Environmental Impact Assessment Report

Drummarnock Wind Farm

Appendix 5-2: Residential Visual Amenity Assessment

Drummarnock Wind Farm Limited

July 2024

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1 Residential Visual Amenity Assessment

1.1 Introduction

This Residential Visual Amenity Assessment (RVAA) describes the change in view likely to be experienced by residents at the closest properties to the proposed Drummarnock Wind Farm (the Proposed Development). The RVAA should be read in conjunction with Chapter 5: Landscape and Visual Impact Assessment (LVIA).

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

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

LI TGN 2/19 explains that:

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

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

Findings of significant effects on views or visual amenity from a property do not automatically imply the need for further assessment. However, for properties likely to experience a high magnitude of visual change and which are in proximity to a development, undertaking an RVAA may be appropriate.

The methodology for the RVAA is set out below along with the scope of the assessment. The findings of the assessment are presented in tabular format and the assessment concludes with a summary of the findings.

1.2 Methodology

The methodology is summarised as follows:

- Identification of properties to be considered (defining the study area and scope);
- Collation of baseline information from maps and aerial photographs and preparation of wireframe visualisations, to inform field survey;
- Field survey to collate information in relation to baseline views and visual amenity from each property;
- Assessment of the magnitude of change in visual amenity likely to be experienced at the property, and a judgement on the significance of the corresponding effect; and
- For properties experiencing a high magnitude of change, and therefore a significant effect, a judgement of whether the predicted change in views and visual amenity breaches the 'Residential Visual Amenity Threshold' described in LI TGN 2/19: that is, whether it would adversely affect residential visual amenity or 'living conditions'.

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

1.2.1 Study Area

The assessment includes consideration of the changes in views and visual amenity from all properties within approximately 2.5km of the proposed turbines (refer to **Figure A5-1-1**). Although there is the potential for significant visual effects to occur beyond this distance, such effects are not considered likely to affect 'living conditions'. This opinion is informed by experience, observations made on Site, and an understanding of the Proposed Development.

Properties were identified using Ordnance Survey (OS) AddressBase Plus data and verified in the field surveys.

1.2.2 Desktop Studies

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

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

In considering baseline visual amenity, the following was examined:

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

1.2.3 Field Surveys

Field surveys were undertaken from publicly accessible locations between March 2021 and January 2023 to determine the following baseline information:

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

- Field work was undertaken between winter and summer. This enabled the 'maximum case' scenario to be assessed, on the basis that any available screening offered by deciduous vegetation was at a minimum during winter months.

1.2.4 Preparation of Accompanying Visualisations

On the basis of guidance included in LI TGN 2/19, indicative wireline visualisations based on a bare ground digital terrain model were generated from all individual properties and property groups using Resoft Windfarm software. They are centred on the wind farm and illustrate a 53.5˚ included angle of view (in accordance with NatureScot visualisation guidance) and 2m viewing height from each location.

The wirelines are not necessarily representative of the primary outlook of the property and do not show features such as buildings and trees that may provide screening or filtering of views. It should therefore be noted that these indicative wireline visualisations represent a 'maximum visibility scenario' which may potentially be experienced from the property or its curtilage and this should be borne in mind when using the images.

The illustrative wireline visualisations show the proposed turbines only, with turbines numbered for ease of reference. No other components of the wind farm have the potential to affect views from residential properties. Therefore, these are not included in any of the accompanying visualisations. The principal/primary outlook of residential properties is discussed in the tables for each property/ property group in the assessment section which follows below.

Operational wind farms are part of the baseline against which the effects of the Proposed Development on residential visual amenity are judged. Given its proximity and potential relationship with the Proposed Development, the operational Craigengelt turbines have also been modelled into the wirelines which accompany this assessment. The single turbine at Craignannet has also been modelled in the wirelines, when visible. Where views of other operational and proposed wind farms are likely, this is also discussed (but noting there are no further wind farms within the RVAA study area).

The wireline visualisations from representative viewpoints are appended to the end of this report (see **Figures A5-1-2 to A5-1-16**).

1.2.5 Assessment of Potential Changes to Views and Visual Amenity

1.2.5.1 Sensitivity of Residential Receptors

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

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

1.2.5.2 Magnitude of Change to Views and Visual Amenity

The likely changes in views and visual amenity as a result of the Proposed Development are considered with reference to the individual wireframes from each property (see **Figures A5-1-2 to A5-1-16**) and an understanding of the baseline view. A judgement on the magnitude of visual change which will be experienced is made, and the change in views summarised, with reference, as appropriate, to the following factors which are set out in GLVIA3 (Page 115, Para. 6.39-6.40):

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

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

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

For each property or group of properties, the evaluation consists of:

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

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

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

Magnitude of visual change is expressed on a relative scale, as set out in Table A5-2-1 below, which highlights the differences between the types of change experienced in views from residential properties examined as part of this RVAA. The existing and proposed view from each property is described, and the likely relative magnitude of change (**high, medium, low, barely perceptible**) arising from the Proposed Development is determined. The nature of existing and predicted views (open, enclosed, panoramic, focused, framed etc.) affects the relative magnitude of change and is taken on board in reaching that judgement. The RVAA looks at the range of views likely to be available from the house and its curtilage and considers potential effects on all of these when coming to a judgement.

Table A5-2-1: Magnitude of change in views and visual amenity

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

Properties predicted to experience a **high** magnitude of change are carried forward for detailed assessment. A magnitude of change of high, in combination with the high sensitivity of residential receptors, is judged to result in a significant visual effect. Therefore, all properties carried forward for detailed assessment are anticipated to experience significant visual effects. A property experiencing significant visual effects will not necessarily experience effects on residential visual amenity which are judged to breach the Residential Visual Amenity Threshold. The RVAA concludes with a judgement as to the potential effect on 'living conditions', or residential visual amenity. This corresponds to the 'Residential Visual Amenity Threshold' as described in LI TGN 2/19.

For properties experiencing a **medium or lower** magnitude of change, it is considered that there is no potential for a breach of the Residential Visual Amenity Threshold, and this final stage of the assessment is therefore not undertaken for these properties.

1.3 Study Findings

The table below (Table A5-2-2) lists all of the properties assessed as part of this study, which correlates to those included on **Figure A5-1-1**). Computer modelling was used to provide details of distance, viewing direction and potential visibility of the Proposed Development. This potential visibility is further illustrated from representative viewpoints on **Figures A5-1-2 to A5-1-16** appended at the end of this report.

Following site survey and analysis of illustrative wirelines, notes were prepared for each of the properties and the potential magnitude of change which will be experienced at these. Where the magnitude of change is judged to be lower than high, commentary on these findings is provided in Table A5-2-2 below, and these receptors are not carried forward into the detailed Residential Visual Amenity assessment.

1.4 Conclusions

No properties will be subject to effects which breach the Residential Visual Amenity Threshold. As set out in the detailed assessment tables below, approximately three properties considered in this assessment will experience a high magnitude of change in the view from certain locations within their property and/or from the associated outdoor areas. When combined with the high sensitivity of the residential receptor, it is judged that these residential receptors will experience a significant visual effect. However, effects from these properties are not judged to breach the Residential Visual Amenity Threshold.

1.5 Assessment of Effects on Residential Visual Amenity

This section sets out the detailed assessment of effects on views and visual amenity for each individual property or group of properties detailed in Table A5-2-2 and shown on **Figure A5-1-1**. The location of each property is indicated on the accompanying aerial image along with the location from which the wireline(s) was generated to illustrate potential views of turbines from the property. The assessment should be read in conjunction with the accompanying wireline visualisations (**Figures A5-1-2 to A5-1-16**).

14 properties and a property group (of 5 properties) were identified within the 2.5km study area, using Address Data, and ZTV analysis confirmed theoretical visibility from all of them. Table A5-2-2 below identifies the properties which are taken forward for detailed assessment.

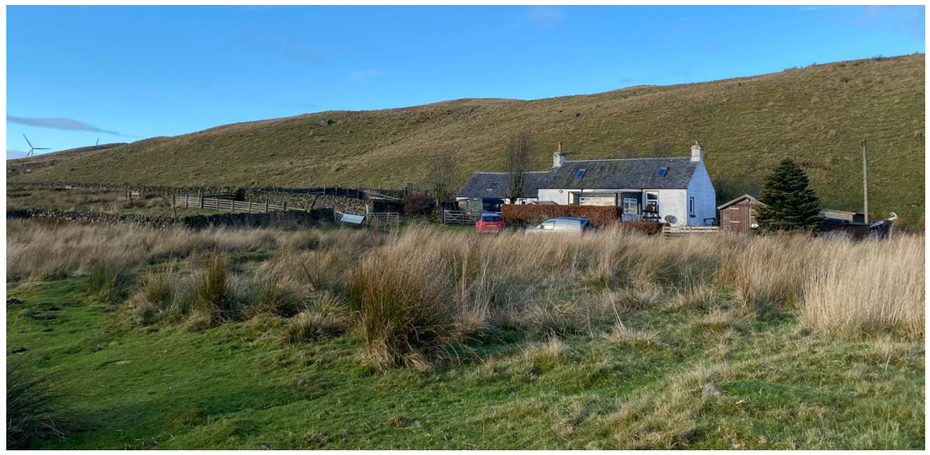
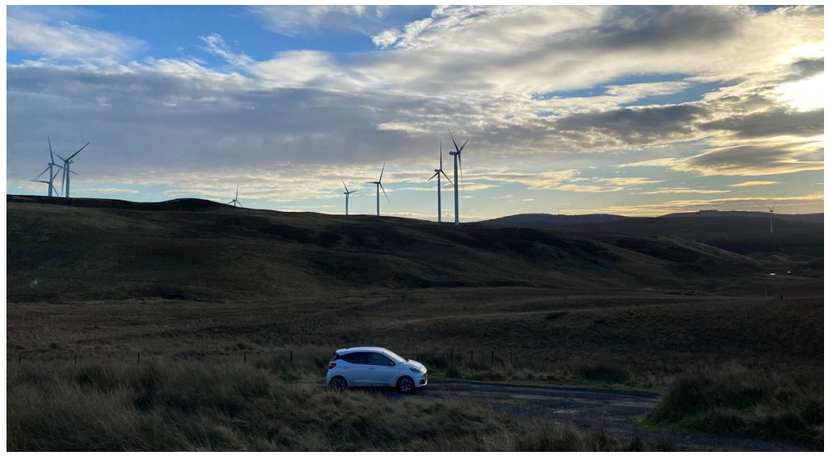
Table A5-2-2: Properties Considered in Assessment:

Name	Approximate Grid Ref	Distance to nearest turbine	Illustrative wireline Figure No.	Magnitude of Change	Considerations for detailed assessment
Easter Cringate Cottage	271748, 687542	1km	A5-1-2	High	**Considered further due to High magnitude of change. See Table A5-2-3.**
Ryecroft	272528, 688124	760m	A5-1-3	High	**Considered further due to High magnitude of change. See Table A5-2-4.**
Townhead Farm	274865, 689063	2km	A5-1-4	Medium	Not considered further, due to the predicted Medium magnitude of change. Reasoning: whilst some visibility from the access track (to the east) of the property is likely, large outbuildings and mature trees to the west and southwest of property, will largely screen views to the southwest from the property itself. Key views from the property are oriented to the southeast and will not be altered by the Proposed Development to the southwest. The orientation of views, combined with a viewing distance of 2km, is such that effects unlikely to breach the RVA threshold.
Todholes	275243, 688022	1.7km	A5-1-5	Medium-low	Not considered further, due to the predicted Medium-low magnitude of change. Reasoning: whilst some visibility from the access track to the property (to the north) is likely, a belt of mature trees and woodland (whilst these remain in place), to the west of property, will largely screen views to the west from the property itself. When visible, views will be heavily filtered with the Proposed Development seen in front of turbines in the operational Craigengelt Wind Farm (and in the context of horizons which have been altered by wind turbines). More open views from the property are oriented to the southeast and will not be altered by the Proposed Development to the west. In this context, and when considering the viewing distance, the effects are unlikely to breach RVA threshold.
Muirpark (property is financially involved)	275553, 687120	1.9km	A5-1-6	Medium-low	Not considered further, due to the predicted Medium-low magnitude of change. Reasoning: whilst some visibility from the access track (to the east) to property is likely, large outbuildings, abandoned structures and mature trees, to the north and west of property, will largely screen views to the west from the property. Key open views from the property are oriented to the east and will not be altered by the Proposed Development to the west. The orientation of views, combined with a viewing distance of 1.9km, and screening provided by intervening landform (which screens turbine bases and lower tower sections) are such that the effects are unlikely to breach the RVA threshold.
Shankhead Farm (and Shankhead)	275009, 685910	1.8km	A5-1-7 (A5-1-10)	Medium-low	Not considered further, due to the predicted Medium-low magnitude of change. Reasoning: both properties set on valley side to north of Buckie Burn, with primary views orientated to the southeast (Site located to northwest). Mature trees along the access track will largely screen views on approach. Outbuildings to northwest of Shankhead Farm are likely to screen secondary views to Site, from this property. Mature trees along the access track to Shankhead Farm are likely to screen secondary views towards Site from the property at Shankhead. Effects are unlikely to breach the RVA threshold.
Craigengelt (and Craigengelt Bungalow)	274458, 685855	1.4km	A5-1-8 (A5-1-11)	High	**Considered further due to High magnitude of change. See Table A5-2-5.**
Greathill House	275230, 688922	2.1km	A5-1-9	Medium-high	Not considered further, due to the predicted Medium-high magnitude of change. Reasoning: the main house is orientated with primary views to the southeast. Gable end views to the southwest are not available, with garden vegetation, fencing and hedgerow trees along the minor road to the west likely to play a notable screening role in external views. Holiday lets to the north of the main property are located on slightly higher ground, with some views orientated to the southwest. Garden vegetation, roadside hedgerows and a large fence are likely to play a notable screening role, in views towards the Site. When combined with a viewing distance of 2.1km, the effects are considered unlikely to breach the RVA threshold.
Easter Buckieburn	275393, 685597	2.2km	A5-1-12	Medium-	Not considered further due to Medium-low magnitude of change.

Name	Approximate Grid Ref	Distance to nearest turbine	Illustrative wireline Figure No.	Magnitude of Change	Considerations for detailed assessment
				low	Reasoning: primary views west from property screened by dense garden vegetation, including evergreen species. Effects are unlikely to breach the RVA threshold.
Buckieburn Cluster	275056, 685100	2.4km	A5-1-13	Low	Not considered further, due to the predicted Low magnitude of change. Reasoning: cluster of five properties, located approximately 2.4km to southeast of Site. Coniferous forest (whilst this remains in place, noting some clearance has been undertaken) to northwest provides screening. Local garden vegetation and outbuildings also provide a level of screening, from each property and in secondary views to northwest. More open primary views are also orientated to the south, east and southeast, looking over the upper extents of the Carron Valley. When considered in the round, and combined with a viewing distance of 2.4km or further, the effects are considered unlikely to breach the RVA threshold.
Earlsburn Cottage	270654, 688308	2.3km	A5-1-14	Medium-low	Not considered further, due to the predicted Medium-low magnitude of change. Reasoning: in more open views from southern facing façade of property, intervening landform of south-western flank of Earl's Hill screens the majority of the Proposed Development (beyond 2 turbine blades). When combined with a viewing distance of 2.3km, the effects are unlikely to breach RVA threshold.
Easter Cringate Farm (and Cairnoch New Lodge)	270493, 686893	2.3km	A5-1-15 (A5-1-16)	Low	Not considered further due to Low magnitude of change. Reasoning: properties set in woodland, largely screening views to the east. When visible, views will be heavily filtered with the Proposed Development seen beyond turbines in the operational Craigengelt Wind Farm (and appearing smaller in scale due to increased viewing distance).

Table A5-2-3 to 5 below describe the potential change in views from each property concluding with a statement with respect to living conditions.

Table A5-2-3: Easter Cringate Cottage

Name: Easter Cringate Cottage **(Note: this property is financially involved with Craigengelt Wind Farm)**			
Direction to Site	East	**Number of turbine hubs visible**	4
Distance to nearest turbine	1km	**Number of turbine blades visible**	4
Nearest turbine	T1		
Description of property, location and existing context:			
A detached 1.5 storey period cottage which is accessed via a short private track, linking to the minor road to the south. The property is situated on the lower southern flank of Earl's Hill and sits at a broadly similar elevation to the Proposed Development site, at approximately 325m AOD. There is a small garden area, to the south of the property, with some garden vegetation including a clipped beech hedge along the southern private garden boundary.			
Photograph:			
			
View from minor road looking north-west, towards southern facing property frontage. Turbines in Earlsburn Wind farm visible beyond.		*Views of operational Craigengelt Wind Farm, in open view south from property frontage*	
Description of existing views and visual amenity:			
The primary outlook from the property is focused to the south, looking over the valley of minor tributaries which feed into Earl's Burn. There are small windows on the property's southern frontage and a small covered porch area. Garden vegetation, including a clipped beech hedge, will provide a level of screening in views from the property itself. Views over the hedge, and from the short access track to the property, look over the open upper valley of Earl's Burn. Turbines in Craigengelt Wind Farm are visible on short distance enclosing horizons to the south, within 1km. Turbines in Earlsburn Wind Farm are visible on the approach to the property, to the north-west. From the property itself the rising landform behind is likely to provide more of a screening role to wind turbines in Earlsburn Wind Farm.			
Description of likely change in views and visual amenity as a result of the Proposed Development:			
Refer to Figure A5-1-2 The hubs and blades of four turbines will be visible, at a distance of 1km. The turbines will be visible in close proximity views from the access track to the property, and in views over a clipped beech hedge from the southern property frontage. Views towards the Proposed Development, to the east/ southeast, will be oblique from the southern facing property frontage. Gable end views to the east, from a small window on the eastern façade of the property, are likely to be largely screened by sheds to the immediate east of the property. Direct views into the site (and views of access tracks and turbine bases) will be screened by the intervening landform. During hours of darkness permanent aviation safety lighting on all four hubs will also be visible. Due to the viewing angle the intensity of this lighting will be below 200 candela (or below 20 candela in clear weather conditions, when the lights are dimmed to 10%). Refer to Figure A5-3-1. Night time effects relating to visibility of four aviation lights are not judged to breach the RVA threshold. The following conclusions relate to day time effects.			
Conclusion with respect to the potential effects on Living Conditions:			
The magnitude of visual change from this property is judged to be high. The Proposed Development will be visible in open views from the short access track to the property and in oblique views (looking over a clipped beech hedge) from the primary southern facing frontage, at a distance of 1km. The proposed turbines will be seen in the context of horizons which have been altered by close proximity views of wind turbines, due to Craigengelt Wind Farm. The proposed turbines will sit at a similar overall elevation to turbines in this scheme. Due to the viewing distance; partially screened nature of views from the property itself (views looking over a clipped beech hedge); and context in which the Proposed Development will be seen (horizons which have been altered by			

wind turbines), the Proposed Development will not appear overwhelming or oppressive.

It is not considered that the Proposed Development will breach the residential visual amenity threshold.

Table A5-2-4: Ryecroft

Name: Ryecroft			
Direction to Site	South-east	**Number of turbine hubs visible**	4
Distance to nearest turbine	760m	**Number of turbine blades visible**	4
Nearest turbine	T1		
Description of property, location and existing context:			
A large detached 1.5 storey 'H' shaped property, which is accessed via a short private track, linking to the minor road to the south-east. The property is situated on the lower south-eastern flank of Earl's Hill and sits at a broadly similar elevation to the Proposed Development site, at approximately 337m AOD. There are garden areas to the south-west and south-east of the property. There is a yard area to the north-west. During fieldwork, in January 2023, a small single storey extension was being constructed on the south-western façade of the property. There is mature planting including coniferous trees along the south-western and south-eastern boundary of the property.			
Photograph:			

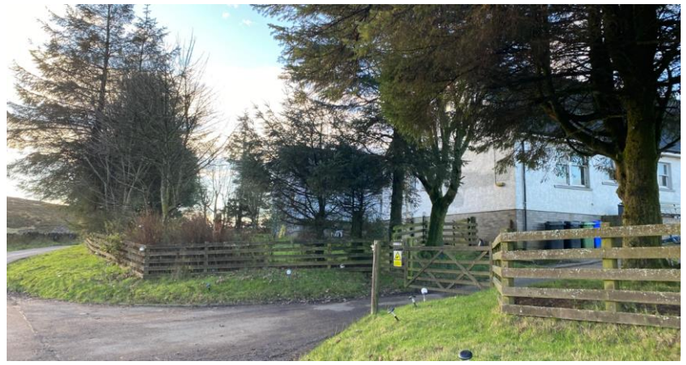
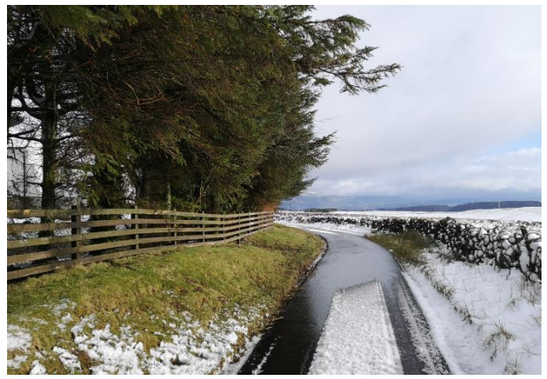
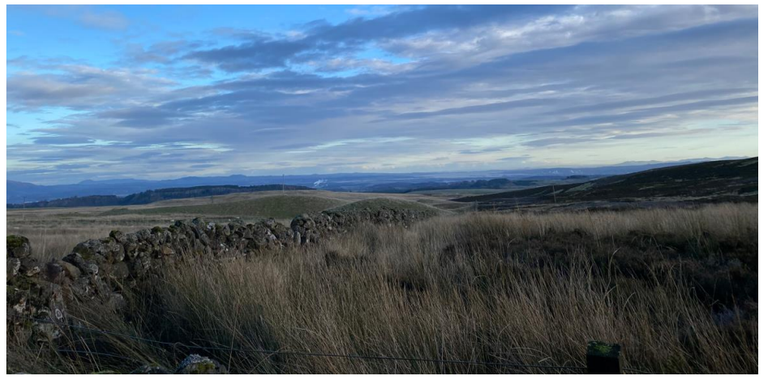

		

Photo highlighting screened/ filtered nature of views from south-eastern property frontage (view on eastern approach)	*Photo highlighting screened/ filtered nature of views from south-eastern property frontage (view on western approach)*	*Large scale nature of views, where open, to the south-east*	
Description of existing views and visual amenity:			
The primary outlook from the property is focused to the south-east and south-west, looking over private garden areas. There is a belt of mature planting, including coniferous trees, along the south-western and south-eastern property boundary, which screens/ heavily filters longer distance views in these directions. Where glimpses through/ between this vegetation are available, views to the south-east are long distance and large scale, looking towards the Forth Valley. Glimpses/ filtered views between boundary vegetation to the south and south-west are contained by the rising landform (minor summit at 373m), to the south-west of the minor road which passes to the south of the property. There are more open views from the north-eastern façade of the property, looking over a yard area and then out to the Touch Hills.			
Description of likely change in views and visual amenity as a result of the Proposed Development:			
Refer to Figure A5-1-3 The hubs and blades of up to four turbines will be theoretically visible, at a distance of 760m to the closest turbine. Views from the property and garden areas will be screened/ heavily filtered by the belt of mature planting, including coniferous vegetation, along the south-western and south-eastern property boundary. This planting will provide year-round screening. Where glimpses through/ between this vegetation are available, the Proposed Development will be seen in the context of long distance and large-scale views, looking towards the Forth Valley. The rising landform to the south will screen direct views into the site (and views of the operational Craigengelt Wind Farm) and also provides a degree of separation between the property and the closer proximity turbines in the scheme. More open views from the north-eastern façade of the property will remain unaltered. During hours of darkness permanent aviation safety lighting on all four hubs will also be visible. Due to the viewing angle the intensity of this lighting will be between 1000 and 400 candela (or between 100 to 40 candela in clear weather conditions, when the lights are dimmed to 10%). Refer to Figure A5-3-1. Night time effects relating to visibility of four aviation lights are not judged to breach the RVA threshold. The following conclusions relate to day time effects.			
Conclusion with respect to the potential effects on Living Conditions:			
Where visible, in glimpsed views through/ between coniferous planting and at a distance of 760m to the closest turbine, the magnitude of visual change from this property is judged to be high. Generally, however, the Proposed Development will be screened or heavily filtered in views between coniferous planting from the south-eastern frontage and garden areas of the property. When visible, the Proposed Development will be seen in the context of long distance and large-scale views to the south-east, looking towards the Forth Valley. The intervening rising landform will also provide a degree of separation between the Proposed Development, and the property. Due to the level of screening provided by garden vegetation, and in this context, the Proposed Development will not appear overwhelming or oppressive. **It is not considered that the Proposed Development will breach the residential visual amenity threshold.**			