west and south-west overlooks a high bing in the foreground which restricts views in these directions. The top of the western valley side can be seen extending above the intervening bing in some parts of the view, forming a rough grassland and forested horizon. There are also partial views along the Doon Valley towards Bellsbank to the south-west. To the north-west there are views along the Doon Valley to Patna and the forested moor behind. These views are partially interrupted by intervening deciduous trees and vegetation that fringe the railway line to the north-west. To the north and north-east, the view is largely contained by Green Hill and deciduous woodland on its lower slopes, which backcloths some residential properties and the former ironworks in the foreground.

Sensitivity:

Receptors at this location are visitors to the heritage centre, who come to view the historic buildings and railway locomotives, as well as a small number of residents at Waterside. Visitors and residents are considered to be of **high** susceptibility. Visitors to the heritage centre will view wider visual context of the Doon Valley as they arrive and depart, and as they move around the heritage centre. The Doon Valley landscape will also be viewed during steam train rides. The viewpoint is located within the Doon Valley SLA. The value of the view is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

Up to 6 hubs and 9 blades will be theoretically visible from this viewpoint, breaking the skyline formed by the intervening bing and the western slopes of the Doon Valley. The eastern-most turbines will be the closest, particularly T9 which is located at a distance of 2 km from the viewpoint. The turbines will form clearly visible features along the horizon. The turbines will be set well back from the valley edge, thereby reducing their apparent scale in relation to the Doon Valley below. The turbines will occupy a section of the skyline in views to the south-west. Tracks and ancillary infrastructure will not be visible due to screening by the intervening bing and valley slopes.

The scale of change will be **medium**. The geographical extent of the change is judged to be **medium** as similar views will be gained from other parts of Waterside and from stretches of the heritage railway and the A713 that run along the Doon Valley.

The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, the under construction South Kyle and consented Benbrack Variation Wind Farms are theoretically visibility to the south-east at a distances of approximately 10.2 and 11.3 km respectively, although deciduous vegetation in the foreground view is likely to screen most of turbines that are theoretically visible. Under Scenario 2, one turbine blade within the proposed Knockkippen Wind Farm (scoping), located approximately 1.4 km to the north-east will be visible as remaining turbines will be screened by the intervening topography of Green Hill. The Proposed Development will introduce turbines within views to the south-west, appearing as a separate scheme to the other visible wind farms. Given the limited visibility of other wind farm development, effects under Scenario 1 and Scenario 2 will be the same as for the LVIA.

Table A5.3.3: Viewpoint 3: Waterside, north end

Viewpoint 3: Waterside, north end			
Grid Reference (NGR)	243599, 608855	Figure Number	5.2.3
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	South-west	Distance to Nearest Turbine (km)	2.1
Number of hubs theoretically visible	8	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

This viewpoint is located at the north end of the village of Waterside and represents residential receptors in this part of the village. Views to the south-west and west are open and overlook a foreground of rough grassland and deciduous woodland that sits below the viewpoint, lining the A713 as it runs through the Doon Valley. Beyond this, the rough grassland covered floodplain of the River Doon is visible with the western slopes of the Doon Valley forming the backdrop. Pockets of woodland are visible across the western slopes with a ridgeline of forestry forming the horizon on the top of the valley slopes. The hubs and blades of 2 turbines within the Dersalloch Wind Farm are also visible along the horizon to the south-west. To the north and north-east, open views up the Doon Valley are available with Patna visible on the middle distance, backclothed by low forested hills beyond. To the east and south, views are screened by a small number of residential properties and a belt of deciduous woodland.

Sensitivity:

Receptors at this location are residents at the northern end of Waterside, with open views to the south-west towards the Proposed Development Area. Residential receptors are considered to be of **high** susceptibility to changes in the view. The viewpoint is located within the Doon Valley SLA therefore this view is considered to be of **medium** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects: Up to 8 hubs and 9 blades will be theoretically visible from this viewpoint, as they extend above the forested skyline along the western slopes of the Doon Valley. The eastern-most turbines will be the closest and most visible, at a distance of 2.1 km from the viewpoint. The turbines will occupy around 45 degrees of the visible horizon. The turbines will be set well back from the valley edge, which will help to reduce their apparent scale in relation to the Doon Valley below. The forestry along the top of the valley slopes will partially screen turbines within the western part of the Proposed Development Area, including some hubs and blades. The access track will be visible on the valley side to the south-west, though other ancillary infrastructure will not be visible due to the intervening valley slopes. The turbines will be seen alongside limited views of Dersalloch Wind Farm to the south-west, and will appear larger and closer. The scale of change in the view will be **medium**. The geographical extent of the change is judged to be **small** as similar views will be gained from limited parts of Waterside, due to intervening woodland that surrounds the settlement. The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect.
Potential for future cumulative effects: The consented Benbrack Variation Wind Farm is theoretically visible in views to the south-east at a distance of approximately 11.7 km, however deciduous trees and buildings in Waterside in the foreground will screen the consented scheme. No other consented wind farms and no proposed wind farms will be visible from this viewpoint. As such, effects under Scenario 1 and Scenario 2 will be the same as for the LVIA.

Table A5.3.4: Viewpoint 4: Patna

Viewpoint 4: Patna			
Grid Reference (NGR)	241958, 610075	Figure Number	5.2.4
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	South and south-west	Distance to Nearest Turbine (km)	2.1
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9
Location, description of existing view and potential receptors: This viewpoint is located within an area of open green space within Patna, adjacent to the A713, and represents residential receptors and road users. Views towards the Proposed Development Area to the south and south-west overlook rough grassland and mixed woodland along the floor of the Doon Valley. Beyond the woodland, properties along the with western slopes of the valley within Patna can be seen against a backdrop of wooded moorland valley slopes, with areas of forestry along the top of the hills that form the horizon and the western valley side. Views to the west are similar with more housing and tree cover within the western slopes of Patna. Views to the north and west are largely contained by residential properties and the wooded eastern slopes of the Doon Valley.			
Sensitivity: Receptors at this location are residents and road users, including cyclists. Residential receptors are considered to be of **high** susceptibility to changes in the view whilst road users are considered to be of **medium** susceptibility. The viewpoint is located within the Doon Valley SLA therefore this view is considered to be of **medium** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.			
Assessment of visual effects: The hubs and blades of all 9 turbines within the Proposed Development will be theoretically visible from this viewpoint, as they extend above the hills that form the western slopes of the Doon Valley. The Proposed Development will occupy around 45 degrees of the horizon in this view, with the closest turbines located at a distance of 2.1 km from the viewpoint. The turbines will be set well back from the valley edge. Turbines within the western part of the Proposed Development Area will be partially screened by forestry on the upper western slopes of the Doon Valley. Mixed woodland in the foreground may provide further screening in many views from the settlement. Tracks and ancillary infrastructure will not be visible due to the intervening valley slopes. The scale of change will be **medium**. The geographical extent of the change is judged to be **medium** as similar views will be gained from other sections of the A713 within Patna and the Doon Valley. The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect.			
Potential for future cumulative effects: The consented Benbrack Variation Wind Farm is theoretically visible in views to the south-east at a distance of approximately 14 km, although deciduous and coniferous woodland in the middle ground view in this direction will screen the consented scheme. As such, effects under Scenario 1 will be the same as for the LVIA. Under Scenario 2, the proposed Knockkippen Wind Farm (scoping) will be visible to the north-east at a distance of approximately 2 km and will appear as large scale features along the wooded horizon. Deciduous and coniferous woodland in the middle distance, back-clothing the residential properties in the foreground, will screen some of the turbines, however outlying turbines and turbine tips are likely to still be visible. The Proposed Development will be seen in successive views with Knockkippen and will introduce turbines in south-western views and in close proximity. The viewpoint therefore will be overlooked by close proximity turbines in opposite directions which will result in a **large** scale change over a **medium** geographical extent. The magnitude of change is considered to be **high** and as such the cumulative visual effect under Scenario 2 will be **Major and Significant.**			

Table A5.3.5: Viewpoint 5: Auchenroy Hill

Viewpoint 5: Auchenroy Hill			
Grid Reference (NGR)	244545, 605595	Figure Number	5.2.5
LCT	17b Foothills with Forest west of Doon Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	North-west	Distance to Nearest Turbine (km)	2.4
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9
Location, description of existing view and potential receptors: This viewpoint is located on the summit of Auchenroy Hill (367m), located approximately 4 km west of Dalmellington, at the edge of the Doon Valley. The summit comprises open moorland and is			

marked by a trig point, offering panoramic views across the surrounding area. To the north-west the viewpoint overlooks the Proposed Development Area as part of the wider forested plateau. Beyond the forestry are the Carrick Hills, with Arran visible in the Firth of Clyde. Patna is visible in the Doon Valley, though much of the valley floor is hidden by White Hill to the north. Looking north-east and east there are views across the Doon Valley to Benquhat and Benbeoch with Dalmellington in the middle-ground, with views of Windy Rig and Afton Wind Farms as well as the tips of Brockloch Rig Phase 1 and 2 Wind Farms in the distance over 10 km away. To the south-east views extend across Bellsbank to Cairnsmore of Carsphairn. To the south there are views to Big Hill of Glenmount and Merrick in the distance. To the west, Dersalloch Wind Farm is visible within 1 km across the moorland and forestry of Dersalloch Hill, with the rocky hills west of the Girvan Water beyond. Ailsa Craig can be seen in the distance. The tips of Hadyard and Tralorg Wind Farms can also be seen over 15 km away in the south-west.

Sensitivity:

Recreational receptors on the summit, whose attention is focused on their surroundings, are considered to be of **high** susceptibility to changes in the view. The viewpoint is located within the Doon Valley SLA and has scenic value, therefore this view is considered to be of **medium-high** value.

On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

The hubs and blades of all 9 turbines within the Proposed Development will be theoretically visible from this viewpoint, as they extend above the rolling forested moorland of the Proposed Development Area. The turbines will break the skyline and stacking will occur between turbines in both the east and west of the Proposed Development Area. Tracks and ancillary infrastructure will be visible across the area of open moorland within eastern part of the Proposed Development Area, where forestry will be felled. Within other parts of the Proposed Development Area this will be screened by retained forestry. The turbines will form a contained cluster in views to the north-west, clearly separate from the Doon Valley. The turbines will be seen in combined views with the turbines of Dersalloch Wind Farm. Although smaller, these turbines are closer and on higher ground than the Proposed Development, reducing contrast in apparent scale.

The scale of change will be **large**. The geographical extent of the change is judged to be **medium** as similar views will be gained from other hill summits to the south of the Proposed Development Area within 5 km.

The overall magnitude of change is judged to be **high** and taking account of the **high** sensitivity will result in a **Major and Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, turbines in the consented Kirk Hill – Kirkoswald Wind Farm will be visible in views to the west at a distance of approximately 17.7 km on the distant horizon. The Proposed Development will be seen in combined views with Kirk Hill – Kirkoswald and the operational Dersalloch Wind Farm, increasing the influence of turbines in views to the west and introducing further turbines in close proximity to the view. To the north-east the consented North Kyle Energy Project Wind Farm, located approximately 6.3 km from the viewpoint, will be visible emerging above the horizon in the middle distance, with some hubs and tips of the consented Overhill Wind Farm visible behind appearing as part of the North Kyle Energy Project Scheme. To the east and south-east, turbines in the consented Enoch Hill, Pencloe, Benbrack Variation and Brockloch Rig Phase 3 Wind Farms will be visible along the more distant forested horizon at distances between 9-15 km in combined views with the under construction South Kyle Wind Farm, approximately 9 km away, and the operational Hare Hill Phase 1 and 2, Afton, Brockloch Rig, Brockloch Rig 1, Windy Rig Wind Farms at distances between 13-19 km. The Proposed Development will be seen in successive views with these schemes and at closer proximity, and will result in views from this location being influenced by an increased number of wind farm developments. This, together with the number of consented schemes visible, will result in a **large** scale change over a **medium** geographical extent. The magnitude of change is considered to be **high** and as such the cumulative visual effect under Scenario 1 will be **Major and Significant.**

Under Scenario 2, the Proposed Development will be seen in successive views with the proposed Knockkippen Wind Farm (scoping) located approximately 3.8 km to the north. Knockkippen will be visible above the Doon Valley in the middle distance in views to the north. Together, the Proposed Development and Knockkipen will introduce close proximity turbines in directions that are not currently influenced by wind farm development. To the south-west, Carrick, Knockcronal and Craiginmoddie Wind Farms (application), located over 8 km away, will be visible behind Dersalloch are likely to be read as part of the Dersalloch scheme despite their distance. The addition of the Proposed Development along with Knockkippen as two new close proximity wind farm developments in the north and north-west will result in a **large** scale change over a **medium** geographical extent. The magnitude of change is considered to be **high** and as such the cumulative visual effect under Scenario 2 will be **Major and Significant.**

Table A5.3.6: Viewpoint 6: Lethanhill

Viewpoint 6: Lethanhill			
Grid Reference (NGR)	242847, 610391	Figure Number	5.2.6
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	South-west	Distance to Nearest Turbine (km)	2.9
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

This viewpoint is located on the north-east valley side of the Doon Valley, to the east of Patna. The viewpoint is at the top of an access track that leads to Lethanhill Schoolhouse, and the track is used by local recreational receptors. The view overlooks the Doon Valley and Patna which is mainly sited on the western valley side. The view takes in the pasture on the south-west side of the valley, divided by wooded gullies, with the open and forested moorland of the Proposed Development Area beyond. Behind the Proposed Development Area, Assel Valley and Tralorg Wind Farms and the tips of Hadyard Hill Wind Farm are visible along the distant horizon, over 15 km away. The forestry along the top of western slopes of the Doon Valley extends around to the north to form the backdrop to Patna. To the south, Auchenroy Hill and Turgeny can be seen containing the middle-distance with Dersalloch Wind Farm visible across the moorland slopes of Black Hill and Dersalloch Hill at a distance of approximately 5 km. Beyond this, the distant summits of Merrick to the south, the Rhinns of Kells to the south-west, and Mochrum Hill to the west, can be glimpsed. Views north and east are obscured by rising ground.

Sensitivity:

Receptors at this viewpoint are recreational users and residents, both of which are considered to be of **high** susceptibility to changes in the view. The viewpoint is located within the Doon Valley SLA and is on a local footpath, therefore the view is considered to be of **medium** value.

On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

The hubs and blades of all 9 turbines within the Proposed Development will be theoretically visible from this viewpoint. The turbines will be seen on the skyline which forms the western backdrop to the Doon Valley, and will occupy around 45 degrees of the view. Tracks and ancillary infrastructure may be visible across the area of open moorland within the eastern part of the Proposed Development Area, including the access track. In views to the south-west from this elevated viewpoint, the turbines will appear large in scale, despite being set back from the valley edge. The turbines will appear larger and closer to those of Dersalloch behind.

The scale of change will be **large**. The geographical extent of the change is judged to be **medium** as similar views will be gained from other elevated parts of the eastern valley side.

The overall magnitude of change is judged to be **high** and taking account of the **high** sensitivity will result in a **Major and Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1 the blades and tips of Kirk Hill – Kirkoswald Wind Farm will be theoretically visible at a distance of approximately 17 km to the south-west. In reality however the turbines are likely to be barely perceptible due to the distance. As such, effects under Scenario 1 will be the same as for the LVIA.

Under Scenario 2, the proposed Knockkippen Wind Farm (scoping) will be visible above the viewpoint across the foreground horizon to the east and north-east from this viewpoint, at a distance of approximately 1 km. Due to their proximity, the turbines of Knockkippen will appear as large-scale features that overlook Lethanhill. To the south-west, the Proposed Development will be visible in successive views with Knockkippen and will be seen in combined views with the operational Dersalloch Wind Farm, approximately 5 km away, and the proposed Knockcronal, Carrick and Craiginmoddie Wind Farms (application), located at distances over 11km. The more distance operational Hadyard Hill, Assel Valley and Tralorg Wind Farms are also visible to the south-west at distances over 17 km. The addition of the Proposed Development in opposite views to Knockkippen will increase the number of turbines visible from this viewpoint and introduce turbines within 3 km of the viewpoint in two directions. This is considered to give rise to a **large** scale of change over a **medium** geographical extent. The magnitude of change is considered to be **high** and as such the cumulative visual effect under Scenario 2 will be **Major and Significant.**

Table A5.3.7: Viewpoint 7: Colonel Hunter Blair's Monument, Craigengower

Viewpoint 7: Colonel Hunter Blair's Monument, Craigengower			
Grid Reference (NGR)	239169, 603968	Figure Number	5.2.7
LCT	17b Foothills with Forest west of Doon Valley	Designated Landscape or Wild Land Area	Water of Girvan Valley LLA
Direction of View	North-east	Distance to Nearest Turbine (km)	3.1
Number of hubs theoretically visible	7	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

This viewpoint is located at Colonel Hunter Blair's Monument on Craigengower, to the south-east of Straiton. The viewpoint offers open panoramic views in most directions. To the north-east and north, the view overlooks the forested moorland of Lamdoughty Hill and Sclenteuch Moor, with lowland Ayrshire beyond. To the north-west is Straiton, in the valley of the Girvan Water, and the Blairquhan estate, with which the monument is associated, which is visible in the middle distance. Beyond are the Carrick Hills and Arran is seen in the Firth of Clyde. To the east and south-east views are obscured by higher ground. The tips of Dersalloch Wind Farm are visible as they extend above Kildoach Hill in the foreground. The Girvan valley lies to the west, with views across the irregular hills behind and the distant hubs and blades of Assel Valley and Tralorg Wind Farms. To the south, the rugged mountains of Carrick and Galloway are visible, including Merrick located over 20 km away.

Sensitivity:

Receptors at this viewpoint are recreational users, which are considered to be of **high** susceptibility to changes in the view as their attention is focused on their surroundings. The viewpoint is located within the Water of Girvan Valley LLA and at the Colonel Hunter Blair's Monument, the view from which is likely to be valued by many visitors. The view is therefore considered to be of **high** value. Taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

Up to 7 hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north-east from this viewpoint, at a distance of 3.1 km to the nearest turbine (T1). The turbines will break the skyline as they extend upwards from the low rolling forested Proposed Development Area below. Turbines 1 to 7 will be fully visible across approximately 30 degrees of the view. Turbines 8 and 9 will largely be screened by the intervening landform of Kildoach Hill. Tracks and ancillary infrastructure will largely be screened by retained forestry. The main focus of this view is north-west, over Straiton and the Girvan Valley towards Arran. The Proposed Development will not interrupt this primary view, but will be seen in the periphery.

The scale of change will be **medium**. The geographical extent of the change is judged to be **small** as similar views will be gained from a limited number of high points to the south of the Proposed Development Area.

The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, the two turbines that form the consented Knockshinnoch Wind Farm will be visible to the north-east at a distance of approximately 10.3 km, behind the Proposed Development as they emerge above the middle distance horizon. To the west, Kirk Hill – Kirkoswald Wind Farm will be visible at a distance of 12.4 km and will occupy a small horizontal extent of views to the west. The Proposed Development will be seen to the north-east in successive views with Kirk Hill – Kirkoswald and at a closer proximity. Given the distance of both Knockshinnoch and Kirk Hill – Kirkoswald Wind Farms from the viewpoint in comparison to the Proposed Development, the cumulative interaction between the three schemes will be limited. As such, effects under Scenario 1 will be the same as for the LVIA.

Under Scenario 2 the proposed Knockkippen will be visible behind the Proposed Development, introducing a larger number of turbines in a direction that is currently not influenced by wind farm development. To the south-west, three turbines in the Carrick Wind Farm (application) will be visible extending above the intervening landform in the foreground at a distance of approximately 4 km in combined views with Craiginmoddie Wind Farm (application) which will be visible approximately 7.5 km away behind the forested slopes of Glenalla Fell, both of which will be seen

in successive views with the Proposed Development. The open view across the Girvan Valley will remain unaffected. The addition of the Proposed Development as well as Knockkippen is considered to give rise to a **medium** scale of change over a **small** geographical extent. The magnitude of change is considered to be **high** and as such the cumulative visual effect under Scenario 2 will be **Moderate and Significant.**

Table A5.3.8: Viewpoint 8: Straiton

Viewpoint 8: Straiton			
Grid Reference (NGR)	237980, 604931	Figure Number	5.2.8
LCT	12 Middle Dale	Designated Landscape or Wild Land Area	Water of Girvan Valley LLA
Direction of View	North-east	Distance to Nearest Turbine (km)	3.2
Number of hubs theoretically visible	5	Number of turbines with blades theoretically visible	9
Location, description of existing view and potential receptors: This viewpoint is located in the village of Straiton, on the B7045, to the south-west of the Proposed Development Area. The viewpoint is representative of residential receptors in Straiton from a part of the village that is more open. To the north-east towards the Proposed Development Area, the view is open and overlooks an area of open green space and cottages in the foreground, backed by a shelter belt of woodland in the middle distance and the slopes of Sclenteuch Moor and Lamdoughty Hill behind. Views in this direction are partially obscured by a small group of mature deciduous trees. To the east and south, views are contained by the properties and St Cuthbert's Church located along the B7045 that runs through Straiton. To the south-east, the partially forested slopes of Highgate Hill, and Colonel Hunter Blair's Monument on Craigengower are visible, forming a backdrop to the church and cemetery in the foreground. To the west, the view overlooks the local play park and adjoining fields backed by the wooded western slopes of the Girvan Valley. Views in this direction are partially obscured by deciduous trees along the B7045. Dersalloch wind farm is not visible from this location.			
Sensitivity: Receptors at this location are residents and road users, including cyclists. Residential receptors are considered to be of **high** susceptibility to changes in the view whilst road users are considered to be of **medium** susceptibility. The viewpoint is located within the Water of Girvan Valley LLA and has some scenic value. The view is considered to be of **medium** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.			
Assessment of visual effects: Up to 5 hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north-east from this viewpoint. Forestry on the skyline will screen most of these, as the turbines are set well back from the valley. Only one turbine hub (T1) is likely to be seen above Sclenteuch Moor and Lamdoughty Hill, which forms the north-eastern back drop to Straiton. Local screening will also be provided by the mature deciduous trees in the foreground. Tracks and ancillary infrastructure will not be visible. The Proposed Development will occupy less than 30 degrees of the view. The scale of change will be **small**. The geographical extent of the change is judged to be **small** as similar views will be gained from a limited parts of Straiton due to the presence of intervening buildings and topography. The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.			
Potential for future cumulative effects: No consented or proposed wind farms will be visible from this viewpoint therefore effects under Scenario 1 and Scenario 2 will be the same as for the LVIA.			

Table A5.3.9: Viewpoint 9: Minor road west of Straiton

Viewpoint 9: Minor road west of Straiton			
Grid Reference (NGR)	236987, 604445	Figure Number	5.2.9
LCT	12 Middle Dale	Designated Landscape or Wild Land Area	Water of Girvan Valley LLA
Direction of View	North-east	Distance to Nearest Turbine (km)	4.3
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9
Location, description of existing view and potential receptors: The viewpoint is located on a minor road which passes south-west of Straiton, and south of the B741. The view from this location looks north-east, with Straiton set in the middle-distance in the Girvan Water Valley below. Within the valley and on lower slopes the scene is pastoral, with a number of scattered dwellings and farmhouses around the main concentration of built development at Straiton. Surrounding Straiton are the lower forested foothills of Lamdoughty Hill and Keirs Hill, to the north, and to the east the more elevated moorland-covered foothills of Kildoach Hill and Largs Hill, with three turbines of Dersalloch Wind Farm partially visible behind the intervening slopes of Largs Hill. To the south, views are contained by coniferous forestry and pockets of deciduous vegetation that occupy the foreground and middle ground. To the west, the view overlook grazing pasture backed by deciduous woodland and forestry which limits any long distance views.			
Sensitivity: Receptors at this location are road users, including cyclists, who are considered to be of **medium** susceptibility. The viewpoint is located within the Water of Girvan Valley LLA. The view is considered to be of **medium** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **medium**.			

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north-east from this viewpoint. The turbines will visible along the forested skyline formed by Lamdoughty Hill. Each of the turbines will be clearly visible in the view, though will be set low on the horizon, behind the forested valley edge. The turbines will occupy less than 30 degrees of the north-eastern skyline. Tracks and ancillary infrastructure will be screened by the intervening forested slopes of Lamdoughty Hill.

The scale of change will be **medium**. The geographical extent of the change is judged to be **small** as similar views will be gained from limited stretches of the minor road due to intervening forestry and topography surrounding the road.

The overall magnitude of change is judged to be **medium** and taking account of the **medium** sensitivity will result in a **Moderate and Significant** visual effect.

Potential for future cumulative effects:

The tips of the consented North Kyle Energy Project Wind Farm will be theoretically visible across the south-eastern horizon at a distance of approximately 16 km, however pockets of coniferous forestry and deciduous woodland along the horizon will largely screen the tips.

Under Scenario 2, the tips of the proposed Knockkippen Wind Farm (scoping) will be theoretically visible across the horizon to the north-east at a distance of 9.2 km, although coniferous forestry will almost entirely screen this. A single turbine tip of Carrick (application) will be theoretically visible in successive views to the south-west, although due to the distance of over 5 km, the single turbine tip will be barely perceptible.

No other consented or proposed schemes will be visible from this viewpoint and due to the lack of visibility of cumulative wind farms, effects under Scenario 1 and Scenario 2 will be the same as for the LVIA.

Table A5.3.10: Viewpoint 10: Blairquhan

Viewpoint 10: Blairquhan			
Grid Reference (NGR)	235915, 605761	Figure Number	5.2.10
LCT	12 Middle Dale	Designated Landscape or Wild Land Area	Water of Girvan Valley LLA
Direction of View	North-east	Distance to Nearest Turbine (km)	4.8
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

The viewpoint is within the grounds of Blairquhan House, within the Girvan Water Valley, on the drive which approaches the house from the north. This drive begins at the B7045 and follows the Water of Girvan through woodland for around 3 km to the house. The viewpoint is located on the more open section of the drive, where the woodland opens out to parkland. The view looks across the parkland to the north of the house, towards the forested skyline of Sclenteuch Moor. The house itself is located to the south-east, though it is behind trees from this location. Views from this location are contained within the valley, and further filtered by surrounding woodland and trees. Blairquhan is privately owned but is available for events and is occasionally open to the public.

Sensitivity:

Receptors at this location are guests staying at the estate and recreational receptors walking through the estate, both of which are considered to be of **high** susceptibility. The viewpoint is located within the Water of Girvan Valley LLA but is not a designed view within the estate landscape. The view is considered to be of **medium** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north-east from this viewpoint. Turbines will be visible along the forested horizon in the middle distance and will occupy around 20 degrees of the view. Actual visibility will be reduced by intervening coniferous forestry and mature parkland trees which will screen turbines intermittently from the length of the drive. Visible turbines will be seen alongside Dersalloch Wind Farm, and will appear larger and closer. Tracks and ancillary infrastructure will be screened by the intervening topography of Sclenteuch Moor. The turbines will not interrupt any key vistas or other main views within the parkland.

The scale of change will be **small**. The geographical extent of the change is judged to be **small** as similar views will be gained from limited parts of the Blairquhan Estate due to intervening estate woodland.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

No consented wind farms will be visible from this viewpoint. Under Scenario 2, the tips of turbines within the proposed Knockippen Wind Farm (scoping) will be theoretically visible to the north-east at a distance of approximately 9.4 km, however pockets of intervening coniferous and deciduous woodland in the foreground view will screen these tips. No other proposed wind farms are visible from this viewpoint, therefore effects under Scenario 1 and Scenario 2 will be the same as for the LVIA.

Table A5.3.11: Viewpoint 11: Dalmellington

Viewpoint 11: Dalmellington			
Grid Reference (NGR)	248030, 606079	Figure Number	5.2.11
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	North-west	Distance to Nearest Turbine (km)	5.6

Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

This viewpoint is on Knowehead, outside the parish church. The viewpoint is slightly elevated above the junction of High Main Street and Park Crescent. To the north-west, the view overlooks single- and two-storey houses in the foreground to the Doon Valley beyond, with White Hill forming the north-western horizon. To the west is Auchenroy Hill, with the tips of 2 turbines in Dersalloch Wind Farm visible behind. A mix of farmland and moorland can be seen, and with forestry in the distance along the skyline. To the north and north-west, the eastern slopes of the valley are seen rising up to Green Hill, behind a foreground of single storey properties in Dalmellington. Patna and Waterside are out of sight. Views to the east are restricted by the church, deciduous trees and adjacent houses. To the south there are views over the village towards Bellsbank and the irregular hills around the upper Doon Valley.

Sensitivity:

Receptors at this location are residents of Dalmellington, who are considered to be of **high** susceptibility. The viewpoint is located within the Doon Valley SLA, and the view has some scenic value. The view is considered to be of **medium** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north-west from this viewpoint. The turbines will visible along the skyline as they extend upwards from behind the slopes of White Hill. The turbines will be set back behind White Hill. The turbines will not affect views to the adjacent higher ground of Auchenroy Hill, one of the landmark hills that forms a setting to Dalmellington. Tracks and ancillary infrastructure will be screened by the intervening topography of slopes of White Hill.

The scale of change will be **medium**. The geographical extent of the change is judged to be **small** as similar views will be gained from limited parts of Dalmellington due to intervening development within the settlement.

The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect.

Potential for future cumulative effects:

No consented wind farms will be visible from this viewpoint, so effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, the proposed Knockkippen Wind Farm (scoping) will be theoretically visible to the north-west at a distance of approximately 4.5 km. Although buildings in the foreground within Dalmellington will screen these turbines from this viewpoint, it may be visible from other locations in the settlement. Knockkippen will be peripheral to key views from Dalmellington, and there will be clear separation between the two wind farms. Some of the tips of the proposed Carrick and Knockcronal Wind Farms (application) will be theoretically visible to the south-west at distances of over 10 km although coniferous forestry along the distant horizon will screen visibility of these wind farms. The magnitude of change is considered to be **medium** and as such the cumulative visual effect under Scenario 2 will be **Moderate and Significant.**

Table A5.3.12: Viewpoint 12: B7045 near Kirkmichael

Viewpoint 12: B7045 near Kirkmichael			
Grid Reference (NGR)	233760, 608819	Figure Number	5.2.12
LCT	12 Middle Dale	Designated Landscape or Wild Land Area	Water of Girvan Valley LLA
Direction of View	South-east	Distance to Nearest Turbine (km)	6.8
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

The viewpoint is located on the B7045 approximately 170 m west of Kirkmichael. There will be no views from Kirkmichael village due to the intervening topography. The view to the south-east towards the Proposed Development Area overlooks a steeply sloping pastoral field which sweeps down to the Dyrock Burn backed by shelterbelts of deciduous woodland. There are glimpsed views of Kirkmichael within the valley floor, behind the intervening deciduous woodland. Rolling pastoral hills to the south-east form the backdrop to the settled Dyrock Valley below, with views of Dersalloch Wind Farm on the rugged hills in the distance beyond. To the south, views are contained by dense deciduous woodland which is part of the policies around Kirkmichael House and to the west and north views are largely contained by the rising pastoral slopes of Drumore. Views to the east are occupied by the properties of Kirkmichael, visible at a lower elevation in the middle ground, surrounded by scattered pockets of deciduous woodland. Rolling pasture and forested hills can be seen in the distance beyond.

Sensitivity:

Receptors at this location are road users, including cyclists, who are considered to be of **medium** susceptibility. The viewpoint is located within the Water of Girvan Valley LLA, but has limited other indication of value. The view is considered to be of **medium-low** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **medium**.

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the south-east, at a distance of approximately 6.8 km to the nearest turbine (T2). The turbines will be visible across the forested skyline, which is set behind the pastoral ridge that forms the backdrop to the Dyrock Valley in these views. The turbines will generally be low on the skyline and will relate to the smooth, flat landform. Tracks and ancillary infrastructure will not be perceptible due to distance and screening by intervening forested topography. The turbines will be larger and closer than those of Dalmellington, but will be seen in the context of this existing wind farm.

The scale of change will be **small**. The geographical extent of the change is judged to be **small** as similar views will be gained from limited parts of the B7045 due to intervening topography, woodland and development.

The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, the consented Kirk Hill – Kirkoswald Wind Farm is theoretically visible to the south-west at a distance of approximately 8 km however views in this direction are largely screened by intervening deciduous woodland to the south-west of the viewpoint therefore actual visibility of this wind farm will be limited. To the north-east, the tips of the two turbines that form the consented Knockshinnoch Wind Farm are theoretically visible at a distance of 10.5 km however at this distance these tips will be barely perceptible. Effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2 the proposed Knockkippen Wind Farm (scoping) will be visible along the distant horizon in views to the north-east at a distance of approximately 10 km. The Proposed Development will be seen to the east in combined views with Knockkippen and will be read as a separate wind farm. The addition of the Proposed Development will occupy the gap that will separate the operational Dersalloch Wind Farm and Knockkippen, increasing the horizontal extent of the eastern view that will be occupied by turbines. In views to the south, the proposed Knockcronal, Carrick and Craiginmoddie Wind Farms (application) will be theoretical visibility along the horizon at distances over 9 km. Actual visibility will be limited due to pockets of deciduous woodland in the foreground and middle distance view that screen longer distance views to the south.

The addition of the Proposed Development alongside the more distant Knockkippen is considered to give rise to **small** scale change over a **small** geographical extent. The magnitude of change is considered to be **low** and as such the additional and total visual effect under Scenario 2 will be **Minor and Not Significant.**

Table A5.3.13: Viewpoint 13: Maybole

Viewpoint 13: Maybole			
Grid Reference (NGR)	230391, 610372	Figure Number	5.2.13
LCT	17d Maybole Foothills	Designated Landscape or Wild Land Area	None
Direction of View	South-east	Distance to Nearest Turbine (km)	10.4
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

The viewpoint is located on the B7024 in the north-east of the small town of Maybole. The road crosses over the railway line, and there are open elevated views from here across to the south-east. In the foreground is a builder's yard, the A77, a school and houses. The view overlooks these to rolling, mainly pastoral, farmland in the middle distance and hills and forested moors that form the backdrop beyond. To the south-east is the low, flat forested Sclenteuch Moor and to the south of this are the steeper hills around the upper Girvan Water, where Dersalloch Wind Farm is visible along the distant horizon, as well as Windy Rig which is theoretical visible beyond. The Hunter-Blair Monument can be seen further west on the hillside. Beyond these hills the Merrick is seen in the distance. To the south there are more forested hills. A single turbine of Hadyard Hill wind farm is seen on the skyline in this view. There are no views to north or west due to rising ground.

Sensitivity:

Receptors at this location are road users, including cyclists, and residents moving around the town. Road users are considered to be of **medium** susceptibility to changes in the view whilst residential receptors are considered to be of **high** susceptibility. The viewpoint is not located within a designated landscape and is located close to commercial buildings, with limited scenic value. The view is considered to be of **low** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **medium**.

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the south-east, at a distance of approximately 10.4 km to the nearest turbine (T2). The turbines will be visible on the distant forested skyline that forms the backdrop in views to the south-east. They will occupy a small extent of the overall view in this direction. The Proposed Development will be viewed alongside the existing Dersalloch Wind Farm which has already altered views in this direction. The turbines will be seen as a discrete group that relates to the smooth forested landform. Tracks and ancillary infrastructure will not be perceptible due to distance and screening by the intervening forested skyline.

The scale of change will be **small**. The geographical extent of the change is judged to be **small** as similar views will be gained from limited parts of Maybole due to intervening topography and development.

The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, a number of consented wind farms will be theoretically visible in views to the east and south-east at distances over 13 km, including Knockshinnoch, Polquhairn, North Kyle Energy Project, Enoch Hill, Pencloe and the tips of Brockloch Rig Phase 3 and Benbrack Variation. Each of these schemes will be theoretically visible along the distant horizon however in most cases only the hubs and blades will be visible. The Proposed Development will be visible in combined views with these wind farms, as well as the operational Dersalloch and the under construction South Kyle Wind Farms, and due to the size of the proposed turbines they will appear at a much larger scale in comparison to the other schemes. Although the Proposed Development will appear as part of an emerging group of wind farms in the east and will be seen in a views already influenced by wind farm development, the addition of it will close the gap between Dersalloch and South Kyle, increasing the extent of the horizon occupied by wind farm development. The consented Kirk Hill - Kirkoswald Wind Farm is theoretically visible to the south-west however will be screened by intervening vegetation in the foreground view.

Under Scenario 2, the proposed Knockkippen Wind Farm (scoping) will be visible in views to the east at a distance of approximately 13 km, following the emerging pattern of wind farm development in the east and south-east. The Proposed Development will be seen in combined views with Knockkippen and will appear as a separate and scheme with much larger scale turbines. The proposed Polquhairn Wind Farm (application) will also be however will be partially screened by the landform forming the horizon. To the south, the Knockcronal, Carrick, Craiginmoddie (application) and Clauchrie (appeal/public inquiry) wind farms are theoretically visible however actual visibility of these schemes is likely to be limited due to intervening built form and vegetation in the foreground that largely screen views in this direction.

The addition of the Proposed Development under both Scenario 1 and 2 is considered to give rise to a **small** scale change over a **small** geographical extent. The magnitude of change is considered to be **low** and as such the additional and total visual effect under both Scenario 1 and 2 will be **Minor and Not Significant.**

Table A5.3.14: Viewpoint 14: B741 near Ruglen

Viewpoint 14: B741 near Ruglen			
Grid Reference (NGR)	230403, 604292	Figure Number	5.2.14
LCT	12 Middle Dale	Designated Landscape or Wild Land Area	Water of Girvan Valley LLA
Direction of View	North-east	Distance to Nearest Turbine (km)	10.5
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

The viewpoint is located on a minor road, close to the junction with the B741, in the valley of the Girvan Water. It is close to the hamlet of Ruglen, and at the edge of the designed landscape of Kilkerran. Views from this location are focused along the valley, with wooded slopes rising to south and north. Looking north-east up the valley, there are views over rising pastoral fields and farms at the valley side, as the Girvan Water turns to northward. Beyond this immediate skyline, forested moors can be seen behind, becoming closer to the east and south-east. Looking south-west there are open views along the floodplain and down the valley, to Maxwellston Hill. The turbine tips of Hadyard Hill are visible in glimpsed above the hills to the south. Assel Valley and Tralorg Wind Farms are also partially visible in the south-west however an intervening shelterbelt of deciduous trees in the middle distance largely screens these wind farms.

Sensitivity:

Receptors at this location are road users, including cyclists, which are considered to be of **medium** susceptibility. The viewpoint is located within the Water of Girvan Valley LLA and has some scenic value. The view is considered to be of **medium** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **medium**.

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north-east, at a distance of approximately 10.5 km to the nearest turbine (T1). The turbines will be visible on the distant forested skyline to the south-east and will occupy a small extent of the overall view in this direction. The Proposed Development will form a noticeable feature to the south-east as there are no other existing wind farms in this direction. Woodland in the middle distance and on the skyline will partly screen the turbines. The Proposed Development will be seen as a distant feature outside the valley. Tracks and ancillary infrastructure will not be perceptible due to distance and screening by the intervening forested skyline.

The scale of change will be **small**. The geographical extent of the change is judged to be **medium** as similar views will be gained from intermittent stretches of the B741 across a distance of approximately 12 km.

The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, a small number of tips of both the consented Knockshinnoch and North Kyle Energy Project Wind Farms will be theoretically visible however given their distance of over of 15 km away, these tips are unlikely to be perceptible. No other consented wind farms are visible from this viewpoint therefore effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, Knockkippen Wind Farm (scoping) will be visible to the north-east as it extends across the wooded horizon, approximately 15 km away. The Proposed Development will be visible in combined views and will partially overlap with the southernmost turbines of Knockkippen. From this viewpoint, the two wind farms are likely to be read as one development. To the south the blades and tips of Craiginmoddie (application) will be visible at a distance of approximately 4.6 km as they extend above the horizon and will be seen in successive views with the Proposed Development and Knockkippen. The addition of the Proposed Development to a baseline that includes Knockippen is considered to give rise to a **small** scale change over a **medium** geographical extent. The magnitude of change is considered to be **low** and as such the additional and total visual effect under Scenario 2 will be **Minor and Not Significant.**

Table A5.3.15: Viewpoint 15: Cornish Hill

Viewpoint 15: Cornish Hill			
Grid Reference (NGR)	240530, 594265	Figure Number	5.2.15
LCT	21 Rugged Uplands, Lochs & Forest	Designated Landscape or Wild Land Area	High Carrick Hills LLA, Galloway Dark Skies Park and Merrick WLA
Direction of View	North	Distance to Nearest Turbine (km)	12.5
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

The viewpoint is located at the summit of a relatively low, rocky hill (460 m), in the southern uplands. Cornish Hill is located to the south of Loch Braden and is accessible via a footpath from the car park at Stinchar Bridge. From the summit, there are open views to the north overlooking a foreground of rugged moorland and forestry. In the middle distance to the north, Dersalloch Wind Farm is visible against a backdrop of the low rolling hills beyond. To the north-west there are distant views of Arran and the Firth of Clyde, with Colonel Hunter Blair's Monument on Craigengower clearly visible in the middle-distance on a rugged skyline with the Ayrshire lowlands beyond. The more rugged skylines continue further north-west, giving way to smoother moorland in westward views. Hadyard Hill, Assel Valley and Tralorg Wind Farms can be seen over 10 km to the west. To the north-east the rolling hills of East Ayrshire are visible in the distance however views are interrupted by the rugged hills of the Carrick Forest in the foreground and middle distance. Closer to the viewpoint the hills are a mosaic of forestry, recently felled areas, moorland, and lochs, with a quarry at Loch Skelloch. Southward views look across upland moorland and are largely contained by the rugged hills that rise to Merrick.

Sensitivity:

Receptors at this viewpoint are recreational users, which are considered to be of **high** susceptibility to changes in the view as their attention is focused on their surroundings. The viewpoint is located within the High Carrick Hills LLA, Galloway Dark Skies Park and Merrick WLA, and is a panoramic outlook. The view is considered to be of **high** value. Taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north, at a distance of approximately 12.5 km. The turbines will be seen across the distant rolling hills to the north of the viewpoint and will be seen breaking the skyline. They will be visible behind the existing Dersalloch Wind Farm and will sit within the existing horizontal extent already occupied by the Dersalloch turbines. As such the turbines will not form a new distinctive feature in views to the north due to the existing presence of Dersalloch Wind Farm. Although larger, due to distance this is unlikely to be clearly perceptible. Tracks and ancillary infrastructure will not be perceptible due to distance and screening by the intervening landform.

The scale of change will be **small**. The geographical extent of the change is judged to be **medium** as similar views will be gained from a number of scattered hill summits and areas of the southern uplands to the south of the Proposed Development Area.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, the consented Knockshinnoch, North Kyle Energy Project, Overhill and the tips of Enoch Hill will be visible in views to the north-east at distances over 17 km. These wind farms will be seen in combined views with each other as well as the operational Dersalloch Wind Farm visible approximately 9 km to the north, however at distances of over 17 km, the presence of the consented schemes are unlikely to give rise to significant cumulative visual effects. The Proposed Development will be visible behind Dersalloch and will be read as part of the existing development. As such, effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, the proposed Knockkippen Wind Farm (scoping) will be visible behind Dersalloch alongside the Proposed Development. Together these three wind farms will form a larger group of turbines visible in the middle distance however the horizontal extent occupied by this group will largely sit within the current extent occupied by Dersalloch alone. Further north-east, the proposed Overhill (appeal/public inquiry) and Greenburn Wind Park (application) will sit within the horizontal extent that will be occupied by the North Kyle Energy Project and are likely to appear as part of that scheme. To the north-west, the proposed Craiginmoddie, Carrick and Knockcronal Wind Farms (application) will be visible at distance between 4-9 km and will introduce turbines in a direction that is currently not influenced by wind farm development. The turbines will appear in close proximity as large scale features in the landscape in successive views with Dersalloch, Knockkippen and the Proposed Development. The addition of these developments will increase the presence of wind farm development within views to the north-west, north, and north-east. The Proposed Development will remain behind Dersalloch, in the context of Knockkippen Wind Farm. As such it is considered that under Scenario 2 the Proposed Development will give rise to a **small** scale change over a **medium** geographical extent. The magnitude of change will be **low** and the cumulative visual effect will be **Minor and Not Significant**. It is considered that the total cumulative visual effect may be Significant under Scenario 2.

Table A5.3.16: Viewpoint 16: Cairnsmore of Carsphairn

Viewpoint 16: Cairnsmore of Carsphairn			
Grid Reference (NGR)	259441, 597991	Figure Number	5.2.16
LCT	19 Southern Uplands (Dumfries and Galloway)	Designated Landscape or Wild Land Area	Galloway Hills RSA
Direction of View	North-west	Distance to Nearest Turbine (km)	19.1
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

The viewpoint is located at the summit of Cairnsmore of Carsphairn (797 m), which is the highest point of the range between the Water of Deugh and the Water of Ken and stands at the head of the Glenkens. It is a popular ascent for hill walkers and is most frequently climbed from the A713 to the south-west. Panoramic views are available from the top of the broad, flat summit. Within 3 km to the north-east is the operational Windy Rig Wind Farm with Brockloch Rig Phase 1 and 2 and Afton Wind Farms beyond to the north within 7 km. Hare Hill Phase 1 and 2 are also visible in the north-east in the distance, approximately 12 km away. In these directions the view looks over rounded hills to the Ayrshire lowlands beyond. To the north-west, the foreground comprises forested and open moorland, with Patna visible in the Doon Valley behind and Dersalloch Wind Farm visible further to the north-west approximately 17 km away. Beyond this in the distance is Arran and the Firth of Clyde. Looking west Loch Doon is seen, with the skylines beyond becoming more irregular as the land rises to the Southern Uplands. Hadyard Hill, Assel Valley and Tralorg Wind Farms can be seen in the distance over 25 km to the west. To the south-west the view takes in the whole of the Merrick range and the Rhinns of Kells, and southwards along the Glenkens. To the east the view looks across the Southern Uplands, including Wether Hill, 10 km to the south-east.

Sensitivity:

Receptors at this viewpoint are recreational users, which are considered to be of **high** susceptibility to changes in the view as their attention is focused on their surroundings. The viewpoint is located within the Galloway Hills RSA and is a destination summit. Views are considered to be of **high** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

The hubs and the blades of all 9 turbines within the Proposed Development will be theoretically visible in views to the north-west, at a distance of approximately 19km to the nearest turbine . The turbines will be seen across the distant rolling hills to the north-west of the viewpoint and will be sit below the skyline. The Proposed Development will be visible beside Dersalloch Wind Farm and will appear as an extension to it, increasing slightly the horizontal extent of the north-western view occupied by turbines. The difference in turbine size is unlikely to be readily perceptible at this distance. Tracks and ancillary infrastructure will not be perceptible due to distance and screening by the intervening landform.

The scale of change will be **small**. The geographical extent of the change is judged to be **small** as similar views will be gained from limited locations on hill summits.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, the consented Brockloch Rig Phase 3 and Benbrack Variation Wind Farms will be visible below the viewpoint in close proximity views to the north-west at distances of 2.7 and 6 km respectively. These schemes will be seen in front of the under construction South Kyle Wind Farm located approximately 4.5 km away, and in combined and successive views with a number of operational wind farms visible to the north and north-east, including Windy Rig located approximately 2.6 km to the north-east. A number of further consented wind farms will be visible from this viewpoint however at a greater distance than Brockloch Rig Phase 3 and Benbrack Variation Wind which will introduce close proximity wind farm development to the north and north-west.

Under Scenario 2, a number of proposed wind farms will be theoretically visible from this viewpoint including, Overhill (appeal/public inquiry), Greenburn Wind Park and Polquhairn (both application) located over 15 km to the north-west, and Knockkippen located approximately 18.5 km to the north-west. To the west, Knockcronal, Carrick and Craiginmoddie (application) are theoretically visible but at distances over 20km. These proposed schemes will be introduced in directions that are already influenced by wind farm development however the addition of them will result in a considerable increase in turbines visible in views from this elevated location. The Proposed Development will be visible in combined views with each of these proposed wind farm developments however will appear as an extension to the operational Dersalloch Wind Farm and this it is likely that there will be no notable change.

The Proposed Development will be a small feature adjacent to an existing wind farm. As such, under Scenario 1 and Scenario 2 the Proposed Development will give rise to a **small** scale change over a **medium** geographical extent. The magnitude of change will be **low** and the cumulative visual effect will be **Minor and Not Significant**. It is considered that the total cumulative visual effect may be Significant under both Scenario 1 and Scenario 2.

A5.3.3 Effects on Views from Settlements

A5.3.3.1 Residential receptors in settlements are considered to have a high susceptibility to changes in the view. Effects on views from settlements in the surrounding area, from which potential views of the Proposed Development are available, are assessed in the following tables.

Table A5.3.17: Patna

Patna			
Representative viewpoint:	VP4: Patna	Approximate distance from settlement edge to nearest turbine:	1.5 km
Location, description of existing view and potential receptors: Patna is located centrally within the study area, within the Doon Valley, to the north-east of the Proposed Development Area. The majority of the settlement is located on the western side of the river. Much of the settlement comprises lower-density 20th-century housing. The southern part of the settlement is on higher ground, with many outward views looking either across the valley or south-east along the valley. In south-eastward views Dalmellington is seen in the distance, between the low hills to either side. These low hills are often visible on the skyline from locations where the valley view is not seen. There are smaller areas of the settlement on the east side of the river, with views across the valley to the south-west. The tips of 1 or 2 turbines in Dersalloch Wind Farm are visible from limited parts of Patna and the A713 on approach to Patna.			
Sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view. Patna is located within the Doon Valley SLA and the value of views from the settlement is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.			
Assessment of visual effects: Looking south from locations within Patna, the wind turbines will appear on the horizon above the south-western valley slopes. The hubs and blades of turbines will be visible across the forested horizon formed by Carskeoch Hill, at a distances of between 1.5 and 3 km. The turbines will be seen from various locations throughout the settlement and from the A713 as it approaches Patna from the north. The turbines will be visible in the south-western views, although will be set well back behind the valley edge. The valley slope will reduce visibility of the turbines from the south-western parts of the settlement. Longer views out of the settlement and along the Doon Valley will not be affected. Where open views towards the Proposed Development are available, the scale of change will be **medium.** The geographical extent of the change is judged to be **medium** as views of the Proposed Development will be gained from various locations throughout the settlement and from the A713, although from many parts of Patna views will be screened by buildings and topography. The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect.			
Potential for future cumulative effects: As illustrated by the CZTV in Figure 5.1.9b under Scenario 1, the Proposed Development will be visible in successive and combined views with the consented Benbrack Variation, Knockshinnoch and the tips of both Brockloch Rig Phase 3 and North Kyle Energy Project Wind Farms. Benbrack Variation will be located approximately 13.5 km away with limited turbines of the remaining consented schemes due to the intervening topography of the Doon Valley. The turbines within the Proposed Development however will be closer and more widely visible than these other schemes. Given the distance and limited visibility of wind farm development, effects in Scenario 1 will be the same as for the LVIA. As illustrated by the CZTV in Figure 5.1.9c under Scenario 2, the proposed Knockkippen Wind Farm (scoping) will be visible in views to the east from the settlement within 5 km and will be seen in successive views with the Proposed Development. The addition of these two schemes will introduce turbines within close proximity to the east and south of the development, resulting in the settlement being overlooked by turbines in two directions. As such, it is considered that the schemes under Scenario 2 will give rise to a **large** scale change over a **medium** geographical extent. The magnitude of change will be **high** and as such the cumulative visual effect is judged to be **Major and Significant** under Scenario 2.			

Table A5.3.18: Waterside

Waterside			
Representative viewpoint:	VP2: Waterside, Doon Valley Railway and VP3: Waterside, north end	Approximate distance from settlement edge to nearest turbine:	1.9 km
Location, description of existing view and potential receptors: Waterside is a small, dispersed settlement located on the north-east side of the Doon Valley. The main group of properties, including New Row, is at the north of the settlement, with a smaller number of dwellings around the heritage centre, as well as Chapel Row further south on the A713. The houses within the settlement are generally aligned to face south-west across the valley, with views over the A713 as well as up and down the Doon Valley. A small open space by the former school enables views south-east to Dalmellington, and south-west to the rough grazing of the valley side. A large bing lies to the south of the A713 and is a prominent feature in views from the heritage centre, from where there are also views north-west to Patna. A small number of hubs and tips of turbines in Dersalloch Wind Farm are visible from limited parts of Waterside.			

Sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view. Waterside is located within the Doon Valley SLA and the value of views from the settlement is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.
Assessment of visual effects: The Proposed Development will be seen low on the forested horizon of Keirs Hill to the west and south-west at distances of between 1.9 and 3 km. Views will be available from various locations throughout the small settlement. The turbines will form clearly visible features in west and south-western views which look across the valley and are limited by woodland and forested western slopes. The access track will be visible on the opposite slope of the valley, to the south of Keirs Glen. Longer views along the Doon Valley will not be affected. Where open views towards the Proposed Development are available, the scale of change will be **medium**. The geographical extent of the change is judged to be **small** as views of the Proposed Development will be gained from limited locations with open views to the west and south-west within this small settlement. The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect.
Potential for future cumulative effects: Under Scenario 1, the consented Benbrack Variation Wind Farm will be theoretically visible to the south-east over 10 km away. Actual visibility from many parts of Waterside is likely to be limited due to intervening vegetation. There are no other consented wind farms visible from this settlement. Under Scenario 2, one turbine blade within the proposed Knockkippen Wind Farm (scoping), located with 2 km to the north-east will be visible as remaining turbines will be screened by the intervening topography of Green Hill. Given the limited visibility of other wind farm development under both Scenario 1 and 2, the effects in Scenario 1 will be the same as for the LVIA.

Table A5.3.19: Straiton

Straiton			
Representative viewpoint:	VP8: Straiton and VP9: Minor road west of Straiton	Approximate distance from settlement edge to nearest turbine:	2.8 km
Location, description of existing view and potential receptors: Straiton is located in the Girvan Water valley and is sited on the north side of the river, below Craigengower. The village comprises a main street of terraced cottages, with several houses located along the B741 to the north. A separate group of dwellings lies immediately west, across the Lambdoughty Burn. From the main street, there are few outward views, excepting to the south-east where the monument on Craigengower is prominent. However, the valley setting of Straiton is apparent from the approaches to the village. A small number of hubs and tips of turbines in Dersalloch Wind Farm are visible extending above the eastern horizon from limited parts of Straiton.			
Sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view. Straiton is located within the Water of Girvan Valley LLA and the value of views from the settlement is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.			
Assessment of visual effects: The Proposed Development will be partly visible from limited locations within Straiton due to intervening built form, tree cover and vegetation. From areas with open views, a small number of turbines (one or two) will be visible as they extend above the forested skyline formed by Sclenteuch Moor and Lamdoughty Hill at a distance of approximately 2.8-3.4 km. Where open views towards the Proposed Development are available, the scale of change will be **small**. The geographical extent of the change is judged to be **small** as views of the Proposed Development will be gained from limited locations with open views to the north-east within this small settlement. The overall magnitude of change is judged to be **low**, due to the limited areas from which the Proposed Development will be visible from this settlement, and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.			
Potential for future cumulative effects: As illustrated by the CZTV in Figure 5.1.9b under Scenario 1, no consented wind farms will be visible from Straiton and therefore effects in Scenario 1 will be the same as for the LVIA. Under Scenario 2, a small number of turbines in the proposed Carrick and Knockcronal Wind Farms (application) to the south will be theoretically visible. Actual visibility is likely to be limited due to intervening vegetation and built development in Straiton. As such the effects in Scenario 2 will be the same as for the LVIA.			

Table A5.3.20: Dalmellington

Dalmellington			
Representative viewpoint:	VP11: Dalmellington	Approximate distance from settlement edge to nearest turbine:	4.8 km
Location, description of existing view and potential receptors: Dalmellington is located in the Doon Valley, and is largely sited on the north side of the river. The older part of the settlement is centred on the bridge over the Doon and extends northwards uphill towards the church. There are open views north-west along the Doon Valley from these upper parts of the settlement, though the central area is low-lying and denser, with fewer outward views. From the foot of High Main Street there are views to the hills to the south-west, and glimpses north to Green Hill from the northern part of the settlement. The tips of 2 turbines in Dersalloch Wind Farm are visible extending above Auchenroy Hill to the west.			
Sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view. Dalmellington is located within the Doon Valley SLA and the value of views from the settlement is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.			

Assessment of visual effects:

The Proposed Development will be visible on the skyline behind the slopes of White Hill at a distance of between 4.8 and 6.3 km. The most open views are represented by Viewpoint 11, showing the elevated view from the church (Figure 5.2.11) with the turbines appearing as a group on the north-western skyline. This viewpoint was selected because of its open view. In most other views, the view down the valley, and of Proposed Development, will be screened by buildings.

Due to the limited availability of views, and the distance to the turbines, the scale of change in outlook from the settlement will be **low**. The geographical extent of the change is judged to be **small** as views of the Proposed Development will be gained from limited locations with open views to the north-west within this settlement.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

As illustrated by the CZTV in Figure 5.1.9b, under Scenario 1, there will be very limited visibility of consented wind farms from Dalmellington and as such the effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, the proposed Knockippen Wind Farm (scoping) will be theoretically visible in views to the north-west from Dalmellington at a distance of approximately 4 km. Knockkippen is likely to be visible from elevated areas within the north-eastern part of the settlement. The Proposed Development will be visible in combined views with Knockkippen and will appear as two separate wind farms. Actual visibility of the Proposed Development and Knockkippen is likely to be limited from much of Dalmellington as many outward views will be screened by built development within the settlement. The magnitude of change will be **low** and as such the cumulative visual effect is judged to be **Minor and Not Significant** under Scenario 2.

Table A5.3.21: Bellsbank

Bellsbank			
Representative viewpoint:	VP11: Dalmellington	Approximate distance from settlement edge to nearest turbine:	5.3 km
Location, description of existing view and potential receptors: Bellsbank is a 20th-century development 1 km to the south of Dalmellington, on the east side of the River Doon. The low-density layout of the settlement on the valley side enables frequent broad views across the river to the west. Auchenroy Hill is a distinctive feature in these views, which extend around to the irregular hills to the south-west. More elevated locations have views along the Doon Valley to Green Hill above Waterside. Dersalloch Wind Farm is visible along the skyline to the south of Auchenroy Hill from various locations throughout the settlement.			
Sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view. Bellsbank is located within the Doon Valley SLA and the value of views from the settlement is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.			

Assessment of visual effects:

The Proposed Development will be visible on the skyline to the north of Auchenroy Hill at a distance of 5.3-6.5 km. Turbines within the southern part of the Proposed Development Area will be partially screened by Auchenroy Hill although the remaining turbines will be visible on the skyline to the north-west, extending upwards from behind Auchenroy Hill and White Hill. The turbines are located in a low point, relating well to the topography. Due to the orientation of the settlement on the hillside, views of the Proposed Development will be frequently visible from locations within the settlement.

The scale of change will be **small**, given the distance to the turbines and their position along the skyline. The geographical extent of the change is judged to be **small** as views of the Proposed Development will be gained from limited locations with open views to the north-west within this settlement.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, some of the tips of the consented North Kyle Energy Project Wind Farm, located approximately 4.3 km to the north-east, will be theoretically visible as they extent upwards from the horizon. These tips will be seen in successive views of the Proposed Development to the north-west. Given that only some of the tips of the North Kyle Energy Project Wind Farm will be visible and no other consented schemes will be seen from this settlement, it is considered that the effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, the Proposed Development will be visible in successive views with the proposed Knockkippen Wind Farm (scoping), approximately 5 km to the north-west of Bellsbank. Both proposed schemes will appear as two separate wind farms. Actual visibility of the Proposed Development and Knockkippen is likely to be reduced due to intervening built development within the settlement and surrounding pockets of woodland that will provide a degree of screening in views to the north-west. Further proposed wind farms over 10 km to the south-west are theoretically visible however actual visibility of these is likely to be reduced due to intervening built form and woodland within the settlement. The magnitude of change will be **low** and as such the cumulative visual effect is judged to be **Minor and Not Significant** under Scenario 2.

Table A5.3.22: Crosshill

Crosshill			
Representative viewpoint:	N/A	Approximate distance from settlement edge to nearest turbine:	7.4 km
Location, description of existing view and potential receptors: Crosshill is located to the south of the Girvan Water. It is within a relatively open section of the Girvan Water valley, with shallow rising ground to south and east. King Street and Dalhowan Street form the main street with views focused towards the hills in the south-east and hubs and tips of Dersalloch Wind Farm visible along the south-eastern horizon. Kirkmichael Road heads east out of the village and enables eastward views, which are increasingly open towards the edge of the settlement. The western approach on the B7023 also enables views over the village towards the east. Turbines within Assel Valley and Tralorg Wind Farms and turbine tips of Hadyard Hill Wind Farm can be glimpsed to the south-west from higher ground at the edges of the settlement.			
Sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view. Crosshill is located within the Water of Girvan Valley LLA and the value of views from the settlement is			

considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.

Assessment of visual effects:

There will be open views of the Proposed Development from the eastern edge of the settlement, and the turbines may be visible along the length of Kirkmichael Road, though most houses are aligned perpendicular to this view. In remaining parts of the settlement where visible, the wind farm will be seen on the forested skyline to the east, behind the low hills in the foreground. The Proposed Development will be seen alongside Dersalloch Wind Farm and in a different direction to Assel Valley, Tralorg and the glimpses of Hadyard Hill Wind Farm to the south-west.

Where open views towards the Proposed Development are available, the scale of change will be **small,** given the distance of 7.4-8.2 km between Crosshill and the turbines, and the existing presence of wind farms in views from the settlement. The geographical extent of the change is judged to be **small** as views of the Proposed Development will be gained from limited locations with open views to the east within this settlement.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, there will be theoretical visibility of some turbine tips within the consented Kirk Hill - Kirkoswald Wind Farm, approximately 6 km to the west. No other consented wind farms will be visible from the settlement. As there will be no visual interaction between the Proposed Development and other schemes, effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, a number of Proposed Developments will be visible from the open edges of the settlement including the proposed Knockkippen Wind Farm (scoping), Knockcronal, Carrick and Craiginmoddie Wind Farms (application). The Proposed Development will appear as a separate wind farm to these schemes and will be visible at a greater distance than the proposed group to the south formed by Knockcronal, Carrick and Craiginmoddie. The addition of all of the schemes under Scenario 2 in combination with those in Scenario 1 will result in wind farm development occupying long distance views to the east, west and south from this settlement however at distances over 6 km. As such, it is considered that the Proposed Development in Scenario 2 will give rise to a **small** scale change over a **small** geographical extent. The magnitude of change will be **low** and as such the total cumulative visual effect is judged to be **Minor and Not Significant.**

Table A5.3.23: Hollybush

Hollybush			
Representative viewpoint:	N/A	Approximate distance from settlement edge to nearest turbine:	6.1 km

Location, description of existing view and potential receptors:

The small village of Hollybush lies to the north of the Doon Valley, at the meeting of the A713, the B7034, and the railway line to Waterside. Houses are arranged along the B7034, facing south-east, and in two side streets. The south-western part of the village is at the highest elevation. Looking south from the highest point of the village, at the junction of the B7034 and Hollybush Terrace, mature woodland around Hollybush House forms the foreground. Behind this is the round, forested summit of Patna Hill and beyond that, the hubs and blades of turbines in Dersalloch Wind Farm can be seen extending above the distant skyline. The relatively even skyline is visible to the right (west), punctuated by occasional woodlands. To the south-west, the immediate topography prevents more distant views. From further east along the B7034, these longer views drop behind the woodland in the foreground. Similar views can be obtained from the A713 to the north of the village, but there are fewer outward views from within the side streets.

Sensitivity:

Residential receptors are considered to be of **high** susceptibility to changes in the view. Hollybush is located within the Doon Valley SLA and the value of views from the settlement is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.

Assessment of visual effects:

The Proposed Development will be visible on the skyline, in open views to the south behind and to either side of the rounded, forested Patna Hill. It is considered that a relatively small proportion of the houses in Hollybush will experience this view, mainly from upper windows, since most of the village is on lower ground, and views will be screened by woodland around Hollybush House. Where visible, the turbines will be seen at distances of 6.1-6.5 km.

The scale of change will be **small.** The geographical extent of the change is also judged to be **small** as views of the Proposed Development will limited to the higher locations within the settlement due to intervening woodland.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 1, there will be theoretical visibility of the consented Knockshinnoch, some of the turbines of North Kyle Energy Project Wind Farms and some of the tips of Polquhairn and Overhill all located within 12 km to the south-east. To the south-west the consented Kirk Hill – Kirkoswald will be theoretically visible at distances over 15 km. The Proposed Development will be visible at distances over 6 km and will be seen in both combined and successive views with the consented wind farms and will be visible in front of the operational Dersalloch Wind Farm. Each of these schemes will appear as separate wind farms across the skyline however due to the distance of each from Hollybush they will appear as distant features. As such, effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, a number of Proposed Developments will be visible from parts of the settlement including the proposed Knockkippen Wind Farm (scoping), Polquhairn, Knockcronal, Carrick, Craiginmoddie (application) and Overhill (appeal/ public inquiry) Wind Farms. The Proposed Development will appear as a separate wind farm to these schemes however will appear at a greater distance than Knockkippen and in front of Dersalloch Wind Farm. As such, it is considered that the Proposed Development in Scenario 2 will give rise to a **small** scale change over a **small** geographical extent. The magnitude of change will be **low** and as such the cumulative visual effect is judged to be **Minor and Not Significant.**

Table A5.3.24: Maybole

Maybole			
Representative viewpoint:	VP13: Maybole	Approximate distance from settlement edge to nearest turbine:	10.1 km

Location, description of existing view and potential receptors: Maybole is a small town located to the south of the Carrick Hills. The older part of the town is sited on low-lying ground either side of the A77, with more recent expansion on the higher ground to the north-west. Views from the lower-lying part of Maybole are limited, though the south-east edge of the settlement is open. Wider views are available from the higher, less densely developed, parts of the town. There are several streets which enable broad views to the east and south, taking in farmland in the foreground and a backdrop of hills. Dersalloch Wind Farm is visible along the distant horizon to the south-east, as well as Windy Rig which is theoretical visible beyond. There are also glimpses of Hadyard Hill Wind Farm to the south from some of these locations.
Sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view. Maybole is not located within any designated landscapes however it contributes to the landscape setting of the settlement as experienced by residents. These views are likely to be locally valued by the community, and the value of views from the settlement is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this settlement is judged to be **high**.
Assessment of visual effects: The Proposed Development will be seen between 10 km – 11 km to the south-east across the distant forested skyline. The turbines will appear alongside Dersalloch Wind Farm and in front of the distant Windy Rig. The Proposed Development will be seen from upper areas of the town, and from the south-east settlement boundary. The scale of change will be **small.** The geographical extent of the change is also judged to be **small** as views of the Proposed Development will limited to the higher locations and the south-eastern edges of the settlement due to intervening built form. The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.
Potential for future cumulative effects: Under Scenario 1, a number of consented wind farms will be theoretically visible from the settlement to the east at distances over 9 km and to the south-west within 6km. The Proposed Development will be visible in combined views with most of the consented schemes and will appear as part of the emerging pattern of wind farm development in the east. Under Scenario 2, a number of proposed wind farms will be theoretically visible to the east, south and south-east at distances over 9 km. The Proposed Development will be visible in both combined and successive views with the proposed wind farms and, as with Scenario 1, will appear as part of the emerging pattern of wind farm development in the east. The introduction of the schemes in both Scenario 1 and 2 will result in a notable increase in wind farm development in views from Maybole. Actual visibility of wind farms under Scenario 1 and 2 is likely to be reduced due to intervening built form in Maybole that screens distant outwards views, however where views of the wind farms are visible, it is considered that this will give rise to a **large** scale change over a **small** geographical extent. The magnitude of change will be **medium** and as such the total cumulative visual effect is judged to be **Moderate and Significant** under both Scenario 1 and 2.

A5.3.4 Effects on Routes

A5.3.4.1 Sequential visual effects are assessed through considering the likely effects of the Proposed Development both in isolation, and in the context of other existing, consented and proposed wind energy developments on key routes through the Study Area. The routes to be assessed were identified through analysis of the ZTVs shown on Figures 5.1.2a-c. The assessment of likely effects on sequential views from these routes is detailed in the following tables.

Table A5.3.25: Minor roads within 5 km of the Proposed Development Area

Minor roads within 5 km of the Proposed Development Area			
Representative viewpoint:	VP6: Lethanhill VP9: Minor road west of Straiton	Approximate distance from route to nearest turbine:	1.7 km
Location, description of existing view and potential receptors: A number of minor roads are located within 5 km of the Proposed Development Area. North of Patna a minor no-through road leads to two farmsteads. West of Patna a small network of minor roads connect to Kirkmichael and north to Dalrymple. There are a smaller number of minor roads to the south-west of the Proposed Development Area near Straiton, with one leading south from Straiton and one to the west that leads to Ruglen. There are also short no-through roads north and south of Dalmellington to the south-east of the Proposed Development Area.			
Sensitivity: Road users including cyclists are considered to be of **medium** susceptibility to changes in the view. All stretches of the minor roads within 5 km are located within designated landscapes, with those to the north, east and south-east located within the Doon Valley SLA and those to the west and south-west located within the Water of Girvan Valley LLA. Some of these views offer scenic value with local access. Views from the roads are considered to be **medium** in value On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **medium**.			
Assessment of visual effects: Minor roads to the north and west of Patna will have intermittent visibility of the Proposed Development and where views of the Proposed Development are available, not all turbines will be visible. Where visible from these roads, including the Patna to Kirkmichael Road, turbines will appear extending from blanket conifer plantation, with turbine towers, and lower more distant turbines screened. Roadside trees and vegetation along the Patna to Kirkmichael Road will screen many views towards the Proposed Development, reducing overall visibility. There will be theoretical visibility of up to 9 turbines from the minor road to the west of Straiton where turbines will be visible across the forested horizon to the north-east. Plantation forest and woodland along this road will provide a degree of screening. South of Straiton, visibility quickly drops off and turbines will be glimpsed, partially screened by local topography. At Dalmellington, from the minor roads to the east of Bogton Loch, views will comprise turbines located on higher ground above the Doon Valley. Overall the scale of change will be **medium** and the geographical extent will be **medium** as visibility will be intermittent across the 5 km distance from the Proposed Development. The overall magnitude of change is judged to be **medium** and taking account of the **medium** sensitivity will result in a **Moderate and Significant** visual effect.			
Potential for future cumulative effects: Under Scenario 1, operational, consented wind farms and the Proposed Development will be visible from many of the minor roads within 5 km of the Proposed Development Area. Actual visibility of these wind farms however will be reduced due to roadside tree planting and vegetation that will provide a degree of screening from the roads. As such, effects in Scenario 1 will be the same as for the LVIA.			

Under Scenario 2, proposed wind farms together with the Proposed Development will be theoretically visible from most stretches of these minor roads. As with Scenario 1 however, it is likely that actual visibility will be reduced due to intervening roadside features. As such, effects in Scenario 2 will be the same as for the LVIA.

Table A5.3.26: A713

A713			
Representative viewpoint:	VP4: Patna	Approximate distance from route to nearest turbine:	2 km
Location, description of existing view and potential receptors: The A713 runs from Ayr south-east through Patna to Castle Douglas and is located approximately 2 km to the east of the nearest turbine at its closest point. Heading north from Patna, the road runs alongside the Doon river valley and single-track railway to Hollybush. From Hollybush the road passes through the lowland outskirts and into the town of Ayr. There are wide views from the section of the road near Martnaham Loch and around Hollybush, with visibility becoming more contained by topography within the Doon river valley. Heading south from Patna the road continues alongside the River Doon to Dalmellington. Here it is located on the low ground at the base of the U-shaped river valley, with contained views to the north-east and south-west, and longer channelled views to the north-west and south-east. The section of the road between Dalmellington and Castle Douglas runs to the east of Galloway Forest Park, through the Glenkens.			
Sensitivity: Road users including cyclists are considered to be of **medium** susceptibility to changes in the view. The road forms part of the Galloway Tourist Route and travels through the Doon Valley SLA between Hollybush and Loch Muck. Views from the road are considered to be **medium** in value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **medium**.			
Assessment of visual effects: Theoretical visibility of up to 9 turbines will be available from the section of the A713 within 5 km of the Proposed Development Area, though the number of visible turbines will be locally reduced between Waterside and Dalmellington. Turbines will be seen on the skyline to the west above the Doon Valley, but set well back from the valley edge. Travelling south from Ayr, visibility is more intermittent and will be available from stretches of the road near South Mains and around Hollybush. Where turbines are theoretically visible, roadside trees will provide intermittent screening towards the Proposed Development from the A713. Travelling north from St John's Town of Dalry through the Glenkens, visibility is very limited before Dalmellington due to surrounding topography that screen views north-west towards the Proposed Development Area. Turbines at the operational Windy Rig Wind Farm may be visible from parts of the A713 in the south of the study area. Overall the scale of change will be **small** due to the transient nature of the view, and the geographical extent will be **medium** as turbines will be visible along a stretch of the route approximately 6-7 km in either direction.			
The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity will result in a **Minor and Not Significant** visual effect on users of the A713.			
Potential for future cumulative effects: Under Scenario 1 there will be theoretical visibility of operational, consented wind farms and the Proposed Development from most of the A713 between Ayr and Carsphairn. Consented wind farms that will be theoretically visible from the road include, Knockshinnoch, Benbrack Variation, Enoch Hill and North Kyle Energy Project. These schemes along with the Proposed Development will be visible sequentially along the route with the Proposed Development visible to the west in combined views with Dersalloch Wind Farm. From most stretches of the A713 however, actual visibility is likely to be reduced due to intervening topography which will partially screen some of these schemes and intervening roadside tree planting and vegetation. As such it is considered that this will give rise to a **small** scale change over a **medium** geographical extent. The magnitude of change will be **low** and as such the cumulative visual effect is judged to be **Minor and Not Significant** under Scenario 1. Under Scenario 2, proposed wind farms together with the Proposed Development will be theoretically visible from most of the A713 between Ayr and Carsphairn. The most notable of the proposed schemes will be Knockkippen (scoping) located to the east of the road which will be visible in successive views with the Proposed Development. This will be most apparent along the stretch of road along the Doon Valley where the addition of both Knockkippen and the Proposed Development will introduce turbines on either side of the road. This will be experienced over a short section of the road. It is considered that this will give rise to a **medium** scale change over a **medium** geographical extent. The magnitude of change will be **medium** and as such the cumulative visual effect is judged to be **Moderate and Significant** under Scenario 2.			

Table A5.3.27: B741

B741			
Representative viewpoint:	VP1: B741 at Gass VP14: B741 near Ruglen	Approximate distance from route to nearest turbine:	0.7 km
Location, description of existing view and potential receptors: The B741 is a long B-road passing across South and East Ayrshire, from Girvan on the west coast, to New Cumnock on the River Nith. It passes near to the southern boundary of the Proposed Development Area, and meets the Proposed Development Area boundary in two locations, between Straiton and Dalmellington. Travelling from low ground at Straiton the B741 steadily rises as it passes south of the Lambdoughty Glen, where views towards the Proposed Development Area are well-screened by existing conifer plantation. It passes under a line of pylons at Kilachie Glen and from this point towards Dalmellington there are some elevated views of the Proposed Development Area across open moorland and rough pasture. From Grimmet, views of the Proposed Development Area become more limited as the level of the road drops toward the Doon Valley. As the road comes to an end near Dalmellington, there are views to the Proposed Development Area on elevated ground above the wide, flat river valley. Beyond 5 km, in the west of the study area, the B741 roughly follows the line of Water of Girvan on low ground, tying in with the Glasgow South Western Railway Line at Dailly. In the east of the study area, beyond Dalmellington, the road travels across an area of upland with limited views in the direction of the Proposed Development Area.			
Sensitivity: Road users including cyclists are considered to be of **medium** susceptibility to changes in the view. Between Straiton and Killochan Bridge to the west of the Proposed Development Area, the road travels			

through the Water of Girvan Valley LLA, and to the east it passes through the Doon Valley SLA. Views from the road are considered to be **medium** in value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **medium**.
Assessment of visual effects: Theoretical visibility of up to 9 turbines will be available from the section of the B741 between Straiton and Dalmellington, with turbines appearing against the skyline in views to the north. Views will be glimpsed from Straiton as far as Gass, due to forestry in the foreground. From this stretch of the road east of Gass, the Proposed Development will be visible in combined, successive and sequential views with Dersalloch to the south of the road. In the west there will be theoretical visibility between Straiton and Ruglen where there will be some successive and sequential views of the Proposed Development with Hadyard Hill, Assel Valley and Tralorg Wind Farms. Beyond Ruglen, theoretical visibility will become more intermittent and roadside trees and vegetation is likely to reduce visibility further. In the east, theoretical visibility is very limited beyond Dalmellington. Overall the scale of change will be **medium** over the closer section between Gass and Dalmellington, reducing to **small** in more distant areas. The geographical extent will be **medium** as turbines will be clearly visible from stretches of the road between 3-6 km long in each direction. The overall magnitude of change is judged to be **medium** and taking account of the **medium** sensitivity will result in a **Moderate and Significant** visual effect on the sections of the B741 with theoretical visibility as described above, reducing to Minor and Not Significant elsewhere.
Potential for future cumulative effects: Under Scenario 1 there will be theoretical visibility of operational, consented wind farms and the Proposed Development from most the stretch of the B741 between Dalmellington to the east and Burnhead to the south-west. The Proposed Development will be seen in both successive and sequential views of operational and consented schemes as well as successive and combined views with the operational Dersalloch Wind Farm. Considering the existing wind farms that are currently visible from the road, including Dersalloch it is considered that cumulative effects in Scenario 1 will be the same as for the LVIA. Under Scenario 2, proposed wind farms together with the Proposed Development will be theoretically visible from most the stretch of B741 between Dalmellington to the east and Burnhead to the south-west. The Proposed Development will be visible in sequential and successive views with visible proposed schemes and at closer proximity. The proposed schemes, including the Proposed Development, will be seen in views that have already been altered by wind farm development. As such, it is considered that cumulative effects in Scenario 2 will be the same as for the LVIA.

Table A5.3.28: B7045

B7045			
Representative viewpoint:	VP8: Straiton VP12: B7045 near Kirkmichael	Approximate distance from route to nearest turbine:	2 km
Location, description of existing view and potential receptors: The B7045 branches off the A77 south of Minishant and extends south-east through Kirkmichael to Straiton. The road passes through a complex undulating topography, with views varying according to topography and land cover. Between Minishant and Kirkmichael there is little roadside vegetation. South of Kirkmichael shelterbelts and policy woodland provide some screening. Generally topography is lower and more contained south of Kirkmichael than in the north. Accordingly, the section of the road north of Kirkmichael has more open views than the section to the south.			

Sensitivity: Road users including cyclists are considered to be of **medium** susceptibility to changes in the view. Between Straiton and approximately 1 km north of Kirkmichael the road is located within the Water of Girvan Valley LLA. Views from the road are considered to be **medium** in value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **medium**.
Assessment of visual effects: Views of the Proposed Development from the B7045 will be intermittent and largely limited to stretches between Straiton and Kirkmichael. Views will be glimpsed across the skyline of rolling agricultural land, and in some places are likely to be screened by vegetation. From more elevated locations near Kirkmichael and further north, the Proposed Development will be visible in combined views with Dersalloch Wind Farm and in successive views with Hadyard Hill, Assel Valley and Tralorg Wind Farms to the south-west. Overall the scale of change will be **small** as theoretical visibility of the Proposed Development will be limited. The geographical extent will be **medium** as turbines will be theoretically visible from intermittent stretches of the road across a distance of approximately 10 km. The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity will result in a **Minor and Not Significant** visual effect on the sections of the B7045 with theoretical visibility as described above.
Potential for future cumulative effects: Under Scenario 1 there will be theoretical visibility of operational, consented wind farms and the Proposed Development from most the stretch of the B7045 between Chapelton and Straiton. Kirk Hill – Kirkoswald Wind Farm, located over 7 km to the south-west at its closest point will be the most notable constented winf farm, visible in successive views with the Proposed Development. Views of other consented schemes from the road will be limited due to intervening topography. As such, it is considered that cumulative effects in Scenario 1 will be the same as for the LVIA. Under Scenario 2, proposed wind farms together with the Proposed Development will be theoretically visible from most the stretch of the B7045 between Chapelton and Straiton. The Proposed Development will be visible in sequential and successive views with visible proposed schemes and at closer proximity. The proposed schemes, including the Proposed Development, will be seen in views that have already been altered by wind farm development. As such, it is considered that cumulative effects in Scenario 2 will be the same as for the LVIA.

Table A5.3.29: Patna to Straiton Core Path

Patna to Straiton Core Path			
Representative viewpoint:	N/A	Approximate distance from route to nearest turbine:	0.5 km
Location, description of existing view and potential receptors: This path is listed as a core path by East Ayrshire Council (code D6) and is a linear route approximately 6.8 km long that connects Patna to Straiton. Most of the route is through plantation forestry as it crosses Sclenteuch Moor and views are largely contained by the forestry. Part of the route passes through the western extent of the Proposed Development Area where it crosses the overhead power line.			
Sensitivity: Recreational receptors, whose attention is focused on their surroundings, are of **high** susceptibility to changes in the view. The Patna to Straiton Core Path briefly passes through the Water of Girvan Valley			

LLA and is a path used by residents and visitors. As such, views from the route are considered to be **medium** in value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **high**.
Assessment of visual effects: There will be theoretical visibility of up to 9 turbines from most of this core path, with T2 being the closest turbine to the route at a distance of 0.5 km as it crosses the overhead power line. Actual visibility will be reduced due to the surrounding forestry that will screen many views from the route. There will be visibility of turbines through areas of forestry that have been recently felled, and from these locations turbines will appear as very large-scale, close proximity features in the view across the surrounding forested moorland. The turbines will not alter any key views or outlooks from this path, which runs through a man-modified landscape. Overall the scale of change will be **medium**. The geographical extent will be **medium** as visibility of the Proposed Development will be varied across the length of the route, with large sections experiencing no visibility due to surrounding forestry and areas experiencing open views of turbines at close proximity where forestry has been felled. The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect on the Patna to Straiton Core Path.
Potential for future cumulative effects: Under Scenario 1 there will be theoretical visibility of operational, consented wind farms and the Proposed Development from most of the core path. Actual visibility however of these wind farms will be limited due to intervening forestry, with limited views of the surrounding operational and consented through areas of recently felled forestry. Similarly, under Scenario 2, there is theoretical visibility of proposed wind farms however actual visibility is also likely to be reduced due to the surrounding forestry. As such, it is considered that cumulative effects in Scenario 2 will be the same as for the LVIA.

Table A5.3.30: Core Paths within the Doon Valley

Core Paths within the Doon Valley			
Representative viewpoint:	VP3: Waterside, north end VP5: Auchenroy Hill VP6: Lethanhill VP11: Dalmellington	Approximate distance from route to nearest turbine:	1.8 km
Location, description of existing view and potential receptors: There are a number of routes within the Doon Valley, within 5km of the turbines, that are listed as core paths by East Ayrshire Council. These include: • D4 Patna to Rankinston; • D5 Patna Bridleway; • D10 Patna and Waterside Circular; • D12 Dalmellington to Bogton Plantation; • D13 Auchenroy Hill and Dalcairnie Falls; • D14 Dalmellington to Loch Doon; • D15 Bogton Plantation; • D16 Craigengillan to Knockdon; • D17 Scottish Coal Cycle Route from Loch Doon; and • D18 Carmlarg. Each of these core paths offer differing views within and across the Doon Valley, with a range of both elevated open views and lower enclosed views.			
Sensitivity: Recreational receptors, whose attention is focused on their surroundings, are of **high** susceptibility to changes in the view. Each of these core paths is either fully or partially located within the Doon Valley SLA and are used by residents and visitors. Views from these routes are considered to be **medium-high** in value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **high**.			
Assessment of visual effects: There will be theoretical visibility of up to 9 turbines from most of the core paths within the Doon Valley. Where visible, the Proposed Development will be seen in views across the forested skyline to the west, north-west and south-west, particularly from the core paths around Patna, Waterside and Dalmellington. From these routes, actual visibility will vary due to tree and vegetation cover along some of these routes that will provide a degree of screening. Similarly, from some locations, the Proposed Development will be partially screened by topography east of Keirs Hill, around White Hill. The Proposed Development will be viewed in both combined and sequential views with Dersalloch Wind Farm from some sections of these core paths. Visibility from core paths to the south-east of Auchenroy Hill will be more limited as the topography of Auchenroy Hill will provide screening in views towards the Proposed Development Area. Overall the scale of change will vary from **large** in some locations, to small where visibility is reduced. The geographical extent of larger scale changes will be **small** due to a variation of both open and contained views along each core path. The overall magnitude of change is judged to be **medium** for core paths around Patna, Waterside and Dalmellington and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect on these core paths. Effects on the core paths to the south-east of Auchenroy Hill will be **Minor and Not Significant** due to the limited theoretical visibility from these routes.			
Potential for future cumulative effects: Under Scenario 1 there will be theoretical visibility of operational, consented wind farms and the Proposed Development from most of the core paths within the Doon Valley. The Proposed Development will be seen in successive and sequential views with operational and consented wind farms and combined views with Dersalloch Wind Farm. The Proposed Development will also introduce further turbines alongside Dersalloch within 3 km of some of these routes, namely those around Patna, Waterside and Dalmellington. As such, it is considered that cumulative effects in Scenario 1 will be the same as for the LVIA. Under Scenario 2 there will be theoretical visibility of proposed turbines from most of the core paths within the Doon Valley. The most notable proposed wind farm will be the Knockkippen (scoping) which will extend across D10 Patna and Waterside Circular, which will introduce turbines at very close proximity to this route as well as the other core paths around Patna and Waterside. The Proposed Development will be visible in successive views to the south-west and together Knockkippen and the Proposed Development will introduce close proximity turbines in two directions from the core paths. As such, it is considered that cumulative effects in Scenario 2 will be the same as for the LVIA.			

Table A5.3.31: Core Paths around Straiton

Core Paths around Straiton			
Representative viewpoint:	VP7: Colonel Hunter Blair's Monument, Craigengower	Approximate distance from route to nearest turbine:	3 km
Location, description of existing view and potential receptors: There are a number of routes around Straiton, within 5 km of the turbines, that are listed as core paths by South Ayrshire Council. These include: • SA39; • SA47; and • SA48. SA39 travels west from Straiton following the B741 as it gradually climbs through forestry and woodland that largely contains outward views. SA48 offers elevated open views as it crosses Craigengower and Highgate Hill, and SA47 follows the Water of Girvan along the floodplain with contained views across the valley and occasional elevated and longer distance views from sections that traverse higher valley slopes.			
Sensitivity: Recreational receptors, whose attention is focused on their surroundings, are of **high** susceptibility to changes in the view. Each of these core paths is either fully or partially located within the Water of Girvan Valley LLA and are used by residents and visitors. Views from these routes are considered to be **medium-high** in value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **high**.			
Assessment of visual effects: There will be theoretical visibility of up to 9 turbines from each of these core paths, although at varying degrees. Theoretical visibility from SA39 will be extensive, although actual visibility will be limited to the eastern extent of the path between Straiton and New Bridge, as surrounding woodland and forestry along the route will screen most views to the east towards the Proposed Development Area. From SA47 there will be views of up to 9 turbines from the section of the route around Bennan with turbines visible along the north-eastern horizon. Visibility from the remaining section of the route will be limited due to intervening topography. From SA48, there will be visibility of turbines in elevated open views at the summit of Craigengower where the turbines will appear as large scale features in the periphery of the main view over Straiton (see Viewpoint 7). Elsewhere along this route the turbines will be screened either by the intervening topography of Craigengower or by trees at Barbellie Wood. The scale of change will vary from **large** in some locations, to **small** where visibility is minimal. The geographical extent will be **small** due to the limited areas along these core paths from which turbines will be seen. The magnitude of change is judged to be **medium** in locations where the turbines are clearly visible, and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect on these core paths. In other locations the effect will be **Minor and Not Significant**.			
Potential for future cumulative effects: Under Scenario 1 there will be theoretical visibility of operational, consented wind farms and the Proposed Development from the core paths. From SA39 operational, consented wind farms and the Proposed Development will be theoretically visible, with the Proposed Development in both successive and combined views with operational and consented schemes. From most of SA47 however only the Proposed Development will be theoretically visible and from SA48 there is a small stretch in which operational, consented wind farms and the Proposed Development will be theoretically visible. Under Scenario 2, theoretical visibility of proposed wind farms, including the Proposed Development, will be available from most of SA39 and SA47. From a large section of the SA48 proposed wind farms however not including the Proposed Development, will be theoretically visible. Due to the varying degrees of visibility under both Scenario 1 and 2, it is considered that cumulative effects in both scenarios will be the same as for the LVIA.			

Table A5.3.32: National Cycle Network Route 7

National Cycle Network Route 7			
Representative viewpoint:	N/A	Approximate distance from route to nearest turbine:	7.5 km
Location, description of existing view and potential receptors: Within the study area NCN Route 7 extends from the coast at Prestwick and Ayr, south through Maybole and Glentrool Forest, to Newton Stewart. This part of Route 7, which runs between Glasgow and Carlisle, is also known as the Lochs & Glens (South) cycle route. Views from the minor roads, along which Route 7 passes between Ayr and Maybole, are generally quite open and long-distance. South of Maybole views remain relatively open until Crosshill, where they steadily become more contained and increasingly intermittent.			
Sensitivity: Recreational receptors, whose attention is focused on their surroundings, are of **high** susceptibility to changes in the view. As this is a nationally promoted cycle route that passes through both the Water of Girvan Valley LLA and the Brown Carrick Hills & Coast LLA, views from the route are considered to be **medium-high** in value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **high**.			
Assessment of visual effects: There will be theoretical visibility of up to 9 turbines along most of this route between Ayr to the north of the Proposed Development Area and Cullochknowes, approximately 8 km to the south-west of the Proposed Development Area. There will be some elevated views of the Proposed Development from large sections of the route north and south of Maybole. From these locations, over 10 km from the Proposed Development Area, turbines are likely to appear in the middle to far distance, set against the skyline, and are likely to be visible in combined views with Dersalloch Wind Farm, as well as combined or successive views with Hadyard Hill, Assel Valley and Tralorg Wind Farms. Further south near Crosshill, where the route comes closest to the turbines, at a distance of approximately 7.5 km, visibility will become more intermittent due to surrounding topography. Approximately 4 km south of Crosshill at Cullochknowes, the route passes behind Drumyork Hill and the Proposed Development will not be visible beyond this point. Overall, considering the distance of 7.5 km between the route and the closest turbine and the visibility of existing wind farms in views from the route, the scale of change will be **small**. The geographical extent will be **medium** due to the intermittent visibility across approximately 16 km of route between Ayr and Cullochknowes. The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect on this route.			

Potential for future cumulative effects:

Under Scenario 1 there will be theoretical visibility of operational, consented wind farms and the Proposed Development from the section of route between Cullochknowes and Brown Carrick Hill. In sections with open views, the operational, consented wind farms and the Proposed Development will be visible at distances over 3 km however the degree of actual visibility along the route will vary due to intervening topography and tree planting and vegetation. The Proposed Development will be visible in combined, successive and sequential views with operational and consented schemes and will be seen within the emerging pattern of wind farm development to the east of the route. As such, it is considered that cumulative effects in Scenario 1 will be the same as for the LVIA.

Under Scenario 2, a number of proposed wind farms, including the Proposed Development, will be theoretically visible from the route. The proposed Craiginmoddie, Carrick and Knockcronal Wind Farm (application) will be notable and they surround a small stretch of the route at Doughty Hill. The Proposed Development will be seen in both successive and sequential views with these wind farms and further proposed wind farms however at a greater distance from the route. The addition of the schemes under Scenario 2 will result in a greater number of turbines being visible and will bring turbines much closer to the route. It is considered that the addition of the Proposed Development will result in a **Minor and Not Significant** additional cumulative effect, due to the distance between the Proposed Development and its location within an emerging pattern of wind farm development to the east. However, the total cumulative visual effect experienced from this route may be significant.

Table A5.3.33: Hill routes in the Southern Uplands

Representative viewpoint:	VP15: Cornish Hill VP16: Cairnsmore of Carsphairn	Approximate distance from route to nearest turbine:	km
Location, description of existing view and potential receptors: Hill routes in the Southern Uplands are frequented by recreational receptors and provide a range of views including elevated long distance views and panoramic views from hill summits. These views are illustrated by VP15: Cornish Hill and VP16 Cairnsmore of Carsphairn.			
Sensitivity: Recreational receptors, whose attention is focused on their surroundings, are of **high** susceptibility to changes in the view. Hill summits and walking routes within the hills in the Southern Uplands are considered to be of **high** value as they are often destination viewpoints for people, and many of them are located within designated landscapes or the Merrick WLA. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors is judged to be **high**.			

Assessment of visual effects:

Theoretical visibility within the Southern Uplands occurs in intermittent and scattered areas with up to 9 turbines visible from most of these elevated locations. Around Loch Bradan, over 8 km to the south of the nearest turbine in the Carrick Forest, there is theoretical visibility of up to 9 turbines from walking routes on hills summits including Cornish Hill (VP15) and site-facing slopes. Actual visibility on walking routes on lower hills slopes will be reduced due to extensive coniferous forest cover in this area which will screen most outwards views. Open long distance view towards the Proposed Development will therefore be limited to parts of routes on higher open slopes and hill summits. Around Eldrick Hill and Shalloch, over 10 km within the Carrick Forest, there will be elevated open views towards the Proposed Development from recreational receptors walking within these hills. There will also be visibility from elevated sections of routes around Loch Doon in the south-east of the Study Area, including from Lamford Hill. From many of these locations, the Proposed Development will be visible in distant combined views with Dersalloch Wind Farm. In many views, the Proposed Development will be set behind Dersalloch. From some locations there will also be combined and successive views with Hadyard Hill, Assel Valley and Tralorg Wind Farms to the west as well as Windy Rig, Brockloch Rig Phase 1 and 2 and Afton Wind Farms to the north-east. The Proposed Development will not introduce turbines into a new section of the view from Southern Upland summits.

The scale of change in hilltop views will be **small**. The geographical extent will be **medium** due to the intermittent and scattered nature of visibility across routes and summits over a relatively wide area to the south of the Proposed Development.

The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect on users of routes within the Southern Uplands.

Potential for future cumulative effects:

Under both Scenario 1 and 2, theoretical visibility of operational, consented and proposed wind farms, including the Proposed Development, from the hill routes will vary. From these routes, the Proposed Development will be seen in both successive and combined views with operational, consented and proposed schemes. In most cases, the wind farms under both Scenario 1 and 2 will be seen in long distance views at distances over 5 km and will be visible in directions that have already been altered by wind farm development. As such, it is considered that cumulative effects in both Scenario 1 and 2 will be the same as for the LVIA.

Technical Appendix 5.4: Residential Visual Amenity Assessment

A5.4.1 Introduction

A5.4.1.1 This Residential Visual Amenity Assessment (RVAA) describes the change in views likely to be experienced by residents of properties within approximately 2 km of the nearest turbines of the Proposed Development. The RVAA should be read in conjunction with Chapter 5: Landscape and Visual of the Environmental Impact Assessment Report (EIAR) and its technical appendices.

A5.4.1.2 The RVAA was undertaken in accordance with the principles contained within the Landscape Institute's Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3)[1] and Landscape Institute RVAA Technical Guidance Note 2/19 (LI TGN 2/19)[2]. The approach has also been informed by numerous decisions made following public inquiries into wind energy proposals in Scotland and elsewhere in the UK.

A5.4.1.3 GLVIA3 notes the need for a 'residential amenity assessment' to consider the effects of development on private properties (GLVIA3, Page 107, Para. 6.17). This is noted to include an assessment of visual effects, although is separate from Landscape and Visual Impact Assessment (LVIA).

A5.4.1.4 LI TGN 2/19 explains that: "the purpose of RVAA is to provide an informed, well-reasoned answer to the question: "is the effect of the development on Residential Visual Amenity of such nature and / or magnitude that it potentially affects 'living conditions' or 'Residential Amenity'?" (LI TGN 2/19, Page 5, Para. 2.1).

A5.4.1.5 The RVAA does not consider other components of residential amenity, such as noise, dust or shadow flicker, which are dealt with in the appropriate chapters of the EIAR.

A5.4.1.6 Findings of significant effects on views or visual amenity from a property do not automatically imply the need for further assessment. However, for properties where receptors are likely to experience a high magnitude of visual change, and which are in proximity to a development, undertaking an RVAA may be appropriate. The scope of the RVAA, including the 2 km study area, was set out in the Scoping Report (August 2021) and agreed through consultation with statutory consultees (refer to Table 5.1 in Chapter 5 Landscape and Visual).

A5.4.1.7 The methodology for the RVAA is set out below along with the scope of the assessment. The assessment concludes with a summary of the findings. The RVAA is supported by illustrative wireframes, including cumulative wireframes, included in Figure A5.4.2.

A5.4.2 Methodology

A5.4.2.1 The methodology can be summarised as follows:

- Identification of properties to be considered (defining the study area and scope);
- Collation of baseline information from maps and aerial photographs and preparation of wirelines visualisations, to inform field survey;
- Field survey to collate information in relation to baseline views and visual amenity from each property;
- Assessment of the magnitude of change in visual amenity likely to be experienced by receptors at the property; and
- For properties experiencing a medium or high magnitude of change, a judgement of whether the predicted change in views and visual amenity reaches the 'Residential Visual Amenity Threshold' described in LI TGN 2/19, i.e. "*is the effect of the development on Residential Visual Amenity of such nature and / or magnitude that it potentially affects 'living conditions' or 'Residential Amenity'?*"[3].

A5.4.2.2 The following section sets out the methodology and the factors considered in more detail.

Study Area and Scope

A5.4.2.3 The assessment includes consideration of the changes in views and visual amenity from all properties up to approximately 2 km of the proposed turbines. Parts of the settlements of Waterside and Patna are also within the 2 km study area as shown on Figure A5.4.1. Properties outside the two settlements are assessed individually or in small groups, while effects on visual amenity of residents within Patna and Waterside are considered more generally.

A5.4.2.4 Although there is the potential for significant visual effects to occur beyond 2 km, such effects are considered less likely to affect 'living conditions'. Locations between 2 – 2.5 km were considered for inclusion, and have been scoped in where there are open views towards the Proposed Development Area. This was informed by experience, observations made on site and an understanding of the Proposed Development.

Individual Properties or Property Groups

A5.4.2.5 Individual properties and property groups were identified using Ordnance Survey (OS) AddressBase Plus data and verified in the field. All properties had some theoretical visibility, as indicated by the Zone of Theoretical Visibility (ZTV) map in Figure A5.4.1, and therefore none were scoped out of the RVAA. Individual properties and property groups are listed in Table A5.4.2.

Settlements

A5.4.2.6 For residential properties within defined settlements, it is not practical or helpful to provide an individual assessment of each dwelling, as many will be very similar. A more general approach was therefore adopted, looking at the overall orientation of houses, and the type and extent of available views out from the settlement.

A5.4.2.7 Different parts of the settlements have differing views and so the settlements have been discussed with reference to a selection of representative locations within each. These were selected based on desk study and field work. The locations are listed in Table A5.4.2 and illustrated in Figure A5.4.1.

[1] Landscape Institute and the Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)
[2] Landscape Institute (2019) Technical Guidance Note 02/19, Residential Visual Amenity Assessment
[3] The LI TGN 2/19 notes that "*the factors which might contribute to the threshold being reached, or the way in which these are expressed, may be different for different types of development (for example, one might use terms such as 'overwhelming/overbearing' for tall structures, or 'overly intrusive' for a development overlooking a garden or principal room)*" (paragraph 2.2).

A5.4.2.8 Four locations were selected in Waterside: Waterside Doon Valley Railway (LVIA Viewpoint 2); Waterside north end (LVIA Viewpoint 3); New Cottages; and Chapel Row. These locations represent the views from houses on the valley side and cottages on the A713. Five locations were selected in Patna, including the LVIA assessment viewpoint on the A713 (LVIA Viewpoint 4). The other four locations represent views from the closest part of the settlement (Keirs Crescent); the higher part of Patna (Clements Wynd); the location of consented housing development (Carskeoch); and Burnfoot. The village of Straiton has not been included in this assessment as it is judged that the distance of 2.8 km between the closest turbine in the Proposed Development and the closest properties in Straiton will result in limited effects on residential visual amenity.

Desktop Studies

A5.4.2.9 For the purposes of this RVAA, the visual amenity experienced at a property is considered to be a combination of the type, nature, extent and quality of views that may be available from the property and its domestic curtilage (e.g. gardens and access drives).

A5.4.2.10 OS maps, aerial imagery and Google Streetview were used for desktop research to assist with recording information such as the location of the residential elements of each property, the orientation of the property, and the extent of its curtilage.

A5.4.2.11 In considering baseline visual amenity, the following was examined:

- The nature and extent of the available existing views (including main/principal views) from the property and its garden, including the proximity and relationship of the property to surrounding landform, landcover and visual foci; and
- Views experienced when approaching or departing from the property via its driveway and/or access roads, if applicable.

Field Surveys

A5.4.2.12 Field surveys were undertaken from publicly accessible locations between November 2021 and April 2022, and during earlier visits as part of the previous Keirs Hill Wind Farm application. Information gathered during these visits was used to determine the following baseline information:

- The orientation and likely views from each property (including principal/primary aspects and presence of windows);
- Layout and orientation of the gardens and property curtilage;
- Access location, and likely views from private or shared driveways or access tracks;
- The nature of existing views from the properties and their gardens, including the proximity and relationship of the properties to surrounding landform, landcover and visual foci and the scenic quality of views; and
- Potential screening provided by local variations in topography, the built environment and vegetation/tree cover within the surrounding landscape.

A5.4.2.13 Fieldwork was undertaken between winter and late Spring. This enabled the ‘maximum case’ scenario to be assessed, on the basis that any available screening offered by deciduous vegetation was at a minimum during winter months.

Preparation of Accompanying Visualisations

A5.4.2.14 On the basis of guidance included in LI TGN 2/19, indicative wireline visualisations based on a bare ground digital terrain model were generated using Resoft Windfarm software from all individual properties / property groups as well as representative viewpoints in Patna and Waterside. The illustrative wirelines are presented in Figure A5.4.2. They have been centred on the Proposed Development and illustrate a 90 degree included angle of view and 1.5 m viewing height from each location.

A5.4.2.15 The illustrative wireline visualisations show the proposed turbines only, with turbines numbered for ease of reference. No other components of the Proposed Development have the potential to affect 'living conditions’ and are therefore not included in the wireframes.

A5.4.2.16 Due to their proximity and potential scope for cumulative interactions in views from properties within the RVAA study area the following cumulative schemes within 20 km have also been included in the wireline visualisations, where visible within the 180 degree view focused on the Proposed Development:

- Dersalloch (Operational);
- South Kyle (Under Construction);
- Chapelton Farm, Turnberry (Under Construction);
- Hadyard Hill (Operational);
- Brockloch Rig 2 (formerly Windy Standard 2) (Operational);
- Brockloch Rig 1 (formerly Windy Standard 1)(Operational);
- Knockkippen (Scoping);
- Knockshinnoch (Consented);
- Knockcronal (Application Submitted);
- Polquhairn (Consented and Application Submitted);
- Carrick (Application Submitted);
- North Kyle Energy Project (Consented);
- Overhill (Consented and Appeal / Public Inquiry);
- Craiginmoddie (Application Submitted);
- Benbrack Variation (Consented);
- Enoch Hill (Consented);
- Kirk Hill – Kirkoswald (Consented);
- Greenburn Wind Park (Application Submitted);
- Brockloch Rig 3 (former Windy Standard 3) (Consented); and
- Pencloe (Consented).

A5.4.2.17 Where cumulative interactions between the Proposed Development and operational, consented or proposed schemes are deemed to contribute to potentially overbearing effects on residential visual amenity, this is highlighted.

A5.4.2.18 The wirelines are not necessarily representative of the primary outlook of the property and do not show features such as buildings and trees that may provide screening or filtering of views. It should therefore be noted that these indicative wireline visualisations represent a ‘maximum visibility scenario’ which may potentially be experienced from the property or its curtilage and this should be borne in mind when using the images. The principal/primary outlook of residential properties is discussed in the tables for each property/settlement in the assessment section which follows below.

Assessment of Potential Changes to Views and Visual Amenity

Sensitivity of Residential Receptors

A5.4.2.19 GLVIA3 advocates an approach which considers the overall sensitivity of visual receptors (people) in terms of "*both their susceptibility to change in views and visual amenity and also the value attached to particular views*" (GLVIA3, Page 113, Para. 6.31), whilst stating that visual receptors most susceptible to change are likely to include "*residents at home*" (GLVIA3, Page 113, Para. 6.33).

A5.4.2.20 Taking account of the purposes of this RVAA, and taking a precautionary approach, all people at their place of private residence are considered to be of **high** sensitivity to changes in their views and visual amenity. As a consequence, no individual assessment of sensitivity is outlined in the assessment which follows.

Magnitude of Change to Views and Visual Amenity

A5.4.2.21 The likely changes in views and visual amenity as a result of the Proposed Development are considered with reference to the individual wireframes from each property (see Figure A5.4.2). A judgement on the magnitude of visual change which will be experienced is made, and the change in views summarised, with reference, as appropriate, to the following factors which are set out in GLVIA3 (Page 115, Para. 6.39-6.40):

- "*scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the Proposed Development;*
- *degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture;*
- *angle of view in relation to the main activity of the receptor;*
- *distance of the viewpoint from the Proposed Development; and*
- *extent of the area over which the changes would be visible.*"

A5.4.2.22 The following additional factors are specific to the type of development proposed:

- Type and nature of the available view (e.g. panoramic, framed);
- Relative size and proximity of turbines or other infrastructure;
- Number, extent and composition of turbines visible (and presence of screening);
- Position of turbines in views from the property e.g. whether in the principal/primary outlook from the property;
- Proportion of the skyline occupied by the turbines;
- Direction (including the aspect) of the view affected; and
- Density and spacing of turbines and their overall composition in the view.

A5.4.2.23 For each property or settlement, the evaluation consists of:

- A description of the property and of its location and context;
- A description of the likely existing available views and visual amenity from the property and its domestic curtilage, including gardens and private or shared access drives; and
- A description of the likely effect on views and visual amenity resulting from the Proposed Development, as well as other existing and proposed schemes included in the study area and likely to influence the decision-making process.

A5.4.2.24 The detailed information for each property or settlement concludes with a judgement with respect to the visual component of residential amenity or 'living conditions' and whether the 'Residential Visual Amenity Threshold' is breached. It is intended that this judgement may assist the decision maker in coming to the wider planning judgement on overall residential amenity, when considered within the context of other components (e.g. noise, shadow flicker and dust).

A5.4.2.25 Informed by the preparatory desk work and supported by maps and wireframes, an assessment was undertaken during field surveys of the magnitude of the likely change in visual amenity that may result from the introduction of the Proposed Development into the local landscape and the view(s) from each property or settlement.

A5.4.2.26 Magnitude of visual change is expressed on a relative scale, as set out in Table A5.4.1 below, which highlights the differences between the types of change experienced in views from residential properties examined as part of this RVAA. The existing and proposed view from each property is described, and the likely relative magnitude of change (high, medium, low, barely perceptible) arising from the Proposed Development is determined. Reference to cumulative wind farm developments is made where appropriate. The nature of existing and predicted views (open, enclosed, panoramic, focused, framed etc.) affects the relative magnitude of change and is taken on board in reaching that judgement. The RVAA looks at the range of views likely to be available from the house and its curtilage, and considers potential effects on all of these.

Table A5.4.1: Magnitude of change in views and visual amenity

Magnitude of Change in Visual Amenity	Description
A5.4.3.1 High	A5.4.3.2 The Proposed Development will be a key/defining element in the view.
A5.4.3.3 Medium	A5.4.3.4 The Proposed Development will be clearly discernible but will not be a key/defining element of the view.
A5.4.3.5 Low	A5.4.3.6 The Proposed Development will be visible and will form a minor element of the view.
A5.4.3.7 Barely Perceptible	A5.4.3.8 The Proposed Development may go unnoticed as a minor element of the view, or is not visible.

A5.4.2.27 The RVAA concludes, for properties where residents are predicted to experience a medium or high magnitude of change, with a judgement as to the potential effect on 'living conditions', or residential visual amenity. This corresponds to the 'Residential Visual Amenity Threshold' as described in LI TGN 2/19.

A5.4.2.28 For properties where residents are predicted to experience a low magnitude of change, it considered that there is no potential for 'living conditions' to be affected, and this final stage is therefore not undertaken.

A5.4.3 Properties Considered in the Assessment

A5.4.3.9 Residential buildings were identified within the 2 km study area using OS Address Data, and ZTV analysis was used to confirm theoretical visibility from each location. Table A5.4.2 below lists all of the properties, property groups, and representative locations assessed as part of this study. For each location, the table contains a reference number (which correlates to those included on Figure A5.4.1), the property name (as informed by OS AddressBase Plus data) and details of location. Computer modelling was used to provide details of distance, viewing direction and potential visibility

of the Proposed Development. This potential visibility of the wind turbines is illustrated in the wirelines appended at the end of this report.

A5.4.3.10 Following site survey and analysis of illustrative wirelines, notes were prepared for each of the properties and the potential magnitude of change which will be experienced at these properties. Where the magnitude of change is judged to be low, commentary on these findings is provided in Table A5.4.2 below, and these receptors are not carried forward into the detailed assessment.

Table A5.4.2: Properties Considered in Assessment

Ref	Name	Approximate grid reference (wireline location)	Distance to nearest turbine	Magnitude of change indicating if the property is carried forward to detailed assessment
Individual Properties				
P1	Sclenteuch Farm	239186, 605505	1.9 km	Low – illustrative wireline indicates very limited theoretical visibility of one turbine blade. ZTV in Figure A5.4.1 also indicates limited visibility from the access track to the property. Not carried forward to detailed assessment.
P2	Low Keirs	243312, 608438	1.6 km	Medium – carried forward to detailed assessment.
P3	Carcloot House (“Carclout” on OS maps)	240061, 609994	1.9 km	Medium – carried forward to detailed assessment.
P4	High Keirs Cottage	242957, 608102	1.2 km	High – carried forward to detailed assessment. (High Keirs itself is a ruin and is not considered).
P5	Glenash		2.0 km	Low – intervening tree belt to the north of property likely to screen views towards the Proposed Development. Main views are to the north-west away from the Proposed Development. Not carried forward to detailed assessment.
Property Groups				
G1	Gass (Gass Farm House, Gass Farm Cottage, Glentaggan Bungalow)	241217, 605635	1.3 km	High – carried forward to detailed assessment.
Representative locations within settlements				
Waterside				Medium-High – carried forward to detailed assessment.
S1	Waterside, Doon Valley Railway (LVIA VP2)	243994, 608395	2.0 km	
S2	Waterside, north end (LVIA VP3)	243599, 608855	2.1 km	
S3	New Cottages	243532, 608737	1.9 km	
S4	Chapel Row	244396, 608119	2.1 km	
Patna				Medium-High – carried forward to detailed assessment.
S5	Keirs Crescent	241958, 609279	1.4 km	
S6	Carskeoch	241522, 609568	1.4 km	
S7	Clements Wynd	241669, 609691	1.6 km	
S8	A713 (LVIA VP4)	241958, 610075	2.1 km	
S9	Burnfoot	242495, 609566	2.0 km	

A5.4.4 Assessment of Effects on Residential Visual Amenity

A5.4.4.1 This section sets out the detailed assessment of effects on views and visual amenity for each individual location taken forward for detailed assessment in accordance with Table A5.4.2. The assessment should be read in conjunction with the accompanying illustrative wirelines in Figure A5.4.2.

Properties / Property Groups

A5.4.4.2 Tables A5.4.3 to A5.4.6 below present the detailed assessments relating to the four locations, representing six individual properties, assessed within the 2 km study area.

Table A5.4.3: P2 Low Keirs

P2: Low Keirs			
Grid Reference (NGR)	243312, 608438	Representative LVIA Viewpoint	N/A
Direction of View	South-west	Distance to Nearest Turbine (km) and turbine no.	1.6 / T9
Number of hubs theoretically visible	2	Number of turbines with blades theoretically visible	4
Description of property, location and context: • Representative of one single storey property; • Accessed via track from A713 to north; • Private garden to north-east of property; • Windows mainly on north-west and south-east facing elevation, with one window on south-west facing elevation; and • Located in a low lying location within Doon Valley, north of pylon line, set within open ground.			

Description of existing views and visual amenity:

This property was observed from the access track. The location of the property is shown on Figure A5.4.1.

Views from the north-west façade (front) of the property are across the drive and access track to open rough pasture, framed by rising topography on either side of the Doon Valley. Views south-east are similarly focused along the valley, but are locally screened to the east by the rocky bing south of Waterside. In this view the pylons extend uphill from the valley floor on to the slopes of Horseman's Knowe.

The garden is located on the north-east side of the property, with views to the bing and chimneys at Waterside beyond. Views heading south on the access track look across the narrowest part of the valley to the slopes rising either side of Keirs Glen.

No operational or under construction wind farms are theoretically visible in the 180 degree view focused on the Proposed Development.

Description of likely effect on views and visual amenity as a result of the Proposed Development:

Wireframes are shown in Figure A5.4.2.

The Proposed Development is likely to be directly visible in views from the window on the south-west side of the property, and from this part of the curtilage. There may be oblique views of some of the turbines from windows on the north-west (front) and south-east facing façades. The wind farm will potentially occupy up to approximately 50 degrees of views south-west, with the hubs of turbines T7 and T9 visible, and the blade tips of turbines T6 and T8 perceptible. Further screening by forestry on the skyline may reduce visibility.

Turbines may be visible from some parts of the garden, where it extends north-west beyond the front façade, though some turbines are likely to be screened by the house itself. Turbines are likely to be visible for the full length of the access track on approach to the property from the A713. The access track leading to the wind farm is also likely to be visible from this location to the immediate west of the property.

No other consented or proposed wind farm developments will be visible in the 180 degree view focused on the Proposed Development. Knockkippen (scoping) will be visible 2 km to the north-east, in the opposite direction to Sclenteuch.

At night, there will be visibility of aviation lighting (refer to Figure A5.5.1) on the hubs of two turbines within the Proposed Development from this property in views to the south-west. Due to the vertical angle of view, built in mitigation controlling the direction of the light will result in a maximum visible lighting intensity of up to 200 candela (cd) and a more likely reduced intensity of up to 20 cd, as detailed in Technical Appendix 5.5. In this direction to the south-west, there are limited sources of artificial light. There will be artificial light at the property, in Patna in the north-west as well as street lighting along the A713 at Waterside.

Conclusion with respect to the Proposed Development:

The magnitude of change of the visual amenity of this property is **low**, as the majority of the Proposed Development will be screened by the intervening landform. There will however be direct views of a small number of turbines on approach to the property, and potentially from the window on the south-west of the property, and obliquely from the main north-west and south-east outlooks. Aviation lighting on two turbines will potentially be visible at night, however they will be seen in the context of existing artificial lighting sources in successive views towards Patna and Waterside.

It is noted that the turbines will not be present at the centre of views from the north-west (front) façade, and views from the garden are largely screened by the house. At a distance of 1.6 km and given the oblique nature of views from the primary outlook and screened views from the garden, as well as the small number of turbines visible, the Proposed Development will not appear overwhelming or oppressive and will not breach the residential visual amenity threshold.

Table A5.4.4: P3 Carcloot House ("Carclout" on OS maps)

P3: Carcloot House ("Carclout" on OS maps)			
Grid Reference (NGR)	240061, 609994	Representative LVIA Viewpoint	N/A
Direction of View	South-east	Distance to Nearest Turbine (km) and turbine no.	1.9 / T5
Number of hubs theoretically visible	4	Number of turbines with blades theoretically visible	6

It was not possible to view this property from a publicly accessible location, therefore the following description is based on OS and aerial mapping.

Description of property, location and context:

- Representative of one property, located within forestry to the east of Carclout Hill and north of Chapel Hill;
- Property appears to be located at the north-western end of a cluster of agricultural buildings and compounds, with a domestic scale turbine to the south-west of the property;
- Access via a long track through forestry from the north-east; and
- Views likely to be filtered and screened by surrounding forestry.

Description of existing views and visual amenity:

The location of the property is shown on Figure A5.4.1.

It was not possible to verify views from the property but the enclosing forestry is likely to provide a degree of filtering and screening of outward views. Views from the access track are also likely to be screened by the enclosing forestry.

No operational or under construction wind farms are theoretically visible in the 180 degree view focused on the Proposed Development.

Description of likely effect on views and visual amenity as a result of the Proposed Development:

Wireframes are shown in Figure A5.4.2.

The Proposed Development is theoretically visible to the south-east of the property at a distance of approximately 1.9 km. The hubs of turbines T5, T6, T7 and T9, and blades of a further two turbines are theoretically visible beyond the slopes of Chapel Hill. It is likely that forestry across Chapel Hill and Carskeoch Hill will filter and screen views of the Proposed Development. Where visible, the turbines will be seen across a foreground of agricultural buildings and compounds from the property and its curtilage. Views from the access track are likely to be partially screened by the surrounding forestry.

Knockkippen Wind Farm (at scoping) will be theoretically visible to the east, across the upper sides and top of Lethanhill above Patna. There will also be some limited theoretical visibility of Knockshinnoch Wind Farm (consented) to the north-east and the tips of South Kyle Wind Farm (under construction) to the east-south-east. Surrounding forestry is likely to screen and filter views of these other wind farms.

At night, aviation lighting on four turbine hubs will be theoretically visible although the enclosing forestry is likely to provide a degree of screening of views towards the Proposed Development. Limited artificial lighting may be visible, other than at the property. Figure A5.5.1 indicates theoretical visibility of aviation lighting from this property at a maximum intensity of up to 400 cd and the more likely reduced intensity of up to 40 cd, due to built in lighting mitigation and the vertical angle of view, as detailed in Technical Appendix 5.5.

Conclusion with respect to the Proposed Development: Adopting a precautionary approach, the magnitude of change of the visual amenity of this property is **medium**, as there will potentially be views towards up to six turbines, and up to four aviation lights at night, at a distance of approximately 1.9 km. At a distance of 1.9 km and given the limited visibility of turbines and likely screening by forestry, the Proposed Development will not appear overwhelming or oppressive and will not breach the residential visual amenity threshold.

Table A5.4.5: P4 High Keirs Cottage

P4: High Keirs			
Grid Reference (NGR)	242957, 608102	Representative LVIA Viewpoint	N/A
Direction of View	South-west	Distance to Nearest Turbine (km) and turbine no.	1.2 / T9
Number of hubs theoretically visible	3	Number of turbines with blades theoretically visible	5
Description of property, location and context: • Representative of one two storey property; • Accessed via long farm track from A713; • Private gardens to north (rear); • Main windows on north and south facing elevations; and • Located west of Keirs Glen and its surrounding tree cover, with a complex topography formed by numerous connecting watercourses.			
Description of existing views and visual amenity: This property was observed from the access track. The location of the property is shown on Figure A5.4.1. The property has open views south (from the front of the property) across rising topography, over rough ground dissected by watercourses, and north (from the rear of the property) over Spy Knowe and Keirs Burn. The main garden is located to the north of the property, but the area immediately around the house is also in use. The long access track from the A713 to the north has open views north for large sections, with cross-slope views north west across Spy Knowe and south east into Keirs Glen. A single tip of Dersalloch Wind Farm (operational) is theoretically visible to the south.			
Description of likely effect on views and visual amenity as a result of the Proposed Development: Wireframes are shown in Figure A5.4.2. There is theoretical visibility of the Proposed Development from windows on the front elevation of the property at a distance of approximately 1.2 km. The hubs of blades of T6, T7, and T9, and the blades of a further two turbines are theoretically visible beyond the slopes of Keirs Hill. Views of the turbines may also be available in views south-west from the garden. When travelling south-west along the access track in the direction of the property, it is likely that there will be some visibility along the length of the track. From this location lower parts of the turbines are likely to be partly screened by the rising topography of Keirs Hill. Visibility will be at its highest when first entering the access track from the A713.			
Knockkippen Wind Farm (scoping) will be theoretically visible on the skyline to the north-east and the consented North Kyle Energy Project, Enoch Hill, Pencloe and Benbrack Variation Wind Farms will be theoretically visible to the south-east. Woodland and vegetation in garden and along the Keirs Burn is likely to provide a degree of screening in views towards these wind farms. Figure A5.5.1 indicates theoretical visibility of aviation lighting from this property. At night, aviation lighting on three turbine hubs will be theoretically visible across the skyline to the south-west. Due to the vertical angle of view, built in mitigation controlling the direction of the light will result in a maximum visible lighting intensity of up to 200 candela (cd) and the more likely reduced intensity of up to 20 cd, as detailed in Technical Appendix 5.5. In this direction to the south-west, there are limited sources of artificial light. There will be artificial light at the property, in Patna in the north-west as well as street lighting along the A713 and various lights along the Doon Valley.			
Conclusion with respect to the Proposed Development: The magnitude of change of the visual amenity of this property is **high**, as there will be direct views of the turbines from the front elevation and garden of High Keirs Cottage, and from several parts of the access track. There will also be potential visibility of aviation lighting on the Proposed Development at night. Although the change in visual amenity is judged to be **high**, the turbines will not affect views north and east from the property, and views from the garden will be of a small part of the array, with most of the wind farm below the horizon. At a distance of 1.2 km and given the unaffected views north and east, the Proposed Development will not appear overwhelming or oppressive and will not breach the residential visual amenity threshold.			

Table A5.4.6: G1 Gass

G1: Gass			
Grid Reference (NGR)	241217, 605635	Representative LVIA Viewpoint	N/A
Direction of View	North	Distance to Nearest Turbine (km) and turbine no.	1.3 / T1
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Description of property, location and context:
• Representative of three properties:
  ○ 2 storey Gass Farm House (241152, 605631);
  ○ Single storey Glentaggan Bungalow (241077, 605622);
  ○ Single storey Gass Farm Cottage (241217, 605635);
• Properties accessed immediately from B741;
• Private gardens situated to south of two properties (including farmhouse) on north side of B741, and to east and south of cottage on south side of B741. Vegetable garden to east of farmhouse, contained by wall and tall hedgerow;
• Properties mainly oriented facing north and south, with windows on all elevations;
• Properties located on elevated north-facing slopes;
• Mature trees (mainly conifers) west of farmhouse separate this property with neighbouring cottage to west; and
• Mature conifers also east of property on south side of B741.			

Description of existing views and visual amenity: The farmhouse and cottages were observed from the B741. The location of the properties is shown on Figure A5.4.1. From the farmhouse building on the north side of the B741, views from lower storeys are likely to be limited: by rising topography in views south, and by surrounding farm buildings in views north, where views are directed north-west. Views from upper storeys are likely to be broader, with elevated views across forestry looking north. Views east and west are limited by topography and vegetation. Views from the garden on the south side of the property are very contained. From the cottage to the west of the farmhouse (Glentaggan Bungalow), also on the north side of the B741, there are open views north, west and south. Views to the east and north east are limited by mature trees. The garden is located to the south of the property with views south and west. The cottage located on the south side of the B741 (Gass Farm Cottage) has open elevated views looking north across forestry, while views south (including from the garden) are contained by surrounding farm buildings and the conifers adjacent to the east and south of the property. Dersalloch Wind Farm (operational) is visible to the south / south-east of the group of properties across Black Hill and Turgeny, at a distance of approximately 1.2 km to the nearest turbine, although views are filtered by nearby trees.
Description of likely effect on views and visual amenity as a result of the Proposed Development: Wireframes are shown in Figure A5.4.2. From Gass, the wind farm will occupy up to approximately 80 degrees of the view north. In views directly north, turbines will be seen extending from the mature forestry below. The array will appear as a relatively even, level spread of turbines. Retained forestry will screen the Proposed Development infrastructure. The turbines are likely to visible from north-facing windows in each of the properties, however visibility of turbines in the east of the layout, from Glentaggan Bungalow, is likely to be partially screened or filtered by vegetation, and visibility from the lower storeys of the farmhouse is unlikely. There is likely to be little visibility of the turbines from the gardens associated with the properties due to their location south of the properties, and the presence of intervening buildings and vegetation. Knockkippen Wind Farm (scoping), North Kyle Energy Project (consented), Overhill (consented and appeal / public inquiry) and Greenburn Wind Park (application submitted) will be theoretically visible on the skyline behind and to the north-west of the Proposed Development but are unlikely to be visible due to screening by forestry. At night, there will be visibility of aviation lights on all eight turbines in views to the north (refer to Figure A5.5.1). The aviation lights will introduce artificial red light into views that are not currently influenced by lighting, however due to the vertical angle of view, built in mitigation controlling the direction of the light will result in a maximum visible lighting intensity of up to 400 candela (cd) and a more likely reduced intensity of up to 40 cd, as detailed in Technical Appendix 5.5.
Conclusion with respect to the Proposed Development: The magnitude of change of the visual amenity of this property group is **high**, as there will be direct views of the turbines, and aviation lighting, in views north from the north-facing windows of each of the properties. Views from Glentaggan Bungalow will be effectively filtered by the adjacent mature trees. Although the turbines will occupy an open section of the views from these properties, the distance and spread of turbines is such that Proposed Development will not appear overwhelming or oppressive and will not breach the residential visual amenity threshold.

Settlements

A5.4.4.3 The following sections present general conclusions relating to changes in visual amenity likely to be experienced at properties within the parts of the two settlements which are within the 2 km study area.

Waterside

Description of the settlement and context

A5.4.4.4 Waterside is located within the Doon Valley, to the north-east of the River Doon. The settlement is largely sited to the north of the A713, with houses along the road and on the valley side. It is a small, dispersed settlement with no defined centre, although historically it has developed around the former Dunaskin ironworks and associated heritage railway. The whole of the village is designated as a Conservation Area, because of its industrial archaeological importance. The former Ironworks site is also designated as a Scheduled Monument.

A5.4.4.5 New Cottages is a terrace of single-storey cottages facing the A713, approximately 1.9 km from the nearest turbine. Behind this is a group of properties on the valley side, including the converted former church. There are around ten properties in this group, which includes Hillend to the north-west, and is centred around an open space next to the former school. LVIA Viewpoint 3 represents views from this location, approximately 2.1 km from the nearest turbine. A smaller number of properties are within the vicinity of the former Dunaskin Ironworks to the south-east. LVIA Viewpoint 2 represents views from this location, approximately 2 km from the nearest turbine. At the southern end of the settlement is Chapel Row, located adjacent to the church on the south-west side of the A713. The terraced cottages on Chapel Row are single-storey with gardens to the south-west, and are approximately 2.1 km from the nearest turbine.

Description of existing views and visual amenity

A5.4.4.6 Properties in Waterside are generally oriented south-west to north-east, with views looking across rather than along the Doon Valley. New Cottages and Chapel Row are located on the valley floor, and look across to the rising ground to the south-west. Properties away from the A713 occupy more elevated positions, with a generally open aspect to the south-west. The character of the view is similar, looking across the rushy pasture of the Doon Valley floodplain, with native scrub along the river. The open valley sides across the valley form the backdrop to these views, comprising pasture with occasional woodland and scrub within the narrow valleys. The even skyline comprises flat or gently convex hills, open for the most part, but with forestry further north, and an overhead power line on the skyline to the south.

A5.4.4.7 There are views up and down the valley from the more elevated properties. These look north-west towards Patna and the forested hills behind, and south-east to Dalmellington, also backclothed by forestry. The chimneys of the former ironworks are local landmarks in these views. From the cottages on the A713, views along the valley are more limited, and are partly obscured by the large bing opposite the ironworks. A small number of hubs and blades of turbines at Dersalloch Wind Farm are visible from limited parts of Waterside.

Description of likely effect on views and visual amenity as a result of the Proposed Development

A5.4.4.8 In all views from Waterside, the turbines will appear on the skyline, above the open pasture on the south-west valley side. The turbines will be viewed as a relatively evenly-spaced array along the simple skyline, with turbines set well back from the valley edge. The views described are representative of the views likely to be available from houses and gardens with relatively open south-west and west aspects, and are discussed with reference to the representative locations illustrated with visualisations.

A5.4.4.9 From VP2 (Waterside, Doon Valley Railway) (see Figure A5.4.2) the turbines will be viewed to the south-west, occupying around 45 degrees of the view. Eight of the nine turbines blades are theoretically visible, with those in the west of the Proposed Development Area largely behind the skyline with only upper blades visible.

A5.4.4.10 From VP3 (Waterside, north end) the turbines will be viewed to the south-west, occupying around 70 degrees of the view. All nine turbines will be theoretically visible from this viewpoint along the western slopes of the Doon Valley. The forestry along the top of the valley slopes will partially screen turbines within the western part of the Proposed Development Area, including some hubs and blades. The blades of four turbines of Dersalloch Wind Farm are theoretically visible however forestry along the south-western horizon and pockets of woodland within Waterside fully or partially screens these turbines from this part of Waterside.

A5.4.4.11 From New Cottages (see Technical Appendix A), all nine turbine blades are theoretically visible, and will appear on the skyline to the south-west occupying around 65 degrees of the view. The turbines in the west of the Proposed Development Area will largely be screened by the intervening valley sides, with only the tips of turbine blades visible. The tips of two turbines of Dersalloch Wind Farm are just perceptible behind Keirs Hill.

A5.4.4.12 From Chapel Row, all nine turbines are theoretically visible in views to the west, occupying around 45 degrees of the view. The turbines will appear along the skyline with the turbines in the eastern part of the Proposed Development Area being most prominent and turbines in the western part of the Proposed Development Area largely screened by the intervening valley sides, with only the tips and blades of turbines visible.

A5.4.4.13 Benbrack Variation Wind Farm (consented) will be theoretically visible in views to the south-east from some locations within the settlement, however it is likely that views will be screened by intervening woodland and vegetation throughout Waterside. There will be limited visibility of further consented or proposed wind farms developments from this settlement due to the intervening topography of the Doon Valley and woodland and vegetation that contain most outward views.

A5.4.4.14 Figure A5.5.1 indicates theoretical visibility of aviation lighting from Waterside. At night, aviation lighting will potentially be visible from all the above locations. Due to the built-in mitigation that reduces brightness at angles below the horizontal, the visible intensity of the aviation lights will be up to 400 cd in the maximum brightness scenario, and up to 40 cd in the more likely reduced scenario. Additionally, other existing sources of artificial light will be visible in views from this settlement, including within the settlement, along the A713, and more widely along the Doon Valley towards Patna. The appearance of aviation lighting in views from Waterside is shown in the dusk photomontage in Figure 5.2.2.

Conclusion

A5.4.4.15 The overall magnitude of change to the visual amenity of properties in Waterside is medium. There will be direct views of the turbines from dwellings and gardens, including within 2 km of the Proposed Development. The proposed turbine array is considered to relate to the open, gently convex skyline of the Doon Valley. The turbines will be set behind the immediate skyline, occupying a relatively small part of the wider view. Some individual properties may have a degree of screening provided by trees and vegetation within or adjacent to gardens, but many properties are relatively open. Aviation lighting on the Proposed Development will be visible from some locations but will be visible at a low intensity.

A5.4.4.16 Properties in Waterside are between approximately 1.9 km and 2.3 km from the closest turbine. Although the overall magnitude of change is judged to be medium, it is considered that the Proposed Development will not appear overwhelming or oppressive and will not breach the residential visual amenity threshold.

Patna

Description of the settlement and context

A5.4.4.17 Patna was established in the early 19th century as a mining town, although the majority of the housing is of post-war date. The village, which had a population of over 2,200 in 2011, is aligned along the Doon Valley. Most of the village is to the west of the river, though there are housing areas along the A713 on the east side. Open space lies around the River Doon, which is crossed by two bridges. To the west the ground rises steeply to the conifer plantations on Chapel Hill; to the east is the restored, former Dunston Hill surface mine.

A5.4.4.18 To the west of the river, this area includes the 20th-century housing south of Carskeoch Drive, accessed via Carnshalloch Avenue and Dalharco Avenue. The topography of this area rises southwards from Carskeoch Drive to a high point around Clements Wynd and Kilmein Avenue. From here the topography falls to the River Doon to the south and east. Keirs Crescent is the closest street to the Proposed Development, located approximately 1.4 km from the nearest turbine. There is a consented housing development for 138 homes at Carskeoch, a former caravan park located approximately 1.4 km from the nearest turbine on rising ground to the west of Clements Wynd. Clements Wynd is located approximately 1.6 km from the nearest turbine. On the east side of the Doon, along the A713 (represented by LVIA Viewpoint 4, located approximately 2.1 km from the nearest turbine), is a mix of housing and commercial buildings, with Doonbank Crescent at Burnfoot at the south-eastern extent of the village, located approximately 2 km from the nearest turbine.

Description of existing views and visual amenity

A5.4.4.19 The streets in the southern part of Patna are arranged parallel with the contours, and houses generally face outward from the hillside. The streets in this area generally follow curves, with the orientation of houses ranging from north-east to south-east. Houses on Dalharco Avenue and Downieston Place overlook the River Doon to the eastern valley sides, covered by rough pasture and occasional forestry.

A5.4.4.20 From the south end of Dalharco Avenue, and from Meikleholm Drive and Netherhill Crescent, there are open views to the south-east along the Doon Valley. These views take in the former ironworks at Waterside, and Dalmellington beyond, framed by grazed hillsides and occasional woodland in the valley. The near horizon to the south is topped by forestry, though part of this has recently been felled. Further south, the lower-lying streets of Dunaskin View and Keirs Crescent also have long views down the valley, though the forested skyline to the south is closer due to the lower elevation.

A5.4.4.21 Further north, in the lower-lying area between Dalharco Avenue and Carskeoch Drive there are fewer outward views, and these are oriented east and north-east across the valley. The consented housing site at Carskeoch is located on north-east facing slopes, although houses in the southern part of this area may have views along the valley.

A5.4.4.22 From the east side of the River Doon, views look south-west across the river towards the forested hills rising above the settlement. From Jellieston Terrace (the A713) the river is in the foreground, with housing behind backclothed by the forest. Views from Burnfoot are more open, looking across pasture on the floodplain. The hill on which the southern part of Patna is built can clearly be seen, again with

coniferous forest behind. The skyline across the valley is simple and convex, with forestry on part of the skyline.

Description of likely effect on views and visual amenity as a result of the Proposed Development

A5.4.4.23 In views from Patna, the wind farm will be seen to the south and south-west. The turbines will be seen on the skyline, though the extent of the wind farm visible will depend on the precise location. The views described are representative of the views likely to be available from nearby houses and gardens with relatively open south-west and west aspects, and are discussed with reference to the representative locations illustrated with visualisations.

A5.4.4.24 From Keirs Crescent closest location within Patna, most of the Proposed Development lies behind the skyline and will not be visible. The blades of turbines T5, T6 and T7 will be seen on the skyline above Meikleholm Glen. The turbines will be seen across approximately 50 degrees of the view. Forestry immediately above the houses may further screen views.

A5.4.4.25 From Carskeoch the Proposed Development will occupy approximately 55 degrees of the view. Turbines will be seen above the convex skyline to the south, between Meikleholm Glen and the more pronounced hillside west of Chapel Hill. Six hubs and a further three blades will be visible. Forestry on the closest hill has been cleared recently.

A5.4.4.26 From Clements Wynd the turbines will appear on the skyline to the south, occupying around 55 degrees of the view. The forestry to the immediate south has recently been cleared. The hubs and blades of all nine turbines are theoretically visible, with turbines in the south-west of the Proposed Development Area less visible due to the intervening landform.

A5.4.4.27 From VP4 (representing views from the A713) the hubs and blades of all nine turbines within the Proposed Development will be theoretically visible in views to the south and south-west. The turbines will be seen extending above the hills that form the western slopes of the Doon Valley and will occupy around 65 degrees of the view. Turbines within western part of the Proposed Development Area are likely to be partially screened by forestry on the upper western slopes of the Doon Valley as well as mixed woodland in the foreground view on the valley floor.

A5.4.4.28 From Burnfoot all nine turbines will be theoretically visible in open views to the south-west across the skyline and will occupy around 65 degrees of the view. Hubs and blades will largely be visible, with most turbine towers screened by the intervening landform of the western side of the Doon Valley. Although turbines will be set back from the valley edge, turbines within the eastern part of the Proposed Development Area will be seen along the skyline in western views from this location.

A5.4.4.29 Knockkippen Wind Farm (scoping) will be visible from various locations throughout Patna in views to the east. The scheme will be visible at close proximity, within 2 km, and turbines will appear as prominent features along the eastern skyline. The Proposed Development will be seen in successive views to the south-west and the presence of both developments will result in Patna being overlooked by turbines on both sides of the Doon Valley.

A5.4.4.30 Figure A5.5.1 indicates theoretical visibility of aviation lighting from Patna. At night, aviation lighting will be visible from all the above locations. Due to the built-in mitigation that reduces brightness at angles below the horizontal, the visible intensity of the aviation lights will be up to 200 cd in the maximum brightness scenario, and up to 20 cd in the more likely reduced scenario. Additionally, other existing sources of artificial light will be visible in views from this settlement, including artificial light within Patna itself, street lighting and vehicle lights along the A713, and other lighting within the Doon Valley towards Waterside. The appearance of aviation lighting in views from Patna is shown in the dusk photomontage in Figure 5.2.4.

Conclusion

A5.4.4.31 Views from Patna are generally oriented across the valley, or along the valley to the south-east. The turbines will appear on the skyline to the south, and will be visible from a number of outward-facing streets, and glimpsed from others. At the closest point, approximately 1.5 km from the nearest turbines, the wind farm will be least visible due to the proximity of these houses to the foot of the slope. The wind farm will be most visible from Burnfoot, on the east side of the river, in views looking back at Patna. The proposed Knockkippen Wind Farm will be visible in successive views with the Proposed Development, resulting in two close proximity wind farms overlooking the settlement in two directions. Aviation lighting on the Proposed Development will be visible from some locations but will be visible at a low intensity.

A5.4.4.32 The magnitude of change to the visual amenity of properties in Patna will vary. From some locations it is judged to be medium, for example in the open views from Burnfoot, or from Meikleholm Drive. From other locations the magnitude of change will be low, for example from Keirs Crescent where the majority of the turbines are not visible, and at locations around Carskeoch Drive and Dalvennan Avenue.

A5.4.4.33 Properties in Patna are between approximately 1.5 km and 3 km from the closest turbine. Although the magnitude of change at some properties will be medium, it is considered that the Proposed Development will not appear overwhelming or oppressive and will not breach the residential visual amenity threshold.

Summary of findings

A5.4.4.34 Of the five individual properties or property groups assessed, four were identified as having the potential to experience a medium or high magnitude of change. Within the two settlements, most of Waterside and some properties with open southward views in Patna were also judged likely to experience a high magnitude of change.

A5.4.4.35 When combined with the high sensitivity of the residential receptor, there is the potential for these residential receptors to experience a significant visual effect. However, none of these receptors will be subject to effects on residential visual amenity which are judged to breach the Residential Visual Amenity Threshold described in LI TGN 2/19, i.e. that would affect the ‘living conditions’ or residential amenity of the residents.

Technical Appendix 5.5: Aviation Lighting Night-Time Assessment

A5.5.1 Introduction

A5.5.1.1 In the interests of aviation safety, structures of ≥ 150m, including wind turbines, require steady red visible aviation lighting, as set out in Civil Aviation Authority (CAA) guidance[1]. As such, the Proposed Development will require visible aviation lighting which may be perceptible to receptors (people) from locations across the Study Area.

A5.5.1.2 The requirement for visible aviation lighting is an emerging consideration for the wind energy sector, and consequently the approach to the assessment of likely landscape and visual effects which may arise, and the illustration of potential effects in the form of visualisations, is evolving.

A5.5.1.3 This Technical Appendix sets out the background to the requirements for visible aviation lighting, followed by an assessment of landscape and visual effects arising for representative receptors across the Study Area. Receptors considered in the assessment are identified in the Landscape and Visual Impact Assessment (LVIA) contained in Chapter 5: Landscape and Visual, and this Technical Appendix should be read with reference to the LVIA and the accompanying visualisations presented in Volume 2c: LVIA and Cultural Heritage Visualisations, along with Technical Appendix 5.1: LVIA Methodology.

A5.5.1.4 Further information relating to light emission from the aviation lighting, with particular reference to the Galloway Dark Sky Park to the south of the Proposed Development Area, is provided in Technical Appendix 5.7: Turbine Lighting Analysis produced by Dr Stuart Lumsden, Associate Professor at the School of Physics and Astronomy, University of Leeds.

A5.5.2 Lighting Design and Impacts

A5.5.1.5 There are two aspects of aviation lighting design being applied at the Proposed Development: those required by the Civil Aviation Authority (CAA) Air Navigation Order (ANO) and those required by the Ministry of Defence (MOD). The lighting design involves illumination of 8 out of the 9 turbines at hub height (105 and 125 m) using 2000/200 candela (cd) lights (to satisfy the CAA-ANO) and infra-red (IR) lights (to satisfy the MOD requirement).

A5.5.1.6 IR lighting specifications satisfy their safety requirement without being visible to the general public and so would not contribute to landscape and visual effects. The MOD IR lights are therefore not considered as part of the LVIA.

A5.5.3 Potential Mitigation

A5.5.1.7 Use of variable lighting intensities (e.g., 2000 cd reduced to 200 cd) to reflect meteorological conditions and the use of cardinal or peripheral lighting, i.e. illuminating those turbines at the periphery of the Proposed Development Area, are both forms of mitigation. Directional lighting, whereby the maximum intensity of the light is only seen by viewers at the same elevation as the light, is also used as mitigation. Transponder activated lighting, which is being developed by the wind energy sector in collaboration with the CAA and other stakeholders is not fully developed and therefore has not been considered as part of this assessment. Initial trials indicate that Transponder Activated Lighting can reduce the frequency of lights being turned on to between 1 and 7% of the time they would otherwise be turned on. As such the Applicant would be willing to consider a condition that allowed new technologies to considered should they be become available prior to construction of the Proposed Development (if consented).

A5.5.4 Proposed Aviation Lighting

A5.5.1.8 Due to the height of the turbines proposed (up to 180 and 200 m to turbine blade tip) visible aviation safety lighting is required. The proposed lighting scheme includes two medium intensity 'steady' red lights (2000 cd) located on the turbine hubs of T1, T2, T4, T5, T6, T7, T8 and T9 (8 No. turbines in total). The secondary light is fitted for use in the event of failure of the primary light, and so will not be lit concurrently. No low intensity red lights located on the intermediate level on the turbine tower are proposed as part of this lighting scheme. The lights will only be illuminated at night, which is defined by the Schedule 1 of the Air Navigation Order (ANO) 2016 as “the time from half an hour after sunset until half an hour before sunrise (both times inclusive), sunset and sunrise being determined at surface level”.

A5.5.1.9 CAA guidance permits 2000 cd lights to be dimmed to 10% of the minimum peak intensity when horizontal meteorological visibility exceeds 5 kilometres (in all directions. Where atmospheric conditions limit visibility to distances of less than 5 km in any direction (e.g., presence of low cloud cover, rain, mist, haze or fog) the lights are illuminated at the necessary intensity of 2000 cd. When atmospheric conditions result in visibility at distances of 5 km or greater from the turbines, the lights operate in a lower intensity mode of 200 cd. Visualisations which support this assessment have been provided to illustrate aviation lighting at both 2000 and 200 cd mode.

A5.5.1.10 Aviation obstruction lights are designed to emit lighting at an intensity that meets the minimum regulatory requirements, in a broadly horizontal direction. The light fitting is designed to reduce the amount of light that shines upward or downward from the light fitting. The detail of this reduction is dependent on the specific model of light that is installed, but the values set out in Table A5.5.1 are widely accepted as a reasonable estimation. These values show that a viewer looking up at the light from a lower elevation would see a reduced intensity of light, compared to the maximum intensity.

[1] Civil Aviation Authority (2016) CAA Policy and Guidelines on Wind Turbines – CAP 764

Table A5.5.1: Lighting intensity by vertical angle

Vertical angle of lighting from nacelle	Maximum luminous intensity (cd)	10% of maximum luminous intensity (cd)
Above 2°	1500-750	150-75
1° to 2°	2500-1500	250-150
0° to 1°	2000-2500	200-250
-1° to 0°	2000-1000	200-100
-2° to -1°	1000-400	100-40
-3° to -2°	400-200	40-20
Below -3°	Below 200	Below 20

A5.5.1.11 The values shown in Table A5.5.1 have been used to generate ZTV maps and photomontages as described below.

A5.5.5 Approach to Assessment of Lighting Effects

A5.5.1.12 The assessment of lighting effects follows the approach detailed in Technical Appendix 5.1 LVIA Methodology. It is important to note that this assessment is not a technical lighting assessment based on a quantitative measurement of light levels. This assessment relies on professional judgement of what the naked human eye can reasonably perceive in the context of the baseline situation with regard to existing sources of artificial lighting.

A5.5.1.13 GLVIA 3 provides the following guidance on the assessment of lighting effects "For some types of development the visual effects of lighting may be an issue. In these cases, it may be important to carry out dusk/night-time 'darkness' surveys of the existing conditions in order to assess the potential effects of lighting and these effects need to be taken into account in generating the 3D model of the scheme. Quantitative assessment of illumination levels, and incorporation into models relevant to visual effects assessment, will require input from lighting engineers, but the visual effects assessment will also need to include qualitative assessments of the effects of the predicted light levels on dusk/night-time visibility" (Paragraph 6.12, page 103).

A5.5.1.14 The assessment considers the potential effects associated with two potential scenarios: when the hub lights are illuminated at 2000 cd; and at 200 cd (in both cases as modified by angle of view as shown in Table A5.5.1). The 2000 cd scenario represents the maximum illumination or lighting intensity possible, and is referred to as the maximum brightness scenario. The 200 cd scenario represents the lower intensity optional mode which would be activated in clear meteorological conditions, where visibility exceeds 5 km. This latter scenario is much more likely to be experienced by receptors, as periods of maximum brightness will necessarily coincide with lower atmospheric visibility, thereby reducing the apparent brightness of the lights.

A5.5.1.15 As the baseline photography for each of the four representative dusk viewpoints was obtained in clear atmospheric conditions (whereby visibility substantially exceeds distances of 5 km) the representation of 2000cd lighting in these conditions illustrates a potentially artificial 'maximum case' (worst-case) scenario. However, adopting a precautionary approach the assessment considers the potential effects that may arise when the hub light is illuminated at both 2000 cd and 200 cd during periods of clear visibility.

A5.5.1.16 Although the assessment is based on effects arising in relation to the steady red light fixed to the top of each turbine hub, as illustrated in the supporting visualisations, it is acknowledged that in some situations a potential flicker effect may be experienced by receptors as blades pass the stationary lights. It is not possible to represent this situation in static photomontages.

A5.5.1.17 When determining the magnitude of change associated with the Proposed Development, the methodology set out in Technical Appendix 5.1 considers the duration of the change. For operational effects this is deemed to be long term. However, and with relevance to night-time effects, the frequency of the effect should also be considered. Aviation lighting will only be apparent during the 'night' which is defined in paragraph 5.4.9 above by Schedule 1 of the ANO (2016). As such in the summer months the frequency of visibility of aviation lighting will significantly reduce.

A5.5.1.18 The night-time baseline against which the effect of the Proposed Development is assessed usually only includes operational / under construction wind farms. There are none within the 25 km cumulative Study Area that have visible aviation obstruction lighting of a similar standard or specification. The consented Brockloch Rig 3 (former Windy Standard 3) (20 turbines at 177.5 m to tip) will require visible aviation lighting. Several proposed wind farms are also likely to require aviation lighting, should they be constructed, as follows:

- Knockkippen (12 turbines at 180 m to tip);
- Knockcronal (9 turbines at 200 m to tip);
- Carrick (13 turbines at 200 m to tip);
- Overhill (10 turbines at 180 m to tip)[2];
- Craiginmoddie (14 turbines at 200 m to tip); and
- Clauchrie (18 turbines at 200 m to tip).

A5.5.1.19 Whilst the scenario of illuminated proposed wind farms is not represented in the night-time visualisations (these schemes are shown in the cumulative wirelines) this is acknowledged in the assessment text, where relevant.

A5.5.1.20 At the present time the proposed manufacturer or precise model and specification of aviation light to be used is not known, therefore any further potential mitigation which may be embedded into the design of the proposed lights has not been considered in the assessment. As such, the lighting considered under this assessment is a worst-case scenario which does not take account of further mitigation opportunities.

Zone of Theoretical Visibility (ZTV) Mapping

A5.5.1.21 A nacelle or hub height (105 and 125 m) ZTV has been calculated, shown on Figure A5.5.1a (20 km radius) and Figure A5.5.1b (45 km radius). The ZTV indicates areas from which the aviation lights installed on turbine nacelles may be visible. The ZTV was performed on 'bare ground' digital terrain model (DTM)[3], which does not take account of potential screening by buildings or vegetation. To illustrate the potential variability in lighting intensity in relation to vertical viewing angle, the ZTV is coloured according to the vertical angle of view, as set out in Table A5.5.1 above. As illustrated by the ZTV, visibility of the nacelle lights at their greatest luminous intensity (or perceived brightness) will be limited to views experienced from locations similar to and just above the horizontal plane of the aviation light (i.e., turbine ground level plus 105 – 125 m). This tends to be from more upland and less settled areas across the study area, at greater distances from the turbines. These upland and less settled areas tend to be less frequently visited during hours of darkness. Conversely, from low lying

[2] Overhill has consent for a scheme of ten turbines with 149.9 m blade tip height with no proposed aviation lighting

[3] The DTM used is based on OS Terrain® 50 height data, obtained from Ordnance Survey in October 2019.

valleys and lowland/coastal locations which are the focus of most settlement, as well as from locations closest to the turbines, the aviation lights will be perceived at substantially reduced intensity.

Wireline and Photomontage Visualisations

A5.5.1.22 Visualisations are just one source of information used to inform the LVIA. Visualisations have been produced for four representative assessment viewpoints, agreed during consultation, and presented in accordance with the industry standard guidance prescribed by NatureScot[4] and the Landscape Institute[5]. The methodology for the preparation of night-time photomontage visualisations is detailed in Technical Appendix 5.1: LVIA Methodology.

A5.5.1.23 NatureScot guidance states "The visualisation should use photographs taken in low light conditions, preferably when other artificial lighting (such as street lights and lights on buildings) are on, to show how the wind farm lighting will look compared to the existing baseline at night… We have found that approximately 30 minutes after sunset provides a reasonable balance between visibility of the landform and the apparent brightness of artificial lights, as both should be visible in the image" (Paras 174 – 177, Pages 35 and 36). Capturing photography at this time represents a small window (during dusk and dawn) when the landform is visible along with existing and proposed light sources. The actual night-time view, for most of the proposed turbine lit hours, will be a darker outlook with the proposed lighting and other light sources (if visible).

A5.5.1.24 Baseline photography was captured at dusk in clear atmospheric conditions and sought to capture the presence of existing baseline sources of artificial lighting (e.g. lighting associated with settlement, street lighting, motor vehicles and other sources) present in the landscape as closely as is experienced by the naked eye as is feasible.

A5.5.1.25 The representative visualisations (Figures 5.2.2, 5.2.4, 5.2.11 and 5.2.15) are presented in Volume 2c: LVIA and Cultural Heritage Visualisations as a combination of existing baseline photography and photomontages which aim to represent the appearance of the proposed visible aviation lighting at:

- Viewpoint 2: Waterside, Doon Valley Railway;
- Viewpoint 4: Patna;
- Viewpoint 11: Dalmellington; and
- Viewpoint 15: Cornish Hill.

A5.5.1.26 NatureScot guidance also states that "The developer should attempt to formally agree the lighting requirements with the aviation authorities in advance of the application. Where this is not possible the visualisations should illustrate the lighting as described in the current legislation" (Paragraph 177, Page 36). As such, photomontage visualisations which illustrate both the 2000cd and 200cd lighting intensity scenarios have been prepared for each of the four viewpoints, as modified by vertical angle.

A5.5.1.27 Based on the lighting intensity ZTV shown in Figure A5.5.1, the following lighting intensity values have been applied to the visualisations produced for these viewpoints. These are the maximum luminous intensity that would be seen from each location under the 2000cd and 200cd scenarios, due to the vertical angle of view between the viewpoint and the light fitting.

- Viewpoint 2: 200 cd / 20 cd;
- Viewpoint 4: 200 cd / 20 cd;
- Viewpoint 11: 1000 cd / 100 cd; and
- Viewpoint 15: 2000 cd / 200 cd.

A5.5.1.28 The candela values used in the production of the photomontage visualisations only take account of the vertical angle between the viewpoint and the lights as a group. The actual intensity will vary between the visible lights, as the vertical angle to each nacelle will be different. The photomontage visualisations do not seek to replicate the additional variable influence which distance (between the light and the viewpoint/observer) or atmospheric attenuation can have on the observed brightness the lights.

A5.5.1.29 The factors that may influence the way the lights are actually perceived were discussed at the public local inquiry (PLI) in to the Crystal Rig IV wind farm proposal, and include:

- how bright a light appears compared to its surroundings;
- how sensitive a person's eyes are to that brightness;
- how it may differ in appearance from the background against which light is seen;
- additional visible light; and
- atmospheric visibility.[6]

A5.5.1.30 These factors cannot be accurately depicted on a photomontage, but the visualisations are considered to be a reasonably accurate depiction of the light likely to be seen.

A5.5.6 Effects on Landscape Character and Designated Landscapes

A5.5.1.31 In terms of effects on landscape character and designated landscapes, and as noted previously, there will be a small window of time, at dawn and dusk, during which the landform is visible along with existing and new light sources.

A5.5.1.32 From the settled valleys and lower lying landscapes, the nature of night time views will be dictated by the landform, vegetation cover and built form. Viewpoints 2, 4 and 11 are representative of views from more settled lower lying landscapes and both views indicate the influence of light sources through settlement in the foreground of views.

A5.5.1.33 From upland landscapes, and where visible, the Proposed Development will typically be seen in more elevated and expansive views. Views will tend to look over valleys, and from some locations out towards the coastal edge of the Firth of Clyde, where light sources in these more settled landscapes will be visible. The night-time view from Viewpoint 15: Cornish Hill is representative of these more upland views (the view looks out from the Merrick Wild Land Area (WLA) and Galloway Dark Sky Park).

A5.5.1.34 Actual night-time conditions, for most of the proposed lit turbine hours, will be darker with the proposed lighting and other light sources (if visible). As such, the window for landscape effects, and effects on many of the associated key characteristics and special qualities (most of which can only be appreciated during daytime), is limited. Given that the Proposed Development will introduce lights in views where other light sources are often visible, no significant effects are predicted on landscape character, or are judged to compromise the special qualities of designated or protected landscapes.

A5.5.1.35 It is noted that in relation to aviation lighting, the Reporters at the Crystal Rig IV PLI stated:

[4] Scottish Natural Heritage (2017) Visual Representation of Wind Farms Guidance – Version 2.2
[5] Landscape Institute (2019) Technical Guidance Note 06/19 Visual Representation of Development Proposals
[6] Crystal Rig IV Wind Farm: Report to Scottish Ministers. Case Reference WIN-140-8.

"We […] conclude that the matter of visible aviation lighting assessment is wholly a visual concern. We consider that without being able to see and fully appreciate the features of the landscape and the composition of views it is not possible to carry out a meaningful landscape character assessment."[7]

A5.5.1.36 Further discussion of effects of lighting on the Merrick WLA is provided in Technical Appendix 5.6 Wild Land Assessment. Discussion of the effects of lighting on the Galloway Dark Sky Park is presented in Technical Appendix 5.7 Scattered Light from Aviation Warning Lights.

A5.5.7 Effects on Visual Amenity

A5.5.1.37 Table A5.5.2 below details the predicted visibility of the proposed turbine lights from each LVIA assessment viewpoint (informed by Figures 5.2.1 – 5.2.16). The table also indicates the potential influence of coniferous forestry and woodland in further screening the turbine lighting from each viewpoint location, informed by the baseline photography and observations from fieldwork.

Table A5.5.2: Summary of Turbine Lighting Visibility

Viewpoint		
1	B741 at Gass	8
2	Waterside, Doon Valley Railway	5
3	Waterside, north end	7*
4	Patna	8
5	Auchenroy Hill	8
6	Lethanhill	8
7	Colonel Hunter Blair's Monument, Craigengower	7
8	Straiton	4*
9	Minor road west of Straiton	8
10	Blairquhan	8*
11	Dalmellington	8
12	B7045 near Kirkmichael	8
13	Maybole	8
14	B741 near Ruglen	8*
15	Cornish Hill	8
16	Cairnsmore of Carsphairn	8

* Turbine hub lighting potentially screened by forestry and woodland

A5.5.8 Representative Assessment Viewpoints

A5.5.1.38 Whilst the potential visibility of aviation lighting is summarised for each of the LVIA assessment viewpoints (as set out in Table A5.5.2) the following assessment focuses on representative viewpoints, agreed through consultation.

A5.5.1.39 Night-time photomontage visualisations were produced for the following four assessment viewpoints, and the corresponding assessments are presented below:

- Viewpoint 2: Waterside, Doon Valley Railway;
- Viewpoint 4: Patna;
- Viewpoint 11: Dalmellington; and
- Viewpoint 15: Cornish Hill.

Table A5.5.3: Viewpoint 2: Waterside, Doon Valley Railway

Viewpoint 2: Waterside, Doon Valley Railway			
Grid Reference (NGR)	243996, 608395	Figure Number	5.2.2
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	West and south-west	Distance to Nearest Turbine (km)	2.0
Number of hubs theoretically visible	5	Number of turbines with blades theoretically visible	8
Location, description of existing view and potential receptors: This viewpoint is located on a railway bridge which gives access to the former iron works at Waterside, now used as a heritage centre, and a small number of residential properties. The centre is open periodically during summer and offers steam train rides along the Doon Valley. The outlooks towards the Proposed Development Area to the west and south-west are darker with no notable sources of artificial lighting. To the north-west subdued artificial lighting from properties and street lights in Waterside and Patna is visible. In distant views to the south-east, a small number of subdued lights from properties and street lights in Dalmellington are also perceptible.			
Night-time sensitivity: Residents are considered to be of **high** susceptibility to changes in night time view. The viewpoint is located within the Doon Valley SLA, though the night time view has no specific values attached. The value of the view is considered to be **medium**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.			

[7] Crystal Rig IV Wind Farm: Report to Scottish Ministers. Case Reference WIN-140-8.

Assessment of visual effects: Figure 5.2.2 illustrates the view of the Proposed Development at night with 2000 cd and 200 cd aviation lighting, reduced to 200 cd and 20 cd due to the vertical angle of view. Lighting on the hubs of 5 of the 8 turbines will be visible above the dark horizon to the west and south-west at a distance of 2 km. The lighting on these turbines will be seen in the context of other sources of existing artificial light which are visible in wider views to the north-west and south-east in Patna and Dalmellington respectively. Overall, the scale of change associated with visible aviation lighting is judged to be **small**. The geographical extent of the change is judged to be **medium** as similar views will be gained from other parts of Waterside and from stretches of the A713 that run along the Doon Valley. The overall magnitude of change is considered to be **low** for both the 2000 cd maximum brightness scenario, and the more likely 200 cd scenario for clear weather conditions. The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity will result in a **Minor and Not Significant** visual effect.
Potential for future cumulative effects: Under Scenario 2 (considering all operational, under construction, consented and proposed wind farms and the Proposed Development) only the aviation lighting on the Proposed Development will be visible due to intervening topography that will screen other proposed wind farm developments with visible aviation lighting. As such no significant cumulative visual effects at night are predicted.

Table A5.5.4: Viewpoint 4: Patna

Viewpoint 4: Patna			
Grid Reference (NGR)	241959, 610085	Figure Number	5.2.4
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	South and south-west	Distance to Nearest Turbine (km)	2.1
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9
Location, description of existing view and potential receptors: This viewpoint is located within an area of open green space within Patna, adjacent to the A713, and represents residential receptors and road users. Street lights and vehicular lights along the A713 and subdued lighting from properties are visible in views towards the Proposed Development Area to the south and south-west. To the west, artificial lighting from properties in Patna along the western slopes of the valley, and artificial lighting from properties and street lights in the foreground view are visible. Further lighting from properties and street lights in the foreground to the east is also visible.			
Night-time sensitivity: Residential receptors are considered to be of **high** susceptibility to changes in the view whilst road users are considered to be of **low** susceptibility to changes in night time views. The viewpoint is located within the Doon Valley SLA although there is no specific value attached to night time views. In the context of the settlement the value of the night time view is judged to be **low**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **medium**.			

Assessment of visual effects: Figure 5.2.4 illustrates the view of the Proposed Development at night with 2000 and 200 cd aviation lighting, reduced to 200 cd and 20 cd due to the vertical angle of view. Lighting on the hubs of all 8 turbines will be visible above the horizon to the south and south-west at a distance of 2.1 km. The lighting on these turbines will be seen in the context of other sources of existing artificial light which are visible below the turbines along the floor of the Doon Valley in views to the south and south-west, as well as further lighting to the west and east from this location. Most of the existing artificial lighting visible from this viewpoint will be at closer proximity and will appear at a brighter intensity in comparison to the visible aviation lighting on the Proposed Development. Overall, the scale of change associated with visible aviation lighting is judged to be **small.** The geographical extent of the change is judged to be **medium** as similar views will be gained from other sections of the A713 within Patna and the Doon Valley. The overall magnitude of change is considered to be **low** for both the 2000 cd maximum brightness scenario, and the more likely 200 cd scenario for clear weather conditions. The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity will result in a **Minor and Not Significant** visual effect.
Potential for future cumulative effects: Under Scenario 2, the proposed Knockkippen Wind Farm (scoping) may introduce aviation lights on the skyline to the north-east at a distance of approximately 2 km. There is no information about how many lights would be required on this scheme. The vertical angle, and reduction in brightness, is likely to be similar to Sclenteuch. Aviation lights on the Proposed Development will add 8 additional red lights on the skyline in successive views to the south and south-west. Receptors will see relatively close turbines with aviation lighting in opposite directions, although in the context of existing artificial lighting within the settlement. As such it is considered that this will result in a **small** scale change over a **medium** geographical extent. The magnitude of change is considered to be **low** and as such the cumulative visual effect at night under Scenario 2 will be **Minor and Not Significant.**

Table A5.5.5: Viewpoint 11: Dalmellington

Viewpoint 11: Dalmellington			
Grid Reference (NGR)	248035, 606075	Figure Number	5.2.11
LCT	10 Upland River Valley	Designated Landscape or Wild Land Area	Doon Valley SLA
Direction of View	North-west	Distance to Nearest Turbine (km)	5.6
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9
Location, description of existing view and potential receptors: This viewpoint is on Knowehead, outside the parish church. The viewpoint is slightly elevated above the junction of High Main Street and Park Crescent. In views to the north-west towards the Proposed Development Area, artificial lighting from properties, street lights and vehicular lights in the foreground are visible with the dark horizon of White Hill beyond. Lighting from properties and street lights are also visible in foreground views to the north and south. Views beyond the fore and middle grounds are darker with limited sources of artificial lights in the distance in most directions.			

Sensitivity:

Receptors at this location are residents of Dalmellington, who are considered to be of **high** susceptibility. The viewpoint is located within the Doon Valley SLA although there is no specific value attached to night time views. In the context of the settlement the value of the night time view is judged to be **low**. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **medium**.

Assessment of visual effects:

Figure 5.2.11illustrates the view of the Proposed Development at night with 2000 and 200 cd aviation lighting, reduced to 1000 cd and 100 cd due to the vertical angle of view. Lighting on the hubs of all 8 turbines will be visible above the dark horizon to the north-west at a distance of 5.6 km. The lights will be visible in the context of existing artificial light in the foreground views in Dalmellington. Additionally, the existing artificial lighting visible from this viewpoint will be closer and will appear brighter in comparison to the visible aviation lighting on the Proposed Development.

Overall, the scale of change associated with visible aviation lighting is judged to be **small.** The geographical extent of the change is judged to be **small** as similar views will be gained from limited parts of Dalmellington due to intervening development within the settlement. The overall magnitude of change is considered to be **low** for both the 2000 cd maximum brightness scenario, and the more likely 200 cd scenario, for clear weather conditions.

The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity will result in a **Minor and Not Significant** visual effect.

Potential for future cumulative effects:

Under Scenario 2, aviation lighting on the proposed Knockkippen Wind Farm (scoping) will be theoretically visible to the north-west at a distance of approximately 4.5 km. . There is no information about how many lights would be required on this scheme. The vertical angle, and reduction in brightness, is likely to be similar to Sclenteuch. Although buildings in the foreground within Dalmellington will screen these turbines from this viewpoint, aviation lights may be visible from other locations in the settlement. Aviation lights on the Proposed Development will add 8 additional red lights on the skyline in successive views to the north-west. However, it is likely that locations from which the lights on both the Proposed Development and Knockkippen will actually be visible in combined and successive views will be limited due to intervening buildings within the settlement. Considering this, and the presence of existing visible artificial light in the view, no significant cumulative visual effects at night are predicted.

Table A5.5.6: Viewpoint 15: Cornish Hill

Viewpoint 15: Cornish Hill			
Grid Reference (NGR)	240530, 594265	Figure Number	5.2.15
LCT	21 Rugged Uplands, Lochs & Forest	Designated Landscape or Wild Land Area	High Carrick Hills LLA, Galloway Dark Skies Park and Merrick WLA
Direction of View	North	Distance to Nearest Turbine (km)	12.5
Number of hubs theoretically visible	9	Number of turbines with blades theoretically visible	9

Location, description of existing view and potential receptors:

The viewpoint is located at the summit of a relatively low, rocky hill (460 m), in the southern uplands, offering open expansive elevated views across the valleys and settled lower lying landscapes to the north.

To the north-west, lighting along the coast of the Firth of Clyde is visible in the distance, over 20 km away as well as further lighting inland to the north, beyond the Proposed Development Area. In other directions however, views from this location are dark, with very limited sources of artificial light.

Sensitivity:

Receptors at this viewpoint are recreational users, who are considered to be of **high** susceptibility to changes in the view as their attention is focused on their surroundings. The number of recreational receptors at this viewpoint at dusk or at night however is likely to be small. The viewpoint is located within the High Carrick Hills LLA, Galloway Dark Skies Park and Merrick WLA and is therefore considered to be of **high** value. On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of receptors at this viewpoint is judged to be **high**.

Assessment of visual effects:

Figure 5.2.15 illustrates the view of the Proposed Development at night with 2000 and 200 cd aviation lighting, with no reduction due to angle of view at this viewpoint. Lighting on the hubs of all 8 turbines will be visible above the horizon to the north at a distance of 12.5 km. The aviation lights will introduce artificial red light into a direction that is already influenced by distant sources of artificial lighting as noted above. Given the distance between the viewpoint and the Proposed Development, the 200 cd lighting will appear subdued, however the 2000cd lighting will appear brighter than existing artificial light visible to the north and north-west.

Overall, the scale of change associated with visible aviation lighting is judged to be **medium** for the 2000 cd maximum brightness scenario, where the lights will be noticeably brighter than distant lights in the view. In the more likely 200 cd scenario, the aviation lights will not be noticeably brighter than the background lights. The geographical extent of the change is judged to be **medium** as similar views will be gained from a number of scattered hill summits and areas of the southern uplands to the south of the Proposed Development Area. The overall magnitude of change is considered to be **medium** for the 2000 cd maximum brightness scenario, and **low** for the more likely 200 cd scenario, for clear weather conditions.

The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity will result in a **Moderate and Significant** visual effect for the 2000 cd maximum brightness scenario, and **Minor and Not Significant** for the more likely 200 cd scenario.

Potential for future cumulative effects:

Under Scenario 2, the proposed Knockkippen Wind Farm (scoping), Overhill (appeal/public inquiry) and Craiginmoddie, Carrick and Knockcronal Wind Farms (application) will introduce an unknown number of aviation lights along the skyline to the north-east and north-west. Aviation lights on the Proposed Development will add 8 additional red lights on the skyline in views to the north. The additional effect of these lights to the cumulative baseline will not give rise to a significant cumulative effect. Despite visibility of existing sources of artificial light in views to the north, the introduction of aviation lighting on all the proposed wind farms under Scenario 2 is considered to give rise to significant total cumulative effects as more artificial lights will be introduced at closer proximity and will widen the extent of the view altered by artificial light. These effects will be apparent during the period of time at night that aviation lights will be switched on and will be experienced by a small number of receptors when illuminated.

A5.5.9 Summary of Lighting Effects

A5.5.1.40 Significant landscape and visual effects associated with aviation lighting are judged to be limited. No significant effects on landscape character are anticipated as the Proposed Development will introduce lights in views where other light sources are often visible.

A5.5.1.41 In terms of visual effects, no significant visual effects are predicted for Viewpoints 2, 4 and 11 as these locations have already been influenced by close proximity artificial lighting within these settled low lying areas. Significant effects have been identified for Viewpoint 15: Cornish Hill as the Proposed Development will introduce artificial lighting into a wide expanse of relatively dark view, resulting in the red lights on the Proposed Development creating a notable change in these dark views. This significant effect will only occur in the 2000 cd maximum brightness scenario. This is a less realistic worst case, since lights will only be at full brightness during conditions of limited visibility (which will limit actual visibility of the lights). When atmospheric visibility is greater than 5 km, the intensity of the lights will be reduced to 200 cd. At 12.5 km distance, only the latter scenario is likely to be seen from Viewpoint 15. This means that significant effects on views from Cornish Hill and other locations within the Galloway Dark Sky Park and Merrick WLA are unlikely in practice, and would only be experienced by a small number of visual receptors visiting this location at dusk and by night.

A5.5.1.42 Significant cumulative visual effects at night have been identified for Viewpoint 15, where the potential spread of artificial lighting from proposed wind farms will give rise to significant total effects, though additional effects are not predicted to be significant. Again, these effects would only occur in the less likely 2000 cd scenario. No significant cumulative effects are predicted for the more likely 200 cd scenario.

Technical Appendix 5.6: Assessment of Effects on the Key Attributes and Qualities of the Merrick Wild Land Area

A5.6.1 Introduction

A5.6.2.1 This Technical Appendix sets out an assessment of the effects of the Proposed Development upon the key attributes and qualities of the Merrick Wild Land Area (WLA). The assessment focuses on both effects during the day and effects at night due to aviation lighting on the Proposed Development. LVIA Viewpoint 15: Cornish Hill represents both daytime and night-time views from the WLA and is referenced throughout the assessment where relevant. The assessment is independent of, but draws upon, the LVIA in Chapter 5: Landscape and Visual and Appendices 5.2, 5.3 and 5.5.

A5.6.2 Methodology

A5.6.2.2 The methodology adopted in the wild land impact assessment is based upon 'Assessing Impacts on Wild Land Areas - Technical Guidance' (NatureScot 2020)[1]. The assessment considers potential effects on both the physical and perceptual attributes and qualities of wild land. A five step process is described in the guidance as set out below.

Step 1 – Define the study area and the scope of the assessment

"Identify a study area appropriate to the scale of the proposal and extent of likely significant effects on the WLA."

A5.6.2.3 The ZTVs as shown in Figure 5.1.2c and Figure 5.1.7 identify theoretical visibility between 12 - 15 km from the Proposed Development on the north facing hill flanks around the Shalloch on Minnoch within the northern extent of the WLA. Between 15 – 23 km, there is further scattered theoretical visibility on north facing hill flanks within the centre of the WLA around hills including Kirriereoch Hill, Little Spear and Mullwharchar. This WLA assessment will therefore focus on a Study Area formed by the part of the WLA located within 12 – 23 km of the Proposed Development.

A5.6.2.4 The aviation lighting ZTV in Figure A5.5.1a-b shows the theoretical visibility of the aviation lighting on the Proposed Development. Within the WLA there will be theoretical visibility of aviation lighting from the northern extents of the WLA within 15 km as well as between 15 – 23 km from north facing hill flanks within the centre of the WLA around hills including Kirriereoch Hill, Little Spear and Mullwharchar. The ZTV in Figure A5.5.1a-b shows that the maximum intensity of aviation lighting from the WLA will be between 2000 and 2500 candela (cd). However the reduced intensity of between 200 and 250 cd is more likely to be seen , as detailed in Technical Appendix 5.5. In addition, it should be noted that these values are the intensity of the light source. The actual brightness experienced will be affected by a number of factors including distance and atmosphere, as also set out in Appendix 5.5.

Step 2 – Verify the WLA Baseline

"Confirm the wild land qualities (set out in the WLA description) relevant to the study area, describing any major changes that have occurred since the description was prepared and the nature of their contribution to the WLA."

A5.6.2.5 Table 5.6.1 below sets out the key attributes and qualities of the Merrick WLA and whether they have been scoped in or out of this assessment. Those that have been taken forward for assessment are assessed in Table 5.6.2. As directed by the assessment guidance, information used in the assessment was supplemented by site visits undertaken between November 2021 and May 2022.

Table 5.6.1: Key Attributes and Qualities of the Merrick WLA Scoped In or Out

A relatively small wild land area but with a strong perception of naturalness, few human artefacts and little contemporary land use	**Scoped in** - the Proposed Development has the potential to indirectly effect the WLA's perception of naturalness in views from the WLA to the north.
A wild land area that contrasts with the adjacent Forest Park, especially in terms of human activity	Scoped out – the Proposed Development will not have any effect on the relationship between WLA and the surrounding forest park and will not affect the human activity that takes place in the area.
Human elements are widely visible from the tops and outermost slopes but lower-lying areas have a much stronger sense of remoteness	**Scoped in** - the Proposed Development will be visible in the context of other human elements that are visible from the upper slopes of the WLA.
A rugged landscape that provides a surprisingly high degree of physical challenge	Scoped out - the Proposed Development will not have any direct physical effect on the WLA.

Step 3 – Assess the sensitivity of the WLA qualities

"Through detailed field assessment within the study area, assess the sensitivity of the wild land qualities scoped in (including their physical attributes and perceptual responses), to the type and scale of change proposed."

A5.6.2.6 The sensitivity of the wild land qualities, and the relevant physical attributes and perceptual responses, is informed by the WLA descriptions and fieldwork.

A5.6.2.7 The assessment (refer to Table 5.6.2 below) considers the sensitivity of wild land qualities to the specific type and scale of development, and is classified as **High**, **Medium** or **Low**.

[1] NatureScot (2020) Assessing impacts on Wild Land Areas - technical guidance

Step 4 – Assess the effects

"Assess the effects on individual and/ or combinations of qualities, drawing out which physical attributes and perceptual responses will be affected, how and to what degree. This should reflect the size or scale of change, its extent and duration."

A5.6.2.8 The assessment of effects on wild land qualities is undertaken in accordance with the principles of GLVIA3, combining professional judgement on the scale of change, geographical extent of the area influenced, and the duration and reversibility of the change. These judgements are combined to consider the overall effect (magnitude of change). In all cases, effects are considered to be adverse, duration is considered to be long-term (in excess of 10 years), and reversibility is considered to be fully reversible, unless otherwise stated. The assessment considers effects on the attributes and qualities of the WLA as they are experienced from within, not outside, the WLA.[2]

A5.6.2.9 The magnitude of change on wild land qualities is described as **High**, **Medium**, **Low** or **Negligible**.

Step 5 – Judgement of the significance of effect

"Conclude on the overall significance (taking into account any mitigation), in terms of the study area and where relevant the wider WLA."

A5.6.2.10 The assessment concludes with an overall judgement on the significance of effects and is undertaken in accordance with the principles of GLVIA3. It then considers if the described effects on the wildland qualities, when taken together and considered in the context of the WLA as a whole, will result in a material change. For example a material change to the WLA may result if:

- very extensive areas are changed relative to the size of the whole area; or
- smaller areas are affected where wild land qualities are particularly unique; or
- the ability to experience certain wild land qualities is lost from the WLA altogether.

A5.6.2.11 Where appropriate, potential mitigation measures may be identified to further reduce the identified effects, which may result in a subsequent judgement of the residual effects following implementation of these measures.

A5.6.2.12 As advocated by the guidance (NatureScot, 2020) the assessment is set out in Table 5.6.2 in accordance with this five step approach, presenting a transparent assessment with clear reasoning for the effects identified.

[2] Refer to Paragraph 3 of the NatureScot (2020). Assessing impacts on Wild Land Areas – Technical Guidance;

Table 5.6.2: Summary of effects on Key Attributes and Qualities of the Merrick WLA

Key Attributes and Qualities[3]	Baseline and Sensitivity (Step 2 and 3)	Summary of Effect and Judgement on Significance (Step 4 and 5)
A relatively small wild land area but with a strong perception of naturalness, few human artefacts and little contemporary land use	The areas of the WLA within the Study Area are formed by rugged remote hills with limited human influence within the area, which contributes to the "*strong perception of naturalness*". Although there are few human artefacts within the WLA, a number of existing wind farms are visible in exterior views from the Study Area, including Dersalloch Wind Farm to the north and Hadyard Hill, Assel Valley and Tralorg Wind Farms to the west. The WLA is also surrounded commercial forestry plantation. In darkness at night, the remoteness and naturalness is heightened by the lack of visible artificial light sources within the interior of the WLA. Artificial lights however are visible in longer distance views towards the low-lying settled areas and coastline outside of the WLA that are visible from parts of the Study Area, including from Viewpoint 15: Cornish Hill. Sensitivity: **Medium**	There will be no direct effects on this key attribute, as the Proposed Development is located outside of the WLA. From parts of the WLA where the Proposed Development will be seen (refer to the ZTVs in Figures 5.1.2c and Figure 5.1.7), it will be visible in distant views to the north, at distances of 12 km and over. The Proposed Development will be seen behind the operational Dersalloch Wind Farm and will sit within the existing horizontal extent occupied by Dersalloch. As such, the Proposed Development will have limited indirect effects on the "*strong perception of naturalness*" as this quality has already been influenced by wind farm development. Similarly, there will be limited indirect effects in relation to the "*few human artefacts and little contemporary land use*" due to the Proposed Development's location within an exterior landscape that has already been altered by human development. The effect of the Proposed Development on Viewpoint 15: Cornish Hill was found to be minor and not significant due to its position behind Dersalloch, as demonstrated by Figure 5.2.15. The Proposed Development therefore, will not form a new distinctive feature in views to the north (refer to Technical Appendix 5.3). At night, the Proposed Development will introduce a new source of artificial lighting in views to the north from the WLA, a direction that currently offers relatively dark views however is affected by some existing sources of artificial light in the distance, as demonstrated by the Dusk Viewpoint 15: Cornish Hill (Figure 5.2.15). These views will be experienced by a small number of receptors that are on this summit at night. The effect of lighting on views at this location was assessed as moderate and significant but only in the less likely maximum brightness scenario, the occurrence of which will be limited due to atmospheric conditions and distance. Under the more likely reduced brightness scenario effects will not be significant (refer to Technical Appendix 5.5). As such, the "*strong perception of naturalness*" will only be slightly altered in some views. The aviation lights will be seen in the context of other sources of artificial light outside of the WLA. From many other locations, there will be no view of the lights. In terms of cumulative effects, the Proposed Development will be seen in the context of other consented and proposed wind farms. The proposed Knockcronal, Carrick and Craiginmoddie Wind Farms (application) will be visible within 5 km and therefore will be seen at closer proximity in comparison to the Proposed Development. At night Knockcronal, Carrick and Craiginmoddie Wind Farms will introduce new sources of artificial light in views to the north and north-west within 5 km of the WLA. It is considered that the addition of the Proposed Development will not result in significant additional effects due to its distance from the WLA and its location within views that will have already been altered by closer proximity aviation lights on other proposed developments. Magnitude of change on wild land attribute: Low Overall, effects on this key attribute are judged to be Not Significant.

[3] SNH (2017), Description of Wild Land Area – 01. Merrick Wild Land Area

Human elements are widely visible from the tops and outermost slopes but lower-lying areas have a much stronger sense of remoteness	The upper areas and hill summits within the WLA offer long distance expansive views across the surrounding landscapes (refer to Figure 5.2.15: Viewpoint 15: Cornish Hill), including to the settled lower-lying landscapes and coastline to the north and north-west. The settled lowlands form part of the "*human elements*" that are "*widely visible*" from the elevated parts of the WLA. Commercial forestry and existing wind farms including Dersalloch Wind Farm to the north and Hadyard Hill, Assel Valley and Tralorg Wind Farms to the west also contribute to these "*human elements*". Throughout the lower lying areas of the WLA, such as within valleys between hill slopes, exterior views are more limited due to the intervening rugged topography that screen outward views, creating the "*stronger sense of remoteness*". At night, artificial lighting on human elements within the settled lowland areas to the north are visible in distant views from the upper areas hill summits within the WLA. From some parts of the WLA, including the contained lower lying areas views will be dark and largely unaffected by artificial sources of lighting. Sensitivity: **Medium**	From parts of the WLA where the Proposed Development will be seen (refer to the ZTVs in Figures 5.1.2c and Figure 5.1.7), it will be seen in the existing context of "*human elements*" and will be visible behind the operational Dersalloch Wind Farm. From the lower lying areas that have a stronger sense of remoteness, the Proposed Development will not be visible due to intervening topography. Is it therefore considered that the Proposed Development will have limited effects on this key attribute. At night, the Proposed Development will introduce a new source of artificial lighting in views to the north from the WLA, as discussed above. The aviation lighting on the Proposed Development will be seen, by a small number of visual receptors, in the context of other sources of artificial light outside of the WLA, and the aviation lights will not be visible from the lower lying parts of the WLA. This key attribute is therefore unlikely to be affected at night-time. In terms of cumulative effects, the Proposed Development will be seen in the context of other consented and proposed wind farms that will further add to the "*human elements*" that are "*widely visible*" from the elevated parts of the WLA. This includes views by day and night as noted above. As with the Proposed Development, the other wind farms and further sources of artificial light will not be visible within the lower lying parts of the WLA. As such, cumulative effects on this key attribute are considered to be limited. Magnitude of change on wild land attribute: Low Overall, effects on this key attribute are judged to be Not Significant.

A5.6.3 Summary

A5.6.3.1 The Proposed Development is located approximately 12 km to the north of the Merrick WLA. There will be no direct effects on the key attributes and qualities of the WLA. The Proposed Development, including lighting, will be visible in the context of human elements that are already present in wider views looking out from the WLA. By day, the Proposed Development will be seen behind Dersalloch Wind Farm so there will be no increase in the visibility of human elements. The WLA's "*strong perception of naturalness*" may be slightly altered at night to the small number of visual receptors that may be present in the WLA at night due to the introduction of aviation lighting in views to the north. However, existing distant sources of artificial light are visible in this direction, as well as existing artificial light in surrounding settled areas that are visible in other directions from parts of the WLA. The visibility of existing human development during the day and existing artificial lighting at night results in the effects on the key attributes of the Merrick WLA to be judged as not significant.

SCLENTEUCH WIND FARM

Environmental Impact Assessment Report

Technical Appendix 5.7: Turbine Lighting Analysis

powering change

1. Scattered Light from Aviation Warning Lights

1.1. Light domes are created when the light from a source is scattered back into our line-of-sight by the atmosphere at a distance from the origin. The scattered light is always less intense than the directly seen light would be.

1.2. It is possible to model this process using a few simple assumptions based on work about visibility of scattered light near observatories (Garstang, 1986). The main assumptions relate to the clarity of the atmosphere (which is a measure of how many scattering particles there are), and the output light profile from the light source. A conservative value is appropriate for the former since this maximises the likely scattered light. For the latter, a fit was made to the angular dependence of the light profile from an existing aviation warning light. This has the correct features, namely that its maximum emission occurs just above the horizontal plane, with a Gaussian profile to the core of the emission, but Lorentzian wings which mean that there is still weak emission even at relatively large angles such as 10 degrees from the horizontal.

1.3. Using this profile, it is found for the view from the former location of the Scottish Dark Sky Observatory (SDSO) that the scattered light from a 200 candela aviation warning light is expected to be generally well below the natural sky background brightness even for a perfectly dark site. This would be true even at its brightest part, predominantly within an angular separation of less than 1 degree of the actual light itself. The scattered light is still reduced by several orders of magnitude compared to the direct view even at very small separations. Multiple lights can add together if they are close enough together in angular extent, but the Proposed Development has insufficient aviation warning lights to change these conclusions.

1.4. This is not surprising when you consider how faint such lights actually are – for example a standard indoor 100W equivalent bulb has a directional flux of approximately 120 candela and we do not expect that to create a light dome if shielded from above. In addition, the aviation warning lights are red, and red light scatters less efficiently than blue light – which is one reason why in some locations light domes have increased with the switch to energy efficient, but notably bluer, LED street lighting.

1.5. The other reason scattered light is expected to be faint from the real aviation warning lights is that the light is mostly emitted horizontally, so scattering is largely confined to a small region in the horizontal rather than vertical plane, and light domes are visible because they lie above the illuminating source.

1.6. Light domes instead are created mostly by either lights directed partially upwards without shielding (floodlights, on playing fields or buildings, for example), or reflected back from the ground (streetlights typically). Aviation warning lights do neither of these.

1.7. In addition to the intrinsic faintness of the scattered emission, the direction in which it is viewed also needs to be considered. Figure 1 shows an image derived from SUOMI satellite data of the night-time light emission from the region. The direction in which the Proposed Development lies from the SDSO site has background light pollution caused by the light domes associated with the towns and villages near the coast (especially Ayr). Therefore, the intrinsic sky brightness is itself much greater than seen in a truly dark location.

1.8. The one case where scattered light potentially could be visible would be if mist formed around the turbine light itself, increasing the number of scattering particles present, whilst potentially triggering the switch to 2000 candela. In this case, you might expect to see more scattering from the immediate vicinity of the light, as noted in section 1.3. A similar process is what creates the halo around the Sun or Moon when thin cloud is present at high altitudes, and the halo there is similarly reduced in brightness compared to the Sun/Moon.

1.9. If the aviation warning lights are not directly visible, this scattered light will mostly be hidden as well given the narrow angles within which it is at its maximum intensity. Furthermore, if mist is forming around the aviation warning lights the atmospheric transparency along the whole line of sight is likely to be reduced, substantially suppressing any visibility beyond a few kilometres even with a direct view of the aviation warning lights (see discussion in 2.5 below).

1.10. Overall, therefore, if the aviation warning lights are hidden from direct view as the wirelines indicate, there should be no evidence of diffuse light domes being visible.

2. Visibility of the Aviation Warning Lights to the South of the Proposed Development

In addition to the impact on the site of the SDSO discussed above, the effect on other areas to the south of the Proposed Development also merit consideration. First, the core of the Dark Sky Park itself has direct visibility of the aviation warning lights, including from the unclassified C001road linking Straiton to the A714 and onwards to Newton Stewart (see Figure 2). Secondly, the village of Straiton lies at the northern end of that road, but well outside the Dark Sky Park. It also has visibility of the aviation warning lights.

2.2. The C001 from Straiton rises steadily to an altitude of 430m AOD just south of the point where it crosses into the core of the Dark Sky Park. Beyond that it drops back down sharply, and visibility as a result is particularly notable only in this short stretch. However, any car coming from the south will see the lights as the road faces almost directly towards the Proposed Development. In addition, the altitude of the road means that the lights are all seen almost horizontally, so the full intensity is received.

2.3. The modelling of the lights at a distance is covered in the technical report prepared by Lumsden (2020) for the Crystal Rig IV Public Inquiry in detail and will not be repeated here. The conditions of the site are likely to be similar between the two locations in terms of the level of opacity present in the atmosphere in “good” conditions. In poor conditions, when the aviation warning lights are run at 2000 candela, there will be very limited visibility anywhere. Basically, in these conditions it would be rare to see the lights beyond a few km at all – the models present in Lumsden (2020) show what happens at the turn-over point, when the lights first switch to 2000 candela, but the vast majority of poor visibility conditions are actually much worse than that.

2.4. It is possible to estimate how often “poor” weather occurs. It is important to note that it is only the behaviour at the turbine hubs themselves that matter here, since the sensors measure the local properties and extrapolate to a visibility. When that extrapolated value exceeds 5km the lights are switched from 200 candela to 2000 candela.

2.5. There are no direct measurements of the visibility at turbine height for the Proposed Development, but there are four Met Office automated stations in

south and south-west Scotland that measure visibility in the same fashion. The closest is Prestwick, where only 6% of all records in the year between 1/5/2021 and 30/4/2022 record a visibility poorer than 5km. However, this is at near to sea level, and the airport is known for its good weather. The more distant West Freuch station near Stranraer is also at sea level and records 8%. A similar value is obtained at Drumalbin, south of Lanark which is at higher altitude (245m). The worst value is recorded for Eskdalemuir, which is more distant again, but at a similar altitude. This finds 15% of all records have visibility poorer than 5km. Given these values a plausible conservative estimate for the Proposed Development itself is 10%. It is important to note that poor visibility often corresponds to a low cloud base as well. For a significant fraction of the time that the lights are emitting at 2000 candela they are likely to be above the cloud base and essentially invisible from below.

2.6. As a result, we need only consider the visibility in good conditions. The point where the C001 crosses into the core of the Dark Sky Park lies approximately between 12.1 and 13.6km from the two extremes of the turbine layout (the exact location considered is NX 39401 94709 which the author has previous experience of viewing the night time light pollution from, as shown in Figure 2). Given the angle is almost horizontal, the expected luminous intensity emitted by the aviation warning lights in that direction and angle is about 210-220 candela (note the maximum intensity of a 200 candela light is actually higher than that, since the specification relates to the minimum value allowed at elevation angles between -1 and +3 degrees).

2.7. Straiton (using a location on Main Street by the Church, NS38072 04925), is nearer – the turbines are between 3.1 and 4.9km. However, that location also has a much steeper viewing angle of the hub lights. This ranges from -5.2 degrees for the nearest turbine to -3.2 degrees for the most distant (all bar two lie below -3.5 degrees). The emergent luminous intensity at these angles, using a fairly conservative light profile of an existing aviation warning light, ranges from 15 to 20 candela in good conditions.

2.8. Lumsden (2020) compares the brightness of the light to stars that are visible. For the C001 location in good conditions the aviation warning lights would appear like easily visible stars, though not the brightest, and a similar result is obtained for Straiton despite its proximity, simply because of the steeper angle at which the lights are viewed.

2.9. Another way in which to consider the observed brightness of the lights is to compare against something that everyone has experience of. Car rear brake lights when activated typically emit about 80 candela, and are also red (though not precisely monochromatic in the way the aviation warning lights are). In very good conditions, lights get fainter as approximately the square of the distance. Therefore, a 20 candela light seen from Straiton is similar to a car brake light seen at twice the distance (ie approximately 6-10km to cover the span in turbine distances from Straiton).

2.10. By contrast, the C001 location would appear similar to a car brake light at approximately 7.5-8.2km to cover the range in distance to the turbines. Atmospheric opacity limits this comparison for a distant location somewhat, but no more than about 30% in good conditions. Therefore, the lights would appear similar to an observer at this location as compared to one in Straiton, all else being equal. This reflects the fact that an observer at the C001 location sees an intrinsically brighter part of the light despite being more distant.

2.11. Finally, the background light pollution needs to be accounted for. From Straiton, this is somewhat limited as shown in Figure 1, simply because of the topography and the angle the lights are viewed at. From the C001 location the important background is mostly not local (which creates light domes extending up to larger angles) but the background light pollution from the distant central belt, which is easily visible in good condition with the naked eye on the horizon line (Figure 2). The limited contrast our eyes can manage when viewing something against a lit background will therefore reduce the apparent intensity of the aviation warning lights somewhat, but they will still be visible.

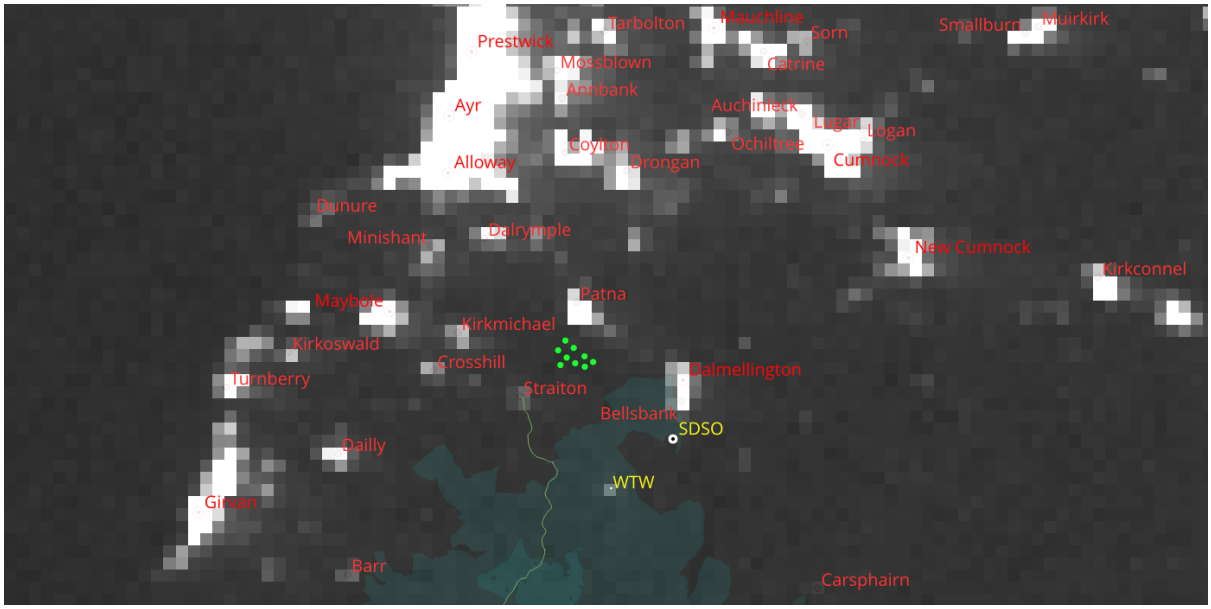


Figure 1 – Night-time image from the SUOMI satellite taken during clear nights in Feb-Mar 2022 of Ayrshire. Selected towns and villages are marked, as are the site of the former SDSO (yellow) and the planned turbine locations for the Proposed Development (green). The Galloway Dark Sky Park is indicated in cyan – the brighter shade represents the core region where no permanent lighting exists, the fainter the periphery where some is permitted. Most notably, the pre-existing Loch Bradan water treatment plant (marked in yellow as WTW) is an obvious source of light pollution within the park periphery. The green line marks the unclassified C001 road from Straiton towards Newton Stewart. There is a clear view of the location of the Proposed Development from the point at which the road crosses into the core of the Dark Sky Park. Light domes are obvious from the Loch Doon access road near the SDSO towards Ayr, but also the region stretching from Maybole south to Girvan. Less clear from this image is that light pollution is also present low down across the entire northern horizon when looking from the south (ie the Dark Sky Park) due to the central belt.

Figure 2: This is an image taken in 2014 from the C001 road just inside the core of the Dark Sky Park. Light pollution is clear across the whole skyline. The brightest patch just left of centre is a light dome from the region around Ayr. Much of the rest arises from the combined effect of the more distant population centres in the central belt. The brief break in the treeline just right of centre is approximately the direction that Sclenteuch lies. The horizon has changed since then (much of the forestry on the left side of the image on the skyline has been felled), and the view is now much more open towards the Doon valley. Comparison of satellite data from 2014 and 2022 shows that the overall light pollution across the wider region has not changed significantly despite the replacement of older style street lighting by more modern LED units. The levels in the image are tuned to give the same impression that the author saw visually, after becoming fully dark adapted.

References

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