

Glenvernoch Wind Farm

Environmental Impact Assessment Report EIAR Volume III – Technical Appendices Appendix 6.1: Landscape and Visual Impact Assessment Criteria

October 2024

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1 LVIA ASSESSMENT CRITERIA

Introduction

- 1.1 This appendix presents the assessment criteria adopted for the assessment of landscape and visual effects arising from the Proposed Development.
- 1.2 The primary source of best practice for LVIA in the UK is The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)¹. The assessment criteria adopted to inform the assessment of effects has been developed in accordance with the principles established in this best practice document. It should however be acknowledged that GLVIA3 establishes guidelines not a specific methodology. The preface to GLVIA3 states:
- " This edition concentrates on principles and processes. It does not provide a detailed or formulaic 'recipe' that can be followed in every situation – it remains the responsibility of the professional to ensure that the approach and methodology adopted are appropriate to the task in hand."*
- 1.3 The criteria set out below have therefore been developed specifically for this appraisal to ensure that the methodology is fit for purpose.
- 1.4 The purpose of an LVIA when undertaken in the context of an EIA is to identify any likely significant landscape and visual effects arising as a result of the proposals. An LVIA must consider both:
- effects on the landscape as a resource in its own right (the landscape effects); and
 - effects on specific views and visual amenity more generally (the visual effects).
- 1.5 Therefore, separate criteria are set out below for the assessment of landscape and visual effects.

Nature (Sensitivity) of Landscape Features

- 1.6 The nature or sensitivity of an individual landscape feature or element reflects its susceptibility to change, and any values associated with it. It is therefore a function of factors such as its quality, rarity, contribution to landscape character, degree to which the particular element can be replaced and cultural associations or designations that apply. A particular feature may be more 'sensitive' in one location than in another often as a result of local values associated with the feature. Therefore, it is not possible to simply place different types of landscape feature into sensitivity bands. Where individual landscape features are affected, professional judgement is used as far as possible to give an objective evaluation of its sensitivity. Justification is given for this evaluation where necessary.

¹ Landscape Institute and the Institute for Environmental Management and Assessment (2013). The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3). Routledge.

- 1.7 The nature or sensitivity of individual landscape features has been described as **very high, high, medium, low, or very low**.

Nature (Sensitivity) of Landscape Character

- 1.8 The nature or sensitivity of landscape character reflects its susceptibility to change, and any values associated with it. It is essentially an expression of a landscape's ability to accommodate a particular type of change. It varies depending on the physical and perceptual attributes of the landscape including but not necessarily limited to: scale; degree of openness; landform; existing land cover; landscape pattern and complexity; the extent of human influence in the landscape; the degree of remoteness/wildness; perception of change in the landscape; the importance of landmarks or skylines in the landscape; intervisibility with and influence on surrounding areas; condition; rarity and scenic quality of the landscape, and any values placed on the landscape including any designations that may apply.
- 1.9 In this assessment, the nature or sensitivity of landscape character is considered with reference to published landscape character areas/types. Information regarding the key characteristics of these character areas/types has been extrapolated from relevant published studies. Together with on-site appraisal, an assessment of landscape sensitivity to wind energy development has been undertaken employing professional judgement for relevant character areas/types.
- 1.10 The nature or sensitivity of landscape character has been described as **very high, high, medium, low, or very low**.

Nature (Sensitivity) of Visual Receptors

- 1.11 The nature or sensitivity of a visual receptor group reflects their susceptibility to change, and any values associated with the specific view in question. It varies depending on a number of factors such as the occupation of the viewer, their viewing expectations, duration of view and the angle or direction in which they would see the site. Whilst most views are valued by someone, certain viewpoints are particularly highly valued for either their cultural or historical associations, and this can increase the sensitivity of the view. The following criteria are provided for guidance only and are not exclusive:
- **Very Low Sensitivity** – People engaged in industrial and commercial activities or military activities.
 - **Low Sensitivity** - People at their place of work (e.g. offices); shoppers; users of trunk/major roads and passengers on commercial railway lines (except where these form part of a recognised and promoted scenic route).
 - **Medium Sensitivity** - Users of public rights of way and minor roads which do not appear to be used primarily for recreational activities or the specific enjoyment of the landscape; recreational activities not specifically focused on the landscape (e.g. football).

- **High Sensitivity** – Residents at home; users of long distance or recreational trails and other sign posted walks; users of public rights of way and minor roads which appear to be used for recreational activities or the specific enjoyment of the landscape; users of caravan parks, campsites and 'destination' hotels; tourist attractions with opportunities for views of the landscape (but not specifically focused on a particular vista); slow paced recreational activities which derive part of their pleasure from an appreciation of setting (e.g. bowling, golf); allotments; visitors to public parks.
- **Very High Sensitivity** - People at recognised vantage points (often with interpretation boards), people at tourist attractions with a focus on a specific view, visitors to historic features/estates where the setting is important to an appreciation and understanding of cultural value.

- 1.12 It is important to appreciate that it is the visual receptor (i.e. the person) that has a sensitivity and not a property, public right of way or road. Therefore, a large number of people may use a motorway for example, but this does not increase the sensitivity of the receptors using it. Conversely, a residential property may only have one person living in it, but this does not reduce the sensitivity of that one receptor. The number of receptors affected at any given location may be a planning consideration, but it does not alter the sensitivity of the receptor group.
- 1.13 Where judgements are made about the sensitivity of assessment viewpoints, the sensitivity rating provided is an evaluation of the sensitivity of the receptor group represented by the viewpoint and not a reflection of the number of people who may experience the view.
- 1.14 It is important not to confuse the concept of visual sensitivity with the perception of wind turbines. It is acknowledged that some people consider wind turbines to be unattractive, but many people also enjoy the sight of them.

Nature (Magnitude) of Change

General Note

- 1.15 The following discussion sets out the approach adopted in this LVIA in relation to a specific issue arising in GLVIA3 which requires a brief explanation.
- 1.16 Prior to the publication of GLVIA3, LVIA practice had evolved over time in tandem with most other environmental disciplines to consider significance principally as a function of two factors, namely: sensitivity of the receptor and magnitude of change (the term 'magnitude' being a word most commonly used in LVIA and most other environmental disciplines to describe the size or scale of an effect).
- 1.17 Box 3.1 on page 37 of GLVIA3 references a 2011 publication by IEMA entitled '*The State of EIA Practice in the UK*' which reiterates the importance of considering not just the scale or size of the change but other factors which combine to define the 'nature of the change' including factors such as the probability of an impact occurring and the duration, reversibility and spatial extent of the change.
- 1.18 The flow diagram on page 39 of GLVIA3 now suggests that the magnitude of change is a function of three factors (the size/scale of the change, the duration of the change and

the reversibility of the change). This is somewhat problematic in the context of assessing wind energy development.

- 1.19 The Proposed Development is for a time limited period and would be largely reversible at the end of the operational period. This is a material consideration in the planning balance but does not reduce the scale of the impact during the period in which the scheme is operational (i.e. the 'magnitude' of the change in the traditional and commonly understood sense of the word). In this regard, it would be incorrect to report a lesser magnitude of change to the landscape or view as a result of the time limited period of the effect or the relative reversibility of the effect.
- 1.20 The approach taken in this LVIA is therefore to consider magnitude of change solely as the scale or size of the impact in the traditional sense of the term 'magnitude.' Having identified the magnitude of change as defined above, the LVIA also describes the duration and reversibility of the identified impact before drawing a conclusion on significance.
- 1.21 In the context of the above discussion the following criteria have been adopted to describe the magnitude of change.

Nature (Magnitude) of Change on Landscape Features

- 1.22 Professional judgement has been used as appropriate to determine the magnitude of direct physical change on individual existing landscape features using the following criteria as guidance only:
- **Very Low Magnitude of Change** - No loss or alteration to existing landscape features.
 - **Low Magnitude of Change** - Minor loss or alteration to part of an existing landscape feature.
 - **Medium Magnitude of Change** - Some loss or alteration to part of an existing landscape feature.
 - **High Magnitude of Change** - Major loss or major alteration to an existing landscape feature.
 - **Very High Magnitude of Change** - Total loss or alteration to an existing landscape feature.

Nature (Magnitude) of Change on Landscape Character

- 1.23 The magnitude of change on landscape character is influenced by a number of factors including: the extent to which existing landscape features are lost or altered, the introduction of new features and the resulting alteration to the physical and perceptual characteristics of the landscape. Professional judgement has been used as appropriate to determine the magnitude using the following criteria as guidance only. In doing so, it is recognised that usually the landscape components in the immediate surroundings have a stronger influence on the sense of landscape character than distant features whilst acknowledging the fact that more distant features can have an influence on landscape character as well.

- 1.24 **Very Low Magnitude of Change** - No notable loss or alteration to existing landscape features; no notable introduction of new features into the landscape; and negligible change to the key physical and/or perceptual attributes of the landscape.
- 1.25 **Low Magnitude of Change** - Minor loss or alteration to existing landscape features; introduction of minor new features into the landscape; or minor alteration to the key physical and/or perceptual attributes of the landscape.
- 1.26 **Medium Magnitude of Change** - Some notable loss or alteration to existing landscape features; introduction of some notable new features into the landscape; or some notable change to the key physical and/or perceptual attributes of the landscape.
- 1.27 **High Magnitude of Change** - A major loss or alteration to existing landscape features; introduction of major new features into the landscape; or a major change to the key physical and/or perceptual attributes of the landscape.
- 1.28 **Very High Magnitude of Change** - Total loss or alteration to existing landscape features; introduction of dominant new features into the landscape; a very major change to the key physical and/or perceptual attributes of the landscape.

Nature (Magnitude) of Change on Views and Visual Amenity

- 1.29 Visual effects are caused by the introduction of new elements into the views of a landscape or the removal of elements from the existing view.
- 1.30 Professional judgement, has been used to determine the magnitude of impacts using the following criteria as guidance only:
- **Very Low Magnitude of Change** - No change or negligible change in views.
 - **Low Magnitude of Change** - Some change in the view that is not prominent but visible to some visual receptors.
 - **Medium Magnitude of Change** - Some change in the view that is clearly notable in the view and forms an easily identifiable component in the view.
 - **High Magnitude of Change** - A major change in the view that is highly prominent and has a strong influence on the overall view.
 - **Very High Magnitude of Change** - A change in the view that has a dominating or overbearing influence on the overall view.
- 1.31 Using this set of criteria, determining levels of magnitude is primarily dependant on how prominent the Proposed Development would be in the landscape, and what may be judged to flow from that prominence or otherwise.
- 1.32 For clarification, the use of the term 'prominent' relates to how noticeable the features of the Proposed Development would be. This is affected by how close the viewpoint is to the Proposed Development but not entirely dependent on this factor. Other modifying factors include: the focus of the view, visual screening and the nature and scale of other landscape features within the view. Rather than specifying crude bands of distance at which the turbines would be dominant, prominent, or incidental to the view etc., the

prominence of the turbines in each view is described in detail for each viewpoint taking all the relevant variables into consideration.

Duration of Change

1.33 For the purposes of this assessment, the temporal nature of each impact with is described as follows:

- Long Term – over 5 years.
- Medium Term – between 1 and 5 years.
- Short Term – under 1 year.

Reversibility of Change

1.34 The LVIA also describes the reversibility of each identified impact using the following terms:

- Permanent – impact is non reversible.
- Non-permanent – impact is reversible.

Significance of Effect

1.35 The purpose of an LVIA when produced in the context of an EIA is to identify any significant effects on landscape and visual amenity arising from the Proposed Development.

1.36 Neither EC Directive 2011/12/EU nor the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 define a threshold at which an effect may be determined to be significant. In certain other environmental disciplines, there are regulatory thresholds or quantitative standards which help to determine the threshold of what constitutes a significant effect. However, in LVIA, any judgement about what constitutes a significant effect is ostensibly a subjective opinion expressed as in this case by a competent and appropriately qualified professional assessor.

1.37 The level (relative significance) of the landscape and visual effects is determined by combining judgements regarding sensitivity of the landscape or view, magnitude of change, duration of change and the reversibility of the change. In determining the level of residual effects, all mitigation measures are taken into account.

1.38 The level (relative significance) of effect is described as **major, major/moderate, moderate, moderate/minor, minor, minor/no effect** or **no effect**. No Effect may also be recorded as appropriate where the effect is so negligible it is not even noteworthy.

1.39 In the LVIA, those effects described as **major, major/moderate** and in some cases **moderate** may be regarded as significant effects as required by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. These are the effects which the authors of the LVIA consider to be most material in the decision-making process.

Glenvernoch Wind Farm

Environmental Impact Assessment Report EIAR Volume III – Technical Appendices Appendix 6.2: ZTV and Visualisation Information

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1 ZTV AND VISUALISATION INFORMATION

Introduction

- 1.1 This appendix provides background information in relation to the Zone of Theoretical Visibility maps (ZTVs) and the suite of visualisations (see **EIA Volume 2**) presented in the Environmental Impact Assessment Report (EIA).
- 1.2 The following text explains how the visualisations have been prepared and presented; including instructions for how the visualisations should be viewed and explains the limitations of the visualisation material.
- 1.3 The visualisations in this EIA have been prepared in accordance with the published best practice guidance outlined in Visual Representation of Wind Farms, Version 2.2 (February 2017) Scottish Natural Heritage (SNH).

Production of Zone of Theoretical Visibility (ZTV) Maps

- 1.4 A ZTV illustrates the extents from which a feature would theoretically be visible within a defined study area.
- 1.5 ZTVs are generated assuming a 'bare ground' terrain model. This means that the ZTVs presented within the LVIA have been generated from topographical data only and they do not take any account of vegetation or the built environment which may screen views of the development. It is, as such, a 'worst case' zone of visual influence and considerably over-emphasises the actual visibility of the Proposed Development. In reality trees, hedges and buildings may restrict views of the development from many of the areas rendered as within the ZTV.
- 1.6 A further assumption of the ZTV is that climatic visibility is 100% (i.e. visibility is not impeded by moisture or pollution in the air). In reality, such atmospheric conditions are relatively rare in this part of the country. Mist, fog, rain, and snow are all common weather occurrences, which would regularly restrict visibility of the development from some of the areas within the ZTV; this being an incrementally more significant factor with distance from the Site. Atmospheric pollution is not as significant as it is in other parts of the country but is still present and would also restrict actual visibility on some occasions, again more so with distance from the Site.
- 1.7 The ZTVs were generated using GIS software. The programme used topographical height data (OS Terrain 50) to build a terrain model. The programme then renders the model using a square grid to illustrate whether the turbines would be visible in each 50m x 50m square on the grid for a specified distance in every direction from the Site.
- 1.8 Digital ZTVs have been prepared to illustrate the theoretical visibility of the turbine for a radius of 35km around the Site. Two sets of ZTVs have been produced, the first shows visibility of the turbines at hub height and the second shows visibility of the turbines to blade

tip when the blade is at its highest possible position. Enlargements of the ZTVs have also been produced.

- 1.9 Cumulative ZTVs have been produced to show locations where the ZTVs of two or more operational, consented, in planning, or at scoping wind turbine sites overlap (in certain cases a number of wind farms which are at the same stage in development have been grouped together). In the cumulative ZTVs, one colour has been used to illustrate the theoretical visibility of the Proposed Development and a second colour to illustrate the visibility of a second site. Where the ZTVs of the two sites overlap, a third colour has been used to illustrate this potential cumulative visual influence.
- 1.10 It should be noted that there are several limitations to the use of ZTVs. For a discussion of these limitations, please refer to Visual Representation of Wind farms – Version 2.2 (NatureScot). In particular, it should be noted that the ZTV plans simply illustrate theoretical visibility and do not imply or assign any level of significance to those areas identified as being within the ZTV. The ZTVs are a tool to assist the Landscape Architect to identify where the Site would potentially be visible from. The assessment of landscape and visual effects in the LVIA does not rely solely on the accuracy of the ZTVs. The ZTVs have been ground proofed and professional judgement has been used to evaluate the significance of effects.
- 1.11 Further details about the production of the lit turbine ZTVs are included in **Appendix 6.7: Assessment of Night-time Lighting**.

Viewpoint Photography

- 1.12 The following text explains how the baseline photography was taken for each viewpoint.
- 1.13 Baseline photographs of the existing view were taken using either a high-quality Canon 5D Mark II digital camera with a Canon EF 50mm f/1.4 USM lens or a high-quality Nikon D600 with a 50mm f/1.4 lens. In accordance with the SNH guidance (2017), both cameras have a full frame digital sensor.
- 1.14 Neutral density graduated filters were used as appropriate at some viewpoints to balance the exposure within some scenes – typically where there was a contrast between bright sky and darker landform. Other than this, no other filters were used during photography.
- 1.15 Photographs were captured in high resolution JPEG format.
- 1.16 At each viewpoint, the camera was mounted on a levelled tripod at a height of approximately 1.5m above ground level (providing an approximation of average adult eye level).
- 1.17 The camera was set up on a panoramic rotating head and photographs were taken at 20-degree increments of rotation from left to right.
- 1.18 In each case the camera focus was locked on the distant horizon (infinity). In doing so, the photographs are in each case focussed on the development Site, whilst very close objects in the foreground may in some cases be out of focus. This approach is in line with best practice photography techniques. The exposure was set correctly for the centre of the

development Site and then locked off so that it remained constant as the camera was rotated through the panorama.

- 1.19 As far as possible, photographs were taken in good weather and clear visibility conditions. Wherever possible photographs were taken with the sun behind the camera; although, this was not possible for all viewpoints i.e. those that are broadly north of the Site.
- 1.20 Inevitably with distance from the Site, atmospheric moisture increasingly reduces the clarity of visibility and therefore photographs from the distant viewpoints typically depict the development Site less clearly than the nearby viewpoint photographs. This is an unavoidable limitation of viewpoint photography.

Stitching of Panoramas and Post-Photographic Processing

- 1.21 Each of the panoramic images presented is comprised of three single frame photographs stitched together in PTGui (for both cylindrical and planar projection images) and then cropped down to a particular horizontal and vertical field of view.
- 1.22 The panoramic baseline photographs which illustrate a 90-degree horizontal angle of view are stitched in cylindrical projection as per the SNH guidance (2017).
- 1.23 The photomontages which show a 53.5-degree horizontal field of view have been based on the same single frame panoramic photographs but have been stitched in planar projection in accordance with the SNH guidance (2017).
- 1.24 A limited amount of post photography processing of the image files has been undertaken to enhance the quality of the baseline photographs. As stated in the SNH guidance (2017):

"Photographic processing involves judgements - there is no process by which a 'pure' photograph can be produced without the application of human decision-making, from exposure timing to the specification of the camera, and whether this is applied manually or automatically."

"In reality there is no way to avoid a photograph being enhanced as this is an integral part of photography and photomontage production."

"Overall, there should be a minimum of post-processing image enhancement."

- 1.25 The extent of image enhancement undertaken in the production of the photomontages has been limited to that which would conventionally occur in a darkroom to improve the clarity of an image and does not in each case change the essential character of the image. Overall, there has been minimal post-photography image enhancement and during the stitching process none of the photographs were distorted in terms of scaling (other than that which is an inherent and unavoidable product of stitching photography in planar projection).

Wirelines

- 1.26 A wireline visualisation (sometimes also referred to as a wireframe visualisation) is a computer-generated 3D outline of a particular structure (in this the proposed wind farm) placed on top of a 3D ground terrain model, which again is represented by a wireline. No rendering is given to any of the surfaces.
- 1.27 The wireline images of the Proposed Development (as well as any other cumulative turbines modelled) were generated utilising the actual dimensions of the proposed turbines and a model of the structures was placed in position over a ground terrain model generated from Ordnance Survey Landform Panorama height data.
- 1.28 The coordinates of the viewpoints were recorded using a Global Positioning System (GPS) in the field. Checks on these coordinates were made with reference to Google Earth. These coordinates were used to set up viewpoints in the model from which to view the turbines. The wirelines were generated using Resoft Windfarm.
- 1.29 The wireline images are generated on a bare ground model and therefore do not take account of any vegetation or the built environment between the viewpoint and the Proposed Development. As such, they represent a worst-case view. Each of the wirelines was checked on Site to ascertain whether there was any screening of the view caused by vegetation or buildings.
- 1.30 For each viewpoint, a 90-degree cylindrical projection wireline is presented to scale beneath the baseline photograph to illustrate the view from each viewpoint. This wireline illustrates the Proposed Development with other operational and consented wind farms (including those under construction). A number of wind farms in planning or at the scoping stage have also been included.
- 1.31 In addition, for each viewpoint an enlarged 53.5-degree planar projection wireline is presented on a second sheet to correspond in scale with the subsequent photomontage. Again, this wireline illustrates the Proposed Development with other operational, consented (including those under construction), proposed, and scoping stage wind farms.
- 1.32 The wireline images only illustrate the anticipated scale and position of the turbines in relation to the terrain. Whilst every effort has been made to ensure the accuracy of the images, it must be appreciated that no wireline image could ever claim to be 100% accurate as there are a number of technical limitations to the model which are discussed further below.
- 1.33 It should be noted that wirelines are just a 'snapshot' of the view from a single fixed location and the wirelines presented in this EIAR represent only a small number of locations where the Proposed Development will be visible from. In reality views would change as receptors move through the landscape. Therefore, the wirelines are simply a tool to assist the Landscape Architect in their assessment of effects. The assessment of visual effects in this chapter does not rely solely on the accuracy of the wireline images. Professional judgement has been used to evaluate the significance of effects.

Photomontages

- 1.34 In simple terms, a photomontage is the superimposition of a rendered, photorealistic, computer-generated model of a development (in this case the proposed wind farm) on to a baseline photograph to illustrate how it would appear in the surrounding landscape context.
- 1.35 A 3D wireline model was generated of the turbines as described above. Resoft Windfarm software was used to generate the 3D model of the turbines. The model of the structures was rendered, and lighting was set appropriate to the date, time, and orientation on which the photograph was taken.
- 1.36 A digital ground terrain model was generated in Resoft Windfarm and the Proposed Development was overlaid on top of it. Using world coordinates in the computer modelling programme the photographic viewpoints were replicated such that a view was set up looking at the turbines from exactly the same location as where the baseline photograph was taken from. The view from the model was then superimposed over the original photograph and edited as necessary in Adobe Photoshop to give a final photomontage.
- 1.37 The photomontages illustrate the Proposed Development set in the current view (i.e. in the context of just operational wind farms where visible).
- 1.38 Whilst every effort has been made to ensure the accuracy of the photomontages, it must be appreciated that no photomontage could ever claim to be 100% accurate as there are a number of technical limitations in the model relating to the accuracy of information available from Ordnance Survey and from the GPS. In particular, it should be recognised that baseline photographs on which photomontages are based can, at best, only ever be a 'flattened' 2D representation of what the eye sees in 3D on site. A photograph will never capture as much detail as the eye would see in the field, it therefore follows that a photomontage can never truly capture the sense of perspective and detail which would be possible in reality. In some of the photomontages, the visibility of the turbines has been slightly digitally enhanced to ensure that they are visible when printed out. Taking account of the inherent technical limitations in producing and presenting photomontages, the photomontages have been produced according to best practice.
- 1.39 The photomontages are simply a tool to assist the Landscape Architect in their assessment of effects. The assessment of visual effects in the LVIA does not rely solely on the accuracy of the photomontages. Professional judgement has been used to evaluate the significance of effects. Each of the photomontages should be viewed flat and at comfortable arm's length.

Presentation of Visualisation Sheets

- 1.40 The following visualisation sheets are presented in the EIAR:

Sheet A: Baseline Photograph and Cumulative Wireline of the Proposed Development

- 1.41 This sheet provides a cumulative wireline image of the Proposed Development directly beneath the corresponding baseline view as replicated from Sheet 1. Both images present a 90-degree horizontal field of view and a 14.2-degree vertical field of view. This sheet presents the information required of the 'Baseline Panorama and Wireline' as set out in Annex C of the SNH guidance (2017). Both of the images on this sheet are presented in cylindrical projection and the principal viewing distance (the distance at which one should view the image to obtain a geometrically accurate impression) is 500mm when the image is curved through the same radius.
- 1.42 For the purposes of clarification, the cumulative wireline on this sheet illustrates the Proposed Development and other operational, consented wind farms/turbines and any developments in planning or at the scoping stage.

Sheet B: Wireline of the Proposed Development

- 1.43 This sheet provides an enlarged and cropped wireline image of the Proposed Development. The image illustrates a 53.5-degree horizontal field of view and an 18-degree vertical field of view. Whilst it is essentially an enlargement of the wireframe presented in Sheet 1, this wireframe is presented in planar projection. As such, the image should be viewed on a flat surface. The principal viewing distance (the distance at which one should view the image to obtain a geometrically accurate impression) is 812.5mm. This sheet presents the information required of the 'Wireline' as set out in Annex C of the SNH guidance (2017).
- 1.44 For the purposes of clarification, the wireline on this sheet illustrates the Proposed Development only.

Sheet C: Photomontage of the Proposed Development

- 1.45 This sheet provides an enlarged and cropped photomontage of the Proposed Development. The image illustrates a 53.5-degree horizontal field of view and an 18-degree vertical field of view. It is presented in planar projection, and as such the image should be viewed on a flat surface. The principal viewing distance (the distance at which one should view the image to obtain a geometrically accurate impression) is 812.5mm. This sheet presents the information required of the 'A1 Panorama' as set out in Annex C of the SNH guidance (2017).
- 1.46 For the purposes of clarification this sheet illustrates only the Proposed Development in conjunction with existing operational wind farms. It does not show consented but as yet unbuilt turbines or any developments that are in planning or at the scoping stage.

Limitations of the Visualisations

- 1.47 Annex A of 'Visual Representation of Wind Farms,' Version 2.2 (SNH, February 2017) sets out a summary of the key limitations of visualisations and recommends that these are set out for each wind farm application. The following text is therefore reproduced from Annex A of the aforementioned SNH guidance (2017):

"Visualisations of wind farms have a number of limitations which you should be aware of when using them to form a judgement on a wind farm proposal. These include:

- *A visualisation can never show exactly what the wind farm will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image;*
- *The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate;*
- *A static image cannot convey turbine movement, or flicker or reflection from the sun on the turbine blades as they move;*
- *The viewpoints illustrated are representative of views in the area, but cannot represent visibility at all locations;*
- *To form the best impression of the impacts of the wind farm proposal these images are best viewed at the viewpoint location shown;*
- *The images must be printed at the right size to be viewed properly (260mm by 820mm);*
- *You should hold the images flat at a comfortable arm's length. If viewing these images on a wall or board at an exhibition, you should stand at arm's length from the image presented to gain the best impression.*
- *It is preferable to view printed images rather than view images on screen. If you do view images on screen you should do so using a normal PC screen with the image enlarged to the full screen height to give a realistic impression. Do not use a tablet or other device with a smaller screen to view the visualisations described in this guidance."*

- 1.48 It should also be noted that the quality of all printed visualisations is also dependent on the printing methods, paper and ink used.

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Environmental Impact Assessment Report EIAR Volume III – Technical Appendices Appendix 6.3: Preliminary Assessment of Landscape Character Types and Designations

October 2024

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1 PRELIMINARY ASSESSMENT OF LANDSCAPE CHARACTER TYPES AND DESIGNATIONS

Introduction

- 1.1 This appendix provides a preliminary assessment of the Landscape Character Types (LCTs) within the detailed 20km LVIA Study Area and the Landscape Designations within the 35km study area.
- 1.2 Landscape Designations within 35km are illustrated on **Figure 6.2: Landscape Designations within 35km Study Area**, with those within 20km additionally shown on **Figure 6.3: Landscape Designations within 20km Study Area**. The Landscape Designations within 35km have been overlaid with the ZTV on **Figure 6.25: Blade Tip ZTV up to 35km with Landscape Designations**, with those within 20km also overlaid with the ZTV on **Figure 6.26: Blade Tip ZTV up to 20km with Landscape Designations**.
- 1.3 LCTs within 35km of the Proposed Development have been illustrated on **Figure 6.4: Landscape Character Types within 35km Study Area**, with those located within the detailed 20km LVIA Study Area illustrated on **Figure 6.5: Landscape Character Types within 20km Study Area**. The LCTs within 20km have also been overlaid with the ZTV on **Figure 6.27: Blade Tip ZTV up to 20km with Landscape Character Types**.

Preliminary Assessment of LCTs

- 1.4 An initial filtering exercise has been undertaken to determine which LCTs within 20km would have the potential for significant effects to arise and would therefore require detailed consideration in the LVIA. The intention has been to ensure that the level of attention given to each LCT is proportionate to the likelihood of significant effects arising. The discussion below summarises the process followed in deciding which LCTs have the potential to experience significant effects as well as those LCTs that do not require any further consideration.
- 1.5 With reference to **Figure 6.4** and the blade tip ZTV at **Figure 6.11: Blade Tip ZTV up to 35km**, all LCTs located between 20km and 35km have been scoped out of further assessment, on account of the distance from the Proposed Development, the influence of other closer wind farm development and the relatively limited theoretical visibility. It is acknowledged that there may be very limited potential for effects on the character of available views from these LCTs but there would be no potential for significant effects to arise.
- 1.6 Therefore, **Table 6.3.1** below lists all LCTs within the 20km detailed LVIA Study Area and considers whether the potential effects upon the landscape character type should be assessed in more detail within the LVIA.

Table 6.3.1: Preliminary Assessment of LCTs

Landscape Character Type	Location Relative to the Proposed Development	Comments	Detailed Assessment Required
LCT 174: Plateau Moorland with Forest [DGWLCS LCT 17a]	Proposed Development (including all proposed turbines) is primarily located within this LCT	Potential for direct and indirect significant effects as part of the associated infrastructure is located within this LCT	Yes
LCT 160: Narrow Wooded Valley [DGWLCS LCT 4]	Proposed Development (Site entrance and part of an access track) is partly located within this LCT	Potential for direct and indirect significant effects as part of the associated infrastructure is located within this LCT	Yes
LCT 181: Rugged Uplands with Forest [DGWLCS LCT 21a]	Approximately 3km to the east	Theoretical visibility from relatively close range. Potential for indirect significant effects	Yes
LCT 172: Upland Fringe [DGWLCS LCT 16]	Approximately 4km to the southeast	Theoretical visibility from relatively close range. Potential for indirect significant effects	Yes
LCT 168: Drumlin Pasture in Moss and Moor Lowland [DGWLCS LCT 12]	Approximately 4km to the south	Theoretical visibility from relatively close range. Potential for indirect significant effects	Yes
LCT 78: Plateau Moorland - Ayrshire [SALWCS LCT 18c]	Approximately 4km to the northwest	Theoretical visibility from relatively close range. Potential for indirect significant effects	Yes
LCT 158: Coastal Flats [DGWLCS LCT 2]	Approximately 8km to the southeast	Theoretical visibility from parts of the LCT. Potential for indirect significant effects	Yes

LCT 167: Moss and Forest Lowland [DGWLCS LCT 11]	Approximately 12km to the south-southwest	Theoretical visibility from parts of the LCT. Potential for indirect significant effects	Yes
LCT 179: Coastal Uplands [DGWLCS LCT 20]	Approximately 13km to the southeast	Theoretical visibility from parts of the LCT. Potential for indirect significant effects	Yes
LCT 176: Foothills with Forest [DGWLCS LCT 18a]	Approximately 9km to the southeast	Limited theoretical visibility from the LCT, with the majority having none. Mostly forested which further restricts potential for visibility	No
LCT 180: Rugged Uplands [DGWLCS LCT 21]	Approximately 6km to the east	Limited theoretical visibility from the LCT, with the majority having none	No
LCT 83: Rugged Upland - Ayrshire [East Ayrshire Landscape Wind Capacity LCT 21]	Approximately 14km to the north-northeast	Limited theoretical visibility from the LCT, with the majority having none	No
LCT 82: Southern Uplands with Forest - Ayrshire [SALWCS LCT 21]	Approximately 13km to the north	Limited theoretical visibility from the LCT, with the majority having none. Mostly forested which further restricts potential for visibility	No
LCT 72: Pastoral Valleys - Ayrshire [SALWCS LCT 13]	Approximately 8km to the northwest	Limited theoretical visibility from the LCT, with the majority having none. Areas with potential visibility mostly forested which further restricts potential for impacts	No
LCT 173: Plateau Moorland [DGWLCS LCT 17]	Approximately 12km to the southwest	Limited theoretical visibility from the LCT, with the majority having none	No
LCT 159: Shallow Flat Bottomed Valley [DGWLCS LCT 3]	Approximately 16km to the southwest	No potential visibility	No

Preliminary Assessment of Landscape Designations

- 1.7 An initial filtering exercise has been undertaken to determine which Designated Landscapes within 35km would have the potential for significant effects to arise and would therefore require detailed consideration in the LVIA. The intention has been to ensure that the level of attention given to each Designated Landscape is proportionate to the likelihood of significant effects arising. The discussion below summarises the process followed in deciding which Designated Landscapes have the potential to experience significant effects as well as those that do not require any further consideration.
- 1.8 Landscape designations within 35km are illustrated on **Figure 6.2**, with those within 20km additionally shown on **Figure 6.3**. The Landscape Designations within 35km have also been overlaid with the ZTV on **Figure 6.25**, with those within 20km overlaid with the ZTV additionally shown on **Figure 6.26**.
- 1.9 **Table 6.3.2** below lists all Designated Landscapes within the 35km LVIA Study Area and considers whether the potential effects upon them should be assessed in more detail within the LVIA.

Table 6.3.2: Preliminary Assessment of Landscape Designations

Designation	Location Relative to the Proposed Development	Comments	Detailed Assessment Required
Fleet Valley National Scenic Area (NSA)	Approximately 22km to the southeast	As illustrated on the ZTV overlaid on to the Landscape Designations within 35km of the Site, there would be no potential for views of the Proposed Development from the NSA	No
Galloway Hills Regional Scenic Area (RSA)	Located adjacent to the eastern boundary of the Site	Potential for visibility of the Proposed Development at close proximity	Yes
Rhins Coast Regional Scenic Area	Approximately 27km to the southwest	Limited theoretical visibility from the RSA, with the majority having none	No
Mochrum Loch Regional Scenic Area	Approximately 15km to the south	Limited theoretical visibility from the RSA	No
Machars Coast Regional Scenic Area	Approximately 25km to the south	Limited theoretical visibility from the RSA, with the majority having none	No

Solway Coast Regional Scenic Area	Approximately 27km to the southeast	No potential visibility	No
South Ayrshire Local Landscape Areas (LLAs) within 35km: Glen App Coast and Hills, Stinchar Valley, Givan to Ballantree Coast and Hills, High Carrick Hills, and Water of Girvan Valley.	Approximately 10km to the northwest	Limited theoretical visibility from the LLAs, with the majority having none	No
East Ayrshire Local Landscape Areas (LLAs) within 35km: Doon Valley	Approximately 30km to the northeast	No potential visibility	No

Glenvernoch Wind Farm

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1 PRELIMINARY ASSESSMENT OF VISUAL RECEPTORS

Introduction

- 1.1 An initial filtering exercise has been undertaken to identify which visual receptors identified in the baseline (see **Chapter 6: Landscape and Visual of the EIA**) have the potential to be significantly affected by the Proposed Development.
- 1.2 The intention has been to ensure that the level of assessment given to each visual receptor is proportionate to the likelihood of significant effects arising. The tables below list the principal visual receptors identified in the baseline study and summarises the initial assessment conducted to determine which visual receptors have the potential to experience significant effects and require detailed assessment.
- 1.3 The principal visual receptors are illustrated on **Figure 6.6: Principal Visual Receptors within 35km Study Area**. The blade tip ZTV has been overlaid over those located within the detailed 20km LVIA study area on **Figure 6.24: Blade Tip ZTV up to 20km with Principal Visual Receptors**.

Table 6.4.1: Preliminary Assessment of Settlements

Settlement	Location Relative to the Proposed Development	Comments	Detailed Assessment Required
Settlements within 5km			
Glentool	Approximately 4.5km north-northeast	Theoretical visibility of up to 13no. blade tips and hubs predicted from properties on the settlement extents; although, intervening vegetation, including forestry and woodland cover would provide screening of views. Potential for effects but they are not considered to be significant	No

Settlements within 5km – 10km			
Newton Stewart	Approximately 6.8km southeast	Theoretical visibility of up to 13no. blade tips and hubs predicted from properties on the settlement extents; although, intervening vegetation, including forestry and woodland cover would provide screening of views. Potential for effects but they are not considered to be significant	No
Settlements within 10km – 15km			
Kirkcowan	Approximately 10.2km south-southwest	Theoretical visibility of up to 13no. blade tips and hubs predicted from the settlement; although, intervening vegetation, including forestry and woodland cover would provide screening of views. Potential for effects but they are not considered to be significant	No
Settlements within 15km – 20km			
Creetown	Approximately 16.9km southeast	Theoretical visibility of up to 13no. blade tips and hubs predicted from properties on the settlement extents; although, intervening vegetation, including forestry and woodland cover would provide screening of views. Any effects would be extremely limited and would not be considered significant	No

Wigtown	Approximately 17.3km south-southeast	Theoretical visibility of up to 13no. blade tips and hubs predicted from properties on the northern settlement extents; although, intervening vegetation, including forestry and woodland cover would provide screening of views. Any effects would be extremely limited and would not be considered significant	No
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Table 6.4.2: Preliminary Assessment of Core Paths

Core Paths	Location Relative to the Proposed Development	Comments	Detailed Assessment Required
Core Paths within 5km			
Core Path UNNO/504/5-10	Approximately 0.9km to the northwest	Theoretical visibility of up to 13no. blade tips and hubs. Potential for significant effects due to proximity and availability of open views from sections of the path	Yes
Core Path CREE/391/1-2 - Wood of Cree	Approximately 1.9km to the east-southeast	Path passes through woodland which would restrict views. Minimal to no potential for significant effects	No
Core Path CREE/424/1-5 - Penninghame Ponds	Approximately 2.1km to the south	Path passes through woodland which would restrict views. Minimal to no potential for significant effects	No
Core Path CREE/416/1-2 - Barclay Bird Reserve Walk	Approximately 3.0km to the southeast	Theoretical visibility of up to 13no. blade tips and hubs. Potential for significant effects due to proximity and availability of open views from sections of the path	Yes
Core Path CREE/387/1 - White Cairn Glentroll	Approximately 4.5km to the north-northeast	Path passes through forestry which would restrict views. Minimal to no potential for significant effects	No

Core Path CREE/382/1 - Glentrol to Stroan Bridge	Approximately 4.8km to the north-northeast	Path passes through forestry which would restrict views. Minimal to no potential for significant effects	No
Core Path CREE/396/1-4 - Glentrol Walk	Approximately 5.0km to the northeast	Path passes through forestry which would restrict views. Minimal to no potential for significant effects	No
Core Paths within 5km – 10km			
Core Path CREE/363/1-8 - Knockman Woods, Cree Valley	Approximately 5.1km to the southeast	Limited to no theoretical visibility from sections of the path, with actual visibility restricted by surrounding woodland, which would restrict views. Any effects would be extremely limited and would not be considered significant	No
Core Path CREE/545/1 - Boreland Wood, Cree Valley	Approximately 5.6km to the southeast	Path passes through woodland which would restrict views. Minimal to no potential for significant effects	No
Core Path CREE/377/1-5 - Blairmount Park Newton Stewart	Approximately 7.3km to the southeast	Theoretical visibility from the path; although, actual visibility would be reduced by surrounding woodland at Doon Hill Plantation. Minimal to no potential for significant effects	No
Core Path CREE/427/1-2 - Riverside Walk Newton Stewart	Approximately 7.8km to the southeast	Limited to no theoretical visibility from sections of the path, with actual visibility restricted by adjacent built form. Minimal to no potential for significant effects	No
Core Path CREE/368/1-3 - Kirroughtree Hotel	Approximately 7.8km to the southeast	Limited to no theoretical visibility from sections of the path, with actual visibility restricted by intervening built form. Minimal to no potential for significant effects	No

Core Path CREE/402/1 - Newton Stewart Cycle Path South	Approximately 8.8km to the southeast	Limited to no theoretical visibility from sections of the path, with actual visibility restricted by adjacent built form. Minimal to no potential for significant effects	No
Core Path CREE/475/1-2 - Lochtrool Circular	Approximately 9.1km to the northeast	Limited to no theoretical visibility from the majority of the path. Potential for limited effects but they would not be considered significant.	No
Core Path CREE/543/1 - Route 7 Cycleway Newton Stewart to Graddoch Bridge	Approximately 9.1km to the southeast	Limited to no theoretical visibility from sections of the path, with actual visibility restricted by intervening built form, and vegetation including forestry and woodland cover. Any effects would be extremely limited and would not be considered significant	No
Core Path CREE/367/1-10 - Kirroughtree Walks	Approximately 9.3km to the southeast	Path passes through forestry which would restrict views. Minimal to no potential for significant effects	No
Core Path CREE/431/1 – The Merrick	Approximately 9.4km to the northeast	Limited to no theoretical visibility from sections of the path, with actual visibility restricted by intervening vegetation including forestry and woodland cover. Potential for visibility of the proposed wind farm from more open and elevated sections of the path near the summit of the Merrick; however, any effects would not be considered significant.	No

Table 6.4.3: Preliminary Assessment of Recreational Routes

Recreational Route	Location Relative to the Proposed Development	Comments	Detailed Assessment Required
Southern Upland Way	Approximately 0.9km to the northwest	Theoretical visibility of up to 13no. blade tips and hubs. Potential for significant effects due to proximity and availability of open views from sections of the path	Yes
NCN Route 7	Approximately 1.2km to the east	Theoretical visibility of up to 13no. blade tips and hubs. Potential for significant effects due to proximity and availability of open views from sections of the path	Yes
NCN Route 73	Approximately 7.8km to the southeast	Theoretical visibility from the most northerly extents of the southern part of the route, which extends between Newton Stewart and Stranraer via Glenluce. Actual visibility would be reduced by intervening built form, and vegetation including forestry and woodland cover. Any effects would be extremely limited and not be considered significant	No

Table 6.4.4: Preliminary Assessment of Roads

Roads	Location Relative to the Proposed Development	Comments	Detailed Assessment Required
A-Class Roads			
A714	Approximately 0.9km to the east	Theoretical visibility of up to 13no. blade tips and hubs. Potential for significant effect due to the proximity of the route to the Proposed Development	Yes

A75	Approximately 7.3km to the south	Intermittent theoretical visibility from sections of the route. Actual visibility would however be reduced by intervening forestry and woodland cover. Road orientation would also largely negate views towards the Proposed Development from the primary direction of travel. Any effects would be extremely limited and not be considered significant	No
B-Class Roads			
B7027	Approximately 2.1km to the southwest	Theoretical visibility of up to 13no. blade tips and hubs. Potential for significant effect due to the proximity of the route to the Proposed Development	Yes
B7079	Approximately 7.7km to the southeast	Intermittent theoretical visibility from sections of the route. Actual visibility would however be reduced by intervening built form, and vegetation including forestry and woodland cover. Any effects would be extremely limited and not be considered significant	No
B735	Approximately 8.5km to the south-southwest	Intermittent theoretical visibility from sections of the route. Actual visibility would however be reduced by intervening built form, and vegetation including forestry and woodland cover. Any effects would be extremely limited and not be considered significant	No

Glenvernoch Wind Farm

**Environmental Impact Assessment Report
EIAR Volume III – Technical Appendices
Appendix 6.5: Viewpoint Assessment
October 2024**

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1 VIEWPOINT ASSESSMENT

Introduction

- 1.1 This Technical Appendix provides an assessment of the visual effects of the Proposed Development from each of the 20no. agreed Landscape and Visual Impact Assessment (LVIA) viewpoints. For each of the assessment viewpoints, a short description is given of the baseline view followed by a description of the features of the Proposed Development which would be visible from that viewpoint. For each viewpoint, there is a comment on how vegetation (including tree cover), buildings, and/or topography would affect the visibility of the turbines, as well as a comment on the sensitivity of the viewpoint, the magnitude of change experienced, and the significance of visual impacts. Finally, a judgement is provided regarding whether the overall effect for each viewpoint is considered to be significant or not in terms of the EIA Regulations.
- 1.2 A list of each viewpoint location and receptor type represented is given in **Table 6.2: Assessment Viewpoints of Chapter 6: Landscape and Visual Impact Assessment** within the EIA. The location of the viewpoints is illustrated on **Figures 6.23**. For each viewpoint, Sheet A illustrates the existing view and cumulative wireline at 90 degrees, Sheet B illustrates the wireline of the proposed wind farm at 53.5 degrees, and Sheet C shows a photomontage of the proposed wind farm at 53.5 degrees.

Viewpoint 1: Southern Upland Way (Hill of Ochiltree)

Baseline				
Grid reference	E232712	N574097	Elevation (m AOD)	183
Nearest turbine	1200m (T13)	Direction to Proposed Wind Farm		East-southeast
LPA	Dumfries & Galloway	Landscape Character Type		LCT 174: Plateau Moorland with Forest - Dumfries & Galloway
Designations	N/A		Receptor	Recreational
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested. From the viewpoint location, views are relatively expansive, with surrounding upland landscapes characterising focal features. The Southern Uplands and Galloway Hills can be seen in views northeast and east, whilst the Wigtownshire Moors are visible in views southwest to northwest. In the direction of the Site, views look across undulating open farmland in the foreground; over the Cree valley in the middle-distance, towards the horizon, where the Southern Uplands and Galloway Hills form discernible skyline features. In views, drystone walls define the boundary extents of large fields, with forestry, woodland blocks, and riparian vegetation adding seasonal colour and interest.				
Receptor	Value	Susceptibility		Sensitivity
Recreational	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The location is on the Southern Upland Way (SUW) route. Its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors on the SUW and at the Hill of Ochiltree. Receptors are assessed as having a high susceptibility.		High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, would be visible across all seasons, primarily against the backdrop of upland landscapes; although, the upper blade sweeps of the turbines would be witnessed above the horizon and against the skyline. The proposed turbines would occupy a large lateral extent of the view. Whilst views from the Hill of Ochiltree are relatively expansive, the proposed turbines would appear prominent, and exert a strong influence in views owing to proximity. Currently, there are no views of existing turbines in direction of the proposed wind farm; although, the baseline turbines on the Wigtownshire Moors are visible in wider views from the location. Recreational walkers have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a high magnitude of change.				
Magnitude of change during darkness hours				
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 there is potential to see all six lit turbines during the hours of darkness. The lights would appear as small, noticeable red lights against the backdrop of upland landscapes and the skyline in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A714, and from lighting of properties in the lower-lying valley landscape. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to Figure 6.7.3 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation				

between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be medium.

Significance of effect

During daylight hours, receptors would experience a **major** significant effect.

During the hours of darkness, receptors would experience a **moderate** significant effect.

Viewpoint 2: A714, north of Bargrennan (N)

Baseline				
Grid reference	E233843	N578647	Elevation (m AOD)	116
Nearest turbine	4805m (T12)	Direction to Proposed Wind Farm		South
LPA	Dumfries & Galloway	Landscape Character Type		LCT 174: Plateau Moorland with Forest - Dumfries & Galloway
Designations	N/A		Receptor	Road users
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested, with forestry to the immediate west. In the direction of the Site, views look across undulating farmland in the foreground towards the horizon, where the Galloway Hills, the Hill of Ochiltree, and Glenvernoch Fell form discernible skyline features. In views, drystone walls define large fields, whilst woodland belts, woodland blocks, and forestry add seasonal colour and interest. Other visible elements include vehicular movement on the A714, and nearby properties.				
Receptor	Value		Susceptibility	Sensitivity
Road users	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The value is assessed as medium.		The viewpoint is representative of views experienced by road users on the A714. Receptors are assessed as having medium susceptibility.	Medium
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, would be visible across all seasons above the horizon and against the skyline. Whilst the scale of the proposed turbines would be broadly consistent with the scale of the surrounding landform, the proposed turbines would occupy a medium lateral extent of the view and appear prominent. Currently, there is theoretical visibility of operational turbines on the Wigtownshire Moors at this location; although, actual visibility is restricted by intervening landform and vegetation, limiting the prospect for intervisibility between the proposed wind farm and existing turbines. Road users on the A714 travelling in a southeasterly direction would experience the change at speed in views in their direction of travel, albeit at an oblique angle. When considering these factors, the proposed wind farm is judged to result in a high-medium magnitude of change.				

Magnitude of change during darkness hours
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 there is potential to see all six lit turbines during the hours of darkness. The lights would appear as very small, noticeable red lights against the skyline in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A714, and from lighting of nearby properties. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to Figure 6.7.3 , which shows the turbine lighting intensity, the intensity of the lights would be reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be medium-low.
Significance of effect
During daylight hours, receptors would experience a moderate non-significant effect. During the hours of darkness, receptors would experience a moderate/minor non-significant effect.

Viewpoint 3: A714, junction with minor road to Glentool (N)

Baseline				
Grid reference	E235461	N575106	Elevation (m AOD)	35
Nearest turbine	1432m (T10)	Direction to Proposed Wind Farm		South-southwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 160: Narrow Wooded Valley – Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area Galloway Forest Park		Receptor	Road users
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested, with the Galloway Forest Park located immediately east. The viewpoint location lies in the Cree valley, with the river passing in close proximity to the east. In the direction of the Site, views look across undulating farmland in the foreground which forms the horizon. In views, post-and-wire fencing, and drystone walls define fields, whilst woodland in the Knockville and Crungie Wood adds seasonal colour and interest. Other visible elements include overhead lines, vehicular movement on the A714, and the property at Clachaneasy.				
Receptor	Value	Susceptibility		Sensitivity
Road users	Whilst the viewpoint is located within a landscape designated for its scenic qualities, it lies on the periphery. As a result, the value is assessed as medium.	The viewpoint is representative of views experienced by local road users and those on the A714. Receptors are assessed as having medium susceptibility.		Medium

Magnitude of change during daylight hours
All 13no. turbines, including all the hubs are theoretically visible. Foreground landform would however provide low-level screening to all turbine towers, whilst the broadleaved woodland in Knockville and Crungie Wood would obscure visibility of several turbines across all seasons, but particularly during spring/summer months when trees are in leaf. Whilst there is prospect to view the full extents of a limited number of turbines, visibility would largely be restricted to the upper blade sweep. The visible proposed turbines, which are concentrated to the right of the view, would occupy a medium lateral extent of the view, with the turbines appearing prominent, and exerting a strong influence in views owing to proximity. There are no views of existing turbines in this location. Road users on the local road have the ability to experience the proposed wind farm in direct views as they approach the junction with the A714. Road users on the A714 would experience the change in views at an oblique or perpendicular angle to their direction of travel. When considering these factors, the proposed wind farm is judged to result in a high magnitude of change.
Magnitude of change during darkness hours
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 , there is potential to see all six lit turbines during the hours of darkness; although, intervening woodland would likely restrict visibility to two turbines: T10 and T13. The limited number of visible lights would appear as small, noticeable red lights above the horizon and against skyline in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A714, and from lighting of nearby properties. With reference to Figure 6.7.3 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be medium.
Significance of effect
During daylight hours, receptors would experience a major/moderate significant effect. During the hours of darkness, receptors would experience a moderate non-significant effect.

Viewpoint 4: Southern Upland Way (Bargrennan)

Baseline				
Grid reference	E234849	N576327	Elevation (m AOD)	53
Nearest turbine	2479m (T12)	Direction to Proposed Wind Farm		South
LPA	Dumfries & Galloway	Landscape Character Type		LCT 160: Narrow Wooded Valley – Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area Galloway Forest Park		Receptor	Recreational
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested, with the Galloway Forest Park located immediately east. The viewpoint location lies in the Cree valley, with the river passing in close proximity to the east. In the direction of the Site, views look across open undulating farmland in the foreground which forms the horizon. In views, forestry, and woodland blocks add seasonal colour and interest. Other visible elements include overhead lines.				

Receptor	Value	Susceptibility	Sensitivity
Recreational	The viewpoint is located within a landscape designated for its scenic qualities. The location is also on the SUW route. Its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors to the Galloway Hills Regional Scenic Area, as well as SUW route users. Receptors are assessed as having a high susceptibility.	High
Magnitude of change during daylight hours			
All 13no. turbines, including hubs, are theoretically visible. Intervening landform however would provide low-level screening to all turbine towers, whilst intervening coniferous forestry plantation would partially obscure visibility of several turbines across all seasons. The proposed turbines would be witnessed above the horizon and against the skyline. Occupying a large lateral extent of the view, the proposed turbines would appear prominent, and exert a strong influence in views owing to proximity. Currently, there are no views of existing turbines in this location. Recreational walkers have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a high magnitude of change.			
Magnitude of change during darkness hours			
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 , there is potential to see all six lit turbines during the hours of darkness; although, visibility of T1 would be obscured by plantation. The limited number of visible lights would appear as small, noticeable red lights above the horizon and against skyline in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A714, and from lighting of nearby properties. With reference to Figure 6.7.3 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be medium.			
Significance of effect			
During daylight hours, receptors would experience a major significant effect. During the hours of darkness, receptors would experience a moderate significant effect.			

Viewpoint 5: Eldrig Fell

Baseline				
Grid reference	E225249	N568714	Elevation (m AOD)	224
Nearest turbine	9935m (T13)	Direction to Proposed Wind Farm		East-northeast
LPA	Dumfries & Galloway	Landscape Character Type		LCT 174: Plateau Moorland with Forest–Dumfries & Galloway
Designations	N/A			Recreational
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested, with rough grazing occurring on grass moorland. The surrounding area is generally flat and regularly incised by burns and streams, and the occasional scattered loch. The viewpoint location is located on the summit of Eldrig Fell, which lies near Artfield Forest, and the operational Kilgallioch, Balmurrie Fell, and Artfield Fell wind				

farms. In the direction of the Site, views look across foreground moorland towards the horizon, where the Galloway Hills form a discernible skyline feature beyond the forested plateau in the middle-distance. The operational Airies wind turbines are notable proximity features.

Receptor	Value	Susceptibility	Sensitivity
Recreational	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. Its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors Eldrig Fell. Receptors are assessed as having a high susceptibility.	High

Magnitude of change during daylight hours

All 13no. turbines, including hubs, would be visible across all seasons against the backdrop of upland landscapes. The visible turbines would occupy a medium lateral extent of the view, with the proposed turbines easily identifiable in views. Intervening landform and coniferous forestry plantation would provide low-level screening to all turbine towers. In views from the location, the baseline turbines on the Wigtownshire Moors are visible at close proximity, with the operational turbines at Airies visible in views in direction of the proposed wind farm. Recreational walkers have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.

Magnitude of change during darkness hours

According to the lit turbine ZTVs at **Figure 6.7.1** and **Figure 6.7.2**, there is potential to see all six lit turbines during the hours of darkness. The limited number of visible lights would appear as very small, noticeable red lights against the backdrop of upland landscapes in a part of the view lighting is scarce. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to **Figure 6.7.3**, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be very low.

Significance of effect

During daylight hours, receptors would experience a **moderate** non-significant effect.
 During the hours of darkness, receptors would experience a **minor** non-significant effect.

Viewpoint 6: Minor road near Bennylow (Culvennan Fell)

Baseline				
Grid reference	E229957	N564225	Elevation (m AOD)	129
Nearest turbine	8898m (T2)	Direction to Proposed Wind Farm		Northwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT: 168 Drumlin Pasture in Moss and Moor Lowland
Designations	N/A		Receptor	Road users

Description of Baseline View			
The immediate landscape setting is primarily agricultural and forested. The undulating and elevated profile of the pastured drumlins at Culvennan Fell and Fell End lie to the immediate east. In the direction of the Site, views look across undulating farmland in the foreground towards the horizon, where the Galloway Hills form discernible skyline features. In views, drystone walls define large fields, whilst woodland belts, woodland blocks, and forestry, add seasonal colour and interest. Other visible elements include vehicular movement on the minor road, and intervening properties.			
Receptor	Value	Susceptibility	Sensitivity
Road users	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The value is assessed as medium.	The viewpoint is representative of views experienced by road users on the minor road. Receptors are assessed as having a medium susceptibility.	Medium
Magnitude of change during daylight hours			
The proposed wind farm would be visible across all seasons; although, landform would visually obscure T1 and the hub of T2. Whilst the visible turbines would occupy a medium lateral extent of the view, and be visible in views, they would not appear prominent in-part due to their greater association with the more distant upland landscape, which would provide a backdrop for the visible turbines. Currently, there is theoretical visibility of the operational Mark Hill turbines at this location; although, actual visibility is restricted by intervening landform and vegetation, limiting the prospect for intervisibility between the proposed wind farm and existing turbines. Minor road users have the potential to experience the proposed wind farm in direct views as they approach Culvennan Fell and Fell End. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.			
Magnitude of change during darkness hours			
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2, there is potential to see up to 4no. of the 6no. lit turbines during the hours of darkness; with landform obscuring visibility of T1 and T2. The limited number of visible lights would appear as very small, noticeable red lights against the backdrop of upland landscapes in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the minor road, and from lighting of intervening properties. With reference to Figure 6.7.3, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be very low.			
Significance of effect			
During daylight hours, receptors would experience a moderate non-significant effect. During the hours of darkness, receptors would experience a minor non-significant effect.			

Viewpoint 7: B7027/Southern Upland Way near Knowe (N)

Baseline				
Grid reference	E230740	N571939	Elevation (m AOD)	108
Nearest turbine	3567m (T13)	Direction to Proposed Wind Farm		East-northeast
LPA	Dumfries & Galloway	Landscape Character Type		LCT 174: Plateau Moorland with Forest - Dumfries & Galloway
Designations	N/A		Receptor	Recreational, Road users
Description of Baseline View				
The immediate landscape setting is primarily forested. From the viewpoint location, views are relatively enclosed by the surrounding coniferous forestry plantation. In the direction of the Site, views look across undulating forest covered landform in the foreground towards the horizon, where the Southern Uplands and Galloway Hills form discernible skyline features.				
Receptor	Value	Susceptibility		Sensitivity
Recreational Road users	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The location is on the SUW route. Its value is assessed as high-medium.	The viewpoint is representative of views experienced by recreational visitors on the SUW route as well as road users on the minor road and the B7027. Receptors are assessed as having a high susceptibility.		High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, are theoretically visible; although, intervening coniferous forestry plantation would largely obscure visibility, considerably limiting the number of visible turbines and hubs across all seasons. Visibility would therefore be largely restricted to the upper blade sweep of several turbines. The visible turbines would be partially experienced against the backdrop of upland landscapes, with the upper blade sweep of other turbines witnessed above the horizon and against the skyline. The visible turbines would occupy a medium to large lateral extent of the view (depending on blade rotation patterns), with the proposed turbines easily identifiable in views. There are no views of existing turbines in this location. With foreground plantation relatively young, it is expected that, upon maturation, the plantation would provide considerable screening across the lifetime of the proposed wind farm, screening more of the proposed turbines than is currently shown. Based on current views, recreational walkers have the ability to experience the proposed wind farm in direct views, as would road users on the minor road. Road users on the B7027 would experience the change in views at an oblique or perpendicular angle to their direction of travel. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.				
Magnitude of change during darkness hours				
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 , there is potential to see all six lit turbines during the hours of darkness; however, coniferous forestry plantation would likely restrict visibility to the turbine lights on T6 and T13. The limited number of visible lights would appear as small, noticeable red lights primarily against the backdrop of upland landscapes in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the				

minor road and the B7027, and from lighting of nearby properties. With reference to **Figure 6.7.3**, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be medium-low.

Significance of effect

During daylight hours, receptors would experience a **moderate** significant effect.
 During the hours of darkness, receptors would experience a **moderate/minor** non-significant effect.

Viewpoint 8: Southern Upland Way (Knockniehourie)

Baseline				
Grid reference	E221294	N568281	Elevation (m AOD)	191
Nearest turbine	13668m (T13)	Direction to Proposed Wind Farm		East-northeast
LPA	Dumfries & Galloway	Landscape Character Type		LCT 173: Plateau Moorland – Dumfries & Galloway
Designations	N/A		Receptor	Recreational
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested, with rough grazing occurring on grass moorland. The surrounding area is generally flat and regularly incised by burns and streams. The viewpoint location is located on the summit of Knockniehourie, which lies near Artfield Forest, and the operational Kilgallioch, Balmurrie Fell, and Artfield Fell wind farms. In the direction of the Site, views look across foreground moorland towards the horizon, where the Galloway Hills form a discernible skyline feature beyond the forested plateau in the middle-distance.				
Receptor	Value	Susceptibility		Sensitivity
Recreational	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The location is on the SUW route. Its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors on the SUW and at the Knockniehourie. Receptors are assessed as having a high susceptibility.		High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, are theoretically visible; although, intervening coniferous forestry plantation would limit the number of visible turbines and hubs across all seasons. Visibility would therefore be largely restricted to the upper blade sweep of several turbines, which would be experienced against the backdrop of upland landscapes. The visible turbines, which would occupy a small to medium lateral extent of the view (depending on blade rotation patterns), would not form a prominent feature in views. In views from the location, the baseline turbines on the Wigtownshire Moors are visible at close proximity, with the proposed turbines viewed in the gap between the Kilgallioch, and Airies and Balmurrie Fell turbines. Recreational walkers have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a low magnitude of change.				

Magnitude of change during darkness hours
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 , there is potential to see all six lit turbines during the hours of darkness; however, intervening coniferous forestry plantation would largely obscure visibility. The limited number of visible lights would appear as very small, noticeable red lights against the backdrop of upland landscapes in a part of the view where no other lights are currently present, apart from occasional lighting of nearby properties. With reference to Figure 6.7.3 , which shows the turbine lighting intensity, the intensity of the lights would be reduced due to the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be very low.
Significance of effect
During daylight hours, receptors would experience a moderate/minor non-significant effect. During the hours of darkness, receptors would experience a minor/negligible non-significant effect.

Viewpoint 9: Bruce's Stone, Glentrool

Baseline				
Grid reference	E241587	N580336	Elevation (m AOD)	117
Nearest turbine	9347m (T10)	Direction to Proposed Wind Farm		Southwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 181: Rugged Uplands with Forest – Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area Galloway Forest Park		Receptor	Recreational
Description of Baseline View				
The immediate landscape setting is primarily mountainous and forested, with Loch Trool lying to the immediate south. In the direction of the Site, views look across Loch Trool to the middle-distance where the rugged profile of the Galloway Hill (Lamachan Hill rises to the south-southeast of the viewpoint location) partners with the Wigtownshire Moors in the distance to form discernible skyline features and to create the horizon. In views, the loch, heather moorland, and forestry, adds seasonal colour and interest.				
Receptor	Value	Susceptibility		Sensitivity
Recreational	The viewpoint is located within a landscape designated for its scenic qualities. As a result, its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors to the Bruce's Stone, as well as the Galloway Hills Regional Scenic Area. Receptors are assessed as having a high susceptibility.		High
Magnitude of change during daylight hours				
8no. of the 13no. turbines are theoretically visible, as are 6no. hubs owing to landform. Intervening coniferous forestry plantation may limit this number further across all seasons. Visibility would therefore be largely restricted to the upper blade sweep of several turbines, with only 2no. turbines potentially visible to their full extents: T12 and T13. Whilst the visible turbines, which would be				

witnessed above the horizon and against the skyline, would occupy a small to medium lateral extent of the view (depending on blade rotation patterns), they would not appear prominent in-part due to their greater association with the more distant upland landscape, rather than the mountainous foreground landscape. In current views from the location, the baseline turbines on the Wigtownshire Moors are visible. The proposed turbines would foreground many of these turbines owing to their closer proximity, whilst increasing the influence of turbines in the view. Residential receptors have the potential to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.

Magnitude of change during darkness hours

According to the lit turbine ZTV at **Figure 6.7.1** and **Figure 6.7.2**, 3no. of the 6no. lit turbines have the potential to be visible during the hours of darkness: T10, T12, and T13. The limited number of visible lights would appear as very small, noticeable red lights above the horizon and against the skyline in a part of the view where no other lights are currently present, apart from occasional headlights from the minor road, and from lighting of nearby properties. The visible lit turbines would be concentrated to the right of the proposed wind farm. With reference to **Figure 6.7.3**, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be very low.

Significance of effect

During daylight hours, receptors would experience a **moderate** non-significant effect.
 During the hours of darkness, receptors would experience a **minor** non-significant effect.

Viewpoint 10: All Saints Church, Challoch

Baseline				
Grid reference	E238569	N567500	Elevation (m AOD)	29
Nearest turbine	4769m (T1)	Direction to Proposed Wind Farm		North-northwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 160: Narrow Wooded Valley – Dumfries & Galloway/ LCT 168: Drumlin Pasture in Moss and Moor Lowland
Designations	N/A		Receptor	Church visitors, Road users
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested, with the All Saints Church located immediately west, and the A714 located to the immediate east. In the direction of the Site, views look across undulating farmland in the foreground towards the horizon, where the Hill of Ochiltree, Glassoch Fell, Glenvernoch Fell, the Top of the Fell, Balunton Hill, and the surrounding coniferous forestry plantation form discernible skyline features. In views, post-and-wire fencing, drystone walls, and hedgerows define fields, whilst woodland belts, woodland blocks, and forestry add seasonal colour and interest. Other visible elements include overhead lines, vehicular movement on the A714, and properties in the neighbouring upland landscape.				

Receptor	Value	Susceptibility	Sensitivity
Church visitors Road users	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The value is assessed as medium.	The viewpoint is representative of views experienced by visitors to the church as well as road users on the A714. Receptors are assessed as having a high susceptibility.	High
Magnitude of change during daylight hours			
All 13no. turbines, including hubs, are theoretically visible; although, intervening broadleaved woodland belts and blocks, and coniferous forestry plantation would limit the number of visible turbines and hubs, particularly during the spring/summer months when trees are in leaf. Visibility would therefore be largely restricted to the upper blade sweep of several turbines, with the hubs of T2 and T3 the only ones clearly visible. The visible turbines would be experienced above the horizon and against the skyline. Whilst the visible turbines would occupy a small lateral extent of the view and be easily identifiable in views, they would appear associated with the more distant upland landscape, rather than the undulating farmed foreground landscape. Currently, there are no views of existing turbines in this location. Recreational visitors to the church have the ability to experience the proposed wind farm in direct views, as would road users on the A714, albeit at a reduced eye-level. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.			
Magnitude of change during darkness hours			
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2, there is potential to see all six lit turbines during the hours of darkness; however, intervening broadleaved woodland belts and blocks, and coniferous forestry plantation would largely obscure visibility. The limited number of visible lights would appear as very small, noticeable red lights above the horizon and against the skyline in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A714, and from lighting of nearby properties. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to Figure 6.7.3, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be low.			
Significance of effect			
During daylight hours, receptors would experience a moderate non-significant effect. During the hours of darkness, receptors would experience a moderate/minor non-significant effect.			

Viewpoint 11: Minor road, north of Mochrum Fell

Baseline				
Grid reference	E230623	N554863	Elevation (m AOD)	78
Nearest turbine	17037m (T2)	Direction to Proposed Wind Farm		North
LPA	Dumfries & Galloway	Landscape Character Type		LCT 167: Moss and Forest Lowland
Designations	Mochrum Lochs Regional Scenic Area	Receptor		Recreational, Road users

Description of Baseline View			
The immediate landscape setting is primarily agricultural and forested, with rough grazing occurring on dry moorland. The surrounding area is generally flat and regularly interspersed by scattered lochs. The viewpoint location is located between Black Loch and Fell Loch. Mochrum Loch lies nearby to the south. In the direction of the Site, views look across wet moss and moorland in the foreground towards the horizon, where the distant profile of the Galloway Hills rises beyond forested drumlins and scattered low hills in the middle-distance. In views, woodland belts, woodland blocks, and forestry add seasonal colour and interest. Other visible elements include vehicular movement on the minor road.			
Receptor	Value	Susceptibility	Sensitivity
Recreational Road users	The viewpoint is located within a landscape designated for its scenic qualities. As a result, its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors to the Mochrum Lochs, which is a Regional Scenic Area. Receptors are assessed as having a high susceptibility.	High
Magnitude of change during daylight hours			
The blade tips of 8no. of the 13no. turbines are theoretically visible, with landform screening the remainder as well as all turbine hubs. Any prospective visibility would be restricted to the upper blade sweep of these eight turbines; although, intervening coniferous, broadleaved, and mixed woodland belts and blocks would restrict visibility across all seasons. Where visible, the proposed wind farm would appear as an incidental feature at most, but most likely resulting in no change to existing views. Currently, there is theoretical visibility of operational turbines on the Wigtownshire Moors at this location; although, actual visibility is restricted by intervening landform and vegetation, limiting the prospect for intervisibility between the proposed wind farm and existing turbines. Minor road users have the potential to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a very low magnitude of change.			
Magnitude of change during darkness hours			
With reference to the lit turbine ZTV at Figure 6.7.1 and Figure 6.7.2, none of the 6no. lit turbines have the potential to be visible during the hours of darkness, with landform restricting potential visibility. As a result, the magnitude of change is judged to be very low.			
Significance of effect			
During daylight hours, receptors would experience a minor/negligible non-significant effect. During the hours of darkness, receptors would experience a minor/negligible non-significant effect.			

Viewpoint 12: Merrick

Baseline				
Grid reference	E242749	N585524	Elevation (m AOD)	843
Nearest turbine	14139m (T10)	Direction to Proposed Wind Farm		Southwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 180: Rugged Uplands – Dumfries & Galloway

Designations	Merrick Wild Land Area Galloway Hills Regional Scenic Area Galloway Forest Park	Receptor	Recreational
Description of Baseline View			
The immediate landscape setting is mountainous. From the viewpoint location, views are panoramic, with surrounding upland landscapes characterising focal features. The Southern Uplands and Galloway Hills can be seen in views north, east, and south; whilst the Wigtownshire Moors are visible in views west. In the direction of the Site, views look across rugged mountainous landform in the foreground; over primarily agricultural and forested lower-lying landscapes in the middle-distance, towards the Wigtownshire Moors and the Irish Sea which form the horizon. In views, heather moorland and forestry adds seasonal colour and interest.			
Receptor	Value	Susceptibility	Sensitivity
Recreational	The viewpoint is located within a landscape designated for its scenic qualities. As a result, its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors to the Galloway Hills Regional Scenic Area, specifically the Merrick which is the highest mountain in the Southern Uplands. Receptors are assessed as having a high susceptibility.	High
Magnitude of change during daylight hours			
All 13no. turbines, including hubs, would be visible across all seasons, against the backdrop of lower-lying landscapes. Views from the Merrick are panoramic, and in current views from the location, the baseline turbines on the Wigtownshire Moors are visible. The proposed turbines would appear more visible in views than these turbines owing to their closer proximity, whilst increasing the influence of turbines in the view. Whilst the visible turbines would occupy a medium lateral extent of views in a south-westerly direction, they would not appear overtly prominent in-part due to their greater association with the more distant lower-lying landscapes, rather than the mountainous foreground landscape. Recreational walkers have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.			
Magnitude of change during darkness hours			
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2, there is potential to see up to six lit turbines during the hours of darkness. With reference to Figure 6.7.3, which shows the turbine lighting intensity, the intensity of the lights would be at its strongest owing to the higher elevation at the viewpoint. Owing to distance, the lights would however appear as very small, barely distinguishable red lights against the backdrop of lower-lying landscapes. They would introduce lighting into a part of the view where no other lights are currently present, apart from occasional lighting of properties in the lower-lying landscapes below. The lit turbines would be seen across the full lateral extent of the wind farm. On balance, the magnitude of change is judged to be very low.			
Significance of effect			
During daylight hours, receptors would experience a moderate non-significant effect. During the hours of darkness, receptors would experience a minor non-significant effect.			

Viewpoint 13: Lamachan Hill

Baseline				
Grid reference	E243498	N577069	Elevation (m AOD)	716
Nearest turbine	9135m (T1)	Direction to Proposed Wind Farm		West-southwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 180: Rugged Uplands – Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area Galloway Forest Park		Receptor	Recreational
Description of Baseline View				
The immediate landscape setting is mountainous. From the viewpoint location, views are panoramic with surrounding upland landscapes characterising focal features. The Southern Uplands and Galloway Hills can be seen in views north, east, and south; whilst the Wigtownshire Moors are visible in views west. In the direction of the Site, views look across rugged mountainous landform in the foreground; over primarily agricultural and forested lower-lying landscapes in the middle-distance, towards the Wigtownshire Moors and the Irish Sea which form the horizon. In views, heather moorland and forestry adds seasonal colour and interest.				
Receptor	Value	Susceptibility		Sensitivity
Recreational	The viewpoint is located within a landscape designated for its scenic qualities. As a result, its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors to the Galloway Hills Regional Scenic Area, specifically Lamachan Hill. Receptors are assessed as having a high susceptibility.		High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, would be visible across all seasons, against the backdrop of lower-lying landscapes. Views from Lamachan Hill are panoramic. In current views from the location, the baseline turbines on the Wigtownshire Moors are visible. The proposed turbines would appear more visible than these turbines owing to their closer proximity, whilst increasing the influence of turbines in the view. Whilst the visible turbines would occupy a medium lateral extent of views in a south-westerly direction, they would not appear overtly prominent in-part due to their greater association with the more distant lower-lying landscapes, rather than the mountainous foreground landscape. Recreational walkers have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.				
Magnitude of change during darkness hours				
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 , there is potential to see up to six lit turbines during the hours of darkness. With reference to Figure 6.7.3 , which shows the turbine lighting intensity, the intensity of the lights would be at its strongest owing to the higher elevation at the viewpoint. Owing to distance, the lights would however appear as very small, barely distinguishable red lights against the backdrop of lower-lying landscapes. They would introduce lighting into a part of the view where no other lights are currently present, apart from occasional lighting of properties in				

the lower-lying landscapes below. The lit turbines would be seen across the full lateral extent of the wind farm. On balance, the magnitude of change is judged to be very low.

Significance of effect

During daylight hours, receptors would experience a **moderate** significant effect.
 During the hours of darkness, receptors would experience a **minor** non-significant effect.

Viewpoint 14: Garlick Hill

Baseline				
Grid reference	E243135	N572897	Elevation (m AOD)	442
Nearest turbine	7087m (T1)	Direction to Proposed Wind Farm		West
LPA	Dumfries & Galloway	Landscape Character Type		LCT 181: Rugged Uplands with Forest – Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area Galloway Forest Park		Receptor	Recreational
Description of Baseline View				
The immediate landscape setting is mountainous. From the viewpoint location, views are panoramic, with surrounding upland landscapes characterising focal features. The Southern Uplands and Galloway Hills can be seen in views north, east, and south; whilst the Wigtownshire Moors are visible in views west. In the direction of the Site, views look across rugged mountainous landform in the foreground; over primarily agricultural and forested lower-lying landscapes in the middle-distance, towards the Wigtownshire Moors and the Irish Sea which form the horizon. In views, heather moorland and forestry adds seasonal colour and interest.				
Receptor	Value		Susceptibility	Sensitivity
Recreational	The viewpoint is located within a landscape designated for its scenic qualities. As a result, its value is assessed as high.		The viewpoint is representative of views experienced by recreational visitors to the Galloway Hills Regional Scenic Area, specifically Garlick Hill. Receptors are assessed as having a high susceptibility.	High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, would be visible across all seasons, against the backdrop of lower-lying landscapes. Views from Garlick Hill are panoramic, and in current views from the location, the baseline turbines on the Wigtownshire Moors are visible. The proposed turbines would appear more visible than these turbines owing to their closer proximity, whilst increasing the influence of turbines in the view. Whilst the visible turbines would occupy a medium lateral extent of views in a south-westerly direction, they would not appear overly prominent in-part due to their greater association with the more distant lower-lying landscapes, rather than the mountainous foreground landscape. Recreational walkers have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.				

Magnitude of change during darkness hours
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 , there is potential to see up to six lit turbines during the hours of darkness. With reference to Figure 6.7.3 , which shows the turbine lighting intensity, the intensity of the lights would be at its strongest owing to the higher elevation at the viewpoint. Owing to distance, the lights would however appear as very small, barely distinguishable red lights against the backdrop of lower-lying landscapes. They would introduce lighting into a part of the view where no other lights are currently present, apart from occasional lighting of properties in the lower-lying landscapes below. The lit turbines would be seen across the full lateral extent of the wind farm. On balance, the magnitude of change is judged to be low.
Significance of effect
During daylight hours, receptors would experience a moderate significant effect. During the hours of darkness, receptors would experience a moderate/minor non-significant effect.

Viewpoint 15: A75, parking area south of Creetown

Baseline				
Grid reference	E247191	N557692	Elevation (m AOD)	1
Nearest turbine	17767m (T1)	Direction to Proposed Wind Farm		Northwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 158: Coastal Flats – Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area		Receptor	Recreational, Road users
Description of Baseline View				
The immediate landscape setting is primarily coastal, with the River Cree flowing into Wigtown Sands to the immediate west. The viewpoint location lies on the urban fringes of Creetown. In the direction of the Site, views look across the Wigtown Sands towards the Galloway Hills which form discernible skyline features and create the horizon. In views, the combination of river, sandbank, woodland belts, woodland blocks, and forestry adds seasonal colour and interest. Other visible elements include vehicular movement on the A75, and intervening properties.				
Receptor	Value	Susceptibility		Sensitivity
Recreational Road users	The viewpoint is located within a landscape designated for its scenic qualities. As a result, its value is assessed as high.	The viewpoint is representative of views experienced by recreational visitors to the Galloway Hills Regional Scenic Area, specifically Wigtown Sands. Receptors are assessed as having high susceptibility.		High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, are theoretically visible. Intervening landform and coniferous forestry plantation would provide low-level screening to all turbine towers across all seasons. The proposed turbines would be witnessed above the horizon and against the skyline. Occupying a small lateral extent of the view, the proposed turbines would not appear prominent in-part due to their greater association with the more distant upland landscape, rather than the coastal foreground landscape. There is potential to view baseline single and small-scale wind turbines from this location.				

Currently, there is also theoretical visibility of operational turbines on the Wigtownshire Moors; although, actual visibility is restricted by intervening landform and vegetation, and attenuation by distance, which limits the prospect for intervisibility between the proposed wind farm and existing turbines. Recreational receptors have the potential to experience the proposed wind farm in direct views, as would road users on the A75 travelling northwards albeit at a reduced eye-level. When considering these factors, the proposed wind farm is judged to result in a low magnitude of change.

Magnitude of change during darkness hours

According to the lit turbine ZTVs at **Figure 6.7.1** and **Figure 6.7.2**, there is potential to see up to six lit turbines during the hours of darkness. The lights, which would appear as very small, barely distinguishable red lights above the horizon and against the skyline would introduce lighting into a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A75, and from lighting of properties in the intervening landscapes. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to **Figure 6.7.3**, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be very low.

Significance of effect

During daylight hours, receptors would experience a **moderate/minor** non-significant effect.
 During the hours of darkness, receptors would experience a **minor/negligible** non-significant effect.

Viewpoint 16: Road Junction between B7005 and A714 at Culquhirk*

Baseline				
Grid reference	E242695	N556811	Elevation (m AOD)	19
Nearest turbine	16077m (T2)	Direction to Proposed Wind Farm		North-northwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 158: Coastal Flats – Dumfries & Galloway, LCT 168: Drumlin Pasture in Moss and Moor Lowland, and LCT: 169 Drumlin Pastures
Designations	N/A		Receptor	Road users
Description of Baseline View				
The immediate landscape setting is primarily agricultural, with West Kirkland Cottage located nearby to the south, and the B7005 to the immediate west. In the direction of the Site, views look across undulating farmland in the foreground; over wooded drumlins and scattered low hills in the middle-distance, towards the horizon, where the Galloway Hills form discernible skyline features. In views, drystone walls define the boundary extents of large fields, with forestry, woodland blocks, and riparian vegetation adding seasonal colour and interest. Other visible elements include vehicular movement on the A714 and the B7005, and intervening properties.				

Receptor	Value	Susceptibility	Sensitivity
Road users	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The value is assessed as medium.	The viewpoint is representative of views experienced by road users on the A714, and the B7005. Receptors are assessed as having medium susceptibility.	Medium
Magnitude of change during daylight hours			
All 13no. turbines, including hubs are theoretically visible; although, intervening broadleaved woodland belts and blocks would largely obscure visibility, considerably limiting the number of visible turbines and hubs across all seasons but particularly during spring/summer months when trees are in leaf. Visibility would therefore be restricted to the upper blade sweep of a limited number of turbines, which would be witnessed above the horizon and against the skyline. Owing to this, the proposed wind farm would appear as an incidental feature at most, but most likely resulting in no change to existing views. Currently, there is theoretical visibility of the operational Mark Hill turbines at this location; although, actual visibility is restricted by intervening landform and vegetation, limiting the prospect for intervisibility between the proposed wind farm and existing turbines. A714 road users have the potential to experience the proposed wind farm in direct views, whilst road users on the B7005 would experience the change in views at an oblique or perpendicular angle to their direction of travel. When considering these factors, the proposed wind farm is judged to result in a very low magnitude of change.			
Magnitude of change during darkness hours			
With reference to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2, there is potential to see up to six lit turbines during the hours of darkness; however, intervening broadleaved woodland belts and blocks, would largely obscure visibility. Whilst there is prospect for the limited number of visible red lights to be visible above the horizon and against the skyline, they are predicted to be indistinguishable from the viewpoint location owing to distance. As a result, the magnitude of change is judged to be very low.			
Significance of effect			
During daylight hours, receptors would experience a minor/negligible non-significant effect. During the hours of darkness, receptors would experience a minor/negligible non-significant effect.			

Viewpoint 17: B733 west of Kirkcowan*

Baseline				
Grid reference	E231762	N560984	Elevation (m AOD)	61
Nearest turbine	10866m (T2)	Direction to Proposed Wind Farm		North-northeast
LPA	Dumfries & Galloway	Landscape Character Type		LCT 168: Drumlin Pasture in Moss and Moor Lowland
Designations	N/A		Receptor	Road users
Description of Baseline View				

The immediate landscape setting is primarily agricultural and forested, with Ballochrae Wood to the immediate west. In the direction of the Site, views look across undulating farmland in the foreground towards the horizon, where the Galloway Hills form discernible skyline features. In views, drystone walls define large fields, whilst woodland belts, woodland blocks, and forestry add seasonal colour and interest. Other visible elements include electricity pylons and overhead lines, and vehicular movement on the minor road and B733.			
Receptor	Value	Susceptibility	Sensitivity
Road users	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The value is assessed as medium.	The viewpoint is representative of views experienced by road users on the minor road as well as on the B733. Receptors are assessed as having a medium susceptibility.	Medium
Magnitude of change during daylight hours			
12no. of the 13no. turbines are theoretically visible, as are 5no. hubs owing to landform. Intervening broadleaved woodland belts and blocks would however limit this number further, particularly during the spring/summer months when trees are in leaf. Visibility would therefore be largely restricted to the upper blade sweep of several turbines. Whilst the visible turbines would primarily be experienced against the backdrop of upland landscapes, the upper blade sweep from a limited number would be witnessed above the horizon and against the skyline. Whilst the visible turbines would occupy a small to medium lateral extent of the view (depending on blade rotation patterns) and be visible in views, they would not appear prominent in-part due to their greater association with the more distant upland landscape, rather than the undulating farmed foreground landscape. Currently, there are no views of existing turbines in this location. Minor road users have the potential to experience the proposed wind farm in direct views as they approach the junction with the B733. Road users on the B733 would however experience the change in views at an oblique or perpendicular angle to their direction of travel. When considering these factors, the proposed wind farm is judged to result in a low magnitude of change.			
Magnitude of change during darkness hours			
According to the lit turbine ZTV at Figure 6.7.1 and Figure 6.7.2, 3no. of the 6no. lit turbines have the potential to be visible during the hours of darkness; however, landform and intervening broadleaved woodland belts and blocks, would largely obscure visibility, and potentially restrict visibility to T2 only. The limited number of visible lights would appear as very small, noticeable red lights against the backdrop of upland landscapes in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the B733 and minor road, and from lighting of nearby properties. With reference to Figure 6.7.3, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be very low.			
Significance of effect			
During daylight hours, receptors would experience a moderate/minor non-significant effect. During the hours of darkness, receptors would experience a minor/negligible non-significant effect.			

Viewpoint 18: Moor of Barclye Archaeological Sensitive Area*

Baseline				
Grid reference	E239814	N570013	Elevation (m AOD)	120
Nearest turbine	3990m (T1)	Direction to Proposed Wind Farm		West-northwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 172: Upland Fringe – Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area Galloway Forest Park		Receptor	Recreational
Description of Baseline View				
The immediate landscape setting is characterised by the presence of moorland and woodland, with the viewpoint location lying between Cree Wood and Knockman Wood on the urban fringes of Newton Stewart. In the direction of the Site, views look across undulating foreground moorland, over the Cree valley, and the Hill of Ochiltree, Glassoch Fell, Glenvernoch Fell, the Top of the Fell, and Balunton Hill in the middle-distance, towards the horizon where the Wigtownshire Moors form discernible skyline features. In views, moorland, coniferous forestry plantation, woodland belts, woodland blocks, and riparian vegetation add seasonal colour and interest.				
Receptor	Value		Susceptibility	Sensitivity
Recreational	The viewpoint is located within a landscape designated for its scenic qualities. The location is also on the route of Core Path CREE/416/1-2 - Barclye Bird Reserve Walk. Its value is assessed as high.		The viewpoint is representative of views experienced by recreational visitors to the Galloway Hills Regional Scenic Area, specifically the Moor of Barclye Archaeological Sensitive Area, as well as core path users. Receptors are assessed as having a high susceptibility.	High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, are theoretically visible; although, intervening broadleaved woodland at Cree Wood would limit the number of visible turbines and hubs, particularly during the spring/summer months when trees are in leaf. Whilst there is prospect to view the full extents of a number of turbines, visibility would be restricted to the upper blade sweep of several others. The visible turbines would be experienced above the horizon and against the skyline, occupying a large lateral extent of the view. The proposed turbines would be easily identifiable in views; although, they would appear associated with the neighbouring more upland landscape, rather than the undulating farmed foreground landscape. In current views from the location, the baseline turbines on the Wigtownshire Moors are visible. The proposed turbines would foreground these turbines owing to their closer proximity, whilst increasing the influence of turbines in the view. Recreational visitors have the ability to experience the proposed wind farm in direct views. When considering these factors, the proposed wind farm is judged to result in a medium magnitude of change.				
Magnitude of change during darkness hours				
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2 , there is potential to see up to six lit turbines during the hours of darkness; however, intervening broadleaved woodland at Cree Wood would largely obscure visibility. The limited number of visible lights would appear as very small,				

noticeable red lights above the horizon and against the skyline in a part of the view where lighting is scarce. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to **Figure 6.7.3**, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be low.

Significance of effect

During daylight hours, receptors would experience a **moderate** significant effect.
 During the hours of darkness, receptors would experience a **moderate/minor** non-significant effect.

Viewpoint 19: The minor road outside Borgan Cottage*

Baseline				
Grid reference	E236435	N574601	Elevation (m AOD)	33
Nearest turbine	1718m (T10)	Direction to Proposed Wind Farm		South-southwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 174: Plateau Moorland with Forest - Dumfries & Galloway
Designations	Galloway Hills Regional Scenic Area Galloway Forest Park		Receptor	Recreational, Residents, Road users
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested, with Glentool Forest in the Galloway Forest Park located immediately east. In the direction of the Site, views look across undulating foreground farmland, over the Cree valley in the middle-distance, towards the horizon, where the Hill of Ochiltree, Glassoch Fell, Glenvernoch Fell, the Top of the Fell, Balunton Hill, and the surrounding coniferous forestry plantation form discernible skyline features. In views, post-and-wire fencing, and drystone walls define fields, whilst woodland belts, woodland blocks, and riparian vegetation add seasonal colour and interest. Other visible elements include vehicular movement on the A714, and properties in the lower-lying valley landscape.				
Receptor	Value		Susceptibility	Sensitivity
Recreational Residents Road users	The viewpoint is located within a landscape designated for its scenic qualities. As a result, its value is assessed as high.		The viewpoint is representative of views experienced by nearby residents, recreational visitors to Galloway Hills Regional Scenic Area, and road users, including cyclists on National Route 7. Receptors are assessed as having a high susceptibility.	High
Magnitude of change during daylight hours				
All 13no. turbines, including hubs, would be visible across all seasons above the horizon and against the skyline. The proposed turbines would occupy a large lateral extent of the view, with the proposed turbines appearing prominent, and exerting a strong influence in views owing to proximity. Currently, there are no views of existing turbines at this location. Residents at Borgan Cottage would experience the change in direct views from windows on the western façade of the property. Recreational walkers and cyclists also have the ability to experience the proposed wind farm in				

direct views. Road users on the minor road would experience the change in views at an oblique or perpendicular angle to their direction of travel. When considering these factors, the proposed wind farm is judged to result in a high magnitude of change.

Magnitude of change during darkness hours

According to the lit turbine ZTVs at **Figure 6.7.1** and **Figure 6.7.2**, there is potential to see up to six lit turbines during the hours of darkness. The lights, which would appear as small, noticeable red lights against the skyline in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A714, and from lighting of properties in the lower-lying valley landscape. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to **Figure 6.7.3**, which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be medium.

Significance of effect

During daylight hours, receptors would experience a **major** significant effect.
 During the hours of darkness, receptors would experience a **moderate** significant effect.

Viewpoint 20: A75 at Knockbex Toll Junction*

Baseline				
Grid reference	E239606	N564299	Elevation (m AOD)	40
Nearest turbine	8020m (T2)	Direction to Proposed Wind Farm		North-northwest
LPA	Dumfries & Galloway	Landscape Character Type		LCT 168: Drumlin Pasture in Moss and Moor Lowland
Designations	N/A		Receptor	Road users
Description of Baseline View				
The immediate landscape setting is primarily agricultural and forested. The viewpoint location lies on the urban fringes of Newton Stewart. In the direction of the Site, views look across undulating foreground farmland towards the horizon, where the Galloway Hills form discernible skyline features. In views, post-and-wire fences define fields, whilst woodland belts, woodland blocks, and forestry add seasonal colour and interest. Other visible elements include electricity pylons, overhead lines, vehicular movement on the A75 and local road network, and nearby properties.				
Receptor	Value		Susceptibility	Sensitivity
Road users	The viewpoint is not located within a landscape designated for its scenic qualities. Whilst the viewpoint is not recognised for its scenic views, it is acknowledged that pleasant views are available. The value is assessed as medium.		The viewpoint is representative of views experienced by road users on the A75, and the local road. Receptors are assessed as having a medium susceptibility.	Medium

Magnitude of change during daylight hours
All 13no. turbines, including hubs, would be visible across all seasons above the horizon and against the skyline. Whilst the visible turbines would occupy a small lateral extent of the view and be easily identifiable in views, they would appear associated with the more distant upland landscape, rather than the undulating farmed foreground landscape at a comparable scale to the existing electricity pylons. Currently, there is theoretical visibility of the operational Kilgallioch turbines at this location; although, actual visibility is restricted by intervening landform and vegetation, limiting the prospect for intervisibility between the proposed wind farm and existing turbines. A75 road users would experience the change in views at an oblique or perpendicular angle to their direction of travel. When considering these factors, the proposed wind farm is judged to result in a medium-low magnitude of change.
Magnitude of change during darkness hours
According to the lit turbine ZTVs at Figure 6.7.1 and Figure 6.7.2, there is potential to see up to six lit turbines during the hours of darkness. The lights would appear as very small, noticeable red lights above the horizon and against the skyline in a part of the view where no other lights are currently present, apart from occasional headlights from vehicles on the A75, and from lighting of nearby properties. The lit turbines would be seen across the full lateral extent of the wind farm. With reference to Figure 6.7.3, which shows the turbine lighting intensity, the intensity of the lights would be reduced due to the difference in elevation between the turbine lights and the viewpoint. On balance, the magnitude of change is judged to be very low.
Significance of effect
During daylight hours, receptors would experience a moderate/minor non-significant effect. During the hours of darkness, receptors would experience a minor non-significant effect.

Table 6.5.1: Assessment of Effects on Viewpoints during Operation

Viewpoints	Sensitivity	Daylight Hours			Darkness Hours		
		Magnitude of Change	Level of Effect	Significant	Magnitude of Change	Level of Effect	Significant
1: Southern Upland Way (Hill of Ochiltree)	High	High	Major	Yes	Medium	Moderate	Yes
2: A714, north of Bargrennan (N)	Medium	High-medium	Moderate	No	Medium-low	Moderate/ minor	No
3: A714, junction with minor road to Glentool (N)	Medium	High	Major/ moderate	Yes	Medium	Moderate	No
4: Southern Upland Way (Bargrennan)	High	High	Major	Yes	Medium	Moderate	Yes
5: Eldrig Fell	High	Medium	Moderate	No	Very low	Minor	No
6: Minor road near Bennylow (Culvennan Fell)	Medium	Medium	Moderate	No	Very low	Minor	No
7: B7027/Southern Upland Way near Knowe (N)	High	Medium	Moderate	Yes	Medium-low	Moderate/ minor	No
8: Southern Upland Way (Knockniehourie)	High	Low	Moderate/ minor	No	Very low	Minor/ negligible	No
9: Bruce's Stone, Glentool	High	Medium	Moderate	No	Very low	Minor	No
10: All Saints Church, Challoch	High	Medium	Moderate	No	Low	Moderate/ minor	No
11: Minor road, north of Mochrum Fell	High	Very low	Minor/ negligible	No	Very low	Minor/ negligible	No
12: Merrick	High	Medium	Moderate	No	Very low	Minor	No
13: Lamachan Hill	High	Medium	Moderate	Yes	Very low	Minor	No
14: Garlick Hill	High	Medium	Moderate	Yes	Low	Moderate/ minor	No
15: A75, parking area south of Creetown	High	Low	Moderate/ minor	No	Very low	Minor/ negligible	No

Viewpoints	Sensitivity	Daylight Hours			Darkness Hours		
		Magnitude of Change	Level of Effect	Significant	Magnitude of Change	Level of Effect	Significant
16: Road Junction between B7005 and A714 at Culquhirk*	Medium	Very low	Minor/negligible	No	Very low	Minor/negligible	No
17: B733 west of Kirkcowan*	Medium	Low	Moderate/minor	No	Very low	Minor/negligible	No
18: Moor of Barclye Archaeological Sensitive Area*	High	Medium	Moderate	Yes	Low	Moderate/minor	No
19: The minor road outside Borgan Cottage*	High	High	Major	Yes	Medium	Moderate	Yes
20: A75 at Knockbren Toll Junction*	Medium	Medium-low	Moderate/minor	No	Very low	Minor	No

Bold text indicates a significant effect.

* Additional LVIA Viewpoint added following feedback received at scoping.

(N) Night-time visualisation produced from this viewpoint in addition to day-time visualisation.

Glenvernoch Wind Farm

Environmental Impact Assessment Report EIAR Volume III – Technical Appendices Appendix 6.6: Residential Visual Amenity Assessment (RVAA)

October 2024

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Version Control Sheet

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1 RESIDENTIAL VISUAL AMENITY ASSESSMENT

Introduction

- 1.1 This technical appendix to the Landscape and Visual Impact Assessment (LVIA) Chapter presents a detailed Residential Visual Amenity Assessment (RVAA) of the Proposed Development. It considers the potential visual effects of the Proposed Development experienced by residents of the nearest properties to the Site.
- 1.2 During the scoping process, Pegasus Group – the project landscape consultants - outlined the proposed scope and extent of RVAA to be produced, including promotion of a 2km study area from the proposed turbines. This was proposed to keep the study proportionate and to focus on the identification of significant effects within 2km. None of the consultee responses received commented on the proposals, therefore this RVAA follows the scope and extent put forward at the scoping stage. A plan which illustrates the properties which lie within 2km is included – see **Figure 6.6.1: Residential Visual Amenity Study Properties**. The RVAA presented in this technical appendix is supported by figures and visualisations in **EIA Volume 2**.
- 1.3 The RVAA aims to report at a level that is reasonable and proportionate upon identifying potentially significant effects upon the visual amenity of dwellings within 2km. Whether assessed individually or within a group, the RVAA identifies if any of these residents would experience a significant effect on any view from their property (the dwelling or its curtilage) during the operational period of the Proposed Development, and specifically details, which views would be affected.
- 1.4 It is important to stress that this technical appendix solely considers the visual component of residential amenity and that any consideration of residential amenity in the broader sense must also take account of any noise and shadow flicker effects, which are addressed elsewhere within the Environmental Impact Assessment Report (EIA). Whilst this RVAA does not comment on the acceptability of the Proposed Development, it does provide a reasoned professional opinion on the likely visual effect on living conditions of the nearest residents.
- 1.5 It should be noted that this study is limited to a consideration of the potential visual impacts that residents might experience within their property, i.e. their dwelling and its curtilage. It is acknowledged that the occupiers of most dwellings experience the wider landscape in passing on a regular basis as they go about their day-to-day activities and that the components of this wider landscape also influence their broader sense of amenity. Residents of certain properties considered within this RVAA would most likely have views of the Proposed Development on a regular basis as they leave and approach their properties through the wider landscape.
- 1.6 It was beyond the scope of this study to determine trends in the day-to-day activities of the residents in the study area, or to define the features and qualities of the surrounding landscape which influence residents' broader amenity. Whilst not discounting this issue, based on previous wind farm appeal decisions, it appears that greatest weight is usually

given to impacts on views from the dwelling itself and its curtilage, as these impacts are likely to have the greatest influence on living conditions. Beyond their property, residents are considered to experience visual effects as users of minor roads, footpaths etc. These effects are assessed as such within the main LVIA Chapter (see **EIA Chapter 6**).

Discussion of Residential Amenity in Relation to Wind Farms

- 1.7 It has been established through several previous wind farm appeal decisions that in certain circumstances wind turbines can have an overbearing, overwhelming, or oppressive effect on residential visual amenity such that a property would become widely regarded to be an unattractive place in which to live. In these circumstances, wind turbines can have a detrimental effect on living conditions which may not be in the public interest.
- 1.8 In Scotland, potentially due to the settlement pattern and encouragement towards wind farm developments in less populated areas, issues relating to wind farms and residential properties have not been as prominent as elsewhere in the UK; however, with the considered “exhaustion” of many of the most suitable wind farm sites, this issue is becoming increasingly relevant.
- 1.9 Whilst the “Lavender Test” is not enshrined in any planning guidance in England or Wales, it has become an approach incorporated by inspectors there. Similarly, there is no reference to such a test in Scottish policy. Equally, there is no general practice in Scotland of describing other Reporters’ decisions in creating “tests.” The approach in Scotland is to identify factors which are not described as a “test,” and these factors have to be applied based on the particular circumstances of the case.
- 1.10 In his report on the St John’s Hill wind farm in Aberdeenshire, the Reporter, Malcolm Mahony, noted that there were 106 properties located within 1km of the nearest turbines, and concluded:
- “Because views from within the site and from outside it tends to be of a panoramic nature, the windfarm, even though it spreads over a length of some 3km, would occupy only a restricted part of those views and not dominate them.”*
- 1.11 With regard to visual impacts from residential properties he stated:
- “I have looked carefully at the visual impact of the scheme from individual properties in the vicinity and I am not persuaded that it is unacceptable due to the factors which I have already outlined.” (APP/2004/4666)*
- 1.12 In the Achany decision in the Highlands, the Reporter: Janet McNair, stated that although a significant impact on the residential amenity of residential properties may be experienced *“Deciding whether these impacts are significantly detrimental is a matter of judgement.”* Janet McNair went on to state that although the properties in question were located within 3km of the Proposed Development *“the turbines would be far enough away from house not to be overbearing or dominant”* concluding that *“the appeal proposal would have a significant impact on some views from some properties. However, significant impacts are not necessarily unacceptable and I conclude that its impacts on residential amenity overall would not be significantly detrimental.”* (PPA/270/438).

- 1.13 The Scottish Ministers' decision letter for Afton wind farm contains the following statement:

"With regards to impacts on residential properties, Ministers agree with the assessment in the ES and subsequent SEI3 and consider that that the Development would not result in any overbearing visual effects on residential amenity to a degree that any property might be considered an unattractive place in which to live." (Dated 17 October 2014).

- 1.14 This decision letter of the Scottish Ministers has a higher status than an individual Reporter's decision and represents a position of government rather than an individual Reporter.

- 1.15 The application for the Harelaw Renewable Energy Park was another Section 36 application. Although it was refused, the Reporter at paragraph 8.51 made the following statement:

"I have used 'locations' rather than 'properties' in the preceding paragraph because I note from the Residential Visual Assessment and also from information provided by Mr and Mrs McGeoch's landscape consultant that some locations contain more than one property. These are 42 East Hareshaw – three, 55 Pebblebank – two, 64 Corsehouse Farm – two and 36 not named – a terrace, number unknown. Furthermore, in the assessment of whether there would be a significant impact the Residential Visual Assessment includes as 'significant' properties that are lived in by people who are financially involved in the Proposed Development (16 Townhead of Floak, 18 Mid Floak, 66 Driffenbeg, 75 Gabroc Hill). I have disregarded properties which have a financial involvement, as I consider residents in those properties would be willing to suffer a diminution in their residential amenity because of the financial benefit they would gain."

- 1.16 Again, the Scottish Ministers adopted this report.

- 1.17 In August 2018, in relation to the proposed Lurgiescleuch Wind Farm near Hawick, a reporter stated the following in allowing the appeal for 7no. turbines up to 149.9m to blade tip:

"Whilst planning law is not intended to protect the view from individual properties, it is generally accepted that it would not be in the public interest for a development to create unacceptable living conditions at a dwelling. Various tests have been applied in these circumstances, but my attention has been drawn, in particular, to that accepted by the Scottish Ministers with regard to their decision on a section 36 application at Afton Wind Farm in East Ayrshire in 2014. Here the Ministers considered whether the development would result in "overbearing visual effects on residential amenity to a degree that any property might be considered an unattractive place in which to live." With this test in mind, I have looked at those dwellings within two kilometres of the appeal site, other than those which would have limited or no visibility of the turbines."

"I am satisfied that the appeal proposal would not result in a situation where the above test would be failed at any of those properties."

- 1.18 In October 2018, a Reporter's decision to refuse the proposed Glenouther Renewable Energy Park in East Ayrshire, comprising 12no. turbines up to 126.5m to blade tip, considered residential visual amenity for 46no. properties located within 2km of the proposed turbines. The Reporter recognised that there were 11no. properties located within 1.1km of the proposed turbines, and that there was coniferous plantation located between some of the dwellings and the proposals. In concluding the matter of residential visual amenity, the Reporter states:

"I consider the number of properties that would be exposed to views of the proposed turbines and in so doing, experience a 'high' magnitude of change, is substantial. For some properties, I consider that the visual effects of the proposed turbines would be significant and unacceptable, as they would adversely affect the living conditions of occupiers... This situation would be exacerbated for properties lying to the south of the appeal site with the partial felling of the coniferous woodland. I acknowledge the financial involvement of Gree Law and that from some properties views of the proposed turbines would be oblique and and/or filtered by vegetation. For some residents, however, the turbines would form a dominant and defining feature in views from which there would be no respite. For these reasons, I do not accept the appellant's assertion that the impact of the Proposed Development on residential amenity would be acceptable."

Assessment Methodology

- 1.19 In 2019, the Landscape Institute published Technical Guidance Note 2/19 'Residential Visual Amenity Assessment (RVAA)'. This Note confirmed that *"Residential Visual Amenity Assessment (RVAA) is a stage beyond LVIA and focusses exclusively on private views and private visual amenity."* The Note goes on to state that the guidance it contains *"is not prescriptive but aims to improve standards."*
- 1.20 This analysis has therefore been informed by a methodology developed by Pegasus Group under the overarching guidelines for LVIA, namely The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (2013), Landscape Institute and the Institute for Environmental Management and Assessment and latterly, the principles set out in Technical Guidance Note 2/19.
- 1.21 In accordance with the above guidelines, the level of visual effect experienced in any given view is ascertained by considering in tandem the sensitivity of the baseline visual receptor and magnitude of change in the view as a result of the Proposed Development. Professional judgement is then employed to determine whether the effect is significant or not; although, this is still based within a recognised framework in line with existing LVIA guidance.
- 1.22 The LVIA assessment criteria used by Pegasus Group acknowledges that different receptor groups (e.g. residents, users of public rights of way, people at their place of work) have varying degrees of sensitivity to change in the view. It is generally accepted that residents are of high sensitivity to change in their view, and in all cases in this assessment, residents at each property have been considered to be of high sensitivity. It is acknowledged, however, that this is a simplified approach which arrives at a worst-case assessment. Sensitivity may, in fact, vary dependent upon the more complex factors such as the functions within the dwelling, for instance residents are generally considered to be more sensitive to changes in the views from certain rooms such as the primary day time living rooms (e.g. lounge, dining room, kitchen or conservatory) than rooms such as bedrooms, bathrooms or utility rooms, notwithstanding the overall high sensitivity for the property as a whole. Similarly, residents are usually more sensitive to changes in the view from certain parts of their garden or curtilage than others.
- 1.23 Visual impacts are caused by the introduction of new elements into the views of a landscape or the removal of elements in the existing view. Professional judgement has

been used to determine the magnitude of change using the following criteria as guidance:

- **Very Low Magnitude of Change** - No change or negligible change in views.
- **Low Magnitude of Change** - Some change in the view that is not prominent but visible to some visual receptors.
- **Medium Magnitude of Change** - Some change in the view that is clearly notable in the view and forms an easily identifiable component in the view.
- **High Magnitude of Change** - A major change in the view that is highly prominent and has a strong influence on the overall view.
- **Very High Magnitude of Change** - A change in the view that has a dominating or overbearing influence on the overall view.

1.24 In general, the magnitude of visual impact on residential properties is likely to increase with proximity to the turbines; however, distance from the nearest proposed turbine is only one of the factors that needs to be considered when determining the magnitude of visual impacts on any given view from a residential property. Other modifying factors include:

- Whether the view of the turbines is in a direct or oblique angle from the primary orientation of the view.
- The extent to which the view is obstructed or filtered by vegetation, landform, or built structures.
- The extent to which the current view is influenced by existing built structures (e.g. buildings, roads, pylons).
- The difference in elevation between the property and the base of the nearest turbine.
- The horizontal and vertical field of view which is occupied by turbines.
- The spacing or relative clustering of the turbines in the view.
- The scale and openness of the receiving landscape.
- The availability of other features in the view, which provide a comparison of scale and perspective.

1.25 As previously indicated, the level of the visual effect experienced in any given view is determined by considering in tandem the sensitivity of the view with the magnitude of change. The level of effect is described as either '**major**', '**major/moderate**', '**moderate**', '**moderate/minor**', '**minor**', '**minor/no effect**' or '**no effect**'. Professional judgement is then used to inform whether the level of effect identified is significant or not.

1.26 In this analysis, those effects described as **major**, **major/moderate** and in some cases **moderate**, are identified as 'significant effects' in line with the Electricity Works (Environmental Impact Assessment) (Scotland) 2017 Regulations as amended.

1.27 In terms of cumulative assessment, it is acknowledged that the Blair Hill wind farm development, which is at Scoping stage, but understood to be close to submission, lies just over 5km to the southeast of the Proposed Development. The Blair Hill wind farm has therefore been discussed separately below.

- 1.28 In the case of each property, once the potential for significant visual effects to arise has been considered, an overall judgement is reached about whether the residents of the property would experience such an overbearing effect on visual amenity that the property would become an unattractive place in which to live. When considering this overall effect of the development on the visual amenity of residents of any given property 'in the round' it is also necessary to take into account the availability of other views from the property which would not be affected by the development.
- 1.29 It is also important to note that these judgements have primarily been made based on the availability of views of the Proposed Development during daylight hours only. When considering the lighting intensity ZTV pattern shown on **Figure 6.6.2: Residential Visual Amenity Study Properties with Lighting Intensity ZTV**, it is considered that during the hours of darkness, views of the proposed turbines would, in many cases, be limited and that any views of the proposed aviation lights would not contribute to the level of effects on the available views to the same extent as views of the proposed turbines during daylight hours.

Properties Within the RVAA Study Area

- 1.30 A total of 16no. residential properties were identified as being located within the 2km RVAA Study Area (referred to as the Study Area) from a combination of Ordnance Survey (OS) Address base data, OS 25,000 raster data, and aerial photography. The residential properties, which are illustrated on **Figure 6.6.1**, are listed in **Table 6.6.1** below.

Table 6.6.1: Individual Properties within the 2km RVAA Study Area

Property Name
Borgan
Brighton Farm & But 'N' Ben Cottages
Clachaneasy
Glenruther Lodge
Larg Farm
Low Cordorcan
Old Larg House
Shepherds Cottage
Borgan Cottage
Cordorcan Cluster
Garchew
Glenhapple Farm
Glenruther
Glenvernoch
Glenvernoch Cottage
Ochiltree Cottage

- 1.31 The property at Knockville, whilst shown on **Figure 6.6.1**, has been excluded from the study as the owner has a financial interest in the Property Development.

- 1.32 The location of the consented Knockville and Crungie Woodland Log Cabins has also been shown on **Figure 6.6.1**. Whilst upon construction the cabins would form non-permanent residences, they have been considered separately in this assessment owing to their proximity to the Proposed Development.
- 1.33 **Figure 6.6.1** is overlaid with the blade tip Zone of Theoretical Visibility (ZTV) which shows that Ochiltree Cottage experiences no theoretical visibility from the property or its curtilage. As such, it has been highlighted in grey in **Table 6.6.1** above, as the property is not considered further within this RVAA.
- 1.34 The properties at Cordorcan have been grouped together on the basis that they are sited adjacent to one another and would experience similar effects.

Contacting Property Occupiers

- 1.35 A letter was posted to each occupied property with theoretical visibility of the Proposed Development, identified in **Table 6.6.1** above, explaining that a RVAA was being undertaken as part of the LVIA and that their property was located within the 2km RVAA Study Area. The letter also sought permission to visit the property at an agreed date and time to assess the primary views towards the Proposed Development from the property and its curtilage.
- 1.36 Of the properties contacted, nine positive responses were received and subsequently visited on Tuesday 04 June or Wednesday 05 June 2024. Photographs were taken from each property and from the curtilage.
- 1.37 For those properties where no access was sought or gained, the assessment has been conducted from the closest publicly accessible vantage points, or the nearest neighbouring property where access was allowed.

Properties Taken Forward into Detailed Assessment

- 1.38 For each of the properties taken forward into detailed assessment, information was gathered through a combination of desk study and site visits, including:
- Name of property.
 - Approximate grid reference of property.
 - General direction of views from the property to the nearest turbine.
 - Distance from the property to the nearest turbine.
 - Approximate elevation of property (AOD).
 - Number of floors within the property.
 - Orientation of the main elevations of the property.
 - Angle of the turbines in the view from a representative point on the façade facing the Proposed Development or part of the curtilage with a view of the Proposed Development.
 - A record of any intervening obstructions (e.g. screening from vegetation, landform, or built structures).

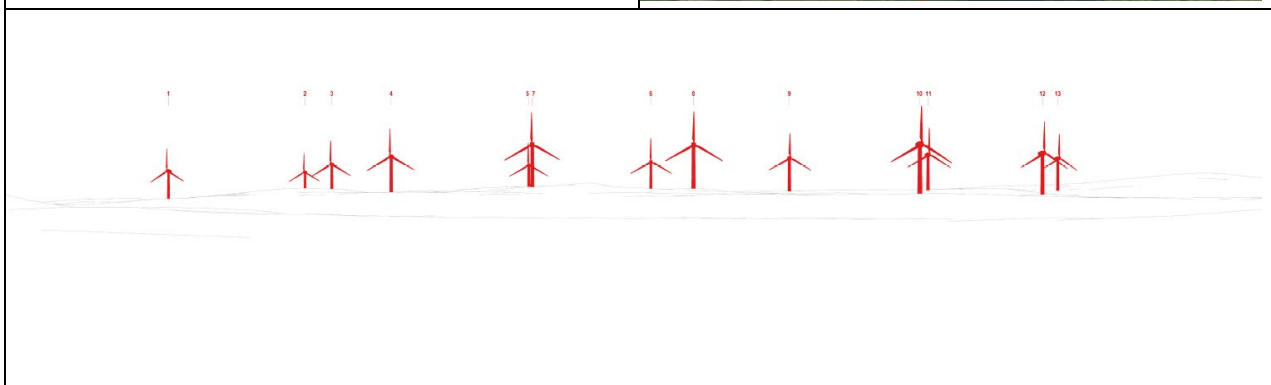
- A record of any built structures which influence the outlook.
- A record of any other features in the foreground view which provide a comparison of scale.
- The availability of other views from the property that are not affected by the Proposed Development.

- 1.39 Where a distance between a residential property and a turbine is provided, the figure given is an approximate measurement between the centre point of the turbine tower and the corner of the nearest façade to the Proposed Development (or the location where the photography was taken from on the date of the site visit).
- 1.40 Defining the limits of private gardens can be subjective and considering the view from all corners of any individual garden is not possible. Therefore, this assessment has appraised what is considered to be the worst-case scenario from gardens. Where a property is set back from the public road along an access track that extends beyond the curtilage of the property, views on approach and departure from the property are also assessed.
- 1.41 For each of the assessed properties, a wireframe model was generated to help identify the scale, arrangement, and visibility of the proposed turbines. These wireline images were reviewed to factor in how natural and built screening would affect visibility of the turbines. In many cases, this screening would be such that the wireline images illustrate a far greater potential visibility that would be seen in reality.
- 1.42 Aerial photographs showing the orientation of each property or property group, direction of view, and distance to the nearest proposed turbine are provided in **Volume 2**.
- 1.43 Cumulative bare earth wirelines showing a 90-degree angle of view (cylindrical), as well as a 53.5-degree angle of view (planar) towards the proposed turbines, from the corner of the nearest façade of each property (or group of properties) has been provided for each property (see **Volume 2**). These wirelines do not take account of any vegetation screening.
- 1.44 Baseline photographs, photowires, and photomontages showing a 90-degree angle of view (cylindrical), as well as a 53.5-degree angle of view (planar), towards the proposed turbines have been produced for the following nine residential properties that granted access to their properties and curtilage: Borgan, Brighton Farm & But 'n' Ben Cottages, Clachaneasy, Glenruther Lodge, Larg Farm, Low Cordorcan, Old Larg House, and Shepherds Cottage. A set of visualisations has also been included from the prospective Knockville and Crungie Woodland Log Cabins. For the properties where a photomontage has been produced, the distance to the nearest proposed turbine has been recorded from the viewpoint location position rather than the corner of the nearest façade of each property (or group of properties).
- 1.45 A summary of the level of effect experienced from each property is provided at **Table 6.6.2**.

Assessment of Effects

- 1.46 The following section presents the information gathered through field and desktop study and provides detailed analysis and discussion of the effects on visual amenity likely to be experienced during the operational phase of the wind farm, for each property within the 2km RVAA Study Area.
- 1.47 Whilst the area was visited during summer months, when there is increased screening from vegetation, the assessment of effects states the worst-case scenario (winter views) unless otherwise stated.

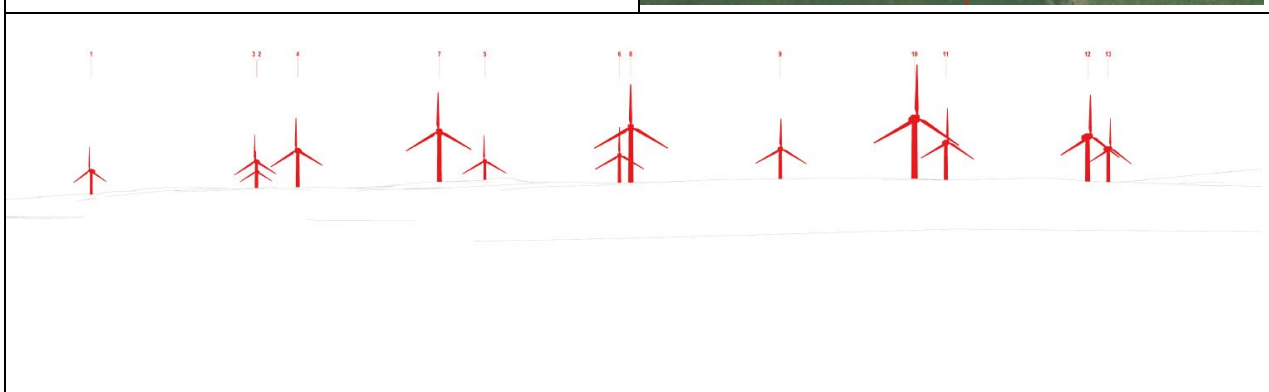
Borgan



Property Type:	Two-storey detached dwelling with associated farm buildings	Visible Wind Farm Extent:	63.3°
Grid Reference:	E236490, N574691	No. of Blade Tips Theoretically Visible:	13
Elevation:	37m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Southwestern façade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1810m (T10)	RVAA Property Visit:	Yes

Existing Residential Visual Amenity		
Borgan is located within Glentool Forest in the Galloway Forest Park. The property lies near the minor road, which permits access to the Forest Park. Primary elevations face northeast and southwest. The property is accessed from the minor road via an access track that leads to a parking area to the north of the property. Forestry and rising landform enclose the northern, eastern, and southern facades, providing enclosure and restricting outward facing views. Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.		
Views from within property:	Direct views are available from windows on the western facade of the property. Views towards the Site from the windows are likely to be partially filtered by vegetation, including garden planting and intervening woodland, to the west of the property that would obscure visibility of several turbines across all seasons, but particularly during spring/summer months when trees are in leaf.	
Views from curtilage:	Partial views available from the curtilage and garden areas, with vegetation providing some screening.	
Views from along access:	Partial views available from the access when leaving the property. When approaching the property, the Proposed Development would appear behind the direction of travel.	
Magnitude of change during daylight hours:	From Property	Direct views of up to 13no. blade tips and 13no. hubs at close distances. The Proposed Development would introduce large-scale new elements across a substantial portion of the views available from the western façade of the property. As a result, the magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	As above.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	Major, significant.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	As above.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Moderate, significant.
Overbearing:	No.	

Brigton Farm & But 'n' Ben Cottages



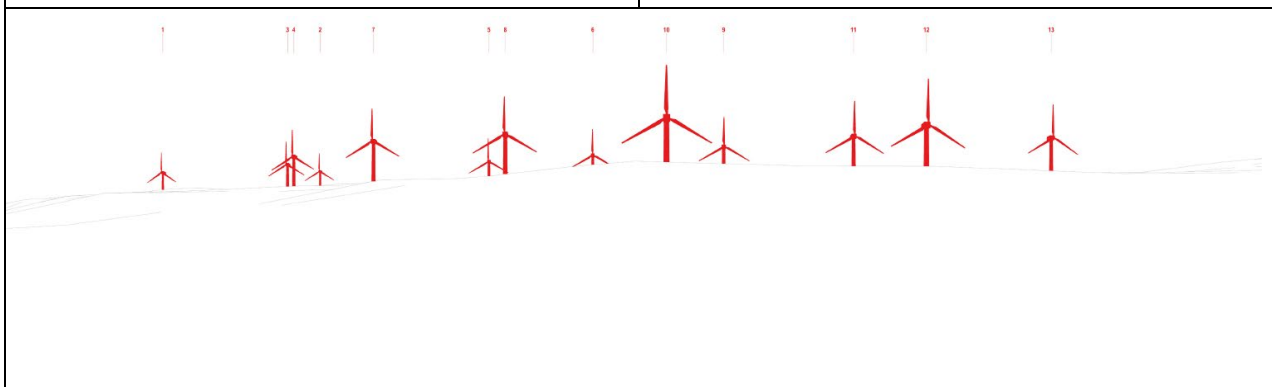
Property Type:	1.5 storey detached dwelling with associated farm buildings, and But 'n' Ben Cottages	Visible Wind Farm Extent:	72.5°
Grid Reference:	E236000, N574512	No. of Blade Tips Theoretically Visible:	13
Elevation:	31m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Southern and western façades	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1300m (T10)	RVAA Property Visit:	Yes

Existing Residential Visual Amenity

Brigton Farm is located in the valley of the River Cree at the edge of Galloway Forest Park. The property lies near the minor road, which permits access to the Forest Park. Primary elevations face northwards and southwards (in opposite direction of the Proposed Development). A conservatory on the northern extents provides prospect for oblique westerly views towards the Site. The property is accessed from the minor road via a moderately long access track that leads to a parking area to the east of the main property, with the But 'N' Ben Cottages located further east. Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	Direct views available from windows on the western façade of the property. Views towards the Site from the windows are partially filtered by garden planting, and intervening woodland to the west of the property, which would obscure visibility of several turbines across all seasons, but particularly during spring/summer months when trees are in leaf. Potential for oblique views from windows on the southern façade.	
Views from curtilage:	Partial views available from the curtilage and garden areas, with intervening rising landform and vegetation providing some screening.	
Views from along access:	Views towards the Site from the access track would largely be oblique to the direction of travel when approaching/leaving the properties, with woodland heavily screening any prospective views.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements in views available from the southern and western facades. As a result, the magnitude of change is judged to be medium.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	Existing woodland along the access track would provide considerable screening of the proposed turbines. The resulting magnitude of change is judged to be very low.
Level of effect during daylight hours:	From Property	Moderate, significant.
	Curtilage	Major, significant.
	Access	Minor, not significant.
Magnitude of change during darkness hours:	From Property	Potential to view up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	Existing woodland along the access track would provide considerable screening of lit turbines. The resulting magnitude of change is judged to be very low.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Minor, not significant.
Overbearing:	No.	

Clachaneasy



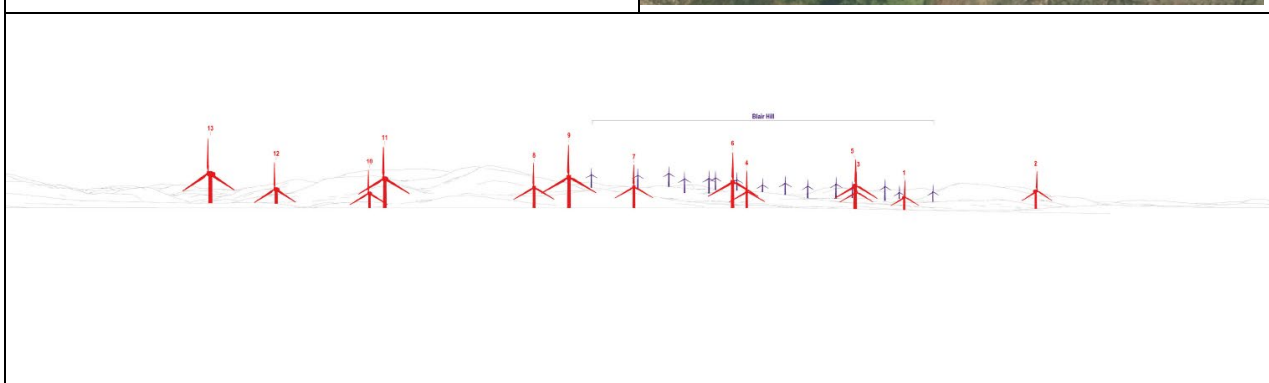
Property Type:	Single storey detached cottage	Visible Wind Farm Extent:	63.4°
Grid Reference:	E235473, N574980	No. of Blade Tips Theoretically Visible:	13
Elevation:	37m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Southern facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1310m (T10)	RVAA Property Visit:	Yes. Access to curtilage only

Existing Residential Visual Amenity

Clachaneasy is located amongst farmland and woodland alongside the A714. The property is nestled behind rising landform and woodland in Knockville and Crungie Wood. The primary elevations face westwards (in direction of the Proposed Development) and eastwards beyond the River Cree towards the Southern Uplands. A sunroom on the southern extents provides prospect for oblique southerly views towards the Site. The property is accessed from the A714 via a very short drive that leads to a parking area to the south. A garden extends from the northern and western facades. Existing views towards the Site are restricted by landform, and enclosing woodland. Currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	It is assumed that any views towards the Proposed Development from the southern façade would be at an oblique angle. Views towards the Site would be heavily screened by rising landform to the immediate southwest, and enclosing woodland in Knockville and Crungie Wood.	
Views from curtilage:	Views towards the Site from the curtilage and garden areas are heavily screened by rising landform and surrounding woodland in Knockville and Crungie Wood, which minimises the potential to view landscape features on the Site.	
Views from along access:	Property accessed directly off the A714.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements across a moderate portion of one part of the wider view. Rising landform and mature woodland immediately southwest of the property would considerably restrict visibility of the proposed turbines across all seasons. As a result, the magnitude of change is judged to be very low.
	Curtilage	As above.
	Access	N/A.
Level of effect during daylight hours:	From Property	Minor/ negligible, not significant.
	Curtilage	As above.
	Access	N/A.
Magnitude of change during darkness hours:	From Property	Up to 6no. turbine lights visible in theory. There is limited prospect for visibility of lit turbines from the property during darkness hours owing to foreground landform and woodland in Knockville and Crungie Wood. As a result, the magnitude of change is judged to be very low/ negligible.
	Curtilage	As above.
	Access	N/A.
Level of effect during darkness hours:	From Property	No effect.
	Curtilage	As above.
	Access	N/A.
Overbearing:	No.	

Glenruther Lodge

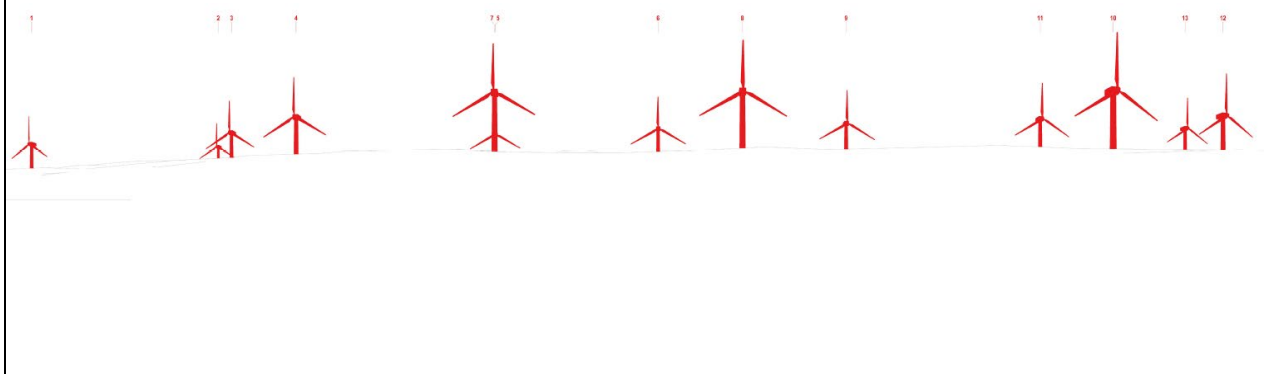


Property Type:	Single storey detached cottage	Visible Wind Farm Extent:	58.4°
Grid Reference:	E232255, N572511	No. of Blade Tips Theoretically Visible:	13
Elevation:	132m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Eastern facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1982m (T13)	RVAA Property Visit:	Yes. Access to curtilage only

Existing Residential Visual Amenity			
Glenruther Lodge is located amongst moorland near a minor road. Primary elevations are assumed to be facing northwards and southwards (in the opposite direction to the Proposed Development). The property is accessed from the minor road via a very short drive that turns off the road and leads to a parking area to the south. A garden encloses the property. Existing views towards the Site are restricted by enclosing garden planting and intervening rising landform and coniferous forestry plantation. Existing views feature the Southern Uplands and the Wigtownshire Moors (including the existing wind farms on the horizon); although currently there are no views of existing turbines in direction of the proposed wind farm.			

Views from within property:	It is assumed that direct views of the Proposed Development would be available from windows on the eastern facade. Views towards the Site from the windows are likely to be partially filtered by vegetation, including garden planting, and intervening coniferous forestry plantation, to the east of the property that would obscure visibility of several turbines across all seasons, but particularly during spring/summer months when trees are in leaf.	
Views from curtilage:	Views towards the Site from the curtilage and garden areas are partly screened by rising landform and intervening coniferous forestry plantation. Mature garden planting surrounding the property also restricts visibility, minimising the prospect to view landscape features on the Site.	
Views from along access:	Property accessed directly off minor road.	
Magnitude of change during daylight hours:	From Property	Direct views of up to 13no. blade tips and 13no. hubs at close distances. The Proposed Development would introduce large-scale new elements across a substantial portion of the views available from the western façade of the property. As a result, the magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	N/A.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	N/A.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	N/A.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	N/A.
Overbearing:	No.	

Larg Farm



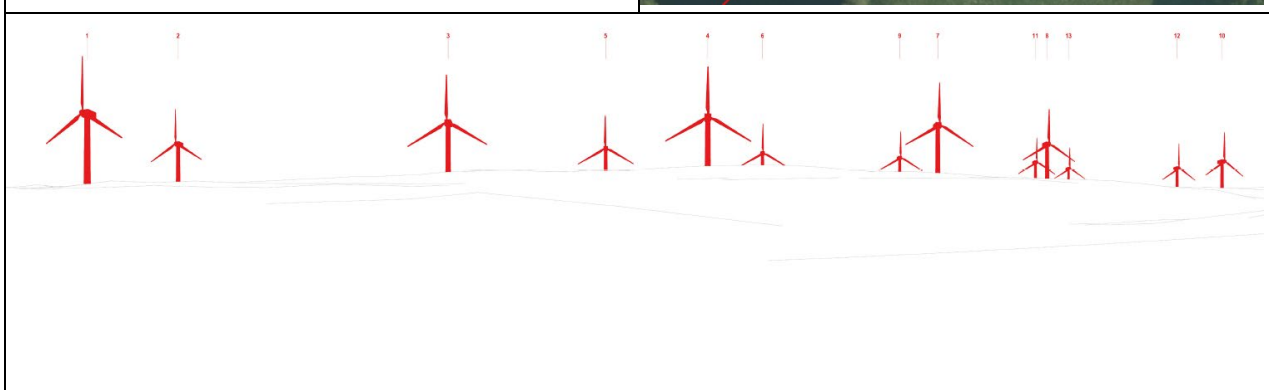
Property Type:	1.5 storey detached dwelling	Visible Wind Farm Extent:	84.8°
Grid Reference:	E236080, N574083	No. of Blade Tips Theoretically Visible:	13
Elevation:	50m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	South-western facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1192m (T10)	RVAA Property Visit:	Yes. Access to curtilage only

Existing Residential Visual Amenity

Larg Farm is located in the valley of the River Cree at the edge of the Galloway Forest Park. The property lies near the minor road, which permits access to the Forest Park. Primary elevations face northeast and southwest. The property is accessed from the minor road via a long access track that leads to a parking area to the east of the property. Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	Direct views available from windows on the western façade. Potential for oblique visibility from the southern façade. Views towards the Site from the windows are likely to be partially filtered by vegetation, including intervening woodland, which would obscure visibility of several turbines across all seasons, but particularly during spring/summer months when trees are in leaf.	
Views from curtilage:	Partial views available from the curtilage and garden areas; with intervening rising landform and woodland providing some screening.	
Views from along access:	Partial views available towards the Site from the access track when approaching/leaving the property; although, visibility is generally experienced oblique or perpendicular to the direction of travel.	
Magnitude of change during daylight hours:	From Property	Direct views of up to 13no. blade tips and 13no. hubs at close distances. The Proposed Development would introduce large-scale new elements across a substantial portion of the views available from the western façade of the property. As a result, the magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements seen at close proximity. Whilst the rising landform and woodland to the west would limit views to the upper parts of the towers, hub and upper blade sweep of the turbines, the full extent of the proposed wind farm would be visible, resulting in a high magnitude of change.
	Access	The Proposed Development would largely appear oblique or perpendicular to the direction of travel when leaving/approaching the property. As a result, the magnitude of change is judged to be medium.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	Moderate, significant.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	As above.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Moderate, significant.
Overbearing:	No.	

Low Cordercan



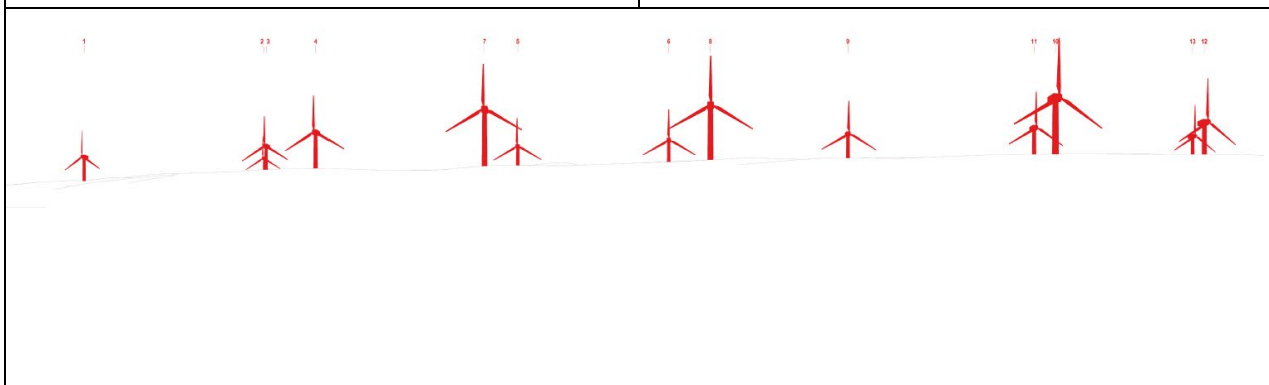
Property Type:	Single storey detached cottage	Visible Wind Farm Extent:	80.8°
Grid Reference:	E236952, N572551	No. of Blade Tips Theoretically Visible:	13
Elevation:	31m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Western facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1218m (T1)	RVAA Property Visit:	Yes. Access to curtilage only

Existing Residential Visual Amenity

Low Cordercan is located in the valley of the River Cree at the edge of the Galloway Forest Park. The property lies near the minor road, which permits access to the Forest Park. Primary elevations face northwards and southwards. The property is accessed from the minor road via a relatively short access track that leads to a parking area to the north and east of the property. Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	Direct views available from windows on the western facade. Views towards the Site from the windows are likely to be partially filtered by vegetation, including intervening woodland, to the west of the property that would obscure visibility of several turbines across all seasons, but particularly during spring/summer months when trees are in leaf.	
Views from curtilage:	Partial views available from the curtilage and garden areas, with intervening landform and woodland to the west providing some screening.	
Views from along access:	Partial views available from the access track on approach to the property. When leaving the property, the Proposed Development would appear behind or oblique to the direction of travel.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would introduce large-scale new elements in views available from the western façade of the main property. Oblique visibility may be achievable from northerly and southerly windows. As a result, the resulting magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	As above.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	Major, significant.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	The Proposed Development would introduce a medium magnitude of change when approaching the property.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Moderate, significant.
Overbearing:	No.	

Old Larg House



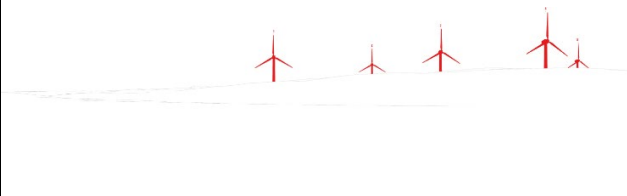
Property Type:	Two storey detached dwelling with associated farm buildings	Visible Wind Farm Extent:	79.8°
Grid Reference:	E235993, N574261	No. of Blade Tips Theoretically Visible:	13
Elevation:	30m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Western façade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1170m (T10)	RVAA Property Visit:	Yes. Access to curtilage only

Existing Residential Visual Amenity

Old Larg House is located in the valley of the River Cree at the edge of the Galloway Forest Park. The property lies near the minor road, which permits access to the Forest Park. Primary elevations face eastwards and westwards. The property is accessed from the minor road via a long access track that leads to a parking area to the south of the property. Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.

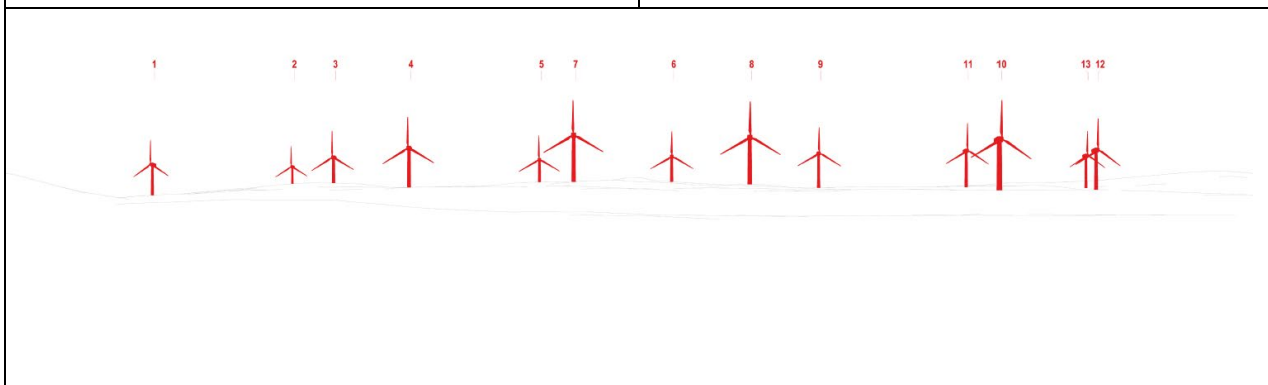
Views from within property:	Direct views available from windows on the western façade. Views towards the Site from the windows are partially filtered by garden planting. Intervening landform and woodland to the west, further obscures visibility of existing landscape features on the Site.	
Views from curtilage:	Partial views available from the curtilage and garden areas; with garden planting and intervening rising landform and woodland providing some screening.	
Views from along access:	Partial views available towards the Site from the access track when approaching/leaving the property; although, visibility is generally experienced oblique or perpendicular to the direction of travel.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements in views available from the western façade of the main property. Oblique visibility may also be achievable from windows on the southern facade. Whilst garden planting, and intervening landform and woodland may restrict views, there remains the prospect to view the upper portions of several turbines at close distances. As a result, the resulting magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	The Proposed Development would largely appear oblique or perpendicular to the direction of travel when leaving/approaching the property. As a result, the magnitude of change is judged to be medium.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	Moderate, significant.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	As above.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Moderate, significant.
Overbearing:	No.	

Shepherds Cottage

			
			
Property Type:	1.5 storey detached dwelling	Visible Wind Farm Extent:	96.2°
Grid Reference:	E236555, N573169	No. of Blade Tips Theoretically Visible:	13
Elevation:	60m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	South-western facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1234m (T4)	RVAA Property Visit:	Yes. Access to curtilage only
Existing Residential Visual Amenity			
Shepherds Cottage is located in the valley of the River Cree at the edge of the Galloway Forest Park. The property lies near the minor road, which permits access to the Forest Park. Primary elevations face northeast and southwest. The property is accessed directly from the minor road. A parking area lies to the east of the property. Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.			
Views from within property:	Direct views available from windows on the western façade. Potential for oblique visibility from the southern façade.		
Views from curtilage:	Partial views available from the curtilage and garden areas; with intervening rising landform and woodland providing some screening.		
Views from along access:	Property accessed directly off the minor road.		

Magnitude of change during daylight hours:	From Property	Direct views of up to 13no. blade tips and 13no. hubs at close distances. Whilst rising landform and woodland would provide partial screening from certain windows on the southern, and western facades, the Proposed Development would introduce large-scale new elements across a substantial portion of the views available from the southern and western facades. As a result, the magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	N/A.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	N/A.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	N/A.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	N/A.
Overbearing:	No.	

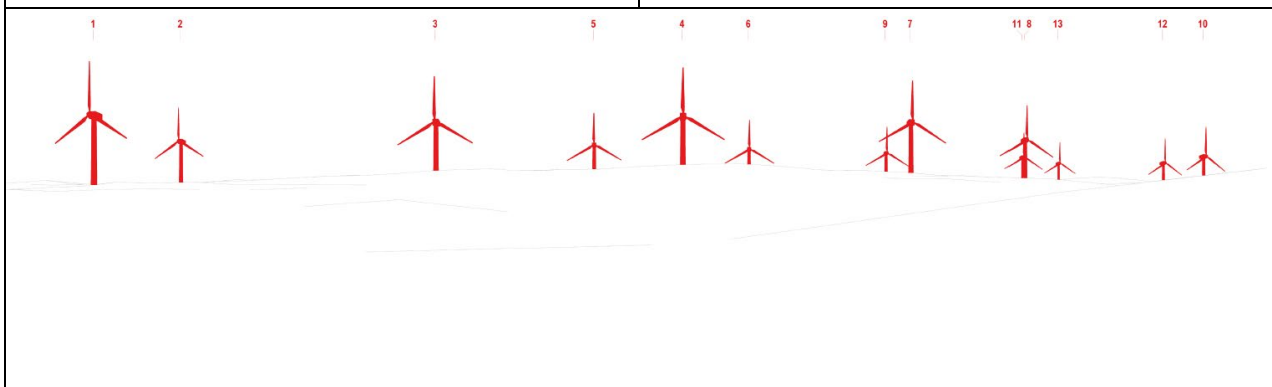
Borgan Cottage



Property Type:	Single storey detached cottage	Visible Wind Farm Extent:	67.7°
Grid Reference:	E236587, N574396	No. of Blade Tips Theoretically Visible:	13
Elevation:	35m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Western façade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1771m (T10)	RVAA Property Visit:	No. The assessment has however been informed by the visualisations for LVIA Viewpoint 19: The minor road outside Borgan Cottage , which represents views from the minor road in close proximity to the property

Existing Residential Visual Amenity		
Borgan Cottage is located within Glentool Forest in the Galloway Forest Park. The property lies near the minor road, which permits access to the Forest Park. Primary elevations face eastwards and westwards. A parking area lies to the north of the property. Forestry and rising landform enclose the northern, eastern, and southern facades beyond the surrounding paddock and pastoral fields. Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.		
Views from within property:	Direct views available from windows on the western façade of the property. Views towards the Site from the windows are likely to be partially filtered by garden planting, and intervening woodland to the west of the property.	
Views from curtilage:	Partial views available from the curtilage and garden areas, with garden planting, and intervening woodland providing some screening.	
Views from along access:	Property accessed directly off minor road.	
Magnitude of change during daylight hours:	From Property	Direct views of up to 13no. blade tips and 13no. hubs at close distances. The Proposed Development would introduce large-scale new elements across a substantial portion of the views available from the western façade of the property. As a result, the magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	N/A.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	N/A.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	N/A.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	N/A.
Overbearing:	No.	

Cordorcan Cluster



Property Type:	1.5 storey dwelling with adjoining holiday let cottage (Wee Cordorcan). Low Cordorcan Cottage is a detached single-storey cottage	Visible Wind Farm Extent:	78.7°
Grid Reference:	E237008, N572613	No. of Blade Tips Theoretically Visible:	13
Elevation:	35m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Two properties west, one south	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1301m (T1)	RVAA Property Visit:	No

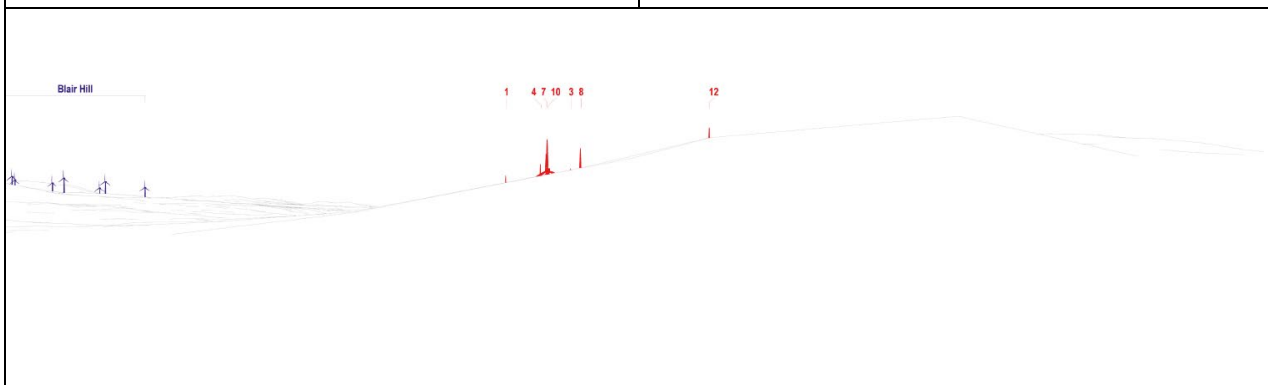
Existing Residential Visual Amenity

The Cordorcan Cluster is located in the valley of the River Cree at the edge of the Galloway Forest Park. The cluster, which comprises the main property: Wee Cordorcan, an adjoining holiday let cottage, along with a further holiday let cottage: Low Cordorcan Cottage. The properties lie near the minor road, which permits access to the Forest Park. Primary elevations from the main property face eastwards and westwards. The adjoining cottage is orientated north-south, whilst Low Cordorcan Cottage is orientated east-west. The properties are accessed via a relatively short access track that leads to a parking area to the west of the main property.

Existing views towards the Proposed Development feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within properties:	Direct views available from windows on the western façade of the main property. Views towards the Site from the windows are partially filtered by garden planting and adjacent built form. Intervening landform and woodland to the west, further obscures views of existing landscape features on the Site.	
Views from curtilage:	Partial views available from the curtilage and garden areas, with garden planting, adjacent built form, and intervening landform and woodland providing some screening.	
Views from along access:	Partial views available from the access track on approach to the properties. When leaving the properties, the Proposed Development would appear behind or oblique to the direction of travel.	
Magnitude of change during daylight hours:	From Properties	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements in views available from the western façade of the main property. Oblique visibility may be achievable from the southerly views of the two holiday let cottages; although, foreground vegetation would likely restrict views. As a result, the resulting magnitude of change is judged to be medium from the main property, and very low from the two holiday cottages.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	As above.
Level of effect during daylight hours:	From Properties	Major, significant from main property, and Minor/negligible, not significant from the two holiday cottages.
	Curtilage	Major, significant.
	Access	Major, significant.
Magnitude of change during darkness hours:	From Properties	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium from the main property. As foreground vegetation would likely restrict views from the two holiday cottages, the resulting magnitude of change is judged to be medium very low.
	Curtilage	There is prospect for visibility of lit turbines from the curtilage during darkness hours. As a result, the magnitude of change is judged to be high.
	Access	As above.
Level of effect during darkness hours:	From Properties	Moderate, significant from main property, and Minor/negligible, not significant from the two holiday cottages.
	Curtilage	Moderate, significant.
	Access	Moderate, significant.
Overbearing:	No.	

Garchew



Property Type:	Two-storey detached dwelling with associated farm buildings	Visible Wind Farm Extent:	31.8°
Grid Reference:	E234014, N575810	No. of Blade Tips Theoretically Visible:	7
Elevation:	82m (AOD)	No. of Hubs Theoretically Visible:	2
Orientation of facades towards Proposed Development:	South-eastern facade	No. of Lit Turbines Theoretically Visible:	2
Distance to Nearest Turbine:	1978m (T12)	RVAA Property Visit:	No

Existing Residential Visual Amenity

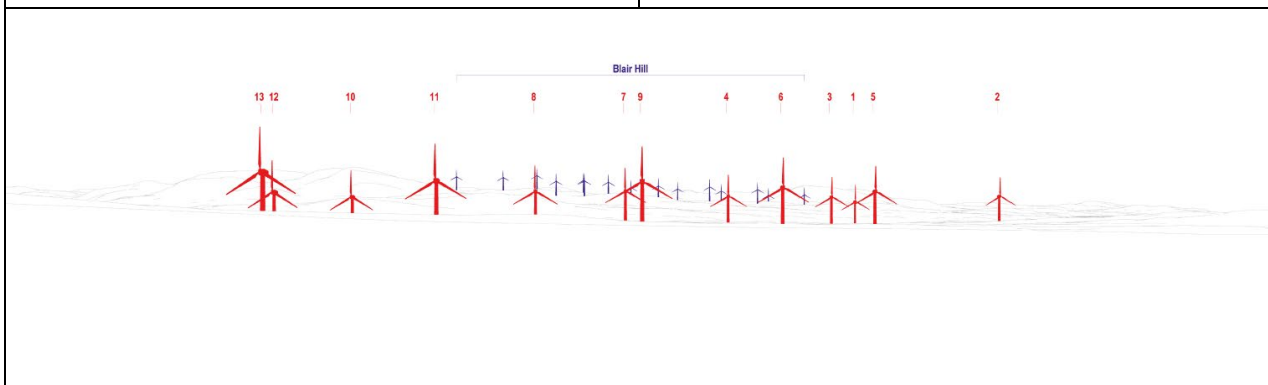
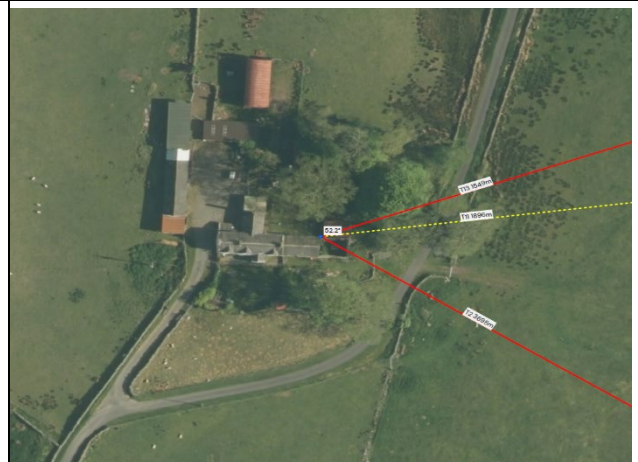
Garchew is located amongst farmland and rough grassland near a minor road. Primary elevations are assumed to be facing northwest and southeast. The property is accessed from the minor road via a very short drive that leads to a parking area to the east. A secondary access leads to the adjacent farm buildings, which enclose the property to the southwest and west. Existing views towards the Site are restricted by the rising landform of Butter Cairn, and intervening woodland to the south-southeast of the property. The Southern Uplands and the Wigtownshire Moors (including the existing wind farms on the horizon) are a regular feature in available views from the property and curtilage; although, currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	It is assumed that any views towards the Proposed Development from windows on the southern façade would be at an oblique angle. Views towards the Site from ground floor and upper floor windows are likely to be heavily screened by the rising landform of Butter Cairn, and intervening woodland to the south-southeast of the property.	
Views from curtilage:	Views towards the Site from the curtilage and garden areas are screened by the landform of Butter Cairn and intervening woodland. Farm buildings surrounding the property also restrict visibility, minimising the prospect to view landscape features on the Site.	
Views from along access:	Property accessed directly off minor road.	
Magnitude of change during daylight hours:	From Property	Up to 7no. blade tips and 2no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements across a minor portion of one part of the wider view. Butter Cairn and intervening woodland however limit the number of turbines potentially visible, with the upper blade sweeps of a limited number of turbines only likely to be available. As a result, the magnitude of change is judged to be low.
	Curtilage	As above.
	Access	N/A.
Level of effect during daylight hours:	From Property	Moderate/ minor, not significant.
	Curtilage	Moderate/ minor, not significant.
	Access	N/A.
Magnitude of change during darkness hours:	From Property	Up to 2no turbine lights visible in theory, however, Butter Cairn and intervening woodland is assumed to limit prospect for visibility of lit turbines from the property during darkness hours. As a result, the magnitude of change is judged to be low.
	Curtilage	As above.
	Access	N/A.
Level of effect during darkness hours:	From Property	Moderate/ minor, not significant.
	Curtilage	Moderate /minor, not significant.
	Access	N/A.
Overbearing:	No.	

Property Type:	Assumed two-storey detached dwelling with associated farm buildings	Visible Wind Farm Extent:	47.8°
Grid Reference:	E237463, N571311	No. of Blade Tips Theoretically Visible:	13
Elevation:	45m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Northern and western facades	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1336m (T1)	RVA Property Visit:	No
Existing Residential Visual Amenity			
Glenhapple Farm is located within Glenhapple Wood near the A714. Primary elevations are assumed to be facing northwards and southwards. The property is accessed from the A714 via a relatively short drive that turns off the road and is assumed to lead to a parking area to the north. From aerial photography, farm buildings appear to enclose the property to the north, with other built structures located in the large landholding that surrounds the property. Existing views towards the Site are likely to be partly restricted by farm buildings, rising landform, enclosing woodland, and the surrounding coniferous forestry plantation in Glenhapple Wood and Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.			

Views from within property:	It is assumed that any views towards the Proposed Development from windows on the northern and western façades would be at an oblique angle (assuming there are windows from these façades). Views towards the Site from ground floor windows are likely to be partially screened by adjacent farm buildings. Glimpsed views may be available from upper floor windows; however, they are likely to be partly screened by rising landform and surrounding coniferous forestry plantation to the northwest of the property.	
Views from curtilage:	Views towards the Site from the curtilage and garden areas are likely to be partly screened by rising landform and surrounding coniferous forestry plantation. Whilst mature woodland planting surrounding the property and built form at the property would also likely restrict visibility, there remains the prospect to view landscape features on the Site.	
Views from along access:	Views towards the Site from the access track would largely be oblique to the direction of travel on approach to the property, with enclosing vegetation and built form at the property heavily screening any prospective views. When leaving the property, the Proposed Development would appear behind the direction of travel.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements across a moderate portion of one part of the wider view. As a result, the magnitude of change is judged to be high.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	Existing vegetation along the access track would provide considerable screening of the proposed turbines. As a result, the magnitude of change is judged to be very low.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	Minor, not significant.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	Existing vegetation along the access track would provide screening of lit turbines, as would built form at the property. The resulting magnitude of change is judged to be very low.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Minor, not significant.
Overbearing:	No.	

Glenruther



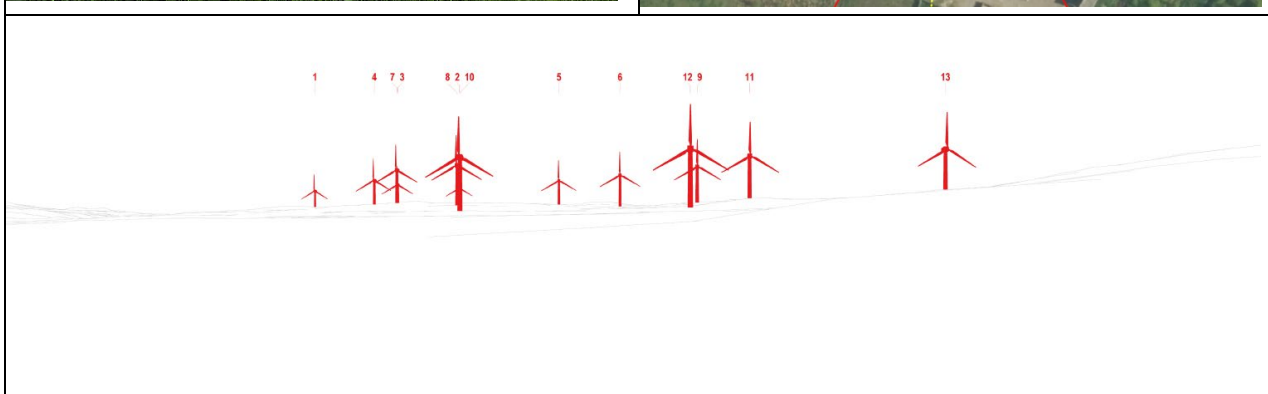
Property Type:	Two-storey detached dwelling with associated farm buildings	Visible Wind Farm Extent:	52.2°
Grid Reference:	E232385, N573178	No. of Blade Tips Theoretically Visible:	13
Elevation:	145m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Eastern facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1548m (T13)	RVAA Property Visit:	No

Existing Residential Visual Amenity

Glenruther is located amongst rough grassland near a minor road. Primary elevations are assumed to be facing northwards and southwards. The property is accessed from the minor road via a short drive that turns off the road and leads to a parking area to the south. A garden also lies to the south. Existing views towards the Site are restricted by enclosing garden planting, intervening rising landform and coniferous forestry plantation. Whilst existing views feature the Southern Uplands and the Wigtownshire Moors (including the existing wind farms on the horizon), currently there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	It is assumed that any views towards the Proposed Development from windows on the northern and southern façades would be at an oblique angle. There are no windows on the eastern façade, which faces the Site. Views towards the Site from ground floor windows are likely to be heavily screened by enclosing garden planting and intervening coniferous forestry plantation. Glimpsed views may be available from upper floor windows; however, they also are likely to be partly screened by enclosing garden planting and intervening landform and coniferous forestry plantation to the east-southeast.	
Views from curtilage:	Views towards the Site from the curtilage and garden areas are partly screened by enclosing garden planting and intervening coniferous forestry plantation. Whilst vegetation would restrict visibility across all seasons, there remains the prospect to view landscape features on the Site owing to the elevation.	
Views from along access:	Views towards the Site from the access track would be oblique or perpendicular to the direction of travel when approaching and leaving the property, with an enclosing drystone wall partially screening any prospective views.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory; however, orientation would most likely restrict views from the property. As a result, the magnitude of change is judged to be very low.
	Curtilage	The Proposed Development would theoretically introduce large-scale new elements across a moderate portion of one part of the wider view. Adjacent farm buildings, enclosing garden planting, and intervening coniferous forestry plantation would however most likely restrict views, resulting in a low magnitude of change.
	Access	The Proposed Development would introduce a very low magnitude of change.
Level of effect during daylight hours:	From Property	Minor, not significant.
	Curtilage	Moderate/minor, not significant.
	Access	Minor, not significant.
Magnitude of change during darkness hours:	From Property	Up to 6no. turbine lights visible in theory. Actual visibility of lit turbines would be limited by adjacent farm buildings, enclosing garden planting, and intervening coniferous forestry plantation. As a result, the magnitude of change is judged as very low.
	Curtilage	There is prospect for visibility of lit turbines from the curtilage during darkness hours. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged to be low.
	Access	The existing drystone wall along the access track would provide partial screening of lit turbines, as would intervening coniferous forestry plantation. The resulting magnitude of change is judged to be very low.
Level of effect during darkness hours:	From Property	Minor, not significant.
	Curtilage	Moderate/minor, not significant.
	Access	Minor, not significant.
Overbearing:	No.	

Glenvernoch



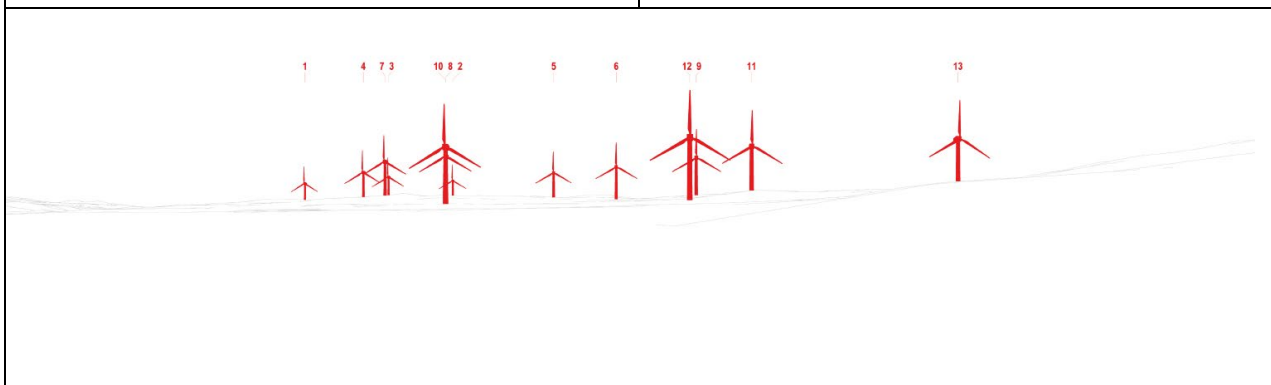
Property Type:	Assumed two-storey detached dwelling with associated farm buildings	Visible Wind Farm Extent:	46.7°
Grid Reference:	E234558, N575347	No. of Blade Tips Theoretically Visible:	13
Elevation:	62m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Southern facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1470m (T12)	RVAA Property Visit:	No

Existing Residential Visual Amenity

Glenvernoch is located amongst farmland and rough grassland near a minor road. Primary elevations are assumed to be facing north and south. The property is accessed from the minor road via a relatively short drive that turns off the road and is assumed to lead to a parking area to the east. From aerial photography, farm buildings appear to lie to the south, with gardens appearing to the east. Existing views towards the Proposed Development are assumed to feature Glenhapple Wood, Penninghame Forest, the Southern Uplands, and the Wigtownshire Moors (including the existing wind farms on the horizon). Currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	It is assumed that any views towards the Proposed Development from windows on the south façade would offer direct views of the proposed turbines (assuming there are windows from this facade). Views towards the proposed turbines from ground floor windows are likely to be partially screened by enclosing woodland and adjacent farm buildings. Views may be more readily available from upper floor windows; however, they also are likely to be partly screened by enclosing woodland.	
Views from curtilage:	Views towards the proposed turbines from the curtilage and garden areas are likely to be partly screened by intervening woodland. Whilst mature woodland planting surrounding the property and built form at the property would also likely restrict visibility, there remains the prospect to view landscape features on the Site.	
Views from along access:	Potential views towards the proposed turbines from the access track would largely be in the direction of travel on approach to the property, with enclosing vegetation heavily screening any prospective views. When leaving the property, the Proposed Development would appear behind the direction of travel.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements across a moderate portion of one part of the wider view. Adjacent farm buildings, and enclosing woodland would however provide partial screening. Owing to the prospect for direct views from the southern façade, the magnitude of change is judged to be high.
	Curtilage	Whilst there is prospect for intervening woodland to provide partial screening of the proposed turbines, there remains the prospect to view the full extent of the proposed wind farm at close distances. As a result, the magnitude of change is judged to be high.
	Access	Existing vegetation along the access track would provide considerable screening of the proposed turbines. As a result, the magnitude of change is judged to be very low.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	Minor, not significant.
Magnitude of change during darkness hours:	From Property	Up to 6no. turbine lights visible in theory. Whilst actual visibility of lit turbines would be slightly limited by adjacent farm buildings, and enclosing woodland there remains the prospect to view the lit turbines in direct views from the property. As a result, the magnitude of change is judged as medium.
	Curtilage	There is prospect for visibility of lit turbines from the curtilage during darkness hours. As a result, the magnitude of change is judged to be medium.
	Access	Existing vegetation along the access track would provide considerable screening of lit turbines. As a result, the magnitude of change is judged to be very low.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Minor, not significant.
Overbearing:	No.	

Glenvernoch Cottage



Property Type:	1.5 storey detached cottage	Visible Wind Farm Extent:	45.0°
Grid Reference:	E234562, N575445	No. of Blade Tips Theoretically Visible:	13
Elevation:	62m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	South-eastern facade	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1569m (T12)	RVAA Property Visit:	No

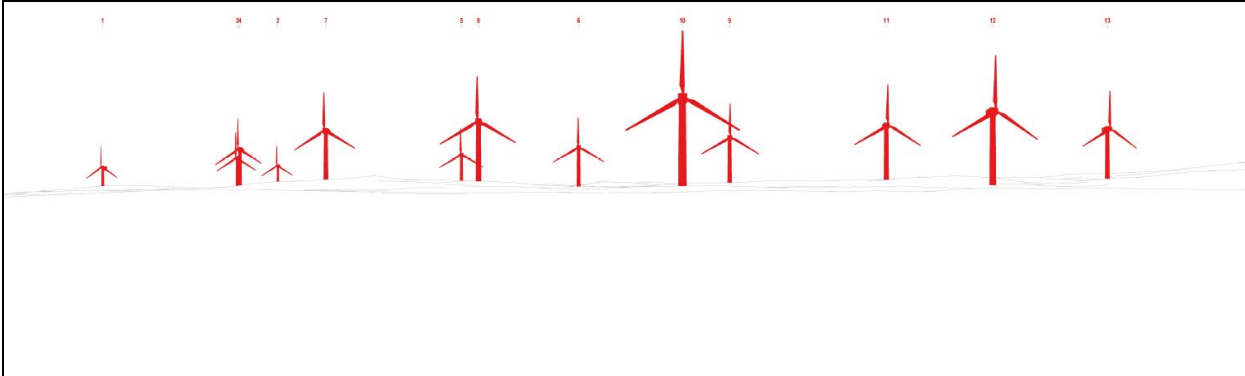
Existing Residential Visual Amenity			
Glenvernoch Cottage is located amongst farmland and rough grassland near a minor road. Primary elevations are assumed to be facing northwest and southeast. The property is accessed from the minor road via a very short drive that turns off the road and leads to a parking area to the northwest. A garden encloses the property. Existing views towards the Proposed Development are assumed to feature the neighbouring property and associated farm buildings at Glenvernoch, Glenhapple Wood, Penninghame Forest, the Southern Uplands, and the Wigtownshire Moors (including the existing wind farms on the horizon). Currently, there are no views of existing turbines in direction of the proposed wind farm.			

Views from within property:	Given the orientation of the property in relation to the Proposed Development, it is assumed that no views would be available from the property, even ones at an oblique angle. Were views permissible, the intervening woodland and built form at Glenvernoch would offer partial screening towards the proposed turbines.	
Views from curtilage:	Views towards the Proposed Development from the curtilage and garden areas are likely to be partly screened by intervening woodland. Whilst built form at the neighbouring Glenvernoch property would also likely restrict visibility, there remains the prospect to view landscape features on the Site.	
Views from along access:	Property accessed directly off minor road.	
Magnitude of change during daylight hours:	From Property	Up to 13no. blade tips and 13no. hubs visible in theory. The Proposed Development would theoretically introduce large-scale new elements across a moderate portion of one part of the wider view. The orientation of the property in relation to the proposed turbines would however likely negate any views, even oblique ones. Intervening woodland and built form at Glenvernoch would also offer partial screening. As a result, the magnitude of change is judged to be very low.
	Curtilage	Whilst intervening woodland and built form at Glenvernoch would provide partial screening of the proposed turbines, likely limiting views to the upper parts of the towers, hub and upper blade sweep of certain turbines, there remains the prospect to view the proposed wind farm at close distances. As a result, the magnitude of change is judged to be high.
	Access	N/A.
Level of effect during daylight hours:	From Property	Minor, not significant.
	Curtilage	Major, significant.
	Access	N/A.
Magnitude of change during darkness hours:	From Property	Up to 6no. turbine lights visible in theory. Actual visibility of lit turbines would be limited by the orientation of the property as well as by intervening woodland and built form. As a result, the magnitude of change is judged as very low.
	Curtilage	There is prospect for visibility of lit turbines from the curtilage during darkness hours. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Access	N/A.
Level of effect during darkness hours:	From Property	Minor, not significant.
	Curtilage	Moderate, significant.
	Access	N/A.
Overbearing:	No.	

Knockville and Crungie Woodland Log Cabins







Property Type:	1.5 storey holiday log cabins	Visible Wind Farm Extent:	70.5°
Grid Reference:	E235408, N574720	No. of Blade Tips Theoretically Visible:	13
Elevation:	50m (AOD)	No. of Hubs Theoretically Visible:	13
Orientation of facades towards Proposed Development:	Southern and western façades	No. of Lit Turbines Theoretically Visible:	6
Distance to Nearest Turbine:	1059m (T10)	RVAA Property Visit:	Yes

Existing Residential Visual Amenity

Upon construction, the two log cabins would be located amongst Knockville and Crungie Wood, which lies near the A714. Primary elevations are assumed to be facing eastwards and westwards. The holiday properties are accessed from the A714 via a long access track that is assumed will lead to a parking area at each property. Woodland encloses the northern and eastern facades of the most westerly cabin, whilst the secondary cabin is set within the woodland, with vegetation, including mature tree cover providing enclosure and restricting outward facing views. Existing views towards the Proposed Development from the westerly cabin feature the Hill of Ochiltree, Glenvernoch Fell, the Top of the Fell, Glassoch Fell, and the surrounding coniferous forestry plantation, including Penninghame Forest. Currently, there are no views of existing turbines in direction of the proposed wind farm.

Views from within property:	Direct views available from windows on the southern, and western facades of the most westerly cabin. Theoretical views available from windows on the southern, and western facades of the secondary cabin, which is set within the woodland. The northern and eastern façades of both cabins are orientated in the opposite direction of the Proposed Development.	
Views from curtilage:	Clear views assumed to be available from the curtilage and garden areas.	
Views from along access:	Views towards the Site from the access track would largely be oblique to the direction of travel when approaching/leaving the properties, with enclosing woodland heavily screening any prospective views.	
Magnitude of change during daylight hours:	From Property	Direct views of up to 13no. blade tips and 13no. hubs at close distances. The Proposed Development would introduce large-scale new elements across a substantial portion of the overall views available from the property. Orientation may negate views from certain windows on the northern, and eastern facades of the most westerly cabin (assuming there are windows from these façades). As a result, the magnitude of change is judged to be high. Views would be restricted from the secondary cabin, which is set in the woodland. The corresponding magnitude of change from this cabin is judged to be no greater than low.
	Curtilage	The Proposed Development would introduce large-scale elements, which would be seen at close proximity. As a result, the magnitude of change is judged to be high.
	Access	Existing woodland along the access track would provide considerable screening of the proposed turbines. The resulting magnitude of change is judged to be very low.
Level of effect during daylight hours:	From Property	Major, significant.
	Curtilage	Major, significant.
	Access	Minor, not significant.
Magnitude of change during darkness hours:	From Property	Direct views of up to 6no. turbine lights visible at close distances. With reference to Figure 6.6.2 , which shows the turbine lighting intensity, the intensity of the lights would be greatly reduced due to proximity and the difference in elevation between the turbine lights and the viewpoint. As a result, the magnitude of change is judged as medium.
	Curtilage	As above.
	Access	Existing woodland along the access track would provide considerable screening of lit turbines. The resulting magnitude of change is judged to be very low.
Level of effect during darkness hours:	From Property	Moderate, significant.
	Curtilage	Moderate, significant.
	Access	Minor, not significant.
Overbearing:	No.	

Cumulative Effects

- 1.48 In terms of cumulative assessment, where other existing wind farms are visible, this is taken into account in the baseline assessment for each property; however, this is generally not applicable to the majority of properties in the study area.
- 1.49 With regards to consented developments, from baseline and on-site analysis, it is not considered that there would be any substantive views of other consented developments from the properties considered that would bring about significant visual effects.
- 1.50 Regarding proposed developments, it is acknowledged that the Blair Hill wind farm development, which is at Scoping stage, but understood to be close to submission, lies just over 5km to the southeast of the Proposed Development. The cumulative ZTV prepared for the development (see **Figure 6.32: Cumulative ZTV within 20km – Glenvernoch with Blair Hill**) illustrates the potential for visibility of the Proposed Development with the Blair Hill development.
- 1.51 As a consequence of the distance between the two sites, the proposed Blair Hill wind farm would be either: in a separate direction to the Proposed Development when viewed from residential properties; or would appear at a clear distance behind the Proposed Development as a result of the physical separation between the two developments. There would be no additional properties that would experience a significant visual effect once the Blair Hill turbines are also considered, that have not already been identified to experience a significant visual effect from the proposed Glenvernoch turbines, in the analysis set out above.
- 1.52 Nonetheless, for some visual receptors in the landscape between the Glenvernoch and Blair Hill sites, there would be an increase in effects as a result of the Proposed Development being seen in views alongside or in the opposite direction to the Blair Hill development. This would include some of the residential properties which lie between the two developments. In particular, the Blair Hill development would be seen simultaneously with the Proposed Development in views from the following properties: Glenruther Lodge, Garchew, and Glenruther, which lies to the north and west of the Site. Successive views of the Blair Hill turbines would also be available from some properties such as Shepherds Cottage. Some additional localised significant cumulative effects would likely arise to visual amenity, but they would not alter the overall level of effects identified for each of the properties.

Summary and Conclusions

- 1.53 **Table 6.6.2** below summarises the predicted worst-case level of effect on visual amenity from properties within 2km resulting from the Proposed Development, from any view from the property, curtilage, and private access from each assessed property.
- 1.54 Having undertaken an appraisal of the relationship between the proposed turbines and the residential properties within the 2km RVAA study area, it is assessed that residents at some of the properties would experience a significant visual effect.

1.55 Whilst it is acknowledged that some properties within the 2km RVAA study area would experience significant visual effects, either individually or cumulatively, it is not the case that any of the effects would be of such a scale so as to become dominant or overbearing. This is due to a range of factors including:

- The separation distances between the residential properties and the proposed turbines.
- Visibility of the Proposed Development in only one part of the view available from the property or its domestic curtilage and the availability of other views from each property.
- The angle of views occupied by the Proposed Development.
- The nature of the intervening landform and vegetation, including plantation forestry and woodland that partially screens part of the proposed turbines, reducing their vertical scale, and the horizontal extent of the view occupied by the Proposed Development.

Table 6.6.2: Summary of RVAA

Property Name	Sensitivity	Daylight Hours			Darkness Hours			Overbearing
		Worst Case Magnitude of Change	Worst Case Level of Effect	Significant	Worst Case Magnitude of Change	Worst Case Level of Effect	Significant	
Borgan	High	High	Major	Yes	Medium	Moderate	Yes	No
Brighton Farm & But 'N' Ben Cottages	High	High	Major	Yes	Medium	Moderate	Yes	No
Clachaneasy	High	Very low	Minor/negligible	No	Very low/negligible	No effect	No	No
Glenruther Lodge	High	High	Major	Yes	Medium	Moderate	Yes	No
Larg Farm	High	High	Major	Yes	Medium	Moderate	Yes	No
Low Cordorcan	High	High	Major	Yes	Medium	Moderate	Yes	No
Old Larg House	High	High	Major	Yes	Medium	Moderate	Yes	No
Shepherds Cottage	High	High	Major	Yes	Medium	Moderate	Yes	No
Borgan Cottage	High	High	Major	Yes	Medium	Moderate	Yes	No
Cordorcan Cluster	High	High	Major	Yes	Medium	Moderate	Yes	No
Garchew	High	Low	Moderate/minor	No	Low	Moderate/minor	No	No
Glenhapple Farm	High	High	Major	Yes	Medium	Moderate	Yes	No
Glenruther	High	Low	Moderate/minor	No	Low	Moderate/minor	No	No
Glenvernoch	High	High	Major	Yes	Medium	Moderate	Yes	No
Glenvernoch Cottage	High	High	Major	Yes	Medium	Moderate	Yes	No
Ochiltree Cottage	High	Very low	Minor	No	Very low	Minor	No	No
Knockville and Crungie Woodland Log Cabins	High	High	Major	Yes	Medium	Moderate	Yes	No

Bold text indicates a significant effect.



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 622



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 454



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 334



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 212



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 127



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 61



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 33



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 15



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 7



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 4



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 2-3



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 2



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 2



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 1

Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 1



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 1



Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 1

Viewpoint Information

OS Reference: 252223 656272

Viewpoint height: 130m

Direction from site: North east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Lux: 1



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm



Viewpoint Information

OS Reference: 424306 410397

Viewpoint height: 156m

Direction from site: South east

Angle of view: 39.6 degrees

Correct viewing distance: 500mm

Glenvernoch Wind Farm

Environmental Impact Assessment Report EIAR Volume III – Technical Appendices Appendix 6.7: Assessment of Night-time Lighting: Assessment Criteria and Methodology

October 2024

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Version Control Sheet

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Edited/checked:		Date:	
Client review:	GO	Date:	08/10/2024
Legal review:		Date:	

1 ASSESSMENT OF NIGHT-TIME LIGHTING:

ASSESSMENT CRITERIA AND METHODOLOGY

Introduction

- 1.1 This Technical Appendix sets out the methodology and approach to the assessment of landscape and visual effects arising from the visible lighting of the Proposed Development, as set out within the **Chapter 6: Landscape and Visual**. The written assessment is supported by Zone of Theoretical Visibility (ZTV) plans showing where the lit turbines are visible from in theory (see **Figure 6.7.1 and Figure 6.7.2**) and showing the theoretical intensity of the lighting at **Figure 6.7.3**. Visualisations illustrating the proposed turbine lighting in the surrounding landscape have also been produced from **Viewpoint 2: A714, north of Bargrennan, Viewpoint 3: A714, junction with minor road to Glentroll, and Viewpoint 7: B7027 / Southern Upland Way, near Knowe**, which are included at **Volume 2**. The approach to the production of this supporting visual material is addressed in this appendix.
- 1.2 The primary source of best practice for Landscape and Visual Impact Assessment (LVIA) in the UK is 'The Guidelines for Landscape and Visual Impact Assessment,' 3rd Edition (GLVIA3)¹. The assessment criteria for the assessment of effects of visible turbine lighting has been developed in accordance with the principles established in this best practice document. It should however be acknowledged that GLVIA3 establishes guidelines not a specific methodology. The preface to GLVIA3 states:
- "This edition concentrates on principles and processes. It does not provide a detailed or formulaic 'recipe' that can be followed in every situation – it remains the responsibility of the professional to ensure that the approach and methodology adopted are appropriate to the task in hand."*
- 1.3 The assessment criteria set out below has therefore been developed specifically for this appraisal to ensure that the methodology is fit for purpose.
- 1.4 The purpose of an LVIA when undertaken in the context of an Environmental Impact Assessment (EIA) is to identify any likely significant landscape and visual effects arising as a result of the Proposed Development. An LVIA should consider both:
- effects on the landscape as a resource in its own right (the landscape effects); and
 - effects on specific views and visual amenity more generally (the visual effects).
- 1.5 For an assessment during daylight hours, one assesses the worst-case situation (i.e. clear full visibility as if a perfect day). A daytime assessment can therefore describe the full extent of that clear visibility, or lack of it, as a moment in time.

¹ Landscape Institute and the Institute for Environmental Management and Assessment (2013). The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3).

- 1.6 For an assessment of visible aviation lighting, an understanding of light conditions after sunset and before sunrise is required.

“Sunrise and sunset are taken to be the times at which the apparent upper limb of the Sun is on the (astronomical) horizon.” “Twilight is the interval preceding sunrise and following sunset when the sky is partially illuminated².”

- 1.7 The visible aviation lights would be switched on between Evening Civil Twilight and Morning Civil Twilight in accordance with the UK Almanac.
- 1.8 The visual assessment of the effects of visible aviation lighting has therefore taken place after the commencement of Evening Civil Twilight, within the period commonly referred to as “dusk,” when some degree of the landscape’s features can be discerned which is considered to be a reasonable worst-case.
- 1.9 It should be recognised however that as the sun continues to dip below the horizon through the periods of civil, nautical, and astronomical twilight, light levels continue to fall, and the amount of discernible landscape features rapidly decreases. The assessment has therefore focussed solely on the effects of the visible aviation on visual amenity. Without being able to fully appreciate landscape features and components that contribute to landscape character, it is not possible to carry out a meaningful landscape character assessment. This precedent was established in the Reporter’s decision for Crystal Rig IV (WIN-140-8)³.

Description of the Proposed Turbine Lighting, Mitigation Measures and Assumptions made in the Assessment Visualisations

- 1.10 In accordance with Civil Aviation Authority (CAA) CAP 764, turbines taller than 150m require visible aviation lighting. A visible aviation lighting layout has been produced for the Proposed Development (see the **Wind Farm Aviation Lighting Design for Glenvernoch Wind Farm prepared by Wind Power Aviation Consultants Ltd** for further details). According to the proposed design, six turbines (T1, T2, T6, T7, T10, and T13) would be fitted with visible red 2000/200 candela (cd) steady state lights on the nacelle of each turbine.
- 1.11 These would operate in the reduced 200cd intensity where meteorological visibility is greater than 5km, and where visibility is less than 5km, the lights would operate at 2000cd. The lights are also required to be able to shine a beam that reduces in intensity above and below the horizontal. According to the proposed design, there is no requirement for intermediate lighting to be installed halfway between the nacelle and the ground-level.
- 1.12 Should the relevant regulatory actions concerning the mandatory carriage of a compatible Electronic Conspicuity system on aircraft be completed and signed into law the project could consider the installation an Electronic Conspicuity (i.e. transponder)

² HM Nautical Almanac Office. Twilights. Available at:
<https://astro.ukho.gov.uk/nao/miscellanea/twilight/>

³ Crystal Rig Inquiry (WIN-140-8). Core Document ELC09. SNH Photos from aviation lighting visits November 2017. Available at: <https://www.dpea.scotland.gov.uk/CaseDetails.aspx?id=120491>

based Aircraft Detection Lighting System. The installation of such a suitable Aircraft Detection Lighting System would considerably reduce the occasions when the lighting would be visible.

1.13 For the purpose of the figures and visualisations prepared to help inform the assessment of visible aviation lighting set out in the LVIA, the following assumptions have been made in light of the proposed mitigation:

- Lighting is only shown on the six turbines that would be fitted with steady state visible aviation lighting.
- No intermediate lighting is illustrated halfway between the nacelle and the ground-level.
- As the photography was taken in clear weather conditions, when visibility was greater than 5km, the visualisations illustrate the reduced 200cd intensity to reflect the lighting that would arise in those conditions as a result of the mitigation proposed. It is understood that these images nonetheless represent the worst-case situation as should visibility be less than 5km such that the 2000cd lighting was active, then these poor conditions would of themselves be such as to restrict the visibility of the lighting to no more than that of the 200candela lighting seen in clear conditions.
- The reduction in the intensity of lights above and below the horizon has been illustrated on **Figure 6.7.3**. This ZTV shows the theoretical reduction in the candela intensity of the lights at vertical angles above and below the horizon to illustrate the reduction in the intensity of the lights at elevations below the level of the turbine lights.
- Whilst the lighting would reduce in intensity above and below the horizontal this reduction has not been illustrated in the night-time visualisations. As such the visualisations are worst-case. This matter has however been considered within the assessment judgements.
- The visualisations illustrate the period after the commencement of Evening Civil Twilight, when sufficient ambient light remains for the landform of the landscape on which the wind farm is proposed, to remain partially visible. The assessment also focuses on this period, which represents a 'worst-case.'
- Whilst the implementation of a suitable Aircraft Detection Lighting System would considerably reduce the occasions when the lighting would be visible, this has not been factored into the judgements of lighting effects which focus on the 'worst-case' scenario of the period when the lighting would be visible. The benefits of a reduction in the lighting associated with the Aircraft Detection Lighting System are nonetheless a matter for the wider planning balance exercise, addressed separately in the application submission.
- It is noted that the matter of darkness adaption is also a relevant consideration, with some receptors, in particular car drivers, not perceiving the lighting in the same manner as if they were in a fully dark environment, due to their vision being influenced by lighting sources in their proximity (i.e. car headlights). The same would apply to residents of residential properties who were viewing the aviation lighting from a location with existing lighting present (i.e. it is unlikely that residents would themselves be in a fully dark environment and their eyes therefore adapted to take in the full extent of the light from the turbines). This serves to further reduce the effects compared to how they are set out in the assessment, which again can be considered to represent

a 'worst-case' position compared to what would be experienced by many of the receptors in practice.

- The frequency in which a viewpoint is likely to be visited during the hours of darkness is not a factor which is considered within the assessment of magnitude or sensitivity. It should be noted however that viewpoints at hills summits and on long-distance footpaths would be unlikely to be visited after daylight hours. Any assessment of these receptors should therefore be considered a 'worst-case' scenario as in many cases the actual numbers of individuals who would be likely to experience the view would be very limited; although, it is recognised that there would be a few individuals such as landscape photographers who may visit hilltops to take photographs at sunset or sunrise or people star gazing.

Analysis of Aviation Lighting

- 1.14 In order to help inform the judgements made, site visits have been undertaken to the Middleton Wind Farm, East Renfrewshire: an operational commercial scale wind farm with aviation lights operating simultaneously at both 2000cd and 200cd. This has enabled consideration of aviation lighting in comparable low light levels, during the hours of darkness, for use as context and an aid to the work undertaken. A Photographic Record of images of the Middleton Wind Farm during low light conditions is set out at Annex 1 to this Technical Appendix, along with a further supporting record of images of the Emley Moor Transmitter mast in Annex 2, which has also been used as a guide (Emley Moor is a 300m concrete tower and mast lit with 2,000cd lights close to the Pegasus Office in Leeds, which has also been used as a convenient control and test location to 'ground truth' judgements).
- 1.15 Whilst these two sites act as an aide, it should be acknowledged that the aviation lighting proposed for the Proposed Development is different and that it would use the latest technology to mitigate the effect on the surrounding area.
- 1.16 Part of this additional site work also sought to consider if there would be any potential for surface illumination of the turbine blades, tower, or nacelle as a result of the aviation lighting to be visible in the wider landscape surrounding a wind farm. There was no clear visibility of such phenomena in the wider landscape during the site work undertaken; however, it is understood that such events may be possible in proximity to lit turbines in locations with very low natural light. It is therefore acknowledged as part of the judgements made within the assessment that such occurrences may be possible as a worse-case scenario but that they would not be typical of the general experience of the lighting when seen from the landscape.
- 1.17 A separate phenomenon which was experienced during the site visit to Middleton, was the manner in which the turbine blades passing in front of the turbine lighting serve to cause a temporary dimming and brightening of the lights. This is something which only occurs when the turbines are viewed with the blades in front of the nacelle and therefore is dependent on the prevailing wind direction on any given day. The dimming and brightening effect serve to increase the noticeability of the turbines within the view and therefore increases their visual effect. It is therefore acknowledged as part of the judgements made within the assessment that such occurrences would periodically occur

in relation to the proposed turbines (albeit the occurrence being most likely for locations to the south-west of the turbines where there are likely to be fewer visual receptors during the low light level period).

Approach to Sensitivity

Nature (Sensitivity) of Visual Receptors

- 1.18 The nature or sensitivity of a visual receptor group reflects their susceptibility to change, and the value associated with the specific view in question. It varies depending on a number of factors such as the occupation of the viewer, their viewing expectations, duration of view, and the angle or direction in which they would see the Site. Whilst most views are valued by someone, certain viewpoints are particularly highly valued for either their cultural or historical associations and this can increase the sensitivity of the view. The following criteria are provided for guidance only and are not exhaustive:
- **Very Low Sensitivity** – People engaged in industrial and commercial activities, or military activities, who would be unlikely to have any particular expectation of their wider night-time view.
 - **Low Sensitivity** - People at their place of work (e.g. offices); shoppers; users of trunk/major roads, and passengers on commercial railway lines (except where these form part of a recognised and promoted scenic route). The primary interest of such receptors would not generally be on the dusk/night-time view.
 - **Medium Sensitivity** - Users of public rights of way and minor roads which do not appear to be used primarily for recreational activities or the specific enjoyment of the landscape; recreational activities not specifically focused on the landscape (e.g. football). Such receptors may have some interest in their dusk/night-time view of the wider landscape, but generally their primary concern would be their immediate landscape context.
 - **High Sensitivity** – Residents at home; users of caravan parks, campsites and 'destination' hotels; tourist attractions open after daylight hours with opportunities for views of the landscape (but not specifically focused on a particular vista); users of public rights of way or minor roads which appear to be used for recreational purposes or the specific enjoyment of the landscape during dusk/night-time (often likely to be in close proximity to residential areas).
 - **Very High Sensitivity** - People at recognised vantage points (often with interpretation boards) which are designed to take in a night-time view, people at tourist attractions with a focus on a specific view which is available at dusk/ night-time, visitors to historic features/estates where the setting is important to an appreciation and understanding of cultural value and can be visited and appreciated during dusk/night-time.
- 1.19 It is important to appreciate that it is the visual receptor (i.e. the person) that has a sensitivity and not a property, public right of way, or road. A large number of people may use a motorway during dusk/ night-time, for example, but this does not increase the sensitivity of the receptors using it. Conversely, a residential property may only have one person living in it, but this does not reduce the sensitivity of that one receptor.

- 1.20 Where judgements are made about the sensitivity of assessment viewpoints, the sensitivity rating provided shall be an evaluation of the sensitivity of the receptor represented by the viewpoint and not a reflection of the number of people who may experience the view.
- 1.21 It is also important not to confuse the concept of visual sensitivity with the perception of turbines. It is acknowledged that some people consider turbines to be unattractive, but many people also enjoy the sight of them. This matter is therefore not a factor when determining sensitivity.

Approach to Nature (Magnitude) of Effects

Nature (Magnitude) of effects on Views and Visual Amenity

- 1.22 Visual effects are caused by the introduction of new elements into the views of a landscape, or the removal of elements from the existing view. In this case the effects would be brought about by the addition of visible lighting.
- 1.23 Professional judgement shall be used to determine the magnitude of impacts using the following criteria as guidance only:
- **Very Low Magnitude of Change** - No change or negligible change in views.
 - **Low Magnitude of Change** - Some change in the view that is not prominent but visible to some visual receptors.
 - **Medium Magnitude of Change** - Some change in the view that is clearly notable in the view and forms an easily identifiable component in the view.
 - **High Magnitude of Change** - A major change in the view that is highly prominent and has a strong influence on the overall view.
 - **Very High Magnitude of Change** – A change in the view that has a dominating or overbearing influence on the overall view.
- 1.24 Using this set of criteria, determining levels of magnitude is primarily dependant on how prominent the lighting associated with the Proposed Development would be in the landscape, and what may be judged to flow from that prominence or otherwise.
- 1.25 For clarification, the use of the term 'prominent' relates to how noticeable the lighting associated with the Proposed Development would be. This is affected by how close the viewpoint is to the Proposed Development but not entirely dependent on this factor. Other modifying factors include: the focus of the view, visual screening and the nature and scale of other landscape features, and visible lighting within the view. Rather than specifying crude bands of distance at which the proposed turbines would be prominent or incidental to the view etc, the prominence of the turbines in each view is described in detail for each viewpoint or receptor group taking all the relevant variables into consideration.

Consideration of the Duration and Reversibility of Effect

- 1.26 Prior to the publication of GLVIA3, LVIA practice had evolved over time in tandem with most other environmental disciplines to consider significance principally as a function of two factors, namely: the sensitivity of the receptor and the magnitude of the effect (the term 'magnitude' being a word most commonly used in LVIA and most other environmental disciplines to describe the size or scale of an effect).
- 1.27 The flow diagram on page 39 of GLVIA3 now suggests that the magnitude of effect is a function of three factors: the size/scale of the effect, the duration of the effect, and the reversibility of the effect). This, however, is somewhat problematic in the context of assessing wind energy development as wind energy developments are generally consented for a time limited period and are largely reversible at the end of their operational period. Whilst this is a material consideration in the planning balance it does not however, reduce the scale of the effect during the period in which the development is operational (i.e. the 'magnitude' of the effect in the traditional and commonly understood sense of the word). In this regard, it would be incorrect to report a lesser magnitude of change to the view during the operational phase as a result of the time limited period of the effect, or the relative reversibility of the effect.
- 1.28 The approach proposed to be taken in this assessment is therefore, to consider magnitude of effect solely as the scale or size of the effect in the traditional sense of the term 'magnitude.'

Approach to the Level of Effect

- 1.29 The purpose of an LVIA when produced in the context of an EIA is to identify any significant effects on landscape and visual amenity arising from the Proposed Development.
- 1.30 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 do not define a threshold at which an effect may be determined to be significant. In certain other environmental disciplines, there are regulatory thresholds or quantitative standards which help to determine the threshold of what constitutes a significant effect; however, in LVIA, any judgement about what constitutes a significant effect is the judgement of a competent and appropriately qualified professional assessor.
- 1.31 The level (relative significance) of the landscape and visual effects is determined by combining judgements regarding sensitivity of the landscape or the viewer, the magnitude of change, duration of effect and the reversibility of the effect. In determining the level of residual effects, all mitigation measures are taken into account.
- 1.32 The level (relative significance) of effect shall be described as **Major, Major/moderate, Moderate, Moderate/minor, Minor, Minor/no effect**. No Effect may also be recorded as appropriate where the effect is so negligible it is not even noteworthy.
- 1.33 In the assessment, those effects described as **Major, Major/moderate** and in some cases **Moderate** may be regarded as significant effects as required by the EIA Regulations. These are the effects which the authors of the LVIA consider to be most material in the decision-making process.

Production of the Zone of Theoretical Visibility (ZTV) Plans

- 1.34 A Zone of Theoretical Visibility (ZTV) illustrates the extents from which a feature (in this case the visible lighting from a number of wind turbines) would theoretically be visible within a defined study area. Two types of ZTV plans have been prepared. **Figure 6.7.1** and **Figure 6.7.2** show the theoretical visibility of the turbines proposed to be lit and illustrates the number of lit turbines theoretically visible from any point in the surrounding study area. In contrast, **Figure 6.7.3** illustrates the theoretical intensity of the turbine lights, taking into account the difference in elevation between the lights and any point in the surrounding study area, and the resulting reduced cd. It does not, however, allow for the reduction in intensity due to distance from the turbine light.
- 1.35 ZTVs are generated assuming a 'bare ground' terrain model. This means that the ZTVs presented are generated from topographical data only and they do not take any account of vegetation or the built environment, which may screen views of the proposed turbines. They are, as such, a 'worst case' zone of visual influence and considerably over-emphasise the actual visibility of the development. In reality, trees, hedges, and buildings may restrict views of the Proposed Development from many of the areas indicated on the ZTV as experiencing theoretical visibility.
- 1.36 The ZTVs have been generated using GIS software and are based on OS Terrain 50 height data. In the case of **Figure 6.7.1** and **Figure 6.7.2**, the programme then calculates whether any of the turbine lights would be visible from each 50m x 50m grid square for a specified distance in all directions. In the case of **Figure 6.7.3**, the programme calculates the theoretical visibility in each elevation band in degrees above and below the horizon.
- 1.37 It should be noted that when light travels from its source it diminishes in intensity, limiting the area that its source can illuminate, a process known as 'atmospheric attenuation' and is the result of absorption and scattering processes. Whilst the ZTV presented at **Figure 6.7.3** does not illustrate any reduction in intensity, it should be recognised that the aviation lighting would diminish in intensity with increased distance from the Proposed Development.
- 1.38 It should be noted that there are several limitations to the use of ZTVs. For a discussion of these limitations, please refer to Visual Representation of Wind farms – Version 2.2 (SNH February 2017). In particular, it should be noted that the ZTV plan simply illustrates theoretical visibility and does not imply or assign any level of significance to those areas identified as being within the ZTV. A ZTV is a tool to assist the Landscape Architect to identify where the turbine lighting would potentially be visible from, however, the assessment of landscape and visual effects shall not rely solely on the ZTV and in all cases professional judgement shall be used to evaluate the significance of effects.

Production of Dusk Period Visualisations

Introduction

- 1.39 SNH (now NatureScot) Guidance: Visual Representation of Wind Farms, Version 2.2, February 2017, considers the matter of visible turbine lighting at paragraphs 174 to 177. This highlights that:

“Where an illustration of lighting is required, a basic visualisation showing the existing view alongside an approximation of how the wind farm might look at night with aviation lighting may be useful.”

- 1.40 The Guidance goes on to note that:

“This is only likely to be required in particular situations where the wind farm is likely to be regularly viewed at night (e.g. from a settlement, transport route) or where there is a particular sensitivity to lighting (e.g. in or near a Dark Sky Park or Wild Land Area).” It is also clear that **“Not all viewpoints will need to be illustrated in this way”**.

- 1.41 The following section provides background information in relation to the dusk period visualisations which have been prepared to illustrate the visible lighting proposed as part of the Proposed Development. The text explains how the photography was taken and how the visualisations were prepared and presented. It includes instructions for how the visualisations should be viewed and explains the limitations of the visualisation material.

Viewpoints Illustrated with Dusk Period Visualisations

- 1.42 The starting point for consideration for which locations should be illustrated with dusk period visualisations was the locations proposed as assessment viewpoints for the main daytime period visual assessment. Of these viewpoints, a review was then undertaken in order to establish which were likely to be representative of visual receptors during low light conditions. In this regard, viewpoints at distances of beyond 10km from the Site were discounted, along with viewpoints at hills summits, and on long distance footpaths, which would be unlikely to be visited after daylight hours.

Dusk Period Photography

- 1.43 SNH advises that:

“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. It is only necessary to illustrate visible lighting, not infrared or other alternative lighting requirements.”

- 1.44 It goes on to note that:

“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. It is important that the photographs represent the levels of darkness as seen by the naked eye at the time and the camera exposure does

not make the image appear artificially brighter than it is in reality. It can also be helpful to note the intensity of other lights in the area to enable comparison (e.g. television transmitters) as this can aid the assessment process."

- 1.45 In this context, the following text explains how the baseline photography was taken for each viewpoint illustrated with a visualisation.
- 1.46 Each viewpoint illustrated with a visualisation was visited during the 'dusk period' and photographs taken at regular intervals as the light levels decreased across the dusk period. In particular, it was sought to gather photographs during the period where street lighting and other light sources of visible light in the baseline are illuminated, but the landform remains partially visible. The ambient light conditions were recorded during each round of photography with a light meter to seek to ensure consistency across the visualisations prepared.
- 1.47 Baseline photographs of the existing view were taken using either a high-quality Canon 5D Mark II digital camera with a Canon EF 50mm f/1.4 USM lens or a high-quality Nikon D600 with a 50mm f/1.4 lens. In accordance with the SNH guidance (2017), both cameras have a full frame digital sensor.
- 1.48 As far as possible, photographs were taken in good weather and clear visibility conditions.
- 1.49 Photographs are captured in high resolution JPEG format and as RAW metadata files.
- 1.50 At each viewpoint, the camera is mounted on a levelled tripod at a height of approximately 1.5m above ground level (providing an approximation of average adult eye level).
- 1.51 The camera is set up on a panoramic rotating head and photographs taken at 30-degree increments of rotation from left to right.
- 1.52 In each case, the camera focus is locked on the distant horizon (infinity). In doing so, the photographs are in each case focussed on the Site whilst very close objects in the foreground may in some cases be out of focus. This approach is in line with best practice photography techniques. The exposure is set correctly for the centre of the Site and then locked off so that it remained constant as the camera is rotated through the panorama.

Stitching of Panoramas and Post-Photographic Processing

- 1.53 Each of the panoramic images presented for the Photographic Record and used for the Visualisations is comprised of three single frame photographs stitched together and then cropped down to a particular horizontal and vertical field of view.
- 1.54 The panoramic baseline photographs, which illustrate a 90-degree horizontal angle of view, are stitched in cylindrical projection as per the SNH guidance.
- 1.55 The photomontages which show a 53.5-degree horizontal field of view are based on the same single frame panoramic photographs but stitched in planar projection in accordance with the SNH guidance.

- 1.56 In some cases, a degree of post photography processing of the raw image files may be undertaken to enhance the quality of the baseline photographs. As stated in the SNH guidance:

“Photographic processing involves judgements - there is no process by which a ‘pure’ photograph can be produced without the application of human decision-making, from exposure timing to the specification of the camera, and whether this is applied manually or automatically.....”

“In reality there is no way to avoid a photograph being enhanced as this is an integral part of photography and photomontage production.”

- 1.57 The extent of image enhancement undertaken, in the production of the photomontages, is however limited to that which would conventionally occur in a darkroom to improve the clarity of an image and does not in any case change the essential character of the image. Overall, a minimum of post-photography image enhancement takes place and during the stitching process none of the photographs are distorted in terms of scaling (other than that which is an inherent and unavoidable product of stitching photography in planar projection).

Production of Wirelines and Photomontages

Wirelines

- 1.58 A wireline visualisation (sometimes also referred to as a wireframe visualisation) is a computer-generated 3D outline of a particular structure (in this case a wind farm) placed on top of a 3D ground terrain model, which again is represented by a wireline. No rendering is given to any of the surfaces.
- 1.59 The wireline images of the proposed turbines (as well as any other cumulative turbines modelled) is generated utilising the actual dimensions of the proposed turbines and a model of the structures placed in position over a ground terrain model generated from Ordnance Survey Terrain 50 DTM data.
- 1.60 The coordinates of the viewpoints are recorded using a Global Positioning System (GPS) in the field. Checks on these coordinates are made with reference to Google Earth. These coordinates are then used to set up viewpoints in the model from which to view the turbines. The wirelines are generated using specialist computer software package ‘WindFarm’ by ReSoft Ltd.
- 1.61 The wireline images are generated on a bare ground model and therefore do not take account of any vegetation or the built environment between the viewpoint and the Proposed Development. As such, they represent a worst-case view.
- 1.62 For each of the viewpoints which are illustrated with a Visualisation, a wireline is presented to scale beneath a baseline photograph to illustrate the view. The wireline images illustrate the anticipated scale and position of the turbines in relation to the terrain. Each of the lit turbines is identified on the wireline as set out in best practice guidance.

Dusk Period Photomontages

- 1.63 In simple terms, a photomontage is the superimposition of a rendered, photorealistic, computer-generated model of a development (in this case a wind farm with visible lighting) on to a baseline photograph to illustrate how it will appear in the surrounding landscape context.
- 1.64 The production of the photomontages begins with the generation of a 3D digital ground terrain model and wireline images of the turbines, using ReSoft Ltd WindFarm software (as described above). The model of the structures is then rendered, and the lighting levels set appropriate to the date, time, and orientation on which the photograph was taken.
- 1.65 Using world coordinates in the computer modelling programme, the photographic viewpoints for which a photomontage is to be prepared is replicated such that a view is set up looking at the structures from exactly the same location as where the baseline photograph was taken from. The view from the model is then superimposed over the original photograph and edited as necessary in Adobe Photoshop to give a final photomontage. Several known landmarks in the far distance of the baseline photographs are recorded on site using a GPS and used to check that the positioning and scale of the structures is correct.
- 1.66 Whilst every effort is made to ensure the accuracy of the photomontages, it must be appreciated that no photomontage could ever claim to be 100% accurate as there are a number of technical limitations in the model relating to the accuracy of information available from Ordnance Survey and from the GPS. In particular, it should be recognised that baseline photographs on which photomontages are based can, at best, only ever be a 'flattened' 2D representation of what the eye sees in 3D on site. A photograph will never capture as much detail as the eye would see in the field. It therefore follows that a photomontage can never truly capture the sense of perspective and detail which would be possible in reality.
- 1.67 Additionally, it has been established during the field work undertaken for previous similar studies that dusk period photographs of visible lighting do not always capture the extent to which the eye perceives light sources during the dusk period. Often photography will appear to show the lighting to be more recessive than it is actually perceived in the field. The photomontages therefore do not seek to replicate the manner in which a dusk period photograph would capture the aviation lighting, rather they seek to replicate the manner in which the lighting is perceived when it is viewed in the field.
- 1.68 In some cases, the visibility of the turbines may also be slightly digitally enhanced to ensure that they are visible when printed out.
- 1.69 Each of the photomontages should be viewed from the stated viewing distance to give an accurate representation of what the Proposed Development would look like; however, the photomontages are simply a tool to assist the Landscape Architect in their assessment of effects. The assessment of visual effects does not rely solely on the photomontages, as it is ultimately professional judgement, which is used to evaluate the significance of effects.

Presentation of the Visualisation Sheets

- 1.70 For each dusk period viewpoint Visualisation, the following additional visualisation sheets are presented after the daytime visualisations:

Sheet D: Dusk Period Photomontage of the Proposed Development

- 1.71 This sheet provides a dusk period photomontage of the Proposed Development. The image also illustrates a 53.5-degree horizontal field of view and an 18-degree vertical field of view. This image is presented in cylindrical projection and the principal viewing distance (the distance at which one should view the image to obtain a geometrically accurate impression) is 500 mm when the image is curved through the same radius.
- 1.72 It is presented in planar projection, and as such the image should be viewed on a flat surface. The principal viewing distance (the distance at which one should view the image to obtain a geometrically accurate impression) is 812.5mm.
- 1.73 For the purposes of clarification this sheet illustrates only the Proposed Development in conjunction with existing operational wind farms. It does not show consented but as yet unbuilt turbines or any developments that are in planning or at the scoping stage.

Limitations of the Visualisations

- 1.74 Annex A of 'Visual Representation of Wind Farms, Version 2.2 (SNH, February 2017) sets out a summary of the key limitations of visualisations and recommends that these are set out for each windfarm application. The following text is therefore reproduced from Annex A of the aforementioned SNH guidance:

"Visualisations of wind farms have a number of limitations which you should be aware of when using them to form a judgement on a wind farm proposal. These include:

- *A visualisation can never show exactly what the wind farm will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image;*
- *The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate;*
- *A static image cannot convey turbine movement, or flicker or reflection from the sun on the turbine blades as they move;*
- *The viewpoints illustrated are representative of views in the area, but cannot represent visibility at all locations;*
- *To form the best impression of the impacts of the wind farm proposal these images are best viewed at the viewpoint location shown;*
- *The images must be printed at the right size to be viewed properly (260mm by 820mm);*
- *You should hold the images flat at a comfortable arm's length. If viewing these images on a wall or board at an exhibition, you should stand at arm's length from the image presented to gain the best impression.*

- *It is preferable to view printed images rather than view images on screen. If you do view images on screen you should do so using a normal PC screen with the image enlarged to the full screen height to give a realistic impression. Do not use a tablet or other device with a smaller screen to view the visualisations described in this guidance."*

1.75 It should also be noted that the quality of all printed visualisations is also dependent on the printing methods, paper and ink used.