Glenkerie Wind Farm

TECHNICAL APPENDICES

VOLUME 2

December 2007

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Submitted by

Prepared by

In association with

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GLENKERIE WIND FARM

VOLUME 2 TECHNICAL APPENDICES

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Middle Hill Wind Farm

SCOPING REPORT

Formal scoping opinion request to Scottish Borders Council

July 2005

Novera Wind Energy Ltd

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1.0 INTRODUCTION

1.1 Background

The Middle Hill site in the Borders region of Scotland was identified as a potential wind farm site by Renewable Energy Development Group Ltd (RED) following an extensive review of possible sites throughout Scotland and northern England. RED is developing the site on behalf of Novera Wind Energy Ltd ('Novera'),

The site is approximately 12 kms south-east of Biggar, to the west of the A701. The location and site boundary of Middle Hill is shown on Figure 1.

RED and Novera have commissioned West Coast Energy Ltd (WCE) to coordinate an Environmental Impact Assessment (EIA) of the proposed wind farm at Middle Hill.

The development is one for which an EIA can be required under the Environmental Impact Assessment (Scotland) Regulations 1999. In this case, WCE decided that an EIA was appropriate, dispensing with the need to obtain a formal Screening Opinion. It is now intended to discuss the scope of the assessment with the local planning authority and other consultees.

This scoping report provides a description of the proposed wind farm and associated infrastructure. It defines the EIA process that will be undertaken to identify potential environmental impacts resulting from the wind farm and includes the proposed methods to be used in the EIA. Finally, the scoping report proposes an initial structure and list of contents for the Environmental Statement (ES).

1.2 Scoping Opinion Request and Consultation

This scoping report requests the Scottish Borders Council (SBC) to forward to the agent (WCE) a formal scoping opinion that details the EIA requirements of the proposed wind farm application known as 'Middle Hill'. It is understood that SBC will produce the scoping opinion via consultation with other prescribed consultation bodies.[1] The purpose of this scoping opinion request document is to provide information about the proposal in order to determine the appropriate scope of the EIA in terms of:

- The potential environmental effects to be included or excluded from consideration;
- The spatial and temporal extent to be considered;
- The methods of study and analysis to be used; and
- The presentation of findings, analysis and recommendations.

Accordingly, WCE invites SBC and consultation bodies to stipulate:

- The potential environmental effects to be assessed;
- The specific assessment/analysis methodologies to be followed; and
- Any other aspects or issues which should be considered within the EIA.

[1] Defined in *The Environmental Impact Assessment (Scotland) Regulations* 1999 as: adjoining planning authority, Scottish Natural Heritage, SEPA, HSE, Scottish Ministers.

In addition, SBC and consultation bodies are invited to provide any other relevant environmental information relating to the site and surrounding area, such as:

- Planning designations (e.g. NSA, AGLV, SAMs, SSSI/RAMSAR/SAC/SPA sites, Area of Search, etc); and/or
- Locally important sites, areas or aspects of potential sensitivity (e.g. Archaeology, Annex 1 Bird Migratory Flight Paths, LBAP habitats/species, etc).

In parallel with the scoping request, a broader pre-application consultation programme will be undertaken. WCE will ensure that the appropriate community councils, community members and other interested parties are actively consulted throughout the EIA process.

2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location and Context

The site is in the SBC area, close to the border with South Lanarkshire and is approximately 5km north-west of the village of Tweedsmuir, 5km south-west of the village of Drumelzier and 12km south-east of the town of Biggar. At present, the land is mainly used for sheep grazing and rough pasture. The site consists of a series of steep hills connected by a ridge. Glenlood Hill with a height of 566m is the highest point on the site. The location of the development site is shown in Figure 1 and a preliminary layout in Figure 2.

Other than isolated properties, Tweedsmuir and Drumelzier are the closest settlements.

Figure 3 shows designated areas within the vicinity of the development and shows that the site lies within an Area of Great Landscape Value and adjacent to a National Scenic Area (NSA).

The closest existing wind farm is Bowbeat, near Peebles which is approximately 25km from the site. Black Law and Hagshaw Hill wind farms in South Lanarkshire lie 30km to the north-west and west respectively. Wind farm proposals within 60km of the site (that are known) are detailed in Table 2 and shown in Figure 12.

2.2 Planning Policy

The EIA will provide an overview of international and national policy include the following:

- Policy resulting from the 1992 Earth Summit and 1997 Kyoto Agreement; and
- UK and Scottish renewable energy targets.

The following planning guidance, policy and plans will be considered in the EIA:

- *National Planning Policy Guidance 6 (Renewable Energy Developments) Revised 2000*;
- *Planning Advice Note 45 (Renewable Energy Development) 2002*;
- Other relevant NPPGs and PANs;
- Scottish Border Structure Plan 2001-2011 (2001);
- Scottish Borders Local Plan – Consultative Draft; and
- Current or draft wind energy policies (e.g. locational guidance for wind farms, such as areas of search/preferred areas).

2.3 Project Description

The preliminary layout for the Middle Hill wind farm suggests that the project will comprise of approximately 11 turbines orientated to take advantage of the prevailing winds. The turbines would be three bladed horizontal axis machines with a maximum hub height of 65m and a maximum rotor blade diameter of 80m, giving an overall maximum height of 105m to blade tip. Rated output from each turbine would be between 2MW and 3MW.

Turbines typically have a design operational life of 25-30 years and the normal operating life of the wind farm would be expected to be 25 years. At the end of this period the turbines can be removed, and appropriate site restoration measures implemented.

The land take of a wind farm is typically quite small amounting to some 1-2% of the site area. Due to the aerodynamics of the wind resource, the turbines are spaced apart so as not to interfere with one another. Accordingly, the land loss is limited to the foundations of the turbine towers themselves, the substation site and site access roadways.

Turbine foundations would typically comprise a 17.0m diameter reinforced concrete slab (volume approx 400m^3) buried at a depth of 1.8m. Topsoil and vegetation are stripped for construction of the foundations and would be stored and reinstated once turbine construction is completed. Material won from foundation excavations would, if suitable, be utilised in the construction of site infrastructure.

The turbines would be connected by approximately 6kms of on-site access tracks for construction and maintenance purposes system. The tracks would connect to the surrounding public road network and would be required to facilitate access by standard and 'exceptional load'[2] HGVs to each turbine position during the construction period and to allow access by maintenance traffic thereafter.

It is envisaged that approximately 6km of new tracks (5m wide with two 0.5m verges giving a total width of 6m) would be required, with some additional widening on bends, junctions and turning places on existing roads. Road stone required for these improvements would be preferably won on site (insitu borrow pit(s)). Additional stone aggregate will only be imported if sufficient quality material cannot be sourced from within the site. Tracks would be designed to become re-vegetated over time whilst still retaining their load bearing capacity. The access track specification would be varied to suit the soil conditions on the site. If required, two basic designs of track will be proposed: one for freely draining, firm soils; and one for wetter, peat soils.

On-site electrical connections would be by 33kV underground cable, lain in trenches approximately 1.5m wide by 0.75m deep. These trenches would be located adjacent to the access tracks and would terminate at the on-site control building.

The new substation will be positioned on lower ground within the site at a location to be agreed. The appearance of the substation will be designed to blend sympathetically with existing buildings in the area and will be constructed with local materials. The substation compound would measure approximately 40m by 30m and would, if necessary, be screened by bunds and planting.

The substation building would incorporate the main high voltage switchgear and metering as well as a storage area. It would be single storey and constructed using reconstituted stone with a pitched slate roof. It would have three painted steel doors and no windows. The building would be approximately 14m by 6m by 5.5m high (to the roof apex).

There would be one or more permanent anemometer masts up to 60m (hub height) height for control purposes on the site. These would be either a guyed tubular steel type or a steel lattice design without guys. A separate planning application for a 50m temporary mast is

[2] 'Exceptional Load' HGVs, also known as 'Special Order Category Abnormal Indivisible Loads '(AILs), 'extended length' vehicles, 'heavy loads'. Such vehicles will be required to transport wind turbine components (blades, nacelle and tower sections) to the site from the local highway road network.

currently being prepared in order to enable wind data to be gathered and analysed and thus contribute to the site layout design.

Considerable effort will be made in the site design and layout to avoid sensitive areas of habitat for both engineering and ecological reasons. Where it is not been possible to avoid such areas, special engineering designs would be adopted in consultation with an ecologist to minimise effects.

Grid Connection

An overhead line for the purposes of a grid connection will require consent under Section 37 of *The Electricity Act 1989.* This will be submitted separately along with any supplementary environmental information that may be required.

It is anticipated that the wind farm substation would be connected to the existing grid network by overhead lines. The EIA process, coupled with further consultation with the local network operator, will identify a grid connection based on the most feasible route of least environmental constraint and lowest visual impact.

SBC is invited to comment on the specific information required to be shown within the Environmental Statement in regards to grid connection.

Construction

The construction phase would take approximately 9 to 12 months from commencement of works, which would include:

- Site establishment;
- Construction of access tracks and cable laying;
- Turbine foundations;
- Control building construction;
- Turbine erection;
- Commissioning; and
- Site demobilisation.

A temporary site construction compound will be required for the construction phase, and would be located in agreement with statutory consultees. Typically, the site construction compound will consist of a laydown area of approximately 50m by 100m and possibly one additional 100m by 50m marshalling area without buildings. Additional buildings and service areas would contain temporary site offices and services such as sealed waste storage toilet facilities, sufficient parking for cars and construction vehicles, containerised storage facilities, receiving area for incoming vehicles, and bunded areas for fuel storage and potential onsite concrete batching. After construction completion, the compound(s) would be removed and the site cleared of hard-core, with the ground restored through regrading to an appropriate profile.

Concrete for site construction would, where possible, be batched on site in order to reduce HGV traffic impacts on local infrastructure. Some material for the production of concrete would be sourced from the site but materials not available from the site would be sourced externally. Alternatively, if it is not possible to batch concrete on site, it would be obtained

from other sources, as close to the site as is possible and conveyed to the site in mixer transporter HGV vehicles.

It is intended to source roadstone for track construction from borrow pits at locations to be identified within the site. Aggregate for wind turbine foundations is likely to be sourced off-site. Details of the siting, design, mitigation and restoration of these pits would be supplied as part of the EIA process.

Vehicle Movements

Articulated transport would deliver the wind turbine components to the site. Tracked construction plant such as excavator and bulldozers would be transported to site on low loaders. If necessary, or as advised by the Highways Authority, SBC, and local police, large loads would be escorted along the main access route.

Site Reinstatement

The precise methods to be used for site reinstatement will form an integral part of the post-construction restoration programme.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGIES

3.1 Potential Effects

The potential environmental effects arising from the construction and operation of the proposed wind farm at the Middle Hill site will be identified through commissioning independent environmental specialist consultants to undertake EIA studies. The EIA studies would identify the source of any potential effects and associated receptors. Consideration will also be given to the interaction of effects, and the potential for secondary and cumulative effects. The ES will present the findings of the EIA studies and would include, where appropriate, suitable mitigation proposals.

WCE has extensive experience in managing wind farm EIAs and based on this experience and existing site information, it is likely that the following issues will need to be addressed in the EIA for the Middle Hill wind farm:

- Landscape and visual effects including cumulative effects;
- Noise;
- Ecology (mammal and plant) including local designated or candidate sites, habitats or designated species;
- Ornithology;
- Cultural heritage;
- Hydrogeology/soils;
- Telecommunications/aviation/safety;
- Transport; and
- Socio-economics.

It is intended that the EIA process will concentrate primarily on these issues. However, SBC and consultation bodies are invited to stipulate any other environmental aspects that should be considered within the EIA process.

A cumulative landscape and visual assessment will be completed; it is possible that a cumulative ornithological assessment may also be required.

Table 1 lists potential environmental effects that are typically encountered with wind farm development proposals. It should be noted that the list is not prescriptive and does not mean that the proposed Middle Hill site will result in all such potential effects.

Table 1. Generic Wind Farm Potential Effects

Environmental Medium	Life Cycle	Specific element	Potential effects	Potential sensitive receptors
Landscape and Visual	Construction	Construction plant, Temporary Construction Facilities	Temporary effects on landscape fabric and quality Temporary effects on visual amenity	Designated landscapes; Other landscapes; Residents, visitors, road users, hill walkers.
	Operation	Tracks, Turbines, Control building, Meteorological Equipment.	Long term effects on landscape fabric and quality Long term effects on visual amenity Cumulative effects with other wind farms	
	Decommissioning	Construction plant	Temporary effects on landscape fabric and quality Temporary effects on visual amenity	
Noise	Construction	Construction plant, Borrow Pits, Rock Crushing	Temporary increase in ambient noise levels	Residents local to site Visitors
	Operation	Turbines	Long term aerodynamic and mechanical noise	Residents local to site Visitors
	Decommissioning	Construction plant	Temporary increase in ambient noise levels	Residents local to site Visitors
Ecology	Construction	Temporary Construction Facilities	Loss or disturbance of habitat, and secondary effects on associated fauna	Statutorily designated habitat (SSSI's) and species (site and adjacent) Other designated habitat and species (site and adjacent) Other habitat and species (site and adjacent) Statutorily conserved trees Other trees
		Borrow Pits	Permanent loss of habitat	
		General civil works	Secondary effects on aquatic habitat and fauna, due to effects on water quality	
		Construction plant	Temporary disturbance of fauna	
		Off-site Road Improvements	Loss or disturbance of habitat and secondary effects on associated species Removal of trees	
	Operation	Roads, Turbine Foundations	Secondary long term effects on habitat, especially peatland / mire, due to change in hydrology, and effects on associated species Long term loss or fragmentation of habitat	

Environmental Medium	Life Cycle	Specific element	Potential effects	Potential sensitive receptors
Ornithology	Construction	Temporary Construction Facilities	Temporary disturbance of foraging/nesting birds	Statutorily designated species Other designated species Other species including raptors, waders and other moorland birds potentially nesting/foraging on or adjacent to the site).
		Construction plant	Temporary disturbance of birds	
	Operation	Turbines, Meteorological Measurement Equipment	Long term disturbance of birds / loss or fragmentation of habitat	
		Maintenance	Infrequent disturbance of birds	
	Decommissioning	Construction plant	Temporary disturbance of birds	
Cultural Heritage	Construction	Roads, Foundations, Cabling, Grid connection	Disturbance of archaeological sites Discovery of archaeological sites	Scheduled ancient monuments Other registered sites Other sites
	Operation	Wind Farm, Grid connection	Long term effects on setting of archaeological sites, and historical and cultural landscapes	Scheduled ancient monuments, listed buildings Other registered sites Other sites
Hydrogeology	Construction	Construction plant	Risk of pollution from fuel and oils Soil disturbance and discharge of suspended solids	Soil, water bodies, groundwater Private and public water supplies
		Borrow pits	Use of resource Discharge of suspended solids in drainage, effecting water quality	Water bodies Private and public water supplies
	Operation	Roads, Foundations, Cables	Alteration of surface hydrological regime due to increased impermeable area, road drains, disruption of natural flow, excavation of foundations, and cable trenching	Hydrology
Telecommunications, aviation and safety	Operation	Turbines	Interference with microwave links and television signals Interference with civil and military radar Flight hazard for civil and military aviation	Military, local authority, emergency services, utilities and telecom operators, and

Environmental Medium	Life Cycle	Specific element	Potential effects	Potential sensitive receptors
				broadcasters Air traffic control, airports, military radar sites Civil airport approaches, military airports and low flying aircraft
Transport	Construction	Abnormal loads, Aggregate and concrete lorries	Disruption of traffic flows Increase in traffic levels causing congestion Abnormal wear of public roads	Motorists Roads network
Socio-economic	Construction	General	Supply of local materials (e.g. aggregate, concrete), and services (e.g. catering, accommodation) Employment of sub-contractors	Local business
	Operation	General	Diversification of rural land use Effects on recreational amenity and tourist destinations/tourist perceptions Employment of operational staff Employment of sub-contractors	Tourists / visitors Hill Farmer Local business

3.2 EIA Guidance

The overall approach to the EIA is guided by *Preparation of Environmental Statements for Planning Projects that Require Environmental Assessment – A Good Practice Guide* (DETR, 1995).

The proposed general methodology for each environmental assessment is as follows:

Scoping

The scoping exercise will define the scope of issues and methodology for each assessment.

Baseline conditions

The existing conditions will be established by means of:

- consultation and desk top review of existing available data; and
- site visits.

This process will identify any sensitive receptors, and in particular any designated receptors.

Assessment of environmental effects and their significance

The EIA Regulations require the identification of likely significant environmental effects arising from a development.

In order to evaluate environmental effects and determine their significance, it is important that assessment criteria are identified. In some instances environmental standards and guidelines are available e.g. *Guidelines for Landscape and Visual Assessmen*t (2002), (Landscape Institute and Institute of Environmental Management and Assessment). The various methodologies that have been used within each specialist area will be identified within the appropriate section of the ES.

In general, effects will be predicted through an assessment of the sensitivity of the receiving environment and the predicted magnitude of change from the baseline state (both positive and negative). Environmental sensitivity may be categorised by a multitude of factors such as rarity, vulnerability, or protection by law. The nature of the impact may be categorised in terms of its duration, extent, frequency, likelihood, reversibility, and compliance with recognised standards. Significance is then evaluated by considering the sensitivity of the receptors, and the nature of the impacts. Based on the thresholds used to determine significance and other standards and guidelines, potential impacts will be determined to be significant or not significant.

Mitigation

Mitigation measures to minimise identified significant adverse effects will be proposed. Mitigation is considered an integral part of the overall design strategy, and not just as an “add on” measure to ameliorate significant environmental effects.

3.3 EIA Topic Areas

The following sections describe the proposed methodologies for the assessment of each EIA topic area.

3.3.1 Landscape and Visual Assessment (LVA)

It is anticipated that potential landscape and visual effects will be a key issue to be addressed by the EIA. The assessment will examine the potential effects of the proposed wind farm development and ancillary features on the landscape and visual amenity of the agreed study area. It will be based on relevant and accepted guidance, and will draw on information provided by statutory consultees, current landscape planning policies and other relevant documentation; a computer based visibility analysis and fieldwork observations.

The LVA methodology would be based on the following documents:

- *Landscape Character Assessment: Guidance for England and Scotland* (Scottish Natural Heritage and the Countryside Agency 2002);
- The Landscape Institute and Institute of Environmental Assessment's *Guidelines for Landscape and Visual Impact Assessment* (2002);
- *Guidelines on the Environmental Impacts of Wind farms and Small Scale Hydro-electric Schemes* (Scottish Natural Heritage 2001);
- *National Planning Policy Guideline (NPPG 6) Renewable Energy* The Local planning authority (2000);
- *Visual assessment of wind farms: best practice,* University of Newcastle (2002);
- *Wildness in Scotland's Countryside,* (SNH Policy Statement 02/03);
- *Strategic Locational Guidance for Onshore Windfarms in Respect of the Natural Heritage* (SNH Policy Statement 02/02);
- *Policy on Renewable Energy* (SNH Policy Statement 01/02); and
- *Sustainable development and the Natural Heritage* (SNH Policy Statement 02/01).

General approach to LVA and Key Tasks

Following the Landscape Institute's Guidelines, landscape effects are defined as relating to changes in the fabric, character and quality of the landscape as a result of the proposed development. Visual effects relate to changes in the available views of the landscape.

The magnitude of the change to the existing conditions resulting from the proposed wind farm on the landscape and visual amenity of the area will be predicted and the significance of these changes assessed.

Our approach to the LVA includes the following key tasks:

- Desk Studies;
- Confirmation of the scope and methodology of the assessment with relevant local authority representatives and SNH (by means of the current scoping exercise);
- Identification of viewpoints in agreement with SNH and SBC;
- Site visits and surveys;
- Photography;
- Landscape character assessment;
- Landscape and visual assessments;

- Mitigation and optimisation; and
- Reporting.

Landscape Assessment

The landscape assessment will describe, classify and analyse the character and sensitivity of the landscape within the study area in order to establish the baseline landscape conditions. Existing documentation on landscape character including SNH's Landscape Character Assessment for the area occupied by the proposed wind farm as well as relevant adjacent LCAs will be referred to. The landscape of the study area will be classified into landscape character areas which will then be analysed for their sensitivity to change of the nature associated with the proposed wind farm.

This assessment will also consider landscape designations and information outlined in the Structure Plan and NPPG 14.

An assessment of the magnitude and significance of the effects of the proposed wind farm on the landscape will then be produced for both construction and operational stages.

Visual Assessment

The visual assessment will be based on:

- The analysis of a zone of visual influence (ZVI) extending 35km from the outermost turbines, examining both the visibility of the turbine hubs and blades;
- An assessment of the general visibility of the proposal; and
- Views from agreed viewpoints representing sensitive receptors at a range of distances from the proposed development in the study area to be agreed with SNH and SBC.

The assessment will involve a desk study, field observations; the preparation of computer generated ZVIs and photomontages, as well as analysis of this data.

The predicted view of the proposed wind farm and will be described and illustrated using photographs with matching wireframe views, or photomontage visualisations. Visualisations will be produced with a viewing distance of approximately 300mm to allow the context of the view to be shown. The use of a digital camera with a fixed 50mm lens is endorsed by the Landscape Institute for the purpose of photomontage production; therefore this camera format will be used for viewpoint photography, unless otherwise advised.

The sensitivity of each viewpoint and the magnitude of the predicted change arising from the proposed wind farm will be assessed. An assessment of the significance of residual visual effects will be undertaken for both construction and operational stages.

Figure 4 shows a 20km blade tip ZVI. Figures 5 - 11 show computer generated wirelines of the preliminary 11 turbine layout; these viewpoint locations are shown on Figure 4. SBC and SNH are invited to comment on likely visibility of the project as shown in these figures.

Mitigation Measures

Generation of the final layout and design of the proposed wind farm, including all ancillary features, will be an iterative process. Where measures which result in reduction of either landscape or visual negative effects can be accommodated within the overall proposal and

within the constraints arising from other environmental considerations, such as ecology or archaeology, these will be incorporated into the proposed development, and will be reported on in the ES.

The final analysis will assess the residual landscape and visual effects once any such measures have been incorporated within the design.

Cumulative assessment

Cumulative effects arise where the proposed development results in:

- An increase in the extent of area affected by views of one or more wind farms;
- An increase in the number of locations in the area where one or more wind farms are already visible and the additional turbines will result in an additional wind farm in the view;
- An increase in the number and/or density of turbines visible in the view; and
- An increase in the angle of view from any viewpoint which includes turbines.

The assessment of cumulative effects will include:

- An assessment of the potential cumulative effects in relation to visibility from key sensitive receptors such as public roads, footpaths, villages and towns. This assessment will include the production of cumulative ZVIs and cumulative wirelines.
- An assessment of simultaneous visibility – simultaneous cumulative effects occur where more than one wind farm is visible from the same location. An assessment of simultaneous cumulative effects will be carried out based on the overlapping cumulative ZVIs of the agreed cumulative wind farms, looking at effects on visual receptors and landscape character types, and a viewpoint assessment at agreed cumulative viewpoints.
- An assessment of sequential visibility – sequential cumulative effects occur where wind farm developments are seen sequentially by an observer moving from one place to another. The wind farm developments would not be seen at the same time, requiring the observer to move from one location to another in order to see the second wind farm. An assessment of sequential cumulative effects will be carried out using the overlapping ZVIs of the agreed cumulative wind farms to assess sequential effects on the transport network of the area and footpaths routes.

It is proposed that the cumulative assessment will include only those wind farm developments which have been submitted to planning, permitted or built within a 60km radius of the Middle Hill site by a date agreed with SNH.

Conclusions

The LVA will summarise the significant landscape and visual effects identified in the detailed assessment and will make comment on the acceptability of the proposed wind farm in the study area.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the impact assessment and relevant data/reference sources that might contribute to the assessment. In particular, guidance is sought on the scope and methodology to be used in the cumulative assessment.

In order to facilitate the cumulative assessment, WCE hereby request details of any proposed wind farms at the scoping or application stage within a 60km radius of the site which are not listed in Table 2.

Table 2: Wind Farms within a 60km radius to be considered for cumulative assessment

Name	Status	Company	Local Authority Area	Project Size
Hagshaw Hill	Built	Scottish Power	South Lanarkshire	26 turbines Hub 35m, RD 40m
Myres Hill	Built	NegMicon	East Renfrewshire	2 turbines
Hare Hill	Built	Eon	East Ayrshire	20 turbines
Windy Standard	Built	nPower	Dumfries and Galloway	36 turbines Hub 35m, RD 45m
Black Law	Built	Scottish Power	South Lanarkshire	62 turbines Hub 70m, RD 80m.
Bowbeat	Built	Eon	Borders	24T 76m to blade tip
Dun Law	Built	Scottish Power	Borders	26T 87m to blade tip
Wether Hill	Permitted	Scottish Power	Dumfries and Galloway	14T 93m to blade tip
Torrs Hill	Permitted	Natural Power	East Ayrshire	2T 100m to blade tip
Dalswinton	Permitted	Airtricity	D&G	16 turbines Hub 80m, RD 90m.
Dun Law ext	Submitted	Scottish Power	Borders	35T 87m to blade tip
Afton	Submitted	Eon	East Ayrshire	27 turbines Hub 60/80m, RD 80m
Windy Standard Ext	Submitted	nPower	Dumfries and Galloway	30 turbines Hub 60/80m, RD 80m.
Whitelee	Submitted	Scottish Power	S. Lanarkshire, E. Ayrshire, E. Renfrewshire	140 turbines Hub 70m, RD 80m.
Clyde	Submitted	Airtricity	South Lanarkshire	173 turbines Hub 80m, RD 90m.
Harestanes	Submitted	Scottish Power	D&G	95 turbines Hub 80m, RD 90m.
Spireslack	Submitted	Scottish Coal	South Lanarkshire/ East Ayrshire	42 turbines Base to tip: 63m/118m.
Ewe Hill	Submitted	Scottish Power	D&G	49 turbines 111.5m to blade tip
Minsca	Submitted	Airtricity	D&G	17 turbines 120m to blade tip
Carlesgill Hill	Resubmitted	Unknown	Borders	5 turbines 99m to blade tip
Toddleburn	Submitted	I&H Brown	Borders	20-25 turbines 100m to blade tip.

Name	Status	Company	Local Authority Area	Project Size
Carcant	Submitted	Amec	Borders	6 turbines
Sell Moor	Submitted	RDC Scotland	Borders	18 turbines 100m to blade tip
Long Park	Submitted	Wind Prospect	Borders	18 turbines 100m to blade tip
Minch Moor	Submitted	Amec	Borders	14 turbines 108m to blade tip
Broadmeadows	Submitted	Greenpower	Borders	13 turbines 112m to blade tip
Tormywheel	Submitted	PM Renewables	West Lothian	15 turbines 115m to blade tip
Greendykeside	Submitted	Unknown	N Lanarkshire	2 turbines 100m to blade tip
Ardoch and Over Enoch	Submitted	Unknown	S Lanarkshire	6 turbines 100m to blade tip
Hagshaw Ext	Submitted	Scottish Power	South Lanarkshire	20 turbines Hub 49m, RD 62m.
Salsburgh	Submitted	AB Energy	S Lanarkshire	12 turbines
Fala Hill	Submitted	Eon	Borders	3 turbines
Minnygap	Submitted	RES	D&G	15 turbines 126m to tip.
Bracco	Scoping	Airtricity	North Lanarkshire	29 turbines
Limmer Hill	Scoping	RDC Scotland	South Lanarkshire	30 turbines Hub 70m, RD 90m.
Daer	Scoping	Eon	South Lanarkshire	35 turbines Hub 80m, RD 80m.
Harrow's Law	Scoping	SSE	S. Lanarkshire, W. Lothian	30 turbines
Auchencorth Moss	Scoping	United Utilities	Borders, Midlothian	30 turbines
Nutberry	Scoping	RDC Scotland	South Lanarkshire	21 turbines Hub 80m, RD 90ml
Black Craig	Scoping	Scottish Power	D&G	31 turbines 135m to blade tip
Stallashaw Moss	Scoping	Unknown	S Lanarkshire	6 turbines
Hartwood	Scoping	RED Group	N Lanarkshire	15 turbines 115m to blade tip
Fernieshaw	Scoping	Unknown	N Lanarkshire	Unknown
Camps Reservoir	Scoping	Eon	S Lanarkshire	Unknown
Dungavel	Scoping	Eon	S Lanarkshire	Unknown

3.3.2 Noise

The assessment methodology of construction noise and operation noise is summarised as follows:

- Identify and agree nearest noise sensitive properties with the local authority;
- Screening exercise to identify any properties where expected levels of wind farm noise may exceed 35dB(A) for wind speeds of up to 10m/s at 10m height;

- Agreement of noise monitoring locations with the local authority;
- Background noise survey over a sufficient period of time to enable reliable assessment at each location (estimated at two weeks). This will take place in parallel with wind speed recording;
- Generation of a background noise curve from the measured data, characterising the noise levels as a function of the wind speed;
- Generation of a table of agreed noise limits for each property;
- Prediction of received noise levels at receptors, by means of a noise model, appropriately corrected for tonal noise emission;
- Comparison of predicted levels with agreed noise limits;
- Assessment of any cumulative impacts, in accordance with ETSU (1997); and
- Identification of mitigation in terms of layout and attenuation if necessary.

The following guidance on noise assessment will be followed:

- Planning Advice Note 45, Renewable Energy Technologies. Local planning authority Development Department, 2002.
- ETSU-R-97, The Assessment and Rating of Noise from Wind Farms. ETSU for the Department of Trade and Industry, 1996.
- ISO 9613-2, Acoustics - Attenuation of Sound During Propagation Outdoors.
- Part 2: General Method of Calculation International Organization for Standardization, 1996.
- British Standard IEC 61400-11:1998. Wind turbine generator systems: Part 11: Acoustic noise measurement techniques.
- ISO 9613-1, Acoustics - Attenuation of sound during propagation outdoors. Part 1: Method of calculation of the attenuation of sound by atmospheric absorption. International Organization for Standardization, 1992.
- ETSU W/13/00385/REP, A critical appraisal of wind farm noise propagation. ETSU for the Department of Trade and Industry, 2000.
- ETSU W/13/00392/REP. Low frequency noise and vibrations measurement at a modern wind farm. ETSU for the Department of Trade and Industry 1997.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the impact assessment and relevant data/reference sources that might contribute to the assessment.

3.3.3 Ecology

The approach to ecological assessment will be in accordance with *Wind Farm Development and Nature Conservation* (WWF, English Nature, RSPB and The British Wind Energy Association, 2001).

Baseline conditions will be assessed by means of reviewing existing data and new site surveys. SNH and local information sources will be approached to obtain any existing information.

An extended habitat survey based upon Phase 1 habitat survey methodology will be carried out to cover ground within a zone beyond the turbine envelope. Access routes, borrow pits, laydown areas, substation positions and buried service routes will be included in survey areas. Any sensitive areas or sites of interest will be surveyed in more detail and the habitats assigned to the communities and sub-communities of the National Vegetation Classification (NVC).

Target notes will be produced for all features of nature conservation interest. The target notes will provide further information on habitat features of value to different ecological groups such as plants, mammals, birds and invertebrates, paying particular attention to species protected by law.

Target notes will reference all NVC vegetation types, and will consider the relationship between the vegetation and hydrology in the area. An ecological baseline survey map will be produced and will include all target note information along with the distribution of habitats within the study area.

Reference to the UK BAP and LBAP will be used to identify habitat and species of local and/or national priority.

The impact assessment will be based on the latest *Draft Guidelines for Ecological Assessment* from the Institute of Ecology and Environmental Management (April 2002). To ensure that appropriate mitigation is adopted, the assessment will consider the methods proposed for the construction stage of the development particularly during the construction of roads and turbine bases, and make recommendations as appropriate.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the impact assessment and relevant data/reference sources that might contribute to the assessment.

3.3.4 Ornithology

This section discusses work done to date on assessment of bird issues and outlines proposed future work in assessing this issue, as follows;

- Baseline survey methodologies – A description of the methods to be used to assess bird interest at this site;
- Completed, ongoing and future surveys – A summary of work completed to date and work still to be undertaken as part of the assessment;
- Assessment methods – A description of how the baseline survey information will be used to design mitigation measures and determine the significance of impacts;
- Vantage point survey results – A summary of the results of the vantage point watches;
- Preliminary results and implications – A description of how these results have been used to date; and
- Local planning authority guidance.

Baseline Survey Methodologies

The following surveys will be used to establish ornithological baselines at the site:

- Brown & Shepherd[3] breeding wader survey – to be used for all open ground within the study area as it provides a standardised way of recording breeding activity by waders. The method has been extended to provide presence/absence and relative abundance data for a number of non-wader species such as Wheatear, Chats, Skylark and Meadow Pipits.
- Black grouse survey[4] – this method is used for monitoring known leks and has been modified to be suitable for finding unrecorded leks by instructing surveyors to move around through the site during the optimal time period just after dawn.
- Vantage point watches – these will be undertaken following the method devised by Mike Madders and supplied by SNH in order to collect data for use in collision risk modelling using the model developed by Band[5]. Current guidance suggests that that 24 hours of observations between April and July per Vantage Point (VP) is sufficient data.
- Winter monitoring – ongoing winter bird monitoring will be carried out during winter 2005/2006.

Survey results to date:

Four vantage points have been selected in order to cover the site. During watches in May and June 2005, common buzzard, curlew and kestrel were observed (flight only). No raptors of conservation importance have been observed.

Brown and Shepherd surveys undertaken in May and June 2005 recorded the following results:

- 6 curlew pairs exhibiting breeding behaviour distributed throughout the site;
- 2 lapwing pairs exhibiting breeding behaviour on lower slopes in the south-south-west edge of the site. 1 chick observed;
- 1 common snipe flushed from west flush in the north of the site;
- 1 peregrine falcon observed (flight only) in the north of the site; and
- Kestrel, common buzzard and sky lark also observed.

Communication with local residents has suggested the following:

- A small population of black grouse (5 males) is known to exist just outside the site boundary;
- Peregrine falcons breed to the south-west of the site boundary; and
- Geese fly over the site during the winter months, particularly during February and March.

[3] Brown AF & Shepherd KB 1993 " A Method for Censusing Upland Breeding Waders" *Bird Study* **40** 189-195

[4] Etheridge and Baines 1993, as described in Gilbert *et al 1998 "Bird Monitoring Methods"* RSPB, Sandy

[5] Method supplied directly by SNH.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the impact assessment and relevant data/reference sources that might contribute to the assessment.

3.3.5 Cultural Heritage

The cultural heritage assessment aims to identify the presence or absence of any archaeological features in the proposed site area and assess the likely impact of the development upon them.

The approach to the archaeological study is:

- to collate known archaeological information on the proposal area;
- to identify any previously unknown archaeological sites through inspection of aerial photographic records and available cartographic evidence;
- to evaluate the archaeological significance of the area by field inspection; and
- to assess the potential effect in this area and suggest appropriate mitigation measures if required.

The sources to be consulted as part of the archaeological assessment will include:

- National Monument Record for Scotland (NMRS), held by Royal Commission on Ancient and Historical Monuments of Scotland; and
- Sites and Monument Record (SMR) for area.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the impact assessment and relevant data/reference sources that might contribute to the assessment.

3.3.6 Hydrology, Hydrogeology and Soils

The construction and operational phases of the development have the potential to affect the hydrology and geology within the localised area, including drainage patterns and watercourses.

The assessment of the geology, hydrology and hydrogeology will involve the study of geological, soil and hydrogeological maps and the sensitivity of the site will be assessed in relation to the development. SEPA and the local authority will be contacted to obtain surface water and groundwater information including rainfall data, river flow and river quality data, and details of any surface or groundwater abstractions and discharges.

Surface water catchments and private water supplies will be mapped out and the potential impact that the works could have on local surface water bodies and neighbouring sensitive locations will be made.

A peat depth survey will be carried out to analyse and predict the risk of peat slide.

Recommendations will be made as to how the works will be undertaken to minimise the impact on surface water and groundwater and to prevent pollution incidents occurring; where required, reference will be made to SEPA's Pollution Prevention Guidelines. An assessment will be made for all phases of the work which will include construction, operational and decommissioning.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the impact assessment and relevant data/reference sources that might contribute to the assessment.

3.3.7 Transport

The additional traffic generated during construction and operation of the wind farm will be assessed in accordance with *Guidelines for the Environmental Assessment of Road Traffic* (Institute of Environmental Assessment, Guidance Notes No. 1).

The principal elements of the assessment study will be to:

- Quantify the bulk construction materials, equipment and other materials required for construction;
- Identify likely sources of aggregates, concrete and other bulk materials;
- Identify transport route options;
- Identify possible modes of delivering bulk construction material and equipment to site and to estimate volumes of movement by mode;
- Assess the impact of additional traffic on existing traffic flows; and
- Identify potential highway improvements necessary for the construction period and long term operation of the wind farm.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the transportation assessment and relevant data/reference sources that might contribute to the assessment.

3.3.8 Socio-Economic Assessment

The potential for both adverse and positive local effects will be evaluated in the environmental assessment process. This will involve identification of the existing socio-economic baseline conditions in the surrounding area, and consideration of potential direct or indirect effects on economic output, employment and the local population. All opportunities for local business involvement and local employment will be addressed during the socio-economic assessment.

Recreational and tourism uses of the site and surroundings will be identified, and potential effects of the wind farm assessed using published data on the effects of wind farms.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the socio-economic assessment and relevant data/reference sources that might contribute to the assessment.

3.3.9 Other Chapters

The EIA will include information on the following subject areas

- Assessment of impact on public access and safety;
- Electromagnetic interference and air traffic safeguarding; and
- Conclusions.

SBC guidance

The SBC is invited to comment on the proposed methodology, key issues to be addressed in the overall EIA and relevant data/reference sources that might contribute.

4.0 ENVIRONMENTAL STATEMENT

The draft structure and contents of the ES are listed below. It is anticipated that this will be refined and confirmed as part of the scoping and EIA process. The ES volumes will consist of the following:

1. Environmental Statement – Written Text.
2. Appendices.
3. Figures and Drawings (A3 volume).
4. Non-Technical Summary

4.1 Written text

The provisional structure of Volume 1 (ES) will be as follows:

CHAPTER 1 - INTRODUCTION

1.1 The Application
1.2 The Applicant
1.3 The Environmental Statement
1.4 Consultation
1.5 Site Design Process
1.6 The Significant Effects Methodology
1.7 Structure of the Documents
1.8 List of Consultants

CHAPTER 2 - SITE SELECTION

2.1 Introduction
2.2 Site Selection – Phase One
2.3 Project Feasibility – Phase Two
2.4 Environmental Assessment – Phase Three
2.5 Design Statement
2.6 Summary & Conclusions

CHAPTER 3 - THE NEED AND BENEFITS OF

3.1 Introduction
3.2 Global Warming and Climate Change
3.3 Acidification of the Environment – Acid Rain
3.4 Sustainable Development
3.5 Security of Supply and Economic Development
3.6 The UK Renewable Energy Market
3.7 Environmental Benefits of the Wind Farm
3.8 Summary

CHAPTER 4 – PLANNING POLICY

4.1 International Policy
4.2 UK Energy Policy and Planning Guidance
4.3 Scottish Renewable Energy Potential Contribution to UK
4.4 Scottish National Planning Guidance
4.5 Local Planning Policy

12.6 Assessment of Potential Effects
12.7 Mitigation
12.8 Conclusions

CHAPTER 13 -Socio-Economics, Infrastructure and Safety

13.1 Introduction
13.2 Tourism and Recreation
13.3 Telecommunication Links
13.4 Aviation
13.5 Infrastructure (if relevant)
13.6 Safety of Wind Turbines
13.7 Shadow Flicker
13.8 Public Access and Safety

CHAPTER 14 – Conclusions

4.2 Figures and plans

It is anticipated the following figures/plans will be produced:

- Site location and highway access
- Application boundary and land ownership
- Typical turbine specifications
- Typical turbine foundation and crane hardstanding
- Typical access track, cable trench and slope cross section
- Typical construction compound, primary office and substation compound
- Design iterations
- Design iterations – wirelines
- Constraints
- Site layout
- Cultural heritage baseline – within site
- Cultural heritage baseline – outwith the site
- Landscape designations
- Landscape character plan
- Viewpoints and cumulative sites
- Blade tip zvi – 35km radius
- Blade tip zvi quadrants
- Hub height zvi – 35km radius
- Cumulative zvis
- Viewpoints – photomontages and wireframes
- Cumulative viewpoints
- Cumulative sequential visual analysis
- Ecology baseline
- Ornithological survey results
- Hydrogeology baseline
- Noise monitoring locations and contours

4.3 Non-Technical Summary (NTS)

The NTS will provide a brief summary of the project description and each of the topics covered in the EIA.

4.4 Technical Appendices

The technical appendices volume will consist of detailed information referred to in Volume 1 of the ES.

APPENDIX A.2: SCOPING RESPONSES

Scottish Borders COUNCIL

Ian Lindley
Planning and Economic Development

Brian Frater
Head of Planning and Building Standards

Annie Ward
Project Manager
West Coast Manager Ltd
Tower Mains Studios
18d Liberton Brae
Edinburgh
EH16 6AE

Please ask for: Mr A Lorimer – Ext 5068

Our Ref: AL/CL

Your Ref:

Date: 12 September 2005

Dear Sirs

PROPOSED WIND FARM DEVELOPMENT AT MIDDLE HILL, SCOTTISH BORDERS

I refer to your letter and report dated 20 July requesting a scoping opinion.

I enclose copies of all responses received to date from consultation bodies and internal consultees and confirm that these constitute the Council's scoping opinion.

I would add, however, that an initial assessment by this Council of the proposed location would suggest that this is not an appropriate site for a wind farm when the Council's policies contained in the approved Structure Plan and Consultative Draft local Plan are applied.

Should you wish clarification on any of the above or further advice please do not hesitate to contact me.

Yours sincerely

Alistair Lorimer

Alistair Lorimer
Senior Development Control Manager (West)

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SOUTH LANARKSHIRE COUNCIL

ENTERPRISE RESOURCES

EXECUTIVE DIRECTOR **IAIN URQUHART**

Planning and Building Control Services- Clydesdale Area

Our ref: **TF/YG/1/B/22(19)**
Your ref:
If calling ask for: **Tony Finn on 01555 673185**
Date: **30 September 2005**

Economic Development
& Environmental Planning
Rec'd - 7 OCT 2005
To AL
Ackn
File
Comment/Complaint ☐
Ref No

Scottish Borders Council
Planning and Economic Development
Council Headquarters
Newton St. Boswells
TD6 0SA
F.A.O. Alistair Lorimer

Dear Sir

Scoping Opinion: MiddleHill Wind Farm, Tweedsmuir

I write with reference to your letter dated 28 July 2005 in which you seek the comments of South Lanarkshire Council on a scoping report produced by West Coast Energy Ltd in respect of the above proposal.

I apologise for the delay in responding to your consultation request but would be grateful if you could give consideration to the comments of the Council set out below and forward these points to the authors of the proposed Environmental Statement.

I would advise that the draft structure and contents of the ES as set out on pages 24-28 of the report appears acceptable. However, I would like the following points to be raised with, and addressed by, the applicants.

i) While figure 12 showing cumulative wind farm sites is correct, it fails to show the true extent of the proposed Clyde Wind Farm to the south west of the proposed site. Indeed there is a high likelihood that there would be intervisibility between these sites. While a decision has not been taken on the Clyde proposal, the cumulative visual impact should be considered by the ES.

It should be noted that the Council has formally objected to this proposal to Scottish Ministers. It is anticipated that a public inquiry will be held sometime in 2006.

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ii) The ES should refer to the following national policy guidance;

- The National Planning Framework
- SPP1 – The Planning System
- SPP15 – Planning for Rural Development
- PAN51 – Planning and Environmental Protection
- PAN56 – Planning and Noise
- PAN58 – Environmental Impact Assessment
- PAN 60 – Planning for Natural Heritage

iii) The Council has recently approved a consultative draft of the South Lanarkshire Local Plan. The ES should refer to Wind Farm policies in this document. It is intended to publish this draft plan for public consultation in the coming weeks.

iv) The ES should include a detailed plan of the site indicating the location of turbines, sub-stations, grid connections and borrow pits, together with the site compound and any parking areas.

v) The ES should set out the site selection process and the reasons for eliminating alternative sites.

vi) The ES should recognise the position of the proposed wind farm adjacent to a Regional Scenic Area which is defined in the Upper Clydesdale Local Plan. Reference should be made to policy 76 in that local plan.

It should be noted that the Regional Scenic Area extends beyond that shown on figure 3 of the scoping report.

The ES will be expected to fully address the visual and landscape impact of the proposals from potentially sensitive receptors and significant viewpoints within South Lanarkshire. The views from nearby Culter Fell are especially important given the Regional Scenic Area Status and its importance for walking and other recreational uses. The guidelines for Landscape and Visual Impact Assessment (2002) should be used.

vii) The ES should include full details of all anticipated traffic movements, including the route for the delivery of turbines, aggregates and other servicing vehicles. The assessment should involve an assessment of the movements on the local road network, in particular at potential stress points at junction and approach roads within South Lanarkshire together with any upgrading works and the impact of any traffic increase on local communities.

I trust that you find the above useful. I look forward to formal consultation on the planning application and ES once it is received.

Yours faithfully

Scott M Ferrie
Area Manager

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SEPA
Scottish Environment Protection Agency

Our Ref: GM/JS/EA/2005/0491
Your Ref: AL

Planning & Economic Development
Scottish Borders Council
Council Headquarters
Newtown St. Boswells
TD6 0SA
FAO: Alistair Lorimer

Economic Development & Environmental
Rec'd 7 - SEP 2005
To AL
Action
File
Comment/Complaint ☐
File No

If telephoning ask for:
Greg McAlister

5 September 2005

Dear Sir

PROPOSED WIND FARM, MIDDLE HILL, TWEEDSMUIR
ENVIRONMENTAL IMPACT ASSESSMENT SCOPING OPINION

Thank you for your consultation that SEPA received on 1 Aug 2005 in connection with the above. Whilst the Scoping Report identifies a number of areas which will be addressed in the Environmental Statement (ES), SEPA request that the following should be included in the ES:

- Construction works associated with the development and mitigation of pollution risk
- Treatment of surface water run-off from site and the use of SUDS
- Disposal of foul drainage from the proposed development
- Stream crossings and other river engineering works
- Air quality issues
- Waste management

The following comments have been prepared in addition to the points mentioned above:

Water Quality

1. SEPA's principal concern is centred on construction activities and the creation of access roads. Previous experience has shown that such activities can pose a threat of water pollution due to release of sediment from exposed surfaces and accidental spillage. Concrete works for the turbine bases could also be a source of pollution. The risk of pollution will be increased during periods of high rainfall, which are quite probable given the elevated and exposed position of the site. Steps must therefore be taken to ensure that the work does not cause mud, silt or concrete to be washed away either during the construction stage or as a result of subsequent erosion.

2. SEPA will require the provision of silt traps with preferably a silt settlement lagoon. The design and location of these facilities will have to be agreed with SEPA's local area team. Consideration will also be given to whether any discharge requires SEPA's formal consent, subject to effluent quality conditions. SEPA would request that, where practicable, surface water drainage arrangements are designed according to the principles of SUDS.

3. The extraction of rock from borrow pits may entail water being pumped out of the excavations, in which case drainage should also be routed to the water treatment facilities.

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ISO 9001 SGS UKAS

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Chief Executive Dr Campbell Gemmell

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4. SEPA has produced pollution prevention guidelines for works in, near or liable to affect watercourses PPG 5, and working at construction and demolition sites PPG 6. This guidance is available free of charge on SEPA's website and should be followed at all times.

5. Forest felling operations must be carried out in accordance with the standard Forest & Water Guidelines.

6. If fuel oil or other substances are to be stored on site, it will be necessary to provide bunding or containment to retain spillage or leakage. The standard requirement is the provision of containment capacity for 110% of the volume stored. SEPA would strongly discourage the storage and use of loose drums of fuel on site and would request the inclusion of a planning condition to that effect.

7. It is anticipated that toilet facilities associated with the construction phase of the project will be of the 'Portaloo' type, which will avoid the need for sewage treatment and discharge of effluent on-site. However, if this is not the case, SEPA's pollution prevention guideline PPG 4 'disposal of sewage where no mains drainage is available' is enclosed.

8. Private water supplies in the vicinity of the development site have been identified in the ESt and measures taken to ensure that there is no pollution of these resources, during or after construction.

9. It is anticipated that some form of stream crossing would be required as part of the development. However, the Water Framework Directive and subsequent Water Environment and Water Services (Scotland) Act 2003 provides a new statutory requirement to protect the ecological quality of watercourses, in addition to introducing regulatory controls for abstraction and engineering activities. The use of culverts to achieve water crossings would be contrary to such legislation. SEPA's preference is therefore bridge crossings instead of culverts and a suitable design should be put forward.

Air Quality

10. Borrow pits would not normally involve quarrying and grading processes as defined under the terms of the Environmental Protection Act 1990 and requiring authorisation from SEPA. However, the applicants or their contractors will have to clarify precisely what is intended, particularly in respect of any plant that may be used. Mobile plant would require to be authorised by SEPA at its place of origin.

Waste

11. SEPA encourages the recovery and reuse of waste, such as soil provided that it is in accordance with the Waste Management Licensing Regulations 1994. There are specific criteria which if met will constitute an exemption under the above Regulations. These exemptions are required to be registered by SEPA and the details must be forwarded to SEPA's Galashiels office.

Continued.../Pg3

ISO 9001 SGS UKAS

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12. The development should include construction practices to minimise the use of raw materials and maximise the use of secondary aggregates and recycled or renewable materials. Waste material generated by the proposal should also be reduced and re-used or recycled where appropriate on site (for example in landscaping and not resulting in excessive earth mounding). The ES should address these aspects.

Yours faithfully

Greg McAlister
Planning Officer

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SCOTTISH NATURAL HERITAGE

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Economic Development & Environmental Planning
Rec'd 16 AUG 2005
To AL
Ackn
File
Comment/Complaint ☐
Ref No

Mr Alistair Lorimer
Assistant Head of Development Control
Planning and Economic Development
Scottish Borders Council
Council Headquarters
Newtown St Boswells
TD6 0SA

Your ref: AL
Our ref: CNS/REN/WF/MH

12 August 2005

Dear Alistair

THE ENVIRONMENTAL IMPACT ASSESSMENT (SCOTLAND) REGULATIONS 1999
SCOPING OPINION: MIDDLE HILL WINDFARM, TWEEDSMUIR

Thank you for inviting Scottish Natural Heritage to comment on the Scoping Report for the above development proposal.

The Scoping Report prepared by West Coast Energy LTD on behalf of the developer seems comprehensive in its approach.

The Environmental Statement arising from the Environmental Impact Assessment should describe and asses the impact of all aspects of the proposed development, including all ancillary development, and cover issues such as details of the proposed locations for on-site borrow pits with restoration objectives and specifications provided, the grid connection type and location with a preferred corridor identified, temporary construction facilities and other buildings or structures which will be on site for the duration of the windfarm such as the substation and anemometry masts etc.

Landscape and Visual Impact

The site is located well within 10 km of the boundary of the Upper Tweeddale National Scenic Area (NSA). SNH's Strategic Locational Guidance (Policy Statement 02/02) identifies areas within 10 km of NSAs as sensitive to wind farm developments and places such areas in Zone 2. The SNH Policy Guidance states that:

> 'Wind farms outwith but adjacent to NSAs may have an impact upon the landscape experience within them. The range of such impacts is very variable, and depends on topography and intervisibility, landscape character and the scale of the wind farm. The potential for such impacts on the character and enjoyment of NSAs is likely to require particular consideration in the surrounding area up to 10 km from the boundary of an NSA.'

It is our view from an initial assessment of the information presented in the Report that the impact on the NSA is likely to be significant because of the location of the windfarm in relation to the NSA and the topography of the area. The wind farm has the potential to be prominent in views from within the NSA and in some views from outwith the NSA looking

towards the NSA. It may also be difficult to site and design a windfarm on these hills without compromising key features of the landscape character of the area. In addition, the proposed site is within the boundary of the Tweedsmuir Hills/Upper Tweeddale Area of Great Landscape Value (AGLV). SNH has serious concerns regarding the strategic implications of the proposal particularly in relation to the Upper Tweeddale NSA. Additionally, we have concerns regarding the effects on landscape character and local visual amenity from the siting and design of a windfarm at this location which uses the large scale turbines that are characteristic of current applications. It also presents concerns regarding potential cumulative landscape and visual impacts in relation to operational windfarms and other windfarms in the planning system that are within the public domain located within a 30 km radius from the site.

The methods proposed for the landscape and visual impact assessment and cumulative impacts appear to be in line with our recommended approach, and must fully assess the impact on the NSA and AGLV.

Ecology and Ornithology

Although the site is not designated for its nature conservation or geological interests, there may be important features present, particularly as the site is within the Central Southern Uplands Environmentally Sensitive Area (ESA). An area of the Central Southern Uplands was designated as an ESA in May 1993 because of the need to manage the habitats, wildlife, landscape and archaeological features of the Southern Uplands in a sensitive way through appropriate farming activities. Although this designation relates to agricultural practices, it is indicative of the environmentally sensitive nature of the area.

The methods for habitat surveys are in line with our recommended approach. Studies must include mammal surveys, to be carried out using standard and approved methods. The methods for ornithological surveys should follow the current SNH guidance given in the 'Methodology for Assessing the Effects of Wind Farms on Ornithological Interests' (SNH, 2000) and in our draft guidance 'Survey Methods for use in Assessment of the Impacts of Proposed Onshore Wind Farms on Bird Communities' (SNH, 2005) which is presently out to consultation with the renewable energy industry.

Please note that SNH does not hold systematic and comprehensive data on habitats and species outwith designated sites as it is held within the Scottish Borders Biological Records Centre. Data is available from Jon Mercer at the Scottish Borders Biological Records Centre, Harestanes, Ancrum, Jedburgh, TD8 6UG Tel. 01835 830306 Fax 01835 830734. A charge will be made for the time in accessing the data and an absence of data does not mean that important species are not present in the area.

In addition to the ecological assessments of what is present on the site, consideration must also be given to the future management of the site for the duration of the operation of the windfarm. Opportunities to manage the habitat to improve its nature conservation and landscape interests should be set out in the ES and include the objectives of management together with brief prescriptions for achievement of these objectives.

Hydrology and Hydrogeology

We recommend that SEPA and Tweed Foundation are consulted over water quality, river classifications and fisheries matters.

Recreation and access

There should be an appraisal of current public access (formal and informal) and any recreational use made of the site. An assessment of the impacts should be made and mitigation measures considered alongside positive opportunities which may arise as a result of the development. Plans for access provision should be detailed, including dealing with public visits which may be generated by interest in the wind farm and mitigation to avoid conflict with any nature conservation interests. This consideration should be made in relation to current and developing interest in the existing windfarm.

I hope these comments are helpful. These are given without prejudice to any future comments SNH would wish to make on any future planning application.

Yours sincerely

Anne Kiggins

Anne Kiggins
Area Officer

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HISTORIC SCOTLAND

We safeguard the nation's built heritage and promote its understanding and enjoyment

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Our ref: AMN/16/B
Your ref: AL
17th August 2005

Alistair Lorimer
Assistant Head of Development Control
Planning and Economic Development
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Newton St Boswells
TD6 OSA

Economic Developmen
& Environmental Planning
Rec'd 19 AUG 2005
To AL
Ackn
File
Comment/Complaint ☐
Ref No

Dear Mr Lorimer

ELECTRICITY ACT 1989
ENVIRONMENTAL IMPACT (SCOTLAND) 1999
MIDDLE HILL WIND FARM,TWEEDSMUIR (SCOPING)

I refer to your letter of 26 July 2005, of which we were sent a copy by colleagues at the Scottish Executive Development Department for our role as statutory consultee through the Scottish Ministers under the Environmental Impact Assessment (Scotland) Regulations 1999. We have to following comments to offer on the content of the accompanying Scoping Report.

We can confirm that the topic of the impact of the proposed wind farm on the cultural heritage must be included in the Environmental Impact Assessment. Whilst there are no scheduled ancient monuments within the proposed site boundary, it is likely that a wind farm in this location will have a visual impact on scheduled monuments within the wider landscape. It will be useful to look at visual impacts using the techniques employed in the Landscape and Visual Impact section of the Environmental Statement (ES). For example, for the wider area, using a Zone of Visual Influence for those monuments that will experience a visual impact and for site specific concerns, representing predicted views to and from monuments. We also advise that the possible cumulative visual impact of other wind farms in the area on scheduled monuments should be assessed.

We note that consultation with the Scottish Borders Council Archaeologist is proposed for the appropriate treatment of unscheduled archaeology.

Sites contained within the *Inventory of Gardens and Designed Landscapes in Scotland, 1987* should form part of the baseline information of the proposed ES. The potential indirect impact of the proposed development on views to and from these sites should be considered and assessed. A full

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list of all such sites within the 35km ZVI has been supplied for your information. A list of all sites that have been identified as candidates for a forthcoming supplementary volume of the *Inventory* has also been supplied for your information and we would ask that these also be considered.
In terms of our listed building interests we would again ask that potential indirect impacts on the surrounding designations is considered and assessed. Descriptive and locational information on these (and designed landscapes) can be found at www.PASTMAP.org.uk

For reference, we would refer you to the following four documents which set out the framework of Government policy for the protection of Scotland's built heritage:

- National Planning Policy Guideline 5 (NPPG5): Archaeology and Planning (Scottish Office Development Department, 1994)
- Planning Advice Note 42 (PAN 42): Archaeology, the Planning Process and Scheduled Monument Procedures (Scottish Office Development Department, 1994)
- National Planning Policy Guideline 18 (NPPG 18): Planning and the Historic Environment (Scottish Office Development Department, 1999)
- Memorandum of Guidance on Listed Buildings and Conservation Areas (Historic Scotland, 1998).

Yours

R. J. Campbell.

ROSALIND CAMPBELL

Enc: Lists x 2
cc: G Paterson, SE-DD, Scottish Executive

INVESTOR IN PEOPLE
POSITIVE ABOUT DISABLED PEOPLE

Designed Landscapes within 35km of Middle Hill Windfarm

SITE NAME

HARBURN HOUSE
PENICUIK
NEWHALL
THE WHIM
LITTLE SPARTA
LEE CASTLE
KAILZIE
STOBO CASTLE
DAWYCK
TRAQUAIR HOUSE
THE GLEN
HANGINGSHAW
BOWHILL
DRUMLANRIG
CASTLE
RAEHILLS

Supplementary Designed Landscapes within 35km of Middle Hill Windfarm

SITE NAME

DUMCRIEFF
ORCHARD HOUSE
SCOT'S MINING
COMPANY HOUSE
THE FALLS OF
CLYDE

SCOTTISH EXECUTIVE

Environment Group

Air, Climate & Engineering Unit
Victoria Quay
Edinburgh EH6 6QQ

Telephone: 0131-244 0196
Fax: 0131-244 0211
guy.winter@scotland.gsi.gov.uk

Your ref: AL
Our ref: EDV/1/28 part 22

Date: 18th August 2005

Alistair Lorimer
Assistant Head of Development Control
Scottish Borders Council
Planning and Economic Development
Council Head Quarters
Newton St Boswells
TD6 0SA

Dear Mr Lorimer

ENVIRONMENTAL IMPACT ASSESSMENT (SCOTLAND) REGULATIONS 1999
MIDDLE HILL WIND FARM AT TWEEDSMUIR {SCOPING}

I refer to your recent consultation under the 1999 Regulations with the Scottish Ministers about the proposed development named above.

This response relates to the Scottish Ministers responsibilities for water supply, water protection, sewerage, flood prevention, coastal protection, waste disposal and air quality. Consideration is being given to the other responsibilities of the Scottish Ministers, including countryside and natural heritage and you may expect separate responses on these aspects.

In relation to the above case, on the basis of the information available and without prejudice to any further consideration the Scottish Ministers may be required to give, we have the following comments to offer on the Scoping Study:

- we note that noise is an issue for consideration. The developers and the local authority may however be interested in the "Review of Published Research on Low Frequency Noise and its Effects" produced for DEFRA and published on the DEFRA website: http://www.defra.gov.uk/environment/noise/lowfrequency/index.htm

Yours sincerely

GUY WINTER

Economic Development
& Environmental Planning
Rec'd 22 AUG 2005
To AL
Ackn
File
Comment/Complaint ☐
Ref No

JMP

CONSULTING

TRANSPORT PLANNERS & ENGINEERS

Alistair Lorimer
Scottish Borders Council
Planning and Economic Development
Council Headquarters
Newtown St. Boswells
TD6 0SA

IB/ B066137B /H1

26 August 2005

Dear Sirs

ENVIRONMENTAL IMPACT ASSESSMENT (SCOTLAND) REGULATIONS 1999
MIDDLE HILL WIND FARM, TWEEDSMUIR (SCOPING)

SETC Ref: **ZZA 5/10 pt 2**
Your Ref: **AL**

With reference to your correspondence relating to the above development, we write to inform you of our involvement as Term Consultants to the Scottish Executive Trunk Road Network Management Division (TRNMD) in relation to the provision of advice on issues affecting the trunk road network.

In considering trunk road impacts there are a number of issues which should be taken into consideration when assessing the merits of this site. In general it is expected that information will be provided on the wider impact of development related traffic where this may be appropriate along with the requirements for any consequent mitigation. These relate specifically to the suitability of the access onto the trunk road in terms of visibility and construction, the requirements for which can be found in the Design Manual for Roads and Bridges (DMRB).

The Environmental Statement should provide information relating to the preferred route options for the movement of heavy loads, and anticipated construction staff movements via the trunk road network during the construction period. In addition, information must be supplied identifying potential environmental impacts on the trunk road network once the proposal is operational, together with appropriate mitigation measures.

Potential trunk road related environmental impacts such as noise and air quality should be assessed. Where such environmental impacts have been fully investigated but found to be of little or no significance, it is sufficient to validate that part of the assessment by stating in the report:

- the work that has been undertaken e.g. Transport/ Noise/ Air Quality Assessments, etc.
- what this has shown i.e. what impact if any has been identified, and,
- why it is not significant

It is not necessary to include all the information gathered during the assessment of these impacts, although this information should be available, if requested.

Continued...

Economic Development
& Environmental Planning
Rec'd 31 AUG 2005
To BF AL
Ackn

JMP CONSULTANTS LIMITED
CENTRUM HOUSE, 38 QUEEN STREET, GLASGOW G1 3DX
T 0141 221 4030 F 0141 221 4050 E glasgow@jmp.co.uk W www.jmp.co.uk
Registered Office: Centrum House, 38 Queen Street, Glasgow G1 3DX Registered in Scotland No. 88006

HSE

Health & Safety Executive
Hazardous Installations Directorate
Chemical Industries Division
Head of Unit: Mr J L Sumner

Scottish Borders Council
Planning and Economic Development
Council Headquarters
Newtown St Boswells
TD6 0SA

Your reference: AL
Our reference: KH/EIA

Date: 25 August 2005

Dear Sirs

ENVIRONMENTAL ASSESSMENT FOR PROPOSED DEVELOPMENT AT MIDDLEHILL WIND FARM, TWEEDSMUIR

Thank you for your letter of 26 July 2005 asking what information should be provided in the environmental statement for the proposed development at Middle Hill.

Environmental Impact Assessments are concerned with projects which are likely to have significant effects on the environment. HSE's principal concerns are the health and safety of people affected by work activities. HSE cannot usefully comment on what information should be included in the environmental statement of the proposed development. However, the environmental statements should not include measures which would conflict with the requirements of the Health and Safety at Work etc Act 1974 and it's relevant statutory provisions.

According to our records, there are no pipelines or hazardous installations within the area of this proposed development.

Yours faithfully

pp KA Humphreys

Mr. A. D. McNab
HM Principal Inspector of Health & Safety

Economic Development
& Environmental Planning
Rec'd 29 AUG 2005
To AL
Ackn
File
Comment/Complaint ☐
Ref No

Belford House, 59 Belford Road, Edinburgh EH4 3UE
☎ 0131 247 2060 0131 247 2041 alistair.macnab@hse.gsi.gov.uk

Reply Memorandum

Scottish Borders Council

ENVIRONMENTAL HEALTH SERVICES

To: **Andrew Lorimer – Economic Development and Planning**

From: **Environmental Health Section**

Contact: Mike Raw **Ext: 2738** **Ref: MR/SH**

Date: 15th August 2005

SUBJECT: **SCOPING OPINION REQUEST: MIDDLE HILL WIND FARM, TWEEDSMUIR**

I have no objection to the proposed methodology for the Noise Assessment.

I would ask that the developer be asked to address the matter of very low frequency noise. This is currently a matter of debate surrounding Wind Farms and will require consideration.

JWM Raw.

JWM RAW
Senior Environmental Health Officer (Noise)

Economic Development & Environmental Planning
Rec'd 16 AUG 2005
To AL
Ackn
File
Comment/Complaint ☐
Ref No

SCOTTISH WATER

02 August 2005

SCOTTISH WATER

419 Balmore Road
Glasgow
G22 6NU

T: 0141 355 5373
F: 0141 355 5449
W: www.scottishwater.co.uk

Scottish Borders Council
Planning & Economic Development
Council Headquarters
Newtown St Boswells
TD6 0SA

Economic Development
& Environmental Planning
Rec'd 4 - AUG 2005
Ack
File
Comment/Complaint
Ref No

Dear Sir

Scoping Report for Middle Hill Wind Farm Tweedsmuir
Your ref: AL

Thank you for your letter dated 26th July 2005 regarding the above development

A review of our records indicates that there are SW water assets in the area that may be affected by the proposed development. It is therefore essential that these assets are protected from the risk of contamination and damage. This also applies to watercourses that feed into reservoirs.

The following is a list of precautions that we would ask you to take to ensure that the aforementioned does not occur or affect our assets:

1) A detailed method statement and a risk assessment must be submitted to Scottish Water.

2) You and your developer must make every effort to reduce the risk of soil erosion and pollution from oils, etc. during and after the construction phase.

3) You should at all times allow us access to assets belonging to Scottish Water and must avoid the obstruction or hindrance to them.

4) You will give full facilities to Scottish Water and our representatives to determine by inspection or otherwise whether our assets protected and whether special requirements of Scottish Water are being observed.

5) Locations where public water supplies may be vulnerable should be identified and the impact assessed. In particular:

   - Any impact to the hydrology of the area should be assessed throughout all stages of the site's development and operation. This should include natural drainage patterns, base flows / volume, retention / run off rates and water quality.

- Any potential pollution risk which could affect water quality should be considered. This includes sediment run-off, erosion and management of chemicals and oils throughout all operations at all stages of development. You should follow the guidance provided by the Scottish Environment Protection Agency (SEPA) on pollution prevention, visit www.sepa.org.uk/guidance/ppg/index.htm
- Any new road infrastructure should take into account local watercourses that are feeding reservoirs and any crossing of these should be kept to a minimum. Pollution prevention measures should be put in place at each crossing point and silt traps, or equivalent, should be constructed at regular intervals to minimise the risk from pollution. Once constructed, site roads should be regularly maintained to ensure minimal erosion and hence pollution, from the road surface. Sites roads should be constructed from inert materials.
- Depending on the vulnerability of the public water supply, a sampling programme to assess the baseline water quality and to monitor any damaging effects caused by the development may be advised.
- A site pollution prevention plan and contingency plan should be developed to prevent or to deal with pollution incidents.

6) Mitigation measures to ensure minimum pollution to water courses / bodies should be highlighted in your Environmental Impact Assessment.

7) In addition, any forestry activity likely to affect the drinking water supply should follow strict guidelines. Please contact us if you are likely to carry out any such activity.

8) Scottish Water will not accept liability for any costs incurred by you or your developer in fulfilling any of these requirements.

9) If a connection to the water or waste water network is required, you must make a separate application to Scottish Water Planning and Development Services section for permission to connect. It is important to note that the granting of planning consent does not guarantee a connection to Scottish Water assets.

If you have any queries about any of the requirements detailed in this letter, please contact the Planning and Development team on XXXXX who will be able to explain it in more detail.

Yours faithfully

Annelies Jamieson

Annelies Jamieson
Support Administrator
Planning.enquiries@scottishwater.co.uk

Reply Memorandum

Scottish Borders COUNCIL

PLANNING AND ECONOMIC DEVELOPMENT

To: Mr A Lorimer

From: Head of Economic Development & Regeneration Date: 01/08/05

Contact: Mr R McDonald Ext: 6622 Ref: ARCH-2-3-P

Subject: **Scoping Opinion: Middle Hill Wind Farm**

Any potential wind farm in this part of the Borders may have archaeological implications. In general I approve of the approach taken by West Coast Energy Ltd in the Scoping Opinion but would ask that the following observations are noted:

- I welcome the fact that discussions will be undertaken with our Archaeology Service
- I would recommend that, in addition to Scottish Borders Council's Historic Environment Records (HER formerly SMR) and the National Monument Record of Scotland (NMRS), that Historic Scotland and the National Library of Scotland's map collection should also be consulted.
- Field survey *will* be necessary, prior to the submission of the final Environmental Statement. Without the benefit of field any plan illustrating the archaeological landscape would be incomplete and I would be unable to determine the full range of potential impacts to the historic environment.
- This part of the Borders is rich in archaeological, however, the height above sea level of the proposed wind farm may allow it to avoid much of the archaeological heritage of this area.

Rory McDonald
Archaeology Officer

SCOTTISH EXECUTIVE

Development Department
Planning Division

Victoria Quay
Edinburgh EH6 6QQ

FAO : Alistair Lorimer

Planning & Economic Development
Scottish Borders Council
Council Headquarters
Newtown St. Boswells
TD6 0SA

Telephone: 0131-244 7076
Fax: 0131-244 7083
gary.paterson@scotland.gsi.gov.uk
http://www.scotland.gov.uk

Your ref: AL
Our ref: P/EA/96/B/28

01 August 05

Dear Mr Lorimer

ENVIRONMENTAL IMPACT ASSESSMENT (SCOTLAND) REGULATIONS 1999 - MIDDLE HILL WIND FARM, TWEEDSMUIR (SCOPING)

I am writing to acknowledge receipt of your letter of 26 July, enclosing details concerning a scoping opinion related to a future EIA for the above development.

Accordingly, the papers are now being circulated to interested parties within the Executive, who have been asked to send information/responses direct by 23 August. However, if any of these parties have queries, or require additional time to reply, they have been advised to contact you to negotiate, by agreement, a revised time-scale, etc.

You should note that any details provided by the Executive relates solely to a request for information under section 10 of the Environmental Impact Assessment (Scotland) Regulations 1999.

Yours sincerely

GARY PATERSON

Economic Development
& Environmental Planning
Rec'd 3 - AUG 2005
To AL
Ackn
File
Comment/Complaint
Ref No

INVESTOR IN PEOPLE

for birds
for people
for ever

RSPB Scotland

Borders Office
2nd Floor Lindean Mill
Galashiels TD1 3PE
Tel: 01750 725323
Fax: 01750 725 323
www.rspb.org.uk/scotland

Jenny Walsh
Project Manager
West Coast Energy
Tower Mains Studios
18g Liberton Brae
Edinburgh
EH16 6AE

4th October 2007

Dear Jenny

Scoping response to proposed windfarm at Glenkerie, Scottish Borders

Thank you for contacting RSPB Scotland in regard to the above proposal.

I am not aware of any species or populations of birds of significant conservation concern at the site of the proposed windfarm at Glenkerie. There are no local, national or international ecological designations at or adjacent to the site.

Nevertheless, an environmental impact assessment should include ornithological survey work carried out in the bird breeding season and over the winter, following the Scottish Natural Heritage guidance paper *Survey methods for use in assessing the impacts of onshore windfarms on bird communities*. This should include a comprehensive baseline survey of the breeding birds on site and within a 500m buffer distance beyond the outermost turbine position. The appropriate methodology for this is Brown and Shepherd, as referred to in SNH Guidance.

A number of specific matters relating to the bird populations of the area would require consideration:

- Black Grouse. Survey work carried out in this general area is now rather dated but did reveal the presence of a few birds. I note from your letter that dedicated Black Grouse surveys were carried out between May 2005 and December 2006. Were any further observations carried out this (2007) spring?

Patron Her Majesty the Queen **President** Julian Pettifer **Chairman of Council** Professor Ian Newton OBE FRS
Chairman, Committee for Scotland Pamela Pumphrey **Director, Scotland** Stuart Housden OBE
Registered charity no 207076 640-1349-05-06

BirdLife INTERNATIONAL

- Raptors/Ravens. Flights through the area by Osprey, possible breeding Goshawk and Raven and, perhaps, other raptor species of conservation concern make it essential that Vantage Point Surveys and Collision Risk calculations are undertaken. I note that these were carried out, as per your letter. Information on the presence of breeding raptors may also be sought from Alan Heavisides, chairman of the local Raptor Study Group (a.heavisides@napier.ac.uk). Data collected on sensitive species should be submitted to, and will be treated by, RSPB Scotland in strict confidence.

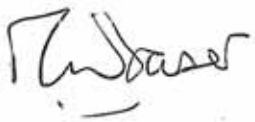
- Breeding Waders. The presence of Golden Plover, which may occur in the area, should have been be detected by standard Brown and Shepherd methodology.

The potential ecological effects of the proposed development with any proposed or existing windfarms in the area need to be addressed in terms of cumulative habitat loss, hazard to birds in flight, and displacement of birds through disturbance and habitat modification.

A search of our database would provide any further information on the bird attributes of the area if these are required. Please contact Clare Fergusson at our Glasgow Office (clare.fergusson@rspb.org.uk) in this regard. There is a charge for this service.

I hope this of some help, and look forward to seeing the Environmental Statement in due course.

Yours sincerely



Mike Fraser
Conservation Officer, Lothian and Borders

APPENDIX 6.1: GAZETTEER OF ARCHAEOLOGICAL SITES AND MONUMENTS

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
1	Burnt mound	NMRS; SMR	NT02NE 16 / 4020117	308100	626650	The NMRS records that as part of continuing re-survey of Tweeddale the following sites have been recorded by Biggar Museum Trust: 1a) NT 0820 2658 Burnt mound. On the lower S flank of Kingle Rig and on the E side of Hare Burn is a prominent burnt mound measuring 5m by 4m by 1.6m high. There is a distinctive hollow 1m diameter by 0.5m deep on the summit of the mound. The mound appears to overly a massive boulder at the burn edge and the deposit tails into the upper ground. It is covered in moss, mature heather and bracken and the ground on the E side is boggy. 1b) NT 0810 2665 Burnt mound. 125m upstream from the above and immediately on the W side of Hare Burn is another burnt mound. The dome-shaped deposit is 6m long by 3m wide and 1m high, the upper side tails into the ground. There is a 10m plateau on the W side of the mound before the ground rises up sharply. The mound is covered in moss and bracken. (Ward 2005)	Regional	None	None	None
2	Burnt mound	NMRS; SMR	NT02NE 17 / 4020118	307900	626770	The NMRS records that as part of continuing re-survey of Tweeddale the following sites have been recorded by Biggar Museum Trust: NT 0790 2677 Burnt mound and natural mounds. On the lower SW flank of Kingle Rig and on the E side of Hare Burn, about 40m upstream from a confluence, there is a double burnt mound. The entire deposit is 9.5m long with the burn flowing 3m to the W. It would appear that two deposits are represented; the lower one being dome-shaped and about 6m long by 4m across and measuring 1m high. With a space of about 2m between them, the upper mound measures	Regional	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						4m by 3m and is slightly dome-shaped. They are both covered in mossy grass and bracken. A few metres below the mounds there is a prominent dome that measures 5m in diameter by 0.75m high, and although it has the appearance of another burnt mound, it is composed of clayey gravel and is likely to be natural. Just upslope from the burnt mounds are other hummocky bumps that are the gravely upcast banks of the burn. NT 0788 2685 Burnt mound. On the lower SW flank of Kingle Rig and on the E side of Hare Burn there is a double burnt mound. The main deposit is kidney-shaped and measures 6m by 4.5m by 0.6m high, a further double, dome-shaped deposit is 2.5m by 2m by 0.3m high. The mound curls around almost 3m as a 2m wide bank leaving an area of about 1.5m within the arc. A spring flows from the E side of the mound, which is covered in moss and mature heather. (Ward 2005)				
3	Burnt mound	NMRS; SMR	NT02NE 18 / 4020105	307750	627000	The NMRS records that as part of continuing re-survey of Tweeddale the following sites have been recorded by Biggar Museum Trust: NT 0775 2700 Burnt mound. There is a burnt mound on the W flank of Kingle Rig, less than 200m from the source of the Hare Burn and at the point where the steep angle of descent of the burn changes abruptly. The mound is prominent on the E side of the burn and measures 6m across the hill by 6m downslope, it is 1.5m high with a curved break of slope or bank at the upper side that is 1m high. (Ward 2005)	Regional	None	None	None
4	Fort	HS; NMRS; SMR	SAM No 3084 NT02NE 2 / NT02SE 14 / 4020052 /	309180	627420	The NMRS records that on the left bank of the Kingledoors Burn, 70 yds NE of the Glenkerie Burn, there is a low knoll which is occupied by a fort measuring internally 160' by 90'. The inner defence (A), which was probably a boulder-faced rubble wall, was drawn round the margin of the summit-area	National	i, a, t, r	Medium	Major

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
			4020107			whilst outside this there were two other walls or earthen ramparts (B, C). The entrance is situated in the centre of the NE end. Except for a short distance W of the entrance, the inner wall has been reduced to a scarp through the construction of a modern sheepfold . Occasional outer facing-stones can still be seen in situ at the foot of the scarp, but owing to the lack of any corresponding inner face it is not possible to determine the thickness of the wall without excavation. Owing to destruction by cultivation, the pair of outer defences are only visible in the form of intermittent scarps. The interior of the fort has been scarped artificially in places, but there are no definite indications of dwellings. (RCAHMS 1967)				
5	Cultivation Terraces	NMRS; SMR	NT02NE 8 / 4020055	308900	627300	The NMRS records cultivation terraces, on the S side of Glenkerie Burn, near the junction with Kingledoors Burn (RCAHMS 1967). The Ordnance Survey subsequently records that these cultivation terraces are of minor importance (Visited by BS 1974). A field survey of this area by Biggar Museum Trust recorded three cairns and a standing stone. Ward (2005) Field survey recorded that the reported terraces are difficult to identify on the ground. Only one linear feature (5a) could be confidently identified as a possible terrace lynchet. 5a) NT 09047 27348 linear bank A slight bank 0.3m high extends NNW from the position of cairn 5b as far as a modern post and wire boundary fence. Short sections of other possible terrace edges were recorded although not with a high degree of confidence. 5b) NT 09608 27315 Cairn On the lower E flank of Broomy Law / Kingle Rig there is a grass covered cairn which measures 5m in diameter by 0.4m high. 5c) NT 09010 27304 Cairn	Local	d, a, p, ir	Low	Negligible

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						On the lower E flank of Broomy Law / Kingle Rig there is an isolated standing stone which measures 0.4m. broad by 0.9m high. It is unclear if this pointed and triangular section stone is in a naturally occurring position. 5d) NT 09131 27317 Cairn On the lower E flank of Kingle Rig and lying in a natural scoop there is a cairn that measures 6m by 4m by 1m high. It lies along the hill face and is covered in moss and heather. 5e) NT 09059 27245 Cairn On the lower E flank of Broomy Law / Kingle Rig there is a grass covered cairn which measures 4m in diameter by 0.5m high.				
6	Cairns	NMRS; SMR	NT02NE 13 / 4020108	309300	627470	The NMRS records that as part of continuing re-survey of Tweeddale the following sites have been recorded by Biggar Museum Trust: NT 0930 2747 Cairns. There are three small cairns measuring about 2m in diameter by 0.3m high lying on a terrace some 100m E of the fort NT 0930 2735 Cairns. AT the base of the SE flank of Glenkerie Rig and to the NW of the track there are two long cairns and an oval-shaped one. The long cairns are aligned NW / SE and are parallel to each other, with a space of 18m between them. The long cairn to the SW measures 15m by 5m by 0.7m high and the other measures 15m by 3m by 0.7m high; the latter has a bulbous terminal at the northern, broader end that may indicate phasing of construction. The oval-shaped cairn measures 7m by 3m by 0.4m high. It is offset in line from the NE long cairn band lies parallel with it. The area around the cairns is growing with better grasses than the general ground around the site and the area is stone free indicating clearance. A series of drains, 6m apart, have been cut down-slope and parallel with the cairns. To the SW there are further drainage channels and a glacial channel that sweeps	Local	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						around the former plantation (24). The ground rises gently above the cairns for about 30m where it meets the abrupt break of slope up to the hillfort (4) above. There is a single small cairn measuring 2m in diameter by 0.3m high at the upper edge of the apparently improved ground. (Ward 2005)				
7	Building; Sheepfold	NMRS; SMR	NT02NE 14 / 4020107	309150	627330	The NMRS records that as part of continuing re-survey of Tweeddale the following sites have been recorded by Biggar Museum Trust: NT 0915 2733 Stone building and bucht. On the lower S flank of Glenkerie Rig and lying on the W side of the Glenkerie Burn there is a stone building, on the E side of the burn and 30m downstream is the bucht. These sites are to the W of the fort (4). The building appears to have been truncated by a modern track. What appears to a squarish structure, about 5m by 5m, is more likely to be the remains of a building that originally measured 8m long by 6m wide and was aligned with the burn. The northern gable is now isolated by the track. Immediately upstream there are two lengths of straight walls 6m long and built with boulders; they lie about 2m apart. The walls are about 0.4m high and parallel but the ends are staggered. They lie in very boggy ground. The bucht measures 8m by 1m internally and has been partially created by quarrying, the spoil being used to build the three sides that are banks of about 0.3m high. The open end is at the SE. (Ward 2005)	Local	None	None	None
8	Burnt Mound	NMRS; SMR	NT02NE 15 / 4020106	308900	627570	The NMRS records that as part of continuing re-survey of Tweeddale the following sites have been recorded by Biggar Museum Trust: NT 0890 2757 Burnt mound. Lying on the SW flank of Glenkerie Rig and on the E side of Glenkerie Burn there is a very prominent burnt mound. The dome-shaped mound has steep sides, the upper edge of the mound is curved making it slightly kidney-shaped. The mound measures 7.5m by 6.5m	Regional	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						by 1.25m high and is covered in moss, bracken and heather. (Ward 2005)				
9	Not used									
10	Cultivation Terraces	NMRS; SMR	NT02NE 4 / 4020053	309420	627900	The NMRS records that, centred NT 0942 2790, there is a group of about six ill-defined strip lynchets, each c. 1.2m in average height, on the W side of Glenkiely Burn. (Visible on APs RAF.106G.Scot.UK 87: 4290-1) (OS 1959)	Local	None	None	None
11	Cultivation Terraces	NMRS; SMR	NT02NE 5 / 4020054	309730	627810	The NMRS records that, centred on NT 0973 2781, there are the fragments of two or three strip lynchets, each c. 1.2m in height, in the angle formed by the E side of the Glenkiely Burn and the N side of the Kingledoors Burn, within 50m of the N side of the road to Hopehead. (Visited by OS (WDJ) 29 September 1959). Field survey recorded one well preserved lynchet and terrace and noted that a modern sheepfold has been constructed in what seems to be a large quarry that cuts into the lower hillslope. A field survey of this area by Biggar Museum Trust identified the following additional sites: Lying on an area where extensive heather burning has taken place and on the cultivation terraces, at NT 0965 2780 there are a few burnt stones. These are typical in appearance to the burnt stone in the numerous local burnt mounds. A search failed to detect any deposit of burnt stone in the vicinity and there are no watercourses in the immediate area. The burnt stone is not the product of muir burn as the ground and other stones on it are clearly unburnt. The burnt stone may be the product of a very local fireplace from some indeterminate period and purpose. (Ward 2005)	Local	None	None	None
12	Burnt Mound	NMRS; SMR	NT12NW 63 / 4020104	310080	628400	The NMRS records that as part of continuing re-survey of Tweeddale the following sites have been recorded: NT 1008 2840 Burnt mounds (2). On the S flank of Benshaw Hill and on the NE side of	Regional	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						Benshaw Burn there are three burnt mounds. The lower mound is roughly circular and measures 7m by 6m and is 1m high on the lower side and 0.5m high on the upper side. The surface has a rather hummocky appearance and is covered in grass, moss, heather and bracken. A spring flows on the E side where the hill face is 10m away and the burn flows some 20m on the W side. 30m upslope there is another burnt mound, it measures 6m by 4m by 1m high. A few metres below the deposit there is an earthfast boulder which is 1m long, it projects from the sloping ground like a step, it is uncertain if this stone has any archaeological significance. 10m upslope from the second mound is a third measuring 3m by 2m by 1m high. The latter two mounds have springs flowing on their E sides. NT 1025 2828 Burnt mound. On the eastern extremity of Cocklie Rig, about 30m uphill from the head dyke and adjacent to and on the S side of Benshaw Burn, there is a burnt mound. The mound is quite distinctive and kidney-shaped. It measures 9.5m by 5.5m at its longest and broadest points and is 2.5m high when measured from the burn. However this height will not reflect the true depth of the deposit, as it must have been created on the steep bank of the burn. The mound is 0.5m high on the upper side and this may be assumed to be a true depth of the deposit at that point. Within the curved area there is some rush growth but no indication of a spring. The mound is covered in short grazed grass. 25m upstream from the burnt mound there is another mound which when tested was shown to consist of clayey gravel. (Ward 2005)				
13	Burnt Mound	NMRS; SMR	NT12NW 80 /	310200	628220	The NMRS records that as part of continuing re-survey of Tweeddale the following new site has been recorded. NT 1020 2822 Burnt mound. (Ward 2005)	Regional	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
14	Track	Historic Maps; 1st Edition OS map; Aerial Photographs; Field Survey				A track linking the settlement at Kingledores with the settlement at Glencotho is depicted on early maps by Armstrong (1775), Thomson (1821) and the Ordnance Survey (1859). Field survey identified a track running parallel with the Benshaw Burn and crossing a pass between Benshaw Hill and Cocklie Rig before descending towards Glencotho. The survival of this feature was very variable, with it disappearing completely between the source of the Benshaw Burn and the summit of the pass, but it was very clear on the descent to Glencotho where it appeared as a slight hollow-way with a width of c. 2-3m.	Lesser	None	None	None
15	Gravel Pit	1st Edition OS map				A gravel pit is depicted on the Ordnance Survey 1st Edition map (on the northern side of the track linking the settlement of Kingledores to the settlement of Glencotho. Field survey did not identify any surviving visible remains of this feature.	Lesser	None	None	None
16	Not used									
17	Not used									
18	Boundary	1st Edition OS Map				The boundary between Drumzelier Parish and Broughton, Glenholm and Kilbucho Parish is depicted on the Ordnance Survey 1st Edition map crossing the summits of Broomy Law, Glenlood Hill and Cocklie Rig before descending the northern flank of Benshaw Hill towards the River Tweed. The alignment is marked by a number of 'boundary markers' and, on Glenlood Hill, a 'pile of stones'. Field survey did not locate any surviving remains of the 'pile of stones' on Glenlood Hill. The boundary is now marked by a modern post and wire fence. At irregular intervals along the modern fence line there are weathered 25mm square-section wrought-iron posts which appear to correspond to the mapped boundary markers.	Local	None	None	None
19	Track	1st Edition OS map				A track following the line of the Kingledoors Burn is depicted on early maps by Armstrong (1775), Thomson (1821) and the Ordnance Survey 1st Edition map (1859). Field survey identified a track with a width of c.3-4m,	Lesser	d, a, p, ir	Medium	Negligible

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						which has been upgraded for vehicular use.				
20	Chapel	NMRS; SMR		310000	628000	The NMRS records that about 1200, Christin, the Hermit of Kingledoors, appears as one of the witnesses regarding the marches of Stobo. Before the close of the same century this chapel, under the invocation of St. Cuthbert, was erected in the glen, possibly as a perpetuation of the cell or oratory of Christin the Hermit. It stood on the south side of the burn of Kingledores. (Gunn 1931)	Unknown / Regional	None	None	None
21	Farmsteading	NMRS; SMR		310540	628100	The NMRS records this site but provides no information. The settlement at Kingledores is depicted on historic maps by Edgar (1741), Roy (c.1750), Armstrong (1775) and Thomson (1821), as well as on the Ordnance Survey 1st Edition map. Field survey identified a complex of farm buildings and enclosures, which are still in current use and lie just outwith the application area.	Local	None	None	None
22	Enclosure	Field Survey		308907	628108	Field survey identified a small drystone enclosure measuring 2.5m square on Glenkerie Rig. The enclosure had an entrance to the north and stood to a maximum height of 0.8m.	Unknown / Local	None	None	None
23	Enclosure	Historic map		310042	627973	A possible enclosure is depicted on an early map by Armstrong (1775), located between the Glenkiely Burn and the Benshaw Burn. Field survey identified a poorly defined sub-rectangular enclosure measuring 20m north-east to south-west by 14m north-west to south-east. The banks of the enclosure had a width of 1.5-2m.	Local	None	None	None
24	Enclosure	Field Survey		309270	627339	The Ordnance Survey 1st Edition map depicts an irregular enclosed plantation to the north of the Glenkerie Burn, close to where it joins the Kingledoors Burn. Field survey identified an irregular drystone enclosure measuring 100m north-west to south-east by 60m north-east to south-west. The banks on the north-	Lesser	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						west, south-west and north-east had a width of 0.5m - 1.0m and survived to a maximum height of 0.4m, but the south-east side was very ephemeral.				
25	Sheepfold	1st Edition OS Map		308576	626569	The Ordnance Survey 1st Edition map (1859) depicts a 'Sheep Shelter' adjacent to the N side of a track that runs along the N bank of the Kingledores Burn. Subsequent OS maps show a circular sheepfold at the same location, replacing the earlier shelter. Field survey recorded a well-preserved, roughly circular sheepfold approximately 23m in diameter with a narrow entrance in the NE arc. The sheepfold wall stands to its original height of 1.2m. Underlying the sheepfold and on the each side of the track there are turf banks. A bank leads off from the stell to the NW for about 10m, then turns at a right angle for 13m where it meets the track, it would have continued for a further 6m to the S side of the track where it turns again at a right angle for 13m to the SW. On the SW side of the stell are the scant remains of another enclosure, it measures 11m by 11m and is seen as a stony bank. Within the stell are a series of amorphous mounds and 3m length of poorly preserved stone wall footings are seen against the hill slope on the W side of the stell.	Local	None	None	None
26	Enclosure / Plantation	1st Edition OS Map; Aerial Photographs; Field Survey		310012	627948	The Ordnance Survey 1st Edition map (1859) depicts an enclosed plantation immediately to the north of the Kingledoors Burn, c. midway between the Benshaw Burn and the Glenkiely Burn. Field survey identified a sub-rectangular enclosure measuring 70m south-west to north-east by 50 m north-west to south-east. The north-eastern and north-western sides of the enclosure survived as low stone walls with a width of c.1m and a height of up to 0.3m, but only slight traces of the south-west and south-east sides remained. A number of trees were still present within the enclosure.	Lesser	None	None	None
27	Enclosure	NMRS; SMR; 1st	NT02NE 5 / 4020054			The NMRS records that an enclosure is depicted on the Ordnance Survey 1st Edition map (Peeblesshire	Unknown / Local	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
		Edition OS Map				1859, sheet xix), but it is not shown on the 1992 edition of the OS 1:10000 map. (RCAHMS 2000). Field survey could detect no trace of any enclosure on what is in fact a steep hillside.				
28	Rig and furrow	Aerial Photographs				An area of rig and furrow is visible on aerial photographs immediately to the south of the settlement at Kingledores. Field survey identified rig and furrow measuring c. 6m from crest to crest	Local	d, a, p, ir	High	Moderate
29	Cairn	Field Survey		310820	627880	Field survey identified a large cairn measuring 8m by 6m by 1.5m high. It consisted of angular stones measuring up to 1m across. The cairn appeared to be fairly modern and was probably either field clearance or a stockpile of material for wall building.	Lesser	None	None	None
30	Railway	NMRS		311000	627500	The NMRS records that this now dismantled Railway was built by the Edinburgh and District Water Trust 1895-96 and was fundamental to the construction of the Talla Reservoir dam (NT12SW 17.01) and associated works. (Marshall 2005)	Local	d, a, p, ir	Low	Negligible
31	Wall	Field Survey		310342	628020	Field survey identified revetment wall running alongside the S side of the track that links Kingledores with Hopehead. It was of drystone construction and stood to a height of 1m. Runs for approximately 50m from NT 10327 28010-NT 10357 28030	Lesser	None	None	None
32	Track	1st Edition OS Map				The Ordnance Survey 1st Edition map depicts a track linking the settlement at Kingledores with what is currently the A701 trunk road. Field survey identified a clearly defined track with a width of c.2m. It had a compacted gravel surface, with grass growing in the centre.	Lesser	None	None	None
33	Dam	Documentary source		310180	628310	Field survey by Biggar Museum Trust (Ward 2005) identified the following site: 300m to the NW of Kingledoors Farm there is a dam wall across the Benshaw Burn. The dam is now completely filled with silt. The OS shows an enclosure around the area of the dam, this is only now traceable by fence wire lying on the ground. On the Benshaw Hill side of the dam and where the fence once stood	Local	None	None	None

ID	Site type	Source	NMRS No / SMR No	Easting	Northing	Description	Importance	Effect	Magnitude	Significance
						there is a prominent sheep pad which now gives the false impression of a trackway.				
34	Mound; Burnt mound (?)	Documentary source		309800	628800	Field survey by Biggar Museum Trust (Ward 2005) identified the following site: On the S flank of Benshaw Hill and E of the Benshaw Burn there is a prominent 15m diameter mound. When measured from the lower side it is 2m high and from the upper side is 1m high. The mound is covered in short grass and is surrounded by boggy ground. Numerous molehills over the area indicate burnt rock and a test on the E side proved the deposit of burnt material. However, most of the soil and stone in the molehills is clayey and with unburnt stone, therefore the true size and shape of the burnt deposit is uncertain.	Unknown / Regional	None	None	None
35	Structures	Documentary source		309070	627160	Just N of the trackway and at the base of the steep slope of the E flank of Broomy Law / Kingle Rig (NT 0907 2716) there are three open-ended stone structures nestling against the break of slope. Two adjoining structures lie slightly above and 20m W from the third The northernmost is 8m long, while that adjoining it is 5m long; their open ends are level with each other. The building to the E measures 20m long on the N side (against the hill) and only 6m long on the S. It appears to have a separate western compartment and there is a pit-ike feature created against the dividing wall, this drystone lined pit is 0.6m deep by 0.6m in diameter. Each of the structures is poorly preserved but walling is evident in them, each has a curved gable and hollowed or sunken floor. These buildings may be examples of buchts. Ward (2005)	Local	None	None	None

APPENDIX 6.2: GAZETTEER OF KEY RECEPTORS

Site ref	Description	Status	Importance	Easting	Northing	Turbines visible	Distance to nearest turbine (km)	Effect Type	Impact Magnitude	Significance Of Predicted Effect
876	Tripans Knowe,enclosure	SAM	National	307031	628141	1 to 2	1.1	i, a, t, r	Low	Minor
2607	Bizzyberry Hill,fort & Wallace's Well	SAM	National	304802	639359	7 to 8	11.2	i, n, t, r	Imperceptible	Minor
2611	Easter Toftcombs,fort 820m NW of	SAM	National	305383	639593	3 to 4	11.2	i, n, t, r	Imperceptible	Minor
2668	Castle Hill,fort 550m WSW of Candybank	SAM	National	306506	641182	7 to 8	12.4	i, n, t, r	Imperceptible	Minor
2675	Chester Knowes, enclosure	SAM	National	311182	628184	9 to 11	1.8	i, a, t, r	Low	Minor
2694	Drumelzier Haugh,standing stone 640m WNW of	SAM	National	313927	635437	1 to 2	7.8	i, n, t, r	Imperceptible	Minor
2739	Mill Rings, earthwork, Trebetha Hill	SAM	National	308597	633590	5 to 6	4.5	i, a, t, r	Imperceptible	Minor
2742	Kilbucho House,settlement 360m WNW of	SAM	National	308101	635127	1 to 2	6.1	i, n, t, r	Imperceptible	Minor
2750	Menzion Farm,platform settlement 910m SSW of	SAM	National	308950	622786	1 to 2	4.5	i, a, t, r	Imperceptible	Minor
2751	Menzion Farm,platform settlement 1280m SSW of	SAM	National	308820	622436	1 to 2	4.8	i, a, t, r	Imperceptible	Minor
2767	Gallow Law,cairn	SAM	National	308339	640169	9 to 11	11.1	i, n, t, r	Imperceptible	Minor
2768	Patervan, burial cairn and buildings N of	SAM	National	311209	628864	7 to 8	1.8	i, a, t, r	Low	Minor
2828	Ratchill,platform settlement and ring enclosure 460m NE of	SAM	National	312165	636608	3 to 4	8.0	i, n, t, r	Imperceptible	Minor
2895	Dreva Craig, fort, settlements & field system	SAM	National	312759	635464	1 to 2	7.1	i, n, t, r	Imperceptible	Minor
2913	Kilbucho House,cairn 1010m NW of	SAM	National	307569	635457	1 to 2	6.6	i, n, t, r	Imperceptible	Minor
2938	Pyked Stane,cairn,Pyked Stane Hill	SAM	National	312297	641096	9 to 11	12.3	i, n, t, r	Imperceptible	Minor
2939	Stirkfield,settlements and cultivation remains 1300m ESE of	SAM	National	311473	640472	9 to 11	11.5	i, n, t, r	Imperceptible	Minor
2943	Easter Stanhope,homestead 780m NW of	SAM	National	311646	630236	1 to 2	2.5	i, a, t, r	Imperceptible	Minor
2945	Helm End, fort and settlement	SAM	National	310963	635335	5 to 6	6.4	i, n, t, r	Imperceptible	Minor
2946	Ratchill,platform settlement 550m N of	SAM	National	311957	636927	3 to 4	8.2	i, n, t, r	Imperceptible	Minor
2950	Easter Dawyck,fort & settlement 730m ESE of	SAM	National	319741	637288	1 to 2	13.2	i, n, t, r	Imperceptible	Minor

Site ref	Description	Status	Importance	Easting	Northing	Turbines visible	Distance to nearest turbine (km)	Effect Type	Impact Magnitude	Significance Of Predicted Effect
3006	Lochurd Farm,ring enclosures & mound 1550m S of	SAM	National	311153	641635	9 to 11	12.6	i, n, t, r	Imperceptible	Minor
3025	Patervan,fort,settlement & cultivation terraces 1050m NNW of	SAM	National	310986	629748	1 to 2	1.7	i, a, t, r	Imperceptible	Minor
3032	Kilbucho Mains, settlement 750m WSW of	SAM	National	308293	635295	5 to 6	6.2	i, n, t, r	Imperceptible	Minor
3033	Langlaw Hill,fort,enclosure & barrows	SAM	National	309938	638352	9 to 11	9.3	i, n, t, r	Imperceptible	Minor
3065	Stanhope, unenclosed platform settlement 850m SW of	SAM	National	311579	629270	9 to 11	2.2	i, a, t, r	Low	Minor
3068	Syke Hill,fort	SAM	National	320155	638064	5 to 6	14.0	i, n, t, r	Imperceptible	Minor
3084	Glenkerie Burn,fort	SAM	National	309199	627438	5 to 6	0.5	i, a, t, r	Medium	Major
3086	Stanhope, enclosed settlement 800m SW of	SAM	National	311623	629331	9 to 11	2.3	i, a, t, r	Low	Minor
3094	Hammer Knowe,fort & settlement	SAM	National	315281	638681	9 to 11	11.2	i, n, t, r	Imperceptible	Minor
3142	Muirburn Castle,fort & scooped settlement	SAM	National	309088	641225	9 to 11	12.1	i, n, t, r	Imperceptible	Minor
3150	Stirkfield,barrow and enclosed cremation cemetery 1120m ESE of	SAM	National	311242	640336	9 to 11	11.3	i, n, t, r	Imperceptible	Minor
3151	Stirkfield Rig,ring enclosures	SAM	National	310624	640341	9 to 11	11.4	i, n, t, r	Imperceptible	Minor
3152	Broughton Knowe,ring enclosures	SAM	National	309849	639073	9 to 11	9.9	i, n, t, r	Imperceptible	Minor
3153	Norman's Castle, dun 830m SW of Stanhope	SAM	National	311724	629149	9 to 11	2.3	i, a, t, r	Low	Minor
3154	Cardon,settlement 650m SW of	SAM	National	309384	632801	1 to 2	3.7	i, a, t, r	Imperceptible	Minor
3161	Mitchelhill Rings, fort	SAM	National	306285	634174	3 to 4	5.9	i, n, t, r	Imperceptible	Minor
3163	Mitchelhill, palisaded enclosure and cairn 200m NW of	SAM	National	306521	634047	1 to 2	5.7	i, n, t, r	Imperceptible	Minor
3215	Patervan, settlement SSE of	SAM	National	311249	628543	9 to 11	1.8	i, a, t, r	Medium	Major
3216	Worm Hill,cairn	SAM	National	311125	630721	9 to 11	2.4	i, a, t, r	Low	Minor
3218	Penveny,settlement & scooped homestead NW of	SAM	National	316359	639619	1 to 2	12.6	i, n, t, r	Imperceptible	Minor
3262	Stanhope, fort, scooped settlement and enclosed settlements SW of	SAM	National	311998	629527	9 to 11	2.7	i, a, t, r	Low	Minor
3467	Stanhope, farmsteads SSW of	SAM	National	312168	629570	5 to 6	2.9	i, a, t, r	Low	Minor
4235	Devonshaw Hill,cairn	SAM	National	296149	628689	1 to 2	11.9	i, n, t, r	Imperceptible	Minor
4253	Stanhope, settlement 160m N of	SAM	National	312283	629913	9 to 11	3.0	i, a, t, r	Low	Minor

Site ref	Description	Status	Importance	Easting	Northing	Turbines visible	Distance to nearest turbine (km)	Effect Type	Impact Magnitude	Significance Of Predicted Effect
4645	Ewe Hill,barrows 750m NE of Biggarshiels Farm	SAM	National	304914	640595	7 to 8	12.3	i, n, t, r	Imperceptible	Minor
4660	Tinto Cairn,cairn on summit of Tinto Hill	SAM	National	295321	634363	3 to 4	14.3	i, n, t, r	Imperceptible	Minor
5277	High House of Edmonston,tower house	SAM	National	307045	642147	3 to 4	13.2	i, n, t, r	Imperceptible	Minor
8155	Stanhope, scooped settlement and enclosure NNE of	SAM	National	312403	630023	9 to 11	3.2	i, a, t, r	Low	Minor
8156	Stanhope Cottage, burial cairn 240m NNE of	SAM	National	312393	630194	9 to 11	3.2	i, a, t, r	Low	Minor
8157	Hopecarton, enclosure 410m SSW of	SAM	National	312655	630613	9 to 11	3.6	i, a, t, r	Low	Minor
8162	Hopecarton, buildings 250m SSE of	SAM	National	312756	630758	9 to 11	3.8	i, a, t, r	Low	Minor
8164	Whiteside Rig, fort & enclosure	SAM	National	311283	624885	5 to 6	3.8	i, a, t, r	Low	Minor
8165	Hopecarton, settlement 530m SE of	SAM	National	313054	630588	9 to 11	4.0	i, a, t, r	Low	Minor
8204	Cardon,fort NW of	SAM	National	309279	633512	9 to 11	4.4	i, a, t, r	Low	Minor
636	High House of Edmonston	Category B Listed	Regional	307040	642140	3-4	13.2	i, n, t, r	Imperceptible	Minor
637	Edmonston Castle	Category B Listed	Regional	307140	642234	1-2	13.3	i, n, t, r	Imperceptible	Minor
639	Carwood House	Category B Listed	Regional	303829	640100	1-2	12.3	i, n, t, r	Imperceptible	Minor
2012	Stanhope Farm	Category B Listed	Regional	312221	629772	9-11	2.9	i, a, t, r	Low	Minor
14166	Elsrickle, Oxengate	Category B Listed	Regional	306046	643349	1-2	14.6	i, n, t, r	Imperceptible	Minor
15159	Skirling, War Memorial	Category B Listed	Regional	307628	639314	5-6	10.3	i, n, t, r	Imperceptible	Minor
15161	Skirling, Loanfoot	Category B Listed	Regional	307655	639089	1-2	10.1	i, n, t, r	Imperceptible	Minor
47120	Victoria Lodge	Category B Listed	Regional	310707	623120	3-4	4.8	i, a, t, r	Imperceptible	Minor

APPENDIX 7.1: ASSESSMENT METHODOLOGY

INTRODUCTION

7.1.1 As a matter of best practice, the assessment has been undertaken in accordance with the advisory guidelines set out in The Landscape Institute and Institute of Environmental Management and Assessment (2002). Guidelines for Landscape & Visual Impact Assessment, Second Edition. Reference has also been made to the following publications, published reports and government policies:

- Carys Swanwick, Dept. of Landscape, University of Sheffield and Land Use Consultants. (2002). Landscape Character Assessment – Guidance for England and Scotland;
- Scottish Natural Heritage. (2001). Guidelines on the Environmental Impacts of Wind Farms and Small Scale Hydroelectric Schemes;
- University of Newcastle. (2002). Visual Assessment of Wind Farms Best Practice. Scottish Natural Heritage Commissioned Report F01AA303A;
- Horner & Maclennan/Envision. (2006). Visual Representation of Windfarms Good Practice Guidance. Report for Scottish Natural Heritage, The Scottish Renewables Forum & The Scottish Society of Directors of Planning;
- Scottish Natural Heritage. *Strategic Locational Guidance For Onshore Wind Farms in Respect of the Natural Heritage*. Scottish Natural Heritage Policy Statement No. 02/02;
- Scottish Natural Heritage. *Cumulative Effect of Windfarms.* Scottish Natural Heritage Guidance (Version 2 revised 13/04/2005).
- Scottish Planning Policy 1 – The Planning System (SPP6);
- Scottish Planning Policy 6 – Renewable Energy (SPP6);
- Planning Advice Note 45 (PAN 45) (Revised 2002);
- National Planning Policy Guidelines 14 – Natural Heritage (NPPG14);
- Planning Advice Note 58 (PAN 60) – Environmental Impact Assessment;
- Planning Advice Note 60 (PAN 60) – Planning for Natural Heritage; and
- National Planning Policy Guidelines 18 – Planning and the Historic Environment (NPPG18)

STUDY AREA

7.1.2 The study area has been determined following consultations with Scottish Borders Council and SNH. The study area covers a 35km threshold radius around the proposals, in line with current best practice.

7.1.3 In addition, a cumulative study area of 60km was determined in order to establish the existing cumulative windfarm baseline. This provides the

context for the cumulative landscape effects relating to the introduction of the proposals to the baseline of existing, consented and potential future wind farm development. The wind farms to be included in the cumulative assessment were agreed with Scottish Borders Council and SNH. This included existing and consented windfarms, along with windfarms currently at a planning and scoping stage stage. In line with current best practice, detailed consideration will be given with regard to the cumulative effects resulting from different wind farm developments within 35km of the proposed development.

7.1.4 Within the 35km study area, four sub-thresholds were identified for assessment purposes.

- Broad scale - outward to 35km radius;
- Local scale - outward to 10km radius;
- Immediate scale - outward to 2.5km radius; and
- The proposed development site.

7.1.5 This was based on current best practice and guidance provided in Policy D4 of the Scottish Borders Local Plan.

COMPUTER MODELLING AND ANALYSIS

7.1.6 In order to assess the potential landscape and visual effects of the development, ZTVs were produced to show the maximum potential areas of visibility resulting from the windfarm. The ZTV in Figure 7.2 has been based on maximum blade tip heights of 105m and 120mm above ground level and shows where topography may permit views of one, two or three blade tips. The ZTV in Figure 7.3 has been generated with hub heights of 70m and 80m and shows where topography may permit views of different numbers of turbine hubs.

7.1.7 ZTVs were generated using the Horizons software package and the Ordnance Survey Panorama dataset. The Panorama dataset has a resolution of 50m, allowing Horizons to calculate the number of turbine blade tips or hubs visible for each 50m ordnance square and display accordingly. The observer was considered to be 2m above ground level and the curvature of the earth's surface was factored into the calculations.

7.1.8 It must be noted that the ZTVs only take account of the ground level topography and does not take into account low level screening effects resulting from trees, vegetation or man-made structures such as or buildings, and therefore represents the worst-case scenario. On this basis, ZTVs only indicate theoretical potential visibility; the actual effects of the proposed windfarm are assessed through a more detailed analysis of specific viewpoints.

7.1.9 A comprehensive photographic study was undertaken with 360-degree photography taken at most viewpoints. The views were photographed using a digital SLR camera with a zoom lens set to give an equivalent view to that of a standard 35mm SLR camera with a 50mm lens.

7.1.10 Photomontages are based on a combination of wireframes generated from Garrad Hassan's Wind Farmer and a matching set of photos taken from the same vantage point. OS Digital terrain data is used to re-create an accurate representation of a viewpoint based on GPS NGR's of a given view point. Using Photoshop software the photos are matched to the computer generated wireframes which then acts as an indicator to where the computer rendered turbines are to be placed. Once this composite file of photo/wireframe/rendered turbine is completed the image is then flattened and presented at the appropriate viewing distance & viewing angle.

ASSESSMENT OF LANDSCAPE EFFECTS AND CUMULATIVE LANDSCAPE EFFECTS

7.1.11 Landscape character is defined as a distinct and recognisable pattern of physical and cultural elements that occur consistently in a particular area. Aspects such as landform, hydrology, vegetation and landcover, land use pattern and cultural and historic features and associations interact and combine to create a common 'sense of place' and identity.

7.1.12 Landscape assessment seeks to identify the key features of the landscape within the study area, and considers the changes that the development would have on that character. In the case of cumulative effects, the changes brought about by the addition of the proposed development to the baseline of one or more existing/consented, proposed and scoped windfarm developments. This may result in substantial changes in the character of the landscapes affected. Other long-term trends and pressures affecting landscape character (e.g. change in land use) may be of relevance to the assessment of landscape effects and cumulative landscape effects. Effects may occur within especially valued landscapes, such as local or national designations. Assessment will take into account the character and elements that make up the valued landscape.

Stages in the Assessment Process

7.1.13 There are three key stages to the overall assessment process. The assessment process is iterative, in which the baseline conditions and the analysis and evaluation of potential effects resulting from the proposal inform the progression of the scheme design, layout and mitigation measures.

7.1.14 **Baseline Landscape Character:** This relates to the recording and classification of existing landscape character and the visual context of the receiving environment through desk based and field based appraisal. This includes the consideration of the physical fabric of the landscape. Equally, the landscape is considered in terms of its characteristic properties, both in terms of aesthetic patterns and perceptual qualities, which make up the character of the landscape. Together, these can be combined to provide an overall description of the character of the landscape.

Based on these results, the sensitivity of the landscape can then assessed. This is a function of landscape value, landscape character sensitivity and landscape visual sensitivity.

7.1.15 **Assessment of the Magnitude of Landscape Change and Cumulative Landscape Change:** This relates to an assessment of the magnitude of change resulting from the proposed development itself, and the assessment of the cumulative magnitude of change resulting from the combined effects of the proposed development and other wind farm forming part of the cumulative assessment. As these involve related, but different, types of change, separate criteria have been developed for each.

7.1.16 **Evaluation of the Significance of Residual Effects:** This relates to the assessment of the significance of residual landscape effects, taking into account sensitivity to change and magnitude of change, along with the primary and secondary mitigation measures.

Baseline Landscape Character

Landscape Character Description

7.1.17 The landscape character description is based upon desk-based analysis, including the review of existing published landscape character assessments, combined with the results of field study.

7.1.18 The baseline character can firstly be described in terms of the physical fabric of the landscape, such as landform, hydrology, landcover, settlement, road and rail patterns, public rights of way, important views, features of cultural heritage and national and local landscape designations.

7.1.19 The characteristics of the landscape, which relate to the combination and patterns of physical features that make up the character of the landscape, can then be considered. This relates to both aesthetic factors and to the way the landscape is perceived. This includes factors such as scale and enclosure, complexity and order, the influence of manmade elements on the landscape, the role of the skyline in the landscape, the connections to adjacent landscapes, the remoteness and tranquillity of the landscape and landscape dynamics, which is an assessment of the rate, degree and nature of change in progress within the landscape.

7.1.20 Utilising the assessment of the physical fabric and characteristics or the landscape, the overall character can then be described.

Landscape Sensitivity

Landscape Sensitivity refers to the capacity of the landscape to accommodate change without significant effects on its character. This can be considered a function of three factors:

- Landscape value;

- Landscape character sensitivity; and
- Landscape visual sensitivity.

The assessment of these three factors is based on the landscape character description.

7.1.21 **Landscape Value:** Landscape value refers to the relative value that is attached to different landscapes. Such value can be expressed in a number of ways. This includes formal classification such as statutory/local designations of landscapes as a whole or of specific elements or features within the landscape. It also includes other classification methods, such as landscape character assessment. A landscape that has not been formally classified in terms of landscape value may be of importance to a community of interest, a community of place or consultees. Value may be derived from a number of factors, including rarity, conservation interests, cultural associations, scenic quality, perceptual aspects such as sense of place and associated recreational or amenity function. For the purposes of this assessment, three factors have been taken into account – landscape designations, landscape rarity and scenic quality. The criteria defining landscape value have been summarised in Table A7.1.1.

7.1.22 **Landscape Character Sensitivity:** Landscape character sensitivity refers to the degree to which the landscape is able to accommodate change without adverse effects on its character. A number of factors influence the sensitivity of a landscape to the type of development proposed. This includes the individual elements that contribute to landscape character, taking into account their vulnerability to change and their condition and state. It also includes aesthetic and perceptual factors such as scale and enclosure, complexity and order, manmade influence, skyline, connections with adjacent landscapes and remoteness and tranquillity.

7.1.23 Landscape character sensitivity is derived from the results of landscape character assessment. As detailed above, a large number of variables potentially determine and contribute towards landscape character. At different scales and in different situations, the relative effect of the variables on landscape character sensitivity can vary considerably. On this basis, it is not practical to establish a comprehensive, objective set of criteria for the assessment of landscape character sensitivity. Assessment instead requires reasoned professional judgements that should be made in a clear, transparent manner. Table A7.1.2 provides an overview of the typical indicators of landscape character sensitivity. Landscape character sensitivity also provides the means to examine the sensitivity of the fabric of the landscape to change, in terms of specific landscape elements and features such as trees, woodlands, hedgerows, meadows, landform and topographic features, river corridors and other water bodies, and built elements such as buildings and dry stone walls.

7.1.24 **Landscape Visual Sensitivity:** Landscape visual sensitivity relates to the nature and number of visual receptors present within a landscape, and the probability of change in visual amenity due to the development being visible. It should be noted that landscape visual sensitivity refers to

the visual sensitivity of the entire landscape that is being assessed, rather than an assessment of the visual effects of a specific, individual development. As with landscape character sensitivity, establishing a comprehensive set of criteria to establish landscape visual sensitivity is impractical. Table 7.1.3, however, provides an overview of the typical indicators of visual sensitivity, which can be used to give a transparent, reasoned judgement regarding landscape visual sensitivity.

7.1.25 Using professional judgement, the overall landscape sensitivity is derived by combining the assessed values attributed to landscape value, landscape character sensitivity, and landscape visual sensitivity to define an average overall value within the range of Very Low, Low, Medium, High and Very High.

Table 7.1.1. Landscape Value

Landscape Value	Typical Indicators
Very High	Areas comprising a clear composition of valued landscape components in robust form and health, free of disruptive visual detractors and with a strong sense of place. Areas containing a strong, balanced structure with distinct features worthy of conservation. Such areas would generally be internationally or nationally recognised designations, e.g. National Parks and National Scenic Areas (NSAs)
High	Areas primarily containing valued landscape components combined in an aesthetically pleasing composition and lacking prominent disruptive visual detractors. Areas containing a strong structure with noteworthy features or elements, exhibiting a sense of place. Such areas would generally be locally designated areas, such as Areas of Great Landscape Value (AGLVs) or Regional Scenic Areas (RSAs). Such areas may also relate to the setting of internationally or nationally designated areas, e.g. National Parks or National Scenic Areas (NSAs).
Medium	Areas primarily of valued landscape components combined in an aesthetically pleasing composition with low levels of disruptive visual detractors, exhibiting a recognisable landscape structure. Such areas may relate to the setting of regionally and locally recognised areas, e.g. AGLV or RSA designated areas.
Low	Areas containing some features of landscape value but lacking a coherent and aesthetically pleasing composition with frequent detracting visual elements, exhibiting a distinguishable structure often concealed by mixed land uses or development. Such areas would be commonplace at the local level and would generally be undesignated, offering scope for improvement.
Very Low	Areas lacking valued landscape components or comprising degraded, disturbed or derelict features, lacking any aesthetically pleasing composition with a dominance of visually detracting elements, exhibiting mixed land uses which conceal the baseline structure. Such areas would generally be restricted to the local level and identified as requiring recovery.

Table 7.1.2. Landscape Character Sensitivity

Landscape Character Sensitivity	Typical Indicators
Very High	**Landscape elements:** Important elements of the landscape susceptible to change and of high quality and condition. **Landscape Dynamics**: Landscape quality and condition likely to improve in the future. **Scale and Enclosure:** Small-scale landform/landcover/ development, human scale indicators, fine grained, enclosed with narrow views, sheltered. **Complexity and order:** Complex, unpredictable, confused and haphazard, rugged and intricate, organic with variable accents, irregular mosaics. **Manmade influence:** Absence of manmade elements, traditional or historic settlements, natural features and 'natural' forms of amenity parkland. **Skyline**: Distinctive landmark skylines, complicated unpredictable skylines, bare uncluttered skylines, confusion of existing vertical elements of variable form and function, intensifying features, e.g. framed vistas, valley rims, channelled views. **Connections with adjacent landscapes:** Sharp contrasts in elevation, contributes to broader scenic composition or setting, neighbouring landscapes of high sensitivity, projects into and out form high ground or open edges, intricate or distinctive backdrops. **Remoteness and Tranquillity:** Sense of peace and isolation, remote and empty, no evident movement.
High	↑
Medium	**Landscape elements:** Important elements of the landscape of moderate susceptibility to change and of medium quality and condition. **Landscape Dynamics**: Landscape quality and condition likely to remain similar in the future. **Scale and Enclosure:** Medium-scale landform/landcover/ development, textured, semi-enclosed with middle distance views. **Complexity and order:** Of moderate complexity, relatively consistent in pattern and form. **Manmade influence:** Presence of man-made elements, which may be partially out of scale with the landscape and be of only partially consistent with vernacular styles. **Skyline**: Varied skylines of moderate complexity and distinctiveness, some existing vertical focal points, which may be out of scale and pattern with landscape to some degree. **Connections with adjacent landscapes:** Distinct transitions in elevation, distinct connections, neighbouring landscapes of moderate sensitivity, some views into and out of landscape, backgrounds of moderate scale and distinctiveness. **Remoteness and Tranquillity:** some noise, evident, but not dominant human activity and development, noticeable movement.
Low	↓

Landscape Character Sensitivity	Typical Indicators
Very Low	**Landscape elements:** Important elements of the landscape insusceptible to change and of low quality and condition. **Landscape Dynamics**: Landscape quality and condition likely to deteriorate in the future. **Scale and Enclosure:** Large-scale landform/landcover/ development, Featureless, coarse grained, open with broad views. **Complexity and order:** Simple, predictable, ordered and hierarchical, smooth and flowing geometric with linear features. **Manmade influence:** Presence of utility, infrastructure or industrial elements, contemporary structures e.g. masts, pylons, cranes, silos, industrial sheds with vertical emphasis, functional man-made land-use patterns and engineered aspects. **Skyline**: Reposeful skylines, simple predictable skylines, existing vertical focal points, discrete and well-ordered verticals in coherent pattern with landscape, moderating features e.g. tiered horizons, low contrast with background. **Connections with adjacent landscapes:** Gradual transitions in elevation, weak connections, neighbouring landscapes of low sensitivity, limited views into and out of landscape, simple large scale backgrounds. **Remoteness and Tranquillity:** Busy and noisy, human activity and development, prominent movement.

Table adapted from "Table 3: Landscape Sensitivity Assessment Criteria" of Coates Associates for Cumbria County Council. (2007). Cumbria Wind Energy Supplementary Planning Document – Part 2 Landscape and Visual Considerations - July 2007.

Table 7.1.3. Landscape Visual Sensitivity

Landscape Character Sensitivity	Typical Indicators
Very High	**Visual interruption:** Flat or gently undulating topography, few if any vegetative or built features. **Nature of views:** Densely populated, dispersed pattern of small settlements, outward looking settlement, landscape focused recreation routes and/or visitor facilities, distinctive settings, gateways or public viewpoints.
High	↑
Medium	**Visual interruption:** Undulating or gently rolling topography, some vegetative and built features. **Nature of views:** Moderate density of population, settlements of moderate size with some views outwards, routes with some degree of focus on the landscape.
Low	↓
Very Low	**Visual interruption:** Rolling topography, frequent vegetative or built features. **Nature of views:** Unpopulated or sparsely populated, concentrated pattern of large settlements, introspective settlement, inaccessible, indistinctive or industrial settings.

Table adapted from "Table 3: Landscape Sensitivity Assessment Criteria" of Coates Associates for Cumbria County Council. (2007). Cumbria Wind Energy Supplementary Planning Document – Part 2 Landscape and Visual Considerations - July 2007.

Assessment of the Magnitude of Landscape Change and Cumulative Landscape Change

7.1.26 Magnitude of change considers the extent to which the proposed development would emerge as a new component in the landscape and change the balance between components that currently constitute baseline character. The magnitude of landscape change is dependent on:

- The characteristics of the receiving landscape; and
- The characteristics of the proposed development, including the proposed primary and secondary mitigation measures.

7.1.27 In the case of cumulative effects, changes refer to those brought about by the addition of the proposed development into a landscape baseline consisting of one or more windfarm developments. The criteria used to define magnitude of effects for this assessment are summarised in Table 7.1.4. Where cumulative windfarms fall within 6km of the proposed development, special attention needs to be paid as to the compatibility of design of the different turbines in terms of their terms hub and blade dimensions, layout and relationship with the landscape.

Table 7.1.4. Magnitude of Landscape Change and Cumulative Landscape Change

Magnitude	Magnitude of Landscape Change	Magnitude of Cumulative Landscape Change
Very Large	Total loss of or major alteration to key valued elements, features and characteristics of the baseline or introduction of elements considered being dominant and totally uncharacteristic when set within the attributes of the receiving landscape. Would be at a considerable variance with the landform, scale and pattern of the landscape. Would cause a high quality landscape to be permanently changed and its quality diminished.	The proposed development would have a major role in the dominant cumulative landscape effects resulting from 2 or more wind farms. This cumulative effect would dramatically alter key valued elements, features and characteristics of the landscape, playing a dominant role on landscape character.
Large	Substantial loss of or alteration to one or more key elements, features, characteristics of the baseline or introduction of elements that may be prominent but considered not to be substantially uncharacteristic when set within the attributes of the receiving landscape. Would be out of scale with the landscape, and at odds with the local pattern and landform. Would leave adverse effects on a landscape of recognised quality.	The proposed development would have an important role in the prominent cumulative landscape effects resulting from 2 or more wind farms. This cumulative effect would typically produce a substantial, potentially dominant, change in key valued elements, features and characteristics of the landscape.
Medium	Partial loss of or alteration to one or more key elements, features, characteristics of the baseline or introduction of elements that may be noticeable but considered not to be substantially uncharacteristic when set within the attributes of the receiving landscape. Would be out of scale with the landscape, and at odds with the local pattern and landform. Will leave adverse effects on a landscape of recognised quality	The proposed development would have an role in the noticeable, evident cumulative landscape effects resulting from 2 or more wind farms. This cumulative effect would typically produce an obvious, but not dominant, change in key valued elements, features and characteristics of the landscape.

Magnitude	Magnitude of Landscape Change	Magnitude of Cumulative Landscape Change
Small	Minor loss or alteration to one or more key elements, features, characteristics of the baseline or introduction of elements that may be apparent, or may not be uncharacteristic when set within the attributes of the receiving landscape. May not quite fit into the landform and scale of the landscape. Affect an area of recognised landscape character.	The proposed development would have a role in any limited cumulative landscape effects resulting from 2 or more wind farms OR the proposed development would have a limited role in more significant cumulative landscape effects resulting from 2 or more wind farms. This cumulative effect would typically produce a minor change in key valued elements, features and characteristics of the landscape.
Very Small	Very minor loss or alteration to one or more key elements, features, and characteristics of the baseline or introduction of elements that may be inconspicuous, or are not uncharacteristic when set within the attributes of the receiving landscape. Maintain existing landscape quality, but maybe slightly at odds to the scale, landform and pattern of the landscape.	The proposed development would have a role in any very minor cumulative landscape effects resulting from 2 or more wind farms or the proposed development would have a very minor role in more significant cumulative landscape effects resulting from 2 or more wind farms. These cumulative effects would typically produce a very minor change in key valued elements, features and characteristics of the landscape.

Assessment of the Significance of Residual Landscape and Cumulative Landscape Effects

7.1.28 The assessment of the significance of residual landscape effects involves the relation of assessed magnitude of landscape change/cumulative landscape change, taking into account primary and secondary mitigation measures, to the assessed sensitivity of the receiving landscape and is summarised in Table A7.1.6.

ASSESSMENT OF VISUAL EFFECTS AND CUMULATIVE VISUAL EFFECTS

7.1.29 The assessment of visual effects is based on identification of the sensitivity of receptors located within the study area and the magnitude of change to views that would result from introduction of the proposals.

7.1.30 It describes the current visual context and evaluates the implications of construction and operation of the proposal for residents, visitors and users of the areas neighbouring the proposed development site.

Visual Baseline

7.1.31 Desk based analysis of the visual baseline using ZTVs forms the first stage in the assessment of visual effects, and illustrates the broad visual context of the proposed development. The visual baseline identifies the extent of the likely visibility of the proposed development within the study area, and the particular fixed and linear receptors which are likely to be affected. Analysis of the ZTVs of the different windfarms forming part of the cumulative assessment also allows the identification of where cumulative visual effects are likely to occur.

7.1.32 This permits for the initial identification of viewpoints, cumulative viewpoints and linear receptors for field investigation. Field investigation allows refinement of the visual baseline to occur, and the assessment of the likely effects upon the viewpoints and linear receptors previously identified.

Viewpoints, Cumulative Viewpoints and Linear Receptors

7.1.33 Using the visual baseline as described above, a total of 23 viewpoints were selected to represent the potential outlook from existing vantage point or viewpoints, existing residential properties, public open spaces outdoor recreation areas and linear receptors. Of these viewpoints 8 were chosen to act as cumulative viewpoints, in order to represent the likely cumulative effects resulting from the interaction of the proposed development with other wind farms within the study area. In addition, 6 representative linear receptors (e.g. roads and public rights of way) within 30km of the proposals have also been identified.

7.1.34 All representative viewpoint locations were identified and agreed with Scottish Borders Council and SNH to illustrate the potential effects that the proposals would have on a range of locations and receptors within the study area.

Viewpoint/Fixed Receptor and Linear Receptor Sensitivity

7.1.35 Sensitivity to change considers the nature, location and context of the receptor or viewpoint.

7.1.36 Least sensitive receptors are considered to be people engaged in work whose primary focus would not necessarily be on the surrounding landscape views. Conversely, more emphasis is placed upon receptors whose change in view or visual amenity is either the prime focus, greater in scale or potentially covers a wider area. The importance of the view gained by the receptor also contributes to an understanding of how sensitive that receptor is to change. Therefore scenic quality is also considered.

7.1.37 The criteria for sensitivity to change used in the visual assessment is provided in Table 7.1.5.

Table 7.1.5. Visual Receptor Sensitivity

Receptor Sensitivity	Typical Indicators
Very High	Public, expansive views from designated vistas and viewpoints, hillforts, castles and beacons.
High	Direct views from individual dwellings, dwelling groupings or settlements. Views from national trails and designated tourist routes. Views from navigable waterways.
Medium	Limited or distant views from individual dwellings, dwelling groupings or settlements. Views afforded to people travelling by car, rail or other transportation modes where higher speeds are involved or where views are transient, sporadic or short-lived. Views afforded to people engaged in outdoor recreation where enjoyment of the landscape is incidental rather than the main interest. Views from public rights of way and other pedestrian routes.
Low	Obscured or filtered views from individual dwellings, dwelling groupings or settlements. Direct views from industrial and commercial buildings. Views from minor roads and trackways of limited use. Views from agricultural land.
Very Low	Limited or distant views from industrial and commercial buildings.

Viewpoint and Cumulative Viewpoint Assessment

7.1.38 Each viewpoint was visited and surveyed during field visits, using the wireframe and photomontage visualisations discussed previously to contextualise the proposed development. The weather on all visits varied from occasional sunshine to overcast cloud cover, resulting in average to good visibility. Factors considered and recorded during the site based visual assessment from representative viewpoints include the following:

- Receptor type (e.g. dwelling / footpath);
- Receptor viewing height;
- Existing view;
- Angle of view (acute / perpendicular / average);
- Viewpoint position (view up / view down / level view);
- Type of view (foreground / mid ground / background);
- Distance of viewpoint from the closest turbine;
- Number and proportion of turbines visible;
- Position and arrangement of the proposals in the view;
- Percentage and elements of the proposals visible;
- If turbines would be seen against a backcloth of land or against the sky;
- Viewpoint and receptor sensitivity;
- Degree of change in character/quality of the view when compared to the baseline; and
- Degree of visual intrusion or extent and nature of the view related to the proposals.

7.1.39 In the case of cumulative viewpoint assessment, these factors continue to be important in the assessment of visual effects. However, a number of other factors are considered

- Total number of wind farm developments visible in the outlook;
- Distance to each wind farm development from the viewpoint;
- Direction of each wind farm in relation to the viewpoint, i.e. are views possible in combination, where several windfarms are within the observer's arc of vision at the same time, or in succession where the observer has to turn to see the various windfarms;
- The angle of view occupied by each wind farm development; and
- The relative scale and composition of each wind farm development in the view.

Magnitude of Visual Change and Cumulative Visual Change – Viewpoints and Cumulative Viewpoints

7.1.40 The results of the Viewpoint and Cumulative Viewpoint Assessment were used in order to assess the magnitude of Visual Change and Cumulative Visual Change. The criteria for the magnitude of visual change and cumulative visual change used in the visual assessment are provided in Table 7.1.6.

Table 7.1.6. Magnitude of Visual Change and Cumulative Visual Change - Viewpoints and Cumulative Viewpoints

Magnitude	Magnitude of Visual Change	Magnitude of Cumulative Visual Change
Very Large	The development would result in a dramatic change in the existing view and/or would cause a dramatic change in the quality and/or character of the view. The turbines would appear large scale and /or form the dominant elements within the overall view and/or may be in full view of the observer or receptor. Commanding, controlling the view.	The proposed development would form a dominant element of cumulative views in combination or succession of 2 or more wind farms. The proposed development would dramatically increase the proportion of the view over which wind farms are visible. This cumulative visual effect with other windfarms would dominate the view.
Large	The development would result in a prominent change in the existing view and/or would cause a prominent change in the quality and/or character of the view. The turbines would form prominent elements within the overall view and/or may be easily noticed by the observer or receptor. Standing out, striking, sharp, unmistakeable, easily seen.	The proposed development would form a prominent element of cumulative views in combination or succession of 2 or more wind farms. The proposed development would result in a significant increase in the proportion of the view over which wind farms are visible. This would result in a notable cumulative effect with other windfarms on the nature of views.
Medium	The development would result in a noticeable change in the existing view and or would cause a noticeable change in the quality and/or character of the view. The turbines would form conspicuous elements within the overall view and/or may be readily noticed by the observer or receptor. Noticeable, distinct, catching the eye or attention, clearly visible, well defined.	The proposed development would form a conspicuous element of cumulative views in combination or succession of 2 or more wind farms. The proposed development would result in a moderate increase in the proportion of the view over which wind farms are visible. This would result in an apparent, obvious cumulative effect with other windfarms on the nature of views.

Magnitude	Magnitude of Visual Change	Magnitude of Cumulative Visual Change
Small	The development would result in a perceptible change in the existing view, and/or without affecting the overall quality and/or character of the view. The turbines would form an apparent small element in the wider landscape that may be missed by the casual observer or receptor. Visible, evident, obvious	The proposed development would form a minor element of cumulative views in combination or succession of 2 or more wind farms. The proposed development would result in a slight increase in the proportion of the view over which wind farms are visible. This would result in a minor cumulative effect with other windfarms on the nature of views,
Very Small	The development would result in a barely perceptible change in the existing view, and/or without affecting the overall quality and character of the view and/or would form an inconspicuous minor element in the wider landscape that may be missed by the casual observer or receptor. Lacking sharpness of definition, not obvious, indistinct, not clear, obscure, blurred, indefinite.	The proposed development would be an inconspicuous minor element of cumulative views in combination or succession of 2 or more wind farms. The proposed development would have little or no effect on the proportion of the view over which wind farms are visible. This would result in little or no cumulative effects with other windfarms on the nature of views.

Evaluation of the Significance of Residual Visual and Cumulative Visual Effects - Viewpoints and Cumulative Viewpoints

7.1.41 The assessment of the significance of residual landscape effects for viewpoints and cumulative viewpoints involves the relation of assessed magnitude of visual change/cumulative visual change, taking into account primary and secondary mitigation measures, to the sensitivity of the viewpoint receptors and is summarised in Table A7.1.8.

Sequential and Cumulative Sequential Visual Analysis

7.1.42 An analysis of sequential and cumulative sequential visibility is undertaken to determine the extent to which the proposed development, and the other windfarms forming part of the cumulative assessment, would be visible along the different linear receptors. This builds on the analysis of the ZTVs for the study area, giving additional consideration to the speed, frequency and direction of travel along local roads and main highways.

7.1.43 Sequential effects refer to repeated views of the proposed development along a linear receptor. As with the fixed viewpoint receptors discussed previously, the distance and nature of views to the proposed development and the sensitivity of the receptor determines the type of effects that occur. However, the speed of travel and frequency and duration of view are additional factors that need to be considered when assessing sequential effects.

7.1.44 Cumulative sequential effects also take into account these factors. However, the additional factor of whether views in combination or succession of the different windfarms occur along the linear receptor needs to be considered.

Magnitude of Sequential Effects and Cumulative Sequential Effects

7.1.45 The criteria used to evaluate the magnitude of sequential effects and cumulative sequential effects are outlined in table 1.7 below.

Table 1.7. Magnitude of Sequential Effects and Cumulative Sequential Visual Effects

Magnitude	Magnitude of Sequential Visual Change	Magnitude of Cumulative Sequential Visual Change
Very Large	Frequent sequential views would be possible of the proposed development. The proposed development would form the dominant element of views for users of the linear receptor.	The proposed development would significantly increase the frequency and duration of sequential views of 2 or more wind farms along the linear receptor. The proposed development would figure prominently in combined/successive views of windfarms along the route receptor. This would result in a cumulative effect with other windfarms to form a dominant characteristic of views along the linear receptor.
Large	Sequential views of the proposed development would be common along the linear receptor. The proposed development would form a prominent element of views for users of the linear receptor.	The proposed development would produce a notable increase in the frequency and duration of sequential views of 2 or more wind farms along the linear receptor. The proposed development would form a prominent element in combined/successive views of windfarms along the route receptor. This would result in a cumulative effect with other windfarms to form a notable characteristic of views along the linear receptor.
Medium	Moderate frequency and duration of sequential views of the proposed development. The turbines would form conspicuous elements in views from the receptor and/or may be readily noticed by the users of the linear receptor.	The proposed development would moderately increase the frequency and duration of sequential views of 2 or more wind farms along the linear receptor. The proposed development would form a conspicuous element in combined/successive views of windfarms along the route receptor. This would result in a cumulative effect with other windfarms to form an apparent, obvious characteristic of views along the linear receptor.
Small	Limited frequency and/or duration of sequential views of the proposed development. The turbines would form an apparent small element in the wider landscape that may be missed by the casual observer travelling along the linear receptor.	The proposed development would produce a slight increase in the frequency and duration of sequential views of 2 or more wind farms along the linear receptor. The proposed development would form a minor element in combined/successive views of windfarms along the route receptor. This would result in a cumulative effect with other windfarms to form a minor characteristic of views along the linear receptor.

Magnitude	Magnitude of Sequential Visual Change	Magnitude of Cumulative Sequential Visual Change
Very Small	Very limited frequency and/or duration of sequential views of the proposed development. The turbines would form inconspicuous minor elements in views from the receptor and/or may be missed by the casual observer travelling along the linear receptor.	The proposed development would result in a very limited increase in the frequency and duration of sequential views of 2 or more wind farms along the linear receptor. The proposed development would be an inconspicuous minor element in any combined/successive views of windfarms along the route receptor. This would result in a cumulative effect with other windfarms to form a very minor characteristic of views along the linear receptor.

Residual Significance of Effect

7.1.46 The significance of effects is assessed by consideration of the relationship of sensitivity to change and magnitude of change for the aspect of the landscape and visual assessment in question.

7.1.47 Professional judgement is used to arrive at the declared residual effect, based on the following impact significance matrix. Full account is taken of the effect mitigation measures would have in offsetting or effectively minimising potentially adverse impacts.

Table 1.8. Significance of Residual Effects

Magnitude of Change	Sensitivity				
	Very High	**High**	**Medium**	**Low**	**Very Low**
Very Large	Major	Major	Major/Moderate	Moderate	Moderate/ Minor
Large	Major	Major/Moderate	Moderate	Moderate/ Minor	Minor
Medium	Major/Moderate	Moderate	Moderate/ Minor	Minor	Minor/Negligible
Small	Moderate	Moderate/ Minor	Minor	Minor/Negligible	Negligible
Very Small	Moderate/ Minor	Minor	Minor/Negligible	Negligible	Negligible /Nil

7.1.48 The significance of the impact may be negative, neutral or positive. For the purposes of this assessment and with reference to the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 1999, 'Significant' landscape effects would be those effects assessed to be major or major/moderate.

APPENDIX 7.2: LEGISLATION AND POLICY CONTEXT

LEGISLATION AND POLICY CONTEXT

Statutory Legislative Framework

7.2.1 Over a number of years, a legislative framework has developed which is designed to safeguard the natural heritage, using both conservation and planning legislation. Within this framework it is the Government's objectives to conserve, safeguard and, where possible, enhance Scotland's natural heritage including:

- The overall populations and natural ranges of native species and the quality and range of wildlife habitats and ecosystems;
- Geological and physiographical features;
- The natural beauty and amenity of the countryside and the natural heritage interest of urban areas; and
- Opportunities for enjoying and learning about the natural environment.[1]

7.2.2 The key pieces of legislation that make up this framework are as follows:

- The National Parks and Access to the Countryside Act 1949;
- The Countryside (Scotland) Act 1967;
- The Wildlife and Countryside Act 1981;
- The Natural Heritage (Scotland) Act 1991;
- The Town and Country Planning (Scotland) Act 1997;
- The National Parks (Scotland) Act 2000;
- The Land Reform (Scotland) Act 2003;
- The Nature Conservation (Scotland) Act 2004; and
- The Planning etc (Scotland) Act 2006.

7.2.3 Such legislation established the system of Scottish Planning Policies (SPPs) (formerly known as National Planning Policy Guidance (NPPGs)), providing statements of Scottish Executive policy and Planning Advice Notes (PANs), providing advice on good practice and other relevant information. A number of these are of relevance to this assessment of the proposed development. These include SPP6 – Renewable Energy, PAN 45 (Revised 2002) – Renewable Energy Technologies, NPPG 14 – Natural Heritage,

[1] Scottish Executive (1999) National Planning Policy Guidance 14: Natural Heritage.

PAN 60 – Planning for Natural Heritage and NPPG 18 – Planning and the Historic Environment.

Scottish Planning Policy 6 (SPP6)

7.2.4 Scottish Planning Policy 6 (SPP6) - Renewable Energy, (which replaced National Planning Policy Guidelines 6 (NPPG6) - Renewable Energy in March 2007) sets out the planning framework to be used to help ensure the delivery of Scotland's renewable energy targets as well as supporting the development of a viable renewables industry in Scotland.

7.2.5 SPP6 sets out the national planning policies for renewable energy developments that planning authorities should consider when preparing development plans and when determining planning applications. It identifies the issues that Scottish Ministers will take into account when considering renewable energy policies in development plans, and when considering applications for planning permission which come before them on appeal or call-in. The policies in this SPP will also be applied to the authorisation of on-shore electricity generation schemes under Section 36 of the Electricity Act 1989. SPP6 :

"...sets out how the planning system should manage the process of encouraging, approving and implementing renewable energy proposals when preparing development plans and determining planning applications...

"... In all instances, development plans should provide clarity on the criteria that should be met to enable development to take place in a satisfactory manner. Plans should, however, use spatial policies to afford significant protection to areas designated for their national or international natural heritage value; green belts and those areas where further development would result in unacceptable cumulative impacts."

SNH Policy Statement No. 02/02 Strategic Locational Guidance For Onshore Wind Farms in Respect of the Natural Heritage

7.2.6 SNH has issued 'Strategic Locational Guidance for Onshore Wind Farms in respect of the Natural Heritage'. It provides a geographic interpretation of the policy principles set out in SNH Policy Statement 01/02 'Renewable Energy' as they apply to wind farms

7.2.7 Against the background of the Renewable Obligation (Scotland) Order 2002, this policy takes a broad overview of where in Scotland there is likely to be the best scope for wind farm development and where there are likely to be the most significant constraints in natural heritage terms. The policy statement includes a series of five maps based on the principles contained in policy.

7.2.8 The guidance takes account of landscape designations at international, national and local levels, and wild land issues that are determined to be sensitive to wind farm development. Scotland is subdivided into three zones ranging from Zone 1 – Land with least natural heritage sensitivity and the greatest opportunity for wind farm development up to Zone 3

with the highest natural heritage sensitivity. Map 5 – Zones of Natural Heritage Sensitivity illustrates the distribution of the differing zones.

7.2.9 It is intended that the guidance will be useful to planning authorities preparing development plans or identifying wind farm search areas and to developers undertaking initial site searches.

7.2.10 The proposed Glenkerie Wind Farm is situated entirely within Zone 2– Land with medium natural heritage sensitivity to wind farm development.

Zone 2: identifies areas with some sensitivities to wind farms. However, by careful choice of location within these areas there is often scope to accommodate development of an appropriate scale, siting and design in a way which is acceptable in natural heritage terms. Zone 2 comprises 47% of Scotland's land area, though around two thirds of the area is shown hatched to indicate that the sensitivities only affect a proportion of the area indicated.

Designated/Protected Landscape Areas

7.2.11 This section describes the relevant statutory and non-statutory national, and local landscape designations of particular significance to the proposed development within the study area. It should be noted that landscape areas designated for special protection do not preclude wind farm development (refer to SPP6). Within the study area designated landscapes include:

- National Scenic Area;
- Regional Scenic Area;
- Area of Great Landscape Value; and
- Historic Gardens and Designed Landscapes.

7.2.12 The proposed Glenkerie Wind Farm is located in close proximity to the Upper Tweeddale National Scenic Area (NSA). National Scenic Area is a national designation identifying areas of outstanding natural beauty and amenity to be safeguarded as part of the national heritage.

7.2.13 SNH Policy Statement No. 02/02, Section 1.2 National Scenic Areas states that:

"In locating and designing wind farms adjacent to NSAs, significant adverse impacts on their character and enjoyment should be avoided. Within an area up to around 10km from an NSA careful assessment of any effect on the NSA is required."

7.2.14 The Scottish Borders Structure Plan, Policy N10 National Scenic Areas states that *"Development in National Scenic Areas will only be permitted where…the objectives of designation and the overall landscape value of the site will not be compromised, or… any significant adverse effects on the qualities for which the site has been designated are clearly outweighed by social or economic benefits of national importance."*

7.2.15 Policy EP1 from the Scottish Borders Local Plan states that *"Development in National Scenic Areas will only be permitted where the objectives of designation and the overall landscape value of the site will not be compromised, or, … any significant adverse effects on the qualities for which the site has been designated are clearly outweighed by social or economic benefits of national importance."*

7.2.16 Regional Scenic Areas and Area of Great Landscape Value are local designations safeguarding locally important areas of outstanding scenic character or quality.

7.2.17 SNH Policy Statement No. 02/02, Section 1.4 Areas of Great Landscape Value (and similar designations) (including RSA) states that *"Wind farms should avoid significant adverse impact on the character and enjoyment of these areas, and will require sensitive siting and design."*

7.2.18 The proposed Glenkerie Wind Farm is situated within land designated as Tweedsmuir Hills/Upper Tweeddale Area of Great Landscape Value. Policy N11 - Areas of Great Landscape Value for the Scottish Borders Structure Plan and Policy EP2 - Areas of Great Landscape Value from the Scottish Borders Local Plan indicate that "*In assessing proposals for development in Areas of Great Landscape Value, the Council will seek to safeguard landscape quality and will have particular regard to the landscape impact of the proposed development. Proposals which have a significant adverse impact will only be permitted where the impact is clearly outweighed by social or economic benefits of national or local importance."*

7.2.19 The proposed Glenkerie Wind Farm is located in close proximity to the South Clydesdale Regional Scenic Area (RSA) within South Lanarkshire. Policy ENV28 - Regional Scenic Area and Areas of Great Landscape Value from the South Lanarkshire Local Plan states that *"… Applicants should take particular care to ensure that new development in or adjacent to an RSA or AGLV does not detract from the special qualities or character of the landscape. They should also ensure that, where possible, aspects of the siting, layout and design should enhance the qualities for which the area has been designated…"*

Historic Gardens and Designed Landscapes

7.2.20 Historic Gardens and Designed Landscapes (HGDL) are historic designed landscapes or extensive planned gardens of national importance for cultural heritage and their contribution to the character and enjoyment of the countryside. They are often established as the setting for a historic building. They are identified on a national inventory compiled and maintained jointly by Historic Scotland and Scottish Natural Heritage. HGDL is a non-statutory designation.

7.2.21 Within the study area 15 HGDL's have been identified, of which only one, Stobo Castle, falls within the ZTV.

7.2.22 Policy BE3 - Gardens and Designed Landscapes of the Scottish Borders Local Plan states that *"Development will be refused where it has an unacceptable adverse impact on the landscape features, character or setting of … sites listed in the inventory of Gardens and Designed Landscapes".*

7.2.23 Policy N13 - Gardens and Designed Landscapes of the Scottish Borders Structure Plan states that *"There will be a presumption against development that would adversely affect the landscape features, character, or setting of sites listed in the Inventory of Gardens and Designed Landscapes. "*

Other Planning Policies

7.2.24 A number of planning policies are of relevance to the proposed development. This includes policies and statements of intent that serve to protect, conserve and enhance specific landscape features such as hedgerows and trees, which form important nature conservation habitats and visual focal points within the landscape. General planning policy issues are explored within the Chapter 4 of this ES. However, the number of policies of particular relevance to the landscape and visual assessment however are discussed here.

7.2.25 Policy D4 - Renewable energy development from the Scottish Borders Local Plan and Policy I20 - Wind Energy Developments from the Scottish Borders Structure Plan provide guidance on wind farm development within the Scottish Borders. This provides guidance on the acceptable nature of commercial wind farm development and the requirements for the assessment of the effects of windfarms.

7.2.26 Structure Plan Policy I20 Wind Energy Developments states:

"Proposals for wind energy developments will be assessed against the following criteria

- *Impact on the landscape character of the areas…… as guided by Landscape Character Assessments;*
- *The structure plans environmental policies;*
- *A significantly increased risk of 'shadow flicker' or 'driver distraction'; or*
- *Any unacceptable cumulative impacts"*

7.2.27 Local Plan Policy D4 – Renewable Energy indicates that the Council supports Renewable Energy Development including commercial wind farms. The aim of the policy is to support the development of renewable energy whilst ensuring that the impacts on the environment are properly controlled. Consequently, proposals will be approved provided that:

1. "There are no unacceptable adverse impacts on the natural heritage including ……landscape…"

7.2.28 With respect to Commercial wind farms the policy states that:

"2. Locations within large scale landscape settings defined as Upland type in the landscape classification hierarchy (contained within the Borders Landscape Assessment) will normally be more acceptable than other landscape character types subject to detailed assessment of the fragility of the area to change;
3. Locations where there is surrounding landform that minimise the external visibility of the development, where there is no interference with prominent skylines or where there is no conflict with sensitive habitats will be looked on more favourably than other locations.
4. In assessing the landscape impacts of windfarm developments, particular attention will be given to the effects on high sensitivity receptors including major tourist routes and important landscape viewpoints."

7.2.29 In addition, applications for wind farms developments will be assessed against the following criteria:

"i. Impact on landscape character and areas exhibiting remote qualities as guided by expert advice and relevant research including the Scottish Borders Landscape Assessment 1995;

ii. Views of the turbines and associated transmission lines, tracks, plant and buildings from "sensitive receptors" that include residential properties, important landscape features, prominent landmarks, major tourist routes and popular public viewpoints, including those outwith the Scottish Borders boundary. "

7.2.30 The Scottish Borders Local Plan - Supplementary Planning Guidance 18: Renewable Energy – June 2007 is not addressed to commercial wind farm development, and so in not considered further as part of this assessment.

7.2.31 The Structure and Local plan policies of particular relevance to the landscape and visual assessment however are those set out within table 1 below.

Table A7.2.1. Planning Policy

Policy Number	Policy Name	Policy Description
Scottish Borders Local Plan, Finalised December 2005		
Policy G1	Quality standards for new development	General policy for all developments
Policy BE4	Conservation Areas	1. Development within or adjacent to a Conservation Area that would have an unacceptable adverse impact on its character and appearance would be refused. 2. All new development must be located and designed to preserve or enhance the special architectural or historic character of the Conservation Area. This should accord with scale, proportions, alignment, density, materials and boundary treatment of nearby buildings, open spaces, vistas, gardens and landscapes. 3. Conservation Area consent, which is required for the demolition of an unlisted building within a Conservation Area, will only be considered in the context of appropriate proposals for redevelopment and will only be permitted where: I. The building is incapable of reasonably beneficial use by virtue of its location, physical form or state of disrepair, and II. The structural condition of the building is such that it cannot be adapted to accommodate alterations or extensions without material loss to its character and, III. The proposal will preserve or enhance the Conservation Area, either individually or as part of the townscape.
Policy NE2	National Nature Conservation Sites	Development proposals which have an adverse effect, either directly or indirectly, on a Site of Special Scientific Interest, will not be permitted unless: I. The development will not adversely affect the integrity of the site, and II. The development offers substantial benefits, including those of social or economic nature, that clearly outweigh the national nature conservation value of the site.
Policy EP1	National Scenic Areas	Development in National Scenic Areas will only be permitted where: I. The objectives of designation and the overall landscape value of the site will not be compromised, or, II. Any significant adverse effects on the qualities for which the site has been designated are clearly outweighed by social or economic benefits of national importance.
Policy EP2	Areas of Great Landscape Value	In assessing proposals for development in Areas of Great Landscape Value, the council will seek to safeguard landscape quality and will have particular regard to the landscape impact of the proposed development. Proposals that have a significant adverse

Policy Number	Policy Name	Policy Description
		impact will only be permitted where the impact is clearly outweighed by social or economic benefits of national or local importance.
Policy D4	Renewable Energy Development	The council will support proposals for both large scale and community level renewable energy development including commercial wind farms, single or limited scale wind turbines, biomass, hydropower, biofuel technology and solar power where they can be accommodated without unacceptable impacts on the environment. The siting and design of all renewable energy developments should take account of the social, economic and environmental content. Renewable energy developments will be approved provided that, 1. There are no unacceptable adverse impacts on the natural heritage including the water environment, landscape, biodiversity, built environment and archaeological heritage, or that any adverse impacts can be satisfactorily mitigated; 2. there are no unacceptable adverse impacts on recreation and tourism, including access routes, or that any adverse impacts can be satisfactorily mitigated. If there are judged to be significant adverse impacts that cannot be mitigated, the development will only be approved if the council is satisfied that the contribution to wider economic and environmental benefits outweighs the potential damage to the environment or to tourism and recreation. Commercial wind farms 1. Large-scale commercial wind farm development will normally be acceptable in locations within ''preferred areas'' outwith environmental designations as set out in Structure Plan Policy I 19. 2. Locations within large-scale landscape settings defined as Upland type in the Landscape Classification hierarchy (contained within the Borders Landscape Assessment) will normally be more acceptable than other landscape character types subject to detailed assessment of the fragility of the area to change. 3. Locations where there is surrounding landform that minimises the eternal visibility of the development, where there is no interference with prominent skylines or where there is no conflict with sensitive habitats will be looked on more favourably than other locations. 4. In assessing the landscape impacts of wind farm developments, particular attention will be given to the effects on high sensitivity receptors including major tourist routes and important landscape viewpoints. 5. In addition to the general provisions for assessment as set out in paragraph 2 of this Policy, proposals for commercial wind farms will be assessed against the following criteria and will be approved where the overall impact is judged acceptable:

<table>
<tr><th>Policy Number</th><th>Policy Name</th><th>Policy Description</th></tr>
<tr><td></td><td></td><td>
I. Impact on the landscape character and areas exhibiting remote qualities as guided by expert advice and relevant research including the Scottish Borders Landscape Assessment 1995;
II. Views of the turbines and associated transmission lines, tracks, plant and buildings from ''sensitive receptors'' that include residential properties, important landscape features, prominent landmarks, major tourist routes and popular public viewpoints, including those outwith the Scottish Borders boundary;
III. Visual impact assessment will include cumulative impact, shadow flicker and the potential for driver distraction, and take account of the distance of the facility from receptors and screening. Decision-making will be guided by expert advice and relevant research including the measured effect of distance on perceived visual impact contained in the Macaulay Enterprises Ltd 2003 Study, ''Visibility Mapping for Windfarm Development – The Scottish Borders''. The following table sourced from the research provides a general guide to the effect which distance has on the perception of the development in an open landscape.

<table>
<tr><td colspan="2">Effect of Distance on Perceived Visual Impact</td></tr>
<tr><td>0 – 2.5 km</td><td>Dominant Impact**</td></tr>
<tr><td>2.5 – 5.0 km</td><td>Major Impact**</td></tr>
<tr><td>5.0 – 7.5 km</td><td>Moderate Impact</td></tr>
<tr><td>7.5 – 10.0 km</td><td>Low Impact</td></tr>
<tr><td>Over 10 km</td><td>Negligible Impact</td></tr>
</table>
*Based on blade tip height of 100m
** Potentially visually intrusive.

IV. Generation of noise;
V. Traffic generation, including access during construction;
VI. Ecology and ornithology, particularly statutorily protected species and habitats, species and habitats of conservation concern or species vulnerable to wind farms by virtue of their behaviour. Assessment of cumulative impacts on regional populations of birds will be required as appropriate.
VII. Interference with radio telecommunications and aviation;
VIII. Provisions for decommissioning, land restoration, after care and after use;
IX. Cumulative impact of wind farm development, including developments in adjoining local authority areas. Unacceptable cumulative impact may restrict development potential in otherwise appropriate areas. In assessing potential cumulative impact, account will be taken of the effect of perceived visual Impact as set out in the table above.
</td></tr>
</table>

Policy Number	Policy Name	Policy Description
		Developers must demonstrate that they have considered options for minimising the operational impact of the development including: 1. Positioning of the wind farm in relation to landscape character, surrounding landform, wind farms and power lines; 2. Positioning of the wind farm in relation to the biodiversity interest of the site and surrounding area 3. Siting and design tracks and ancillary development; 4. Turbine positioning and separation from residential properties and radiotelecommunications; 5. Turbine specification and technical controls, including consideration of predicted noise levels at specific properties closest to the wind farm at wind speeds corresponding to cut-in, full rated power and maximum operational wind speed, along with background noise levels and wind speeds; 6. Colour and finishes; 7. Routeing and timing of construction traffic; 8. Road access and improvements, taking account of constraints posed by wetland and upland habitats.
South Lanarkshire Local Plan, Finalised August 2006		
Policy ENV 9	Review of Area of Great Landscape Value Proposal	The Area of Great Landscape Value around the Douglas Valley will be reviewed to confirm its boundaries in light of the completion of open cast operations and other developments within the area. South Lanarkshire's extensive rural area contains landscapes of recognised quality. The Environmental Designations Map identifies a Regional Scenic Area (RSA) and areas designated as Areas of Great Landscape Value (AGLV). Impact on the landscape is a planning consideration when assessing development proposals, the RSA and AGLV require a greater degree of protection and policy ENV 28 in Volume II sets this out. In addition the AGLV boundary in the vicinity of Poniel Hill follows a grid line on the map where it travels across former open cast coal workings. It is therefore proposed in Policy Policy ENV 9'Review of Area of Great Landscape Value Proposal' to reassess this boundary in light of the completion of open cast coal operations in the area and industrial development proposals for Poniel (see Table 6.3 'Proposed Additions and Deletions to Marketable Supply').
ENV 14	Potential Windfarm Areas Policy	In accordance with the Glasgow & Clyde Valley Structure Plan, significant windfarm developments are to be directed to the 'potential' areas shown on the Proposals Map, and will be assessed against the criteria set out in Policy ENV 37 – Renewable Energy Development Assessment Criteria. Outwith the 'potential' areas, proposals for large scale windfarm developments will not be favoured, though all proposals that meet the criteria set out Policy ENV 37 will be considered on their merits.

Policy Number	Policy Name	Policy Description
ENV 27	Historic Gardens and Designed Landscapes Policy	Development affecting Historic Gardens and Designed Landscapes shall protect, preserve and enhance such places and shall not impact adversely upon their character, upon important views to, from and within them, or upon the site or setting of component features which contribute to their value.
ENV 28	Regional Scenic Area and Areas of Great Landscape Value Policy	Within the Regional Scenic Area and Areas of Great Landscape Value, development will only be permitted if it satisfies the requirements of policies STRAT 3 - 6 (as appropriate) and can be accommodated without adversely affecting the overall quality of the designated landscape area. Reasoned Justification Applicants should take particular care to ensure that new development in or adjacent to an RSA or AGLV does not detract from the special qualities or character of the landscape. They should also ensure that, where possible, aspects of the siting, layout and design should enhance the qualities for which the area has been designated.
Scottish Borders Structure Plan (approved 2002)		
PRINCIPLE S1	Environmental Impact	Proposals for substantial development will be assessed against relevant sustainability criteria with the aim of minimising harmful environmental impacts and moving towards sustainable development.
POLICY N9	Maintaining Landscape Character	Proposals for development and land use change will be guided by the Scottish Borders Landscape Assessment with the aim of maintaining the integrity of the landscape character and enhancing its quality. The Assessment will be used to inform policy reviews and guidelines on topics, which have implications for the landscape resource.
POLICY N10	National Scenic Areas	Development in National Scenic Areas will only be permitted where: (i) the objectives of designation and the overall landscape value of the site will not be compromised, or, (ii) any significant adverse effects on the qualities for which the site has been designated are clearly outweighed by social or economic benefits of national importance.
POLICY N11	Areas of Great Landscape Value	In assessing proposals for development in Areas of Great Landscape Value, the Council will seek to safeguard landscape quality and will have particular regard to the landscape impact of the proposed development. Proposals which have a significant adverse impact will only be permitted where the impact is clearly outweighed by social or economic benefits of national or local importance.
POLICY I19	Renewable	The Council supports the development of renewable energy sources that can be developed in an environmentally acceptable

Policy Number	Policy Name	Policy Description
	Energy	manner.
POLICY I20	Wind Energy Developments	Proposals for wind energy developments will be assessed against the following criteria: (i) impact on the landscape character of the areas, and neighbouring Structure Plan areas, as guided by Landscape Character Assessments, (ii) the Structure Plan's environmental policies, (iii) the impact of noise on residential and other noise-sensitive developments, (iv) interference with aircraft activity, (v) a significantly increased risk of 'shadow flicker' or 'driver distraction', or, (vi) any unacceptable cumulative impacts.

APPENDIX 7.3: LANDSCAPE & VISUAL BASELINE

7.3 LANDSCAPE BASELINE

7.3.1 Within the 35km radius study area, four different levels of detail have been used to describe the baseline landscape character, based on distance from the proposed turbines. These are:

- The landscape character of the development site itself (the Planning Application boundary);
- The landscape character of the immediate landscape setting (2.5km radius around the proposed turbines);
- The landscape character of the local landscape setting (15km radius around the proposed turbines); and
- The landscape character of the wider landscape (35km radius around the proposed turbines).

7.3.2 The landscape character baseline is described using combination of existing published landscape character assessments and the results of field survey work. Reference is made to the viewpoints used within the visual assessment in order to illustrate landscape character within the 35km radius study area.

PUBLISHED LANDSCAPE CHARACTER ASSESSMENTS

7.3.3 The National Programme of Landscape Character Assessment, undertaken by Scottish Natural Heritage in partnership with local authorities and other agencies, has involved the assessment of landscape character for all of Scotland.

7.3.4 A number of landscape assessments from the National Programme are of relevance to the assessment of landscape effects. These include;

- ASH Consulting Group 1998. The Borders landscape assessment. Scottish Natural Heritage Review. No 112;
- Land Use Consultants 1999. Glasgow and the Clyde Valley landscape assessment. Scottish Natural Heritage Review No. 116;
- ASH Consulting Group 1998. The Lothians landscape character assessment. Scottish Natural Heritage Review No 91;
- Land Use Consultants 1998. Dumfries and Galloway landscape assessment. Scottish Natural Heritage Review No 94; and
- Land Use Consultants 1998. Ayrshire landscape assessment. Scottish Natural Heritage Review No 111.

7.3.5 The different landscape character types and areas that fall into the 35km study area are indicated in Table A7.2.1 below. A detailed analysis of landscape character is carried out for the development site itself, the immediate landscape setting within 2.5km of the proposed turbines, and the local landscape setting within 15km radius of the proposed turbines.

7.3.6 This is in accordance with the assessment methodology and current best practice and guidance provided in Policy D4 Renewable Energy Development of the Scottish Borders Local Plan.

7.3.7 On this basis, the more detailed landscape descriptions within the landscape character areas are used for assessment within 15km of the site, while the less detailed descriptions of landscape types and regional character areas are used for assessment over the wider 35km broad-scale landscape.

Table 7.2.1 Published Landscape Character within 35km of the Proposed Glenkerie Wind Farm.

Landscape Character within 2.5km of the Proposed Glenkerie Wind Farm	
Landscape Character Assessment	**Landscape Character Areas/Types**
The Borders landscape assessment	Landscape Type (LT)/Landscape Character Area (LCA) BDR4 (BG) Southern Uplands with Scattered Forest, Broadlaw Group; LT/LCA BRD22 (UT) Upland Valley with Pastoral Floor, Upper Tweed
Glasgow and the Clyde Valley landscape assessment	Regional Character Area (RCA)/LCA STC (vi) 21 Southern Uplands, Southern Uplands;
Landscape Character within 15km of the Proposed Glenkerie Wind Farm	
Landscape Character Assessment	**Landscape Character**
The Borders landscape assessment	LT/LCA BDR4 (BG) Southern Uplands with Scattered Forest, Broadlaw Group; LT/LCA BDR 22(UT) Upland Valley with Pastoral Floor, Upper Tweed; LT/LCA BDR 22(BW) Upland Valley with Pastoral Floor, Biggar Water; LT/LCA BDR 22(MW) Upland Valley with Pastoral Floor, Manor Water; LT/LCA BDR 22(LY) Upland Valley with Pastoral Floor, Lyne Water; LT/LCA BDR 25(MT) Upland Valley with Woodland, Middle Tweed; Type/Area BDR 3(BH) Plateau Outliers, Broughton heights; LT/LCA 11S Grassland with Hills, Skirling
Glasgow and the Clyde Valley landscape assessment	RCA/LCA STC (VI) 21 Southern Uplands, Southern Uplands; RCA/LCA STC (VI) 14 Southern Uplands, Upland Glen; RCA/LCA STC (X) 13 Southern Upland Foothills, Broad Valley Uplands; RCA/LCA STC (X) 15 Southern Upland Foothills, Foothills
Dumfries and Galloway landscape assessment	Landscape Character Type (LCT)/Landscape Unit (LU) DGW21a Foothills with Forests; LCT/LU DGW22 Southern Uplands, North Moffat; LCT/LU DGW11 Upland Glens, Moffat;
Landscape Character within 35km of the Proposed Glenkerie Wind Farm	
Landscape Character Assessment	**Landscape Character**
The Borders landscape assessment	Midland Valley RCA; Central Southern Uplands RCA, Lammermuir and Moorfoot Hills RCA

Glasgow and the Clyde Valley landscape assessment	Clyde and Ayrshire Basins Moorlands RCA; Central Plateau Moorlands RCA; Southern Uplands RCA; Clyde Basin Farmlands RCA; Inner Clyde Valley RCA; Southern Upland Foothills RCA; Pentland Hills RCA
The Lothians landscape character assessment	Uplands LCT; Upland Fringes LCT; Lowland River Valleys LCT; Lowland Plateaux LCT; Lowland Plains LCT
Dumfries and Galloway landscape assessment	West Southern Uplands RCA
Ayrshire landscape assessment	Ayrshire Rim RCA; Southern Upland RCA

WIND FARMS FORMING PART OF THE CUMULATIVE ASSESSMENT

7.3.8 Figure 7.9 illustrates the location of all existing and proposed public domain proposals within 60km of the proposed Glenkerie Wind Farm and includes all known proposals as of December 2007.

7.3.9 While consideration is made of the potential cumulative effects of all wind farms identified within 60km of the proposed Glenkerie Wind Farm, only those existing and proposed developments located within approximately 30km of the Glenkerie Wind Farm proposal are assessed in detail. This follows SNH best practice guidelines. The wind farms forming part of the assessment are listed in Table 7.3.2. For the purposes of this assessment the operational Hagshaw Hill and Hagshaw Hill extension have been assessed as one development.

Table 7.3.2 Wind Farms Forming Part of the Cumulative Assessment

Wind Farm	~ Distance from Glenkerie	Status	Number of Turbines	Hub height	Blade Tip Height
Black Law (A & B)	30.0km	Operational	4	70	80
Bowbeat	25.7km	Operational	24	46	60
Hagshaw Hill	28.4km	Operational	26	45	65.5
Hagshaw Hill Extension	27.1km	Operational	20	60	95
Harestanes	28.1km	Consented	71	80	90
Pates Hill	30.8km	Consented	6	60	80
Tormywheel	31.5km	Consented	15	80	90
Auchencorth Moss	29.2km	Submitted	18	62	80
Black Law Extension (C)	31.0km	Submitted	18	70	80
Clyde Airtricity	8.5km	Submitted	173	80	90
Harrows Law	22.5km	Submitted	37	65	90
Limmer Hill	16.34km	Submitted	33	80	90
Minch Moor	25.7km	Submitted	12	67	80
Minnygap	30.34km	Submitted	15	80	90

Earlshaugh	10.3km	Scoping	36	80	90

7.3.10 The effects and significance of the introduction of the proposed Glenkerie Wind Farm are assessed against these wind farms, which act as the baseline for cumulative assessment. It must be noted that the assessment findings are not a substitute for the individual development-specific assessments for each of the wind farms named above, and that the findings are based on an assessment of available information.

THE LANDSCAPE CHARACTER OF THE DEVELOPMENT SITE

7.3.11 The proposed Glenkerie Wind Farm site and planning application boundary lies west of the A701, approximately 9.75km south east of Biggar. The majority of the site occupies a series of rounded, dome shaped hills with a general southwest to northeast orientation. These include Broomy Law (~550m AOD), Kingle Rig (~430m AOD), Glenlood Hill (566m AOD) and Cockle Rig Head (489m AOD). The north eastern section of the proposed Glenkerie Wind Farm site and planning application boundary drops in elevation along a valley side to meet the A701 east of the property of Kingledores, which lies within the planning application boundary. The total area of the planning application boundary is 390ha.

Physical Fabric

7.3.12 The physical fabric of the site is varied. Generally, the site consists of a typical 'upland mosaic' of different land cover. Semi-improved acid grassland, acid dry dwarf shrub heath, dry heath/acid grassland mosaic, wet dwarf shrub heath, wet heath/blanket bog mosaic, wet heath acid grassland mosaic, blanket bog, wet modified bog and marshy grassland all represent common components of land cover. Also present but less common are areas of scattered bracken. Remnant cleuch broadleaved (rowan and birch) woodlands are found alongside the Glenkerie and the Glenkiely Burn.

7.3.13 To the east of the site, land cover along the more sheltered lower valley sides includes semi improved and improved grassland, with broad leaved and coniferous shelter planting around Kingledores. An area of semi-natural broad-leaved woodland follows the burn meandering to the River Tweed.

7.3.14 The area within the planning application boundary is relatively unenclosed at higher elevations, with some post and wire fencing being present. Lower lying fields within the valley to the east are enclosed with post and wire fencing and are small in size.

7.3.15 A number of small watercourses drain from the raised topography to the centre of the proposed Glenkerie Wind Farm site to the valley located to the east and west, including Glenkerie Burn and Hare Burn.

Characteristics and Overall Character

7.3.16 These are addressed in the context of the immediate surroundings of the proposed site in Section A.2.5 below.

Landscape Sensitivity

7.3.17 The sensitivity of the different landscape elements within the proposed Glenkerie Wind Farm site is connected to their value as assessed within the assessment of ecological effects in chapter eight. On this basis, the blanket bog, upland acid grassland and heath and cleuch broadleaved (rowan and birch) woodland land cover types are assessed as being of **Medium** landscape sensitivity. Due to the time required for full recovery post-reinstatement, coniferous plantation woodland is also assessed as being of **Medium** sensitivity.

7.3.18 The other land cover types are assessed as being of **Low** landscape sensitivity.

THE LANDSCAPE CHARACTER OF THE IMMEDIATE LANDSCAPE SETTING (2.5KM RADIUS AROUND PROPOSED TURBINES)

7.3.19 The landscape character types within which the Planning Application boundary and immediate surroundings are located are illustrated on Figure 7.7 and represented by Viewpoints (VPs) 2, 9, 10, 12, 14, 17 and 27. Information from published landscape assessments includes:

- Landscape Type/Landscape Character Area BDR4 (BG) Southern Uplands with Scattered Forest, Broadlaw Group (Borders landscape assessment);
- Landscape Type/Landscape Character Area BDR22 (UT) Upland Valley with Pastoral Floor, Upper Tweed (Borders landscape assessment); and
- Regional Character Area/ Landscape Character Area STC (vi) 21 Southern Uplands, Southern Uplands (Glasgow and the Clyde Valley landscape assessment).

Physical Fabric

7.3.20 The landform within the 2.5km radius local landscape can be broadly divided into two categories, which are the upland landscapes and valley landscapes. Upland landscapes are described by BDR4 (BG) Southern Uplands with Scattered Forest, Broadlaw Group and STC (VI) 21 Southern Uplands, Southern Uplands. Valley landscapes are described by BDR22 (UT) Upland Valley with Pastoral Floor, Upper Tweed. These landscapes form part of a wider area known as the Southern Uplands. The upland landscape is characterised by large domed and cone shaped hills. VP 2 provides an illustration of this characteristic landform. Areas of upland landscape are typically separated by valley landscapes. These are characterised by narrow flat valley floors with relatively steep sides, often with distinctive U shaped glaciated cross sections. These valleys may be sinuous in nature. Valley sides are frequently incised by watercourses draining from higher ground. VPs 9, 10, 12, 14, 17 and 27 all represent views within valley landscapes.

7.3.21 Hydrology reflects the topography of this immediate landscape. Small watercourses drain down from the upland landscapes to the valley landscapes, converging to produce larger watercourses.

7.3.22 The proposed Glenkerie Wind Farm site occupies an area of upland to the centre of the immediate study area with a general southwest to northeast orientation. In addition to Broomy Law, Kingle Rig, Glenlood Hill, and Cockle Rig Head, other prominent hills here are Coomb Hill (640m AOD), Middle Head (519m AOD) and Worm Hill (541m AOD). To the north west of this upland landscape lies the valley of Holms Water, beyond which a further area of upland lies.

7.3.23 South and west of the proposed Glenkerie Wind Farm lies the valley of Kingledores Burn. Beyond this, the land rises into another ridge of hills with a similar southwest to northeast orientation, including Upper Oliver

Dodd (490m AOD) and Nether Oliver Dodd (510m AOD). North of this second ridge of hills, and east of the proposed Glenkerie Wind Farm site, part of the valley of the river Tweed falls within the immediate landscape.

7.3.24 Land cover reflects this broad division into upland and valley landscapes. Much of the land cover on the upland landscapes reflects the 'upland mosaic' identified within the landscape character of the site itself. Such upland mosaic is generally open in nature with few boundaries, although occasional post and wire fences are present (VP 2). Some coniferous plantation is present however to the north of the 2.5km radius immediate landscape.

7.3.25 Landcover in the valley landscapes is more diverse. The predominant land cover on the valley floor is permanent pasture divided into a regular pattern of small to medium sized fields divided by drystone dykes, and to a lesser extent, post and wire fencing (VPs 12, 14, 17 and 27). Smaller areas of rushes, scrub and rough grassland are typically found in wetter areas (VP 17). Valley sides are typically a mixture of rough grassland with some scree. Areas of coniferous plantation are present along the valley sides of the River Tweed and Holms Water. Other mixed and deciduous woodland is found as shelterbelts around properties and along the line of watercourses, (VPs 9, 10, 12 and 14). Scrubby hedgerow vegetation also occurs (VP 27).

7.3.26 Settlement consists of a few scattered properties, almost exclusively along the valleys. This includes the properties of Logan Cottage, Kingledores, Patervan Farm, Polmood, Hopehead, Holms Waterhead, Glenkirk, Glencotho and Glenhighton. Roads are limited here relating to the A701 along the valley of the Tweed, a minor road running parallel with Holms Water and a number of access tracks connecting different scattered properties. With the exception of telegraph poles and 33kv electricity poles, vertical structures are absent from this landscape.

Characteristics

7.3.27 **Landscape Elements:** The landscape fabric of the area is generally in good condition and is well managed. The valleys represent a generally interesting, pleasant small-scale landscape. The upland landscapes contrast sharply with the lowlands and have a dramatic, remote "*wild land*"[1] atmosphere.

7.3.28 **Landscape Dynamics:** Upland landscapes and valley landscapes are sensitive to change in terms of forest expansion and the demand for isolated housing. Further pressures for upland landscapes relate to visitor pressure and grazing demands. Sensitive management, and the extra protection afforded by the Tweedsmuir Hills/Upper Tweeddale AGLV and Upper Tweeddale NSA landscape designations covering this area should help to counteract such pressures and maintain, and possible improve, the character of the landscape.

[1] Borders landscape assessment, page 63.

7.3.29 **Scale and Enclosure:** Upland landscapes tend to be very open despite the presence of coniferous plantation, and are large or even vast in scale (VP 2). Conversely, the enclosed nature and higher incidence of vegetation cover in the valley landscapes means that they are generally small, and in many cases intimate, in scale (VPs 9, 10, 12, 14 17 and 27).

7.3.30 **Complexity and order:** The upland landscapes are made up of coarse textured land cover elements. As a result, they represent a simple, well-ordered landscape. The valley landscapes are more complex, but still represent a well ordered, regular, managed landscape which is typified by its consistent pattern of features. The regular pattern of individual properties fits easily into the grain of the landscape, as do the roads and tracks that generally follow the lines of valley floors.

7.3.31 **Manmade influence:** With the exception of blocks of coniferous plantation, manmade influence is largely absent from the upland landscapes within 2.5km of the proposed turbines. For the valley landscapes, manmade influence is largely limited to properties that fit neatly into the pattern of the landscape and roads and tracks. The road with the most influence on landscape character is the A701. Limited vertical structures are present in the valley landscapes, relating to telegraph and 33kV poles.

7.3.32 **Skyline:** For the valley landscapes described above, the skyline tends to comprise vegetation or enclosing steep sided valley landform in the near to middle distance. For the more elevated, wider scale landscapes, panoramic views are possible to the surrounding landscape, often comprising hills in the middle and far distance.

7.3.33 **Connections with adjacent landscapes:** For the enclosed valley landscapes described above, connections to adjacent landscape sub-types/areas involves views upwards of the steep valley sides to the enclosing upland landscapes, however views are generally more focussed along the valleys. Long views may occasionally be gained to adjacent landscapes, although intervening landform and the meandering sinuous nature of the valleys may preclude such. The valley sides typically frame connections along valleys to adjacent landscapes, and such connections will typically involve a relatively gentle transition between landscapes.

7.3.34 Upland landscapes are strongly connected to other upland landscapes and to lower elevation landscapes. The surrounding lower lying land may provide a relatively intricate, ordered setting for the wilder, simpler uplands.

7.3.35 **Remoteness and Tranquillity:** Generally, these landscapes are generally peaceful and still in character. The upland landscapes are especially remote and wild. The A701 adds a sense of noise and movement along the Tweed Valley.

Overall Character

7.3.36 The 2.5km radius immediate landscape falls into two main categories, upland and valley landscapes. The upland landscapes are open, large scale, remote, wild and dramatic in character, with landform comprising distinctive domed and conical hills with a simple, coarsely textured upland mosaic land cover. In contrast, the valley landscapes are smaller in scale and enclosed, even intimate in character, with a simple but finely textured land cover dominated by pasture, rough grazing and woodland.

Landscape Sensitivity

7.3.37 **Landscape Value:** The entire 2.5km radius immediate landscape falls into the Tweedsmuir Hills/Upper Tweeddale AGLV. The northern edge of the immediate landscape also falls within the Upper Tweeddale NSA, and the southwestern edge of the immediate landscape falls within the South Clydesdale RSA. This indicates that the landscape is locally, and to some degree nationally, valued for its aesthetic characteristics. The landscape is assessed as being of **High** value.

7.3.38 **Landscape Character Sensitivity:** This is based on the descriptions of the landscape characteristics above. Using those descriptions, the characteristics relating to the manmade influence, skyline, connections with adjacent landscapes and remoteness and tranquillity for upland landscapes are assessed as indicating a **very high** level of sensitivity. The characteristics relating to the landscape dynamics for both upland and valley landscapes and the scale and enclosure and manmade influence within valley landscapes are assessed as indicating a **high** level of sensitivity. The characteristics relating to the skyline and remoteness and tranquillity for valley landscapes are assessed as indicating a **medium** level of sensitivity. The characteristics relating to the complexity and order and connections with adjacent landscapes for valley landscapes are assessed as indicating a **low** level of sensitivity. The characteristics relating to the scale and enclosure and complexity and order of upland landscapes are assessed as indicating a **very low** level of sensitivity.

7.3.39 Landscape elements were discussed previously in relation to the Planning Application boundary itself, as these reflect the direct physical effects of the proposed Glenkerie Wind Farm.

7.3.40 Overall, the upland landscapes within the 2.5km immediate radius area around the proposed Glenkerie Wind Farm are assessed as being of **High** landscape character sensitivity. The valley landscapes are assessed as being of **Medium** sensitivity.

7.3.41 **Visual Sensitivity:** For the upland landscapes, while uninterrupted long distance panoramic views are possible, visual receptors are limited mainly to those using the landscape for leisure purposes. Taking into account the higher sensitivity of such users, the visual sensitivity is assessed as being **High.**

7.3.42 For the valley landscapes, while the density of visual receptors increases, views become curtailed due to topographic and vegetative screening. The visual sensitivity of valley landscapes is thus assessed as being **Medium.**

7.3.43 Overall, landscape sensitivity for the upland landscapes is assessed as being **High**, and landscape sensitivity for the valley landscapes is assessed as being **Medium**.

THE LANDSCAPE CHARACTER OF THE LOCAL LANDSCAPE SETTING (15KM RADIUS AROUND PROPOSED TURBINES)

7.3.44 The landscape character types within which local surroundings are located are illustrated on Figure 7.7 and represented by Viewpoints (VPs) 2, 6, 9, 10, 12, 14 16, 17, 18, 20, 21, 27, 28, 29, 30 and 32.

7.3.45 Published landscape assessments for the local landscape include the Borders landscape assessment and the Glasgow and the Clyde Valley landscape assessment. Landscape character from the Borders landscape assessment is described by the following Landscape Types/Landscape Character Areas:

- BDR4 (BG) Southern Uplands with Scattered Forest, Broadlaw Group;
- BDR22 (UT) Upland Valley with Pastoral Floor, Upper Tweed;
- BDR22 (BW) Upland Valley with Pastoral Floor, Biggar Water;
- BDR22 (MW) Upland Valley with Pastoral Floor, Manor Water;
- BDR22 (LY) Upland Valley with Pastoral Floor, Lyne Water;
- BDR25 (MT) Upland Valley with Woodland, Middle Tweed;
- BDR3 (BH) Plateau Outliers, Broughton heights; and
- BDR11 (S) Grassland with Hills, Skirling.

7.3.46 Landscape character from the Glasgow and the Clyde Valley landscape assessment is described by the following Regional Character Areas/ Landscape Character Areas:

- STC (VI) 21 Southern Uplands, Southern Uplands;
- STC (VI) 14 Southern Uplands, Upland Glen;
- STC (X) 13 Southern Upland Foothills, Broad Valley Uplands; and
- STC (X) 15 Southern Upland Foothills, Foothills.

7.3.47 Landscape character from the Glasgow and the Dumfries and Galloway is described by the following Landscape Character Types/Landscape Units:

- DGW21a Foothills with Forests;
- DGW22 Southern Uplands, North Moffat; and
- DGW11 Upland Glens, Moffat;

Physical Fabric

7.3.48 To the south, west and east of the proposed Glenkerie Wind Farm, the physical fabric of the local landscape broadly reflects that described for the immediate landscape, comprising a mixture of upland and valley landscapes. The upland landscapes here are described by BDR4 (BG) Southern Uplands with Scattered Forest, Broadlaw Group; STC (VI) 21 Southern Uplands, Southern Uplands; DGW21a Foothills with Forests; and DGW22 Southern Uplands, North Moffat. The valley landscapes here are described by BDR22Upland Valley with Pastoral Floor, (UT) Upper Tweed, (BW) Biggar Water, (MW) Manor Water, (LY) Lyne Water; STC (VI) 14 Southern Uplands, Upland Glen and DGW11 Upland Glens, Moffat. As discussed above, these landscapes comprise part of a wider area known as the Southern Uplands.

7.3.49 The majority of the local landscape south, west and east of the proposed Glenkerie Wind Farm comprises such uplands. Notable peaks within this landscape include Broad Law (840m AOD), Dollar Law (917m AOD), Pykestone Hill (737m AOD), Snowgill Hill (573m AOD), Backwater Rig (511m AOD), Coomb Dod (635m AOD), Gathersnow Hill (688m AOD), Hart Fell (808m AOD), Garelet Dod (698m AOD), Garelet Hill (680m AOD) and Blackhouse Heights (675m AOD). VPs 2, 6, 20 and 23 represent views from these uplands landscapes.

7.3.50 A number of valley landscapes are present within the local landscape south, west and east of the proposed Glenkerie Wind Farm. These include the Tweed Valley, as discussed above for the immediate landscape, which has a general northeast to southwest orientation through the local study area, passing adjacent to the proposed Glenkerie Wind Farm site. The valley of Culter Water, which has a generally north to south orientation, is approximately 4.9km west of the proposed Glenkerie Wind Farm at its closest point. The valley of Manor Water lies approximately 11km east north east of the proposed Glenkerie Wind Farm, and has a generally north to south orientation. This valley is particularly characterised by rocky outcrops.

7.3.51 Four other valleys have been dammed to create the Fruid, Talla, Camps, Coulter and Megget Reservoirs. Shallow valleys associated with watercourses exist through the rest of the local landscape, but these tend to be more exposed and similar to the upland landscapes in character. Coniferous plantation is common along the sides of the deeper valleys, extending from the upper slopes of those valleys to the upland landscapes beyond. This gives the Tweed Valley and the Manor Water valley, in particular, a relatively wooded feel. VPs 9, 10, 12, 14, 17, 18, 27 and 28 illustrate views within the valley landscapes. VP 28 in particular illustrates the type of coniferous plantation present along the sides of the valley landscapes.

7.3.52 Upland areas are also located to the north of the local study area. The Tinto Hills and Biggar Hills, which are divided by the Clyde valley, are located along the northeastern edge of the local study area, and are described by STC (X) 15 Southern Upland Foothills, Foothills. These represent an area of rounded, often conical hills, dissected by small

watercourses, and separated from other areas of uplands by the valleys of larger surrounding watercourses. Tinto Hill (707m AOD) is the most notable of these, and is represented by VP 15. Transitional land cover from the valley landscapes occurs on the lower slopes, with pasture fields enclosed by fences, hedges and shelterbelts. Rough grazing is found at higher elevations, with heather dominated upland mosaic and some coniferous plantations on the hilltops, notably Biggar Common within the Biggar Hills.

7.3.53 East of the Biggar Hills around the settlement of Skirling, a landscape with slightly different character exists, as described in BDR11 (S) Grassland with Hills, Skirling. This landscape relates to a series of low dome shaped hills, with landcover predominantly consisting of permanent pasture, with some upland mosaic on the hilltops, with hedgerow field boundaries and woodland blocks are more common here.

7.3.54 Further east, another upland area, incorporating Broughton Heights (571m AOD) and Trahenna Hill (549m AOD) (VPs 16 and 21), is found along the northeastern edge of the study area, as described by BDR3 (BH) Plateau Outliers, Broughton heights. This incorporates the upland mosaic of land cover and landform relates to smooth ridges and dome shaped hills.

7.3.55 A series of broad, flat-bottomed valleys are located to the northeast and north of the site. These are described by STC (X) 13 Southern Upland Foothills, Broad Valley Uplands; and BDR25 (MT) Upland Valley with Woodland, Middle Tweed. These include the Valley of the River Clyde, which enters the 15km radius local landscape to the west in the vicinity of Abington, and flows north east before changing direction 2.75km south west of Biggar, flowing north west to leave the study area. A second valley, approximately 6.5km north of the proposed Glenkerie Wind Farm, occurs along Biggar Water, which originates east of Biggar. Biggar Water flows through this valley and joins the River Tweed north of the settlement of Drumelzier. The River Tweed then continues in a generally north east direction to leave the study area.

7.3.56 Land cover along these broad valley bottoms is more varied, and incorporates arable as well as improved grazing fields. Field sizes are variable, but tend to be larger than in the narrower valleys discussed previously. Field boundaries predominantly comprise fragmented hedgerows and post and wire fencing, with tree lines being common along such boundaries. The watercourses meander along the valley bottoms, and river terraces are a common feature. Shelterbelts are common on lower slopes and around properties and settlements. Upper valley sides consist of rough grazing, with coniferous plantation extending upwards to the surrounding upland landscape in places, especially to the north east of the local study area. The valley of the River Tweed after its confluence with Biggar Water in particular, contains policy woodland and mixed woodlands on the valley floor, with coniferous plantations on the valley side. VPs 29, 29a and 30 represent views within the Biggar Water/River Tweed valley. VP 15 offers views east from Tinto Hill across the Clyde Valley.

7.3.57 Outside of the broader river valleys, settlement patterns within the local study mainly reflect those found for the immediate landscape around the proposed Glenkerie Wind Farm. Larger settlements are absent, with properties tending to be dispersed in nature and located along the valleys. The A701, which follows the Tweed Valley, represents the main route within the local landscape, with a number of minor roads and tracks connecting the dispersed properties. However, the southwestern edge of the local study area contains a limited section of the M74 motorway and the settlement of Crawford.

7.3.58 The sites of the Clyde Airtricity Wind Farm which has been submitted to planning with South Lanarkshire Council are located ~8.5km to the south east of the proposed Glenkerie Wind Farm. The Earlshaugh Wind Farm, which is at a scoping stage in the Scottish Borders Council area, is located at a distance ~10.3km to the south of the proposed Glenkerie Wind Farm. Other vertical structures in the local landscape are mainly limited to telegraph and 33kV electricity poles. Three transmission masts are located in this area, ~0.4km south east of the property of Tweedsmuir, near the A701, ~0.6km north east of the peak of Broad Law and ~3.5km south east of Crawford.

7.3.59 The broader river valleys contain more settlements and communication routes. The Clyde Valley includes the settlements of Lamington, Wiston, Symington, Thankerton and Coulter. Communication routes run along the flatter valley floor including A72, A73, A702, B7055 and a rail line. The Biggar Water/River Tweed valley includes Biggar, Broughton, Drumelzier and Bellspool, in addition to a variety of dispersed properties. A number of roads are located here, including the A701, B712 and the B7016, and a number of minor roads. Once more, vertical structures are mainly limited to telegraph and 33kV electricity poles, although a transmission mast is located ~2km south east of Broughton, with two masts located at Broomy Law, 2.75km north east of Skirling.

Characteristics

7.3.60 **Landscape Elements**: As before, the landscape fabric of the area is generally in good condition and is well managed. The valleys represent an interesting, pleasant small-scale landscape, although the broader river valleys represent a small to medium scale, less intimate landscape. The upland landscapes contrast sharply with the lowlands and have a dramatic, remote "*wild land*"[2] atmosphere.

7.3.61 **Landscape Dynamics:** Upland landscapes and valley landscapes are sensitive to change in terms of forest expansion and the demand for isolated housing. Within the broader river valleys, agricultural pressures and the expansion of existing settlements are also likely to contribute to landscape pressure. Further pressures for upland landscapes relate to visitor pressure and grazing demands. Sensitive management, and the extra protection afforded by the Tweedsmuir Hills/Upper Tweeddale AGLV, Upper Tweeddale NSA and the South Clydesdale RSA landscape

[2] Borders landscape assessment, page 63.

designations covering this area should help to counteract such pressures and maintain, and possible improve, the character of the landscape.

7.3.62 **Scale and Enclosure:** Upland landscapes tend to be very open despite the presence of some coniferous plantations, and are large or even vast in scale (VP 2, 6, 16 and 20). Conversely, the enclosed nature and higher incidence of vegetation cover in the valley landscapes means that they are generally small, and in many cases intimate, in scale (VPs 9, 10, 12, 14 17 and 27). The broader river valleys represent a small to medium scale, less intimate landscape (VPs 29, 29a and 30).

7.3.63 **Complexity and order:** Coarse textured and predictable land cover elements and a consistent pattern of landform characterise the upland landscapes. As a result, they represent a simple, well-ordered landscape. The valley landscapes are typically more complex, but still again relate to a well ordered, regular, managed landscape which is typified by its a consistent pattern of features. This is also true of the broader river valleys. The regular pattern of individual properties fits easily into the grain of the landscape, as do the roads and tracks that generally follow the lines of valleys.

7.3.64 **Manmade influence:** If they were consented, the Earlshaugh and Clyde Airtricity Wind Farms would make wind turbines and wind farms a common element in the upland landscapes to the south and east of the proposed Glenkerie Wind Farm. With the exception of this, manmade influence is primarily limited to blocks of coniferous plantation and the transmission mast near the peak of Broad Law.

7.3.65 South, west and east of the proposed Glenkerie Wind Farm manmade influence within the valley landscapes is largely limited to dispersed properties which fit neatly into the pattern and form of the landscape, Roads here are limited, with the A701 comprising the road with the most influence on landscape character. Along the Biggar Water/River Tweed valley, larger settlements and more roads are present, relating to a more prominent manmade influence on the landscape. Vertical structures within the valley landscapes relate to transmission masts, along with telegraph and 33kV electricity poles.

7.3.66 **Skyline:** Vegetation or enclosing landform in the near to middle distance generally forms the skyline of the valley landscapes. In many cases, this skyline is formed by enclosing landform and relates to dramatic views of surrounding elevated topography. From upland areas panoramic views reveal a horizon is formed by hilltops to the middle and far distance.

7.3.67 **Connections with adjacent landscapes:** Connections to adjacent landscapes for valley landscapes relates to views upwards to the enclosing upland landscapes, or, where sinuous valley form does not limit visibility, along valleys to adjacent landscapes. The enclosing broad scale upland backgrounds provide context for the valley landscapes. Valley sides frame connections between different landscapes along valleys, which typically relate to a relatively gentle transition between landscapes.

7.3.68 Upland landscapes are strongly connected to other upland landscapes and to lower elevation landscapes. The surrounding valley landscapes may provide a more intricate, ordered setting for these rugged, simple uplands.

7.3.69 **Remoteness and Tranquillity:** Generally, both the upland and valley landscapes are generally peaceful and still in character. The upland landscapes, in particular, tend to be remote and wild. Where larger settlements and roads are present, they contribute a sense of noise and movement.

Overall Character

7.3.70 The 15km radius local landscape largely once again falls into upland and valley landscapes. As before, the upland landscapes are open, large scale, remote, wild and dramatic in character, with land form comprising distinctive domed and conical hills with a simple, coarsely textured upland mosaic land cover. In contrast, the valley landscapes tend to be smaller in scale and enclosed, even intimate in character, with a simple but finely textured land cover dominated by pasture, rough grazing and woodland. However, the broader river valleys are wider and larger in scale.

Landscape Sensitivity

7.3.71 **Landscape Value:** The central, eastern and southern sections of the 15km radius local landscape falls into the Tweedsmuir Hills/Upper Tweeddale AGLV. The northern eastern section of the local landscape falls within the Upper Tweeddale NSA, and western section of the local landscape falls within the South Clydesdale RSA. This indicates that the local landscape is both locally and nationally recognised for its aesthetic characteristics. The landscape is assessed as being of **High** value within the South Clydesdale RSA and Tweedsmuir Hills/Upper Tweeddale AGLV, and of **Very High** value within the Upper Tweeddale NSA.

7.3.72 **Landscape Character Sensitivity:** This is based on the descriptions of the landscape characteristics above. Using those descriptions, the characteristics relating to the manmade influence, skyline, connections with adjacent landscapes and remoteness and tranquillity for upland landscapes are assessed as indicating a **very high** level of sensitivity. The characteristics relating to the landscape dynamics for both upland and valley landscapes and the scale and enclosure and manmade influence within valley landscapes are assessed as indicating a **high** level of sensitivity, with the exception of the broader valleys. The characteristics relating to the skyline and remoteness and tranquillity for valley landscapes, and scale and enclosure of the broader valleys, are assessed as indicating a **medium** level of sensitivity. The characteristics relating to the complexity and order and connections with adjacent landscapes for valley landscapes are assessed as indicating a low level of sensitivity. The characteristics relating to the scale and enclosure and complexity and order of upland landscapes are assessed as indicating a very low level of sensitivity.

7.3.73 Landscape elements were discussed previously in relation to the Planning Application boundary itself, as these reflect the direct physical effects of the proposed Glenkerie Wind Farm.

7.3.74 Overall, the upland landscapes within the 15km radius local area around the proposed Glenkerie Wind Farm are assessed as being of **High** landscape character sensitivity. The valley landscapes, including the broader valleys, are assessed as being of **Medium** sensitivity.

7.3.75 **Visual Sensitivity:** For the upland landscapes, while uninterrupted long distance panoramic views are possible, visual receptors are limited mainly to those using the landscape for leisure purposes. Taking into account the higher sensitivity of such users, the visual sensitivity is assessed as being **High**.

7.3.76 For the valley landscapes, while the density of visual receptors increases, views become curtailed due to topographic and vegetative screening. The visual sensitivity of valley landscapes is thus assessed as being **Medium**.

7.3.77 Overall landscape sensitivity for the South Clydesdale RSA and Tweedsmuir Hills/Upper Tweeddale AGLV upland landscapes are assessed as being of **High** landscape sensitivity, with the valley landscapes as being of **Medium to High** sensitivity. Within the Upper Tweeddale NSA upland landscapes are assessed as being of **High to Very High** landscape sensitivity, and valley landscapes, taking into account the presence of broader valleys here, as being of **High** sensitivity.

HISTORIC GARDENS AND DESIGNED LANDSCAPES WITHIN THE LOCAL LANDSCAPE SETTING (15KM RADIUS AROUND PROPOSED TURBINES)

7.3.78 Two Historic Gardens and Designed Landscapes are located within the 15km radius local study area. These are the Dawyck botanic gardens and the grounds to Stobo Castle, located approximately 7.5km and 9km north east of the proposed Glenkerie Wind Farm respectively. As Dawyck falls outside of the ZTV for the proposed Glenkerie Wind Farm, it will not be considered further within this assessment.

Stobo Castle

7.3.79 **Physical Fabric:** Stobo Castle is located on the B712 ~9.5km southwest from Peebles and ~19km east of Biggar. It is situated adjacent to the River Tweed, on the lower slopes of Harrow Hope and Trahenna Hill. The B712 forms the western boundary of the designed landscape. The castle is surrounding by farmland, coniferous woodland and heather moorland. The Weston Burn runs through the grounds. An extensive area of parkland contains a variety of broadleaved and deciduous tree species. The entrance drive from the Garden Lodge winds its way up the hill and approaches the castle from the north side. There are a number of extensive blocks of woodland at Drummore Wood, on Harrow Hill and Great Hill, and some of the original hardwood species remain. A former

terrace garden is largely neglected now, with the exception of the garden close to the Castle. A Japanese-style Water Garden lies along a narrow, tree-lined gorge, consisting of three lakes linked by a series of streams, cascades, runs, rills and calm water. A former walled garden complex is now used for pheasant rearing.

7.3.80 **Characteristics:** The elements within the grounds of Stobo reflect its origins as a designed parkland landscape, and are of high quality and condition. The park is enclosed by woodland, although extensive views up and down the Tweed Valley and across to the foothills of Dollar Law, the highest mountain in the Southern Uplands (871m AOD), are possible. The skyline is likely to comprise a combination of surrounding woodland and the surrounding topography beyond. Stobo Castle exists as attractive, naturalistic, relatively simple and balanced parkland landscape, and, due to a combination of the surrounding woodland and wider setting, is experienced as tranquil landscape.

7.3.81 **Landscape Sensitivity:** Given its designated status as a historic garden and designed landscape, which falls within the wider context of the Upper Tweeddale NSA, Stobo Castle is assessed as being of **High to Very High** landscape value. Landscape sensitivity is likely to relate to effects on the setting of this landscape. Despite the screening effects of woodland and other vegetation, Stobo Castle has some connections with the surrounding landscapes, indicating that it is of **Medium to Low** landscape character and visual sensitivity to potential wind energy development.

7.3.82 Overall, the sensitivity of Stobo Castle to wind energy development located outwith and some distance from its boundaries is **Medium**.

THE LANDSCAPE CHARACTER OF THE WIDER LANDSCAPE SETTING (35KM RADIUS AROUND PROPOSED TURBINES)

7.3.83 The landscape within the 15km radius local landscape around the proposed Glenkerie Wind Farm is represented by Viewpoints (VPs) 2, 6, 9, 10, 12, 14 16, 17, 18, 20, 21, 27, 28, 29, 30 and 32. VPs 22 and 24 illustrate the landscape character within the 35km radius study area outside of this local landscape.

7.3.84 Published landscape assessments for the local landscape include the Borders landscape assessment, the Glasgow and Clyde Valley landscape assessment, the Lothians landscape character assessment, the Dumfries and Galloway landscape assessment and the Ayrshire landscape assessment. Landscape character from the Borders landscape assessment is described by the following Regional Character Areas:

- Midland Valley;
- Central Southern Uplands;
- Lammermuir and Moorfoot Hills

7.3.85 Landscape character from the Glasgow and the Clyde Valley landscape assessment is described by the following Regional Character Areas:

- Clyde and Ayrshire Basins Moorlands;
- Central Plateau Moorlands;
- Clyde Basin Farmlands;
- Inner Clyde Valley;
- Southern Upland Foothills; and
- Pentland Hills.

7.3.86 Landscape character from the Glasgow and the Clyde Valley landscape assessment is described by the following Landscape Character Types:

- Uplands;
- Upland Fringes;
- Lowland River Valleys;
- Central Plateau Moorlands;
- Lowland Plateaux; and
- Lowland Plains.

7.3.87 Landscape character from the Dumfries and Galloway landscape assessment is described by the following Regional Character Areas:

- West Southern Uplands.

7.3.88 Landscape character from the Ayrshire landscape assessment is described by the following Regional Character Areas:

- Ayrshire Rim; and
- Southern Upland

Physical Fabric

7.3.89 The northern edge of 35km radius broad scale landscape consist primarily of the Uplands and Upland Fringes Types from the Lothians landscape character assessment and the Central Plateau Moorlands Regional Character Area from the Glasgow and the Clyde Valley landscape assessment. The Uplands consist of ridges and summits at 300 to 500m AOD, with land cover comprising heather moorland, peatland and rough grass vegetation types. Further north, the Upland Fringes and Central Plateau Moorlands represent a transition to the lower lying coastal landscapes beyond. These are differentiated from the true uplands a more varied, productive range of land cover including improved pasture and arable farmland, with coal mining and industry in the case of the Central Plateau Moorlands. Located within these landscapes are the operational and consented Bowbeat, Pates Hill and Tormywheel Wind Farms, and the submitted Auchencorth Moss Wind Farm.

7.3.90 Further to the south the Pentland Hills Regional Character Area (Glasgow and the Clyde Valley landscape assessment) and the Midland Valley (Borders landscape assessment) are located. These represent gently sloping hills, with open moorland land cover and limited coniferous

plantation tree cover. Settlement is generally sparse, with the exception of the small town of West Linton. Located within these landscapes is the submitted Harrows Law Wind Farm.

7.3.91 To the north east of the 35km radius broad scale landscape lies within the Lammermuir and Moorfoot Hills Landscape Character Area from the Borders landscape assessment. These have a characteristic landform of relatively smooth plateaux with land cover of moorland and unimproved grassland which contain deep, steep-sided valleys with land cover of permanent pasture and scattered major forestry plantations. Settlement is restricted to scattered farm building groups within the sheltered valleys.

7.3.92 The central eastern section of the broad scale landscape, including the proposed Glenkerie Wind Farm site, falls into the Central Southern Uplands Regional Character Area of the Borders landscape assessment (VP 22). Most of this area is characterised by smooth rolling landform although within the highest ground of the Tweedsmuir massif the landform is more defined, comprising a series of cone ridges and glaciated valleys. Land cover on areas of higher ground relates to heather moor and rough acid grassland with extensive coniferous plantations, particularly in the upper Tweed valley and on the gentler plateaux further south at Craik and upper Teviotdale. Improved grassland is found along the major valleys of the Tweed, Yarrow, Ettrick and Teviot. Evidence of ancient settlement is found on the fringes of the upland valleys, along with Roman and Mediaeval features. Located within this landscape is the submitted Minch Moor Wind Farm.

7.3.93 The south of the broad scale landscape comprises the West Southern Uplands regional character area of the Dumfries and Galloway landscape assessment. This area extends into the southwest of the study area as the Southern Uplands of the Glasgow and the Clyde Valley landscape assessment. These are characterised by smooth, conical peaks with extensive foothills and plateaux. Land use is mainly related to forestry and upland sheep farming, except in the dales where grazing, arable and grass silage fields divided by walled and hedged enclosures occur. Forestry is extensive, but does not have continuity of cover. The main settlements and lines of communications are in the dales (VP 24). Located within these landscapes are the consented Harestanes Wind Farm and the submitted Minnygap Wind Farm.

7.3.94 The west of the broad scale landscape is characterised by the Southern Upland Foothills and Clyde and Ayrshire Basins Moorlands Regional Character Areas of the Glasgow and the Clyde Valley landscape assessment. The Southern Upland Foothills form a transition zone between the Southern Uplands to the south and the lowland and plateau, and have a generally smooth landform with distinctive rounded conical hills, most notably Tinto Hill. Landcover is primarily made up of heather moorland. The valley of the upper River Clyde forms an open corridor of farmland through the uplands. The Clyde and Ayrshire Basins Moorlands separate the Clyde and Ayrshire Basins and relates to an extensive area of plateau moorland, with upland landcover comprising areas of moss, blanket bog and coniferous plantations. Settlement and communication is concentrated in river valleys. Located within these landscapes are the

consented Hagshaw Hill and Hagshaw Hill Extension Wind Farms and the submitted Limmer Hill Wind Farm.

7.3.95 The north west of the broad scale landscape relates to the Clyde Basin Farmlands and Inner Clyde Valley Regional Character Areas of the Glasgow and the Clyde Valley landscape assessment. The Clyde Basin Farmlands includes plateau farmlands that form the transition from the enclosing moorlands and rolling farmland. This includes pastoral and some arable farming, and deciduous woodland occurs in the form of farm woodlands and field boundary trees. This contains a variety of settlement and has the greatest density of designed landscapes. Areas within this RCA have been subject to mineral working and industrial development, resulting in areas of derelict or damaged land. This area contains the fertile, wooded Inner Clyde Valley RCA. Located within these landscapes are the operational Black Law a & b Wind Farms and the submitted Black Law c Wind Farm.

Characteristics

7.3.96 **Landscape Elements:** The landscape fabric of the broad scale study area varies significantly. Much of the area, especially that protected by national and local designations, represents a landscape in good quality and condition. Other landscapes where human activity has caused degradation, especially in terms of mining and large-scale industry, are considered to be of lower quality and condition.

7.3.97 **Landscape Dynamics:** General patterns of landscape change can be identified in the broad scale landscape. Upland landscapes, including both hilly/mountainous areas and plateaux, tend to be sensitive to change in terms of forest expansion, the demand for isolated housing, visitor pressure and grazing demands. The narrower, remoter valley landscapes tend to be sensitive to change in terms of forest expansion, the demand for isolated housing, and agricultural expansion. The broader valleys and flatter, larger scale farmed landscapes are sensitive in terms of agricultural expansion and development pressure, especially around existing settlements. Where protection is afforded by the Tweedsmuir Hills/Upper Tweeddale AGLV, Upper Tweeddale NSA and South Clydesdale RSA landscape designations, these should help to counteract such pressures and maintain, and possible improve, the character of the landscape. Other, undesignated areas may be more susceptible to the pressures identified here.

7.3.98 **Scale and Enclosure:** Upland landscapes tend to be very open despite the presence of some coniferous plantation, and are large or even vast in scale. Conversely, the enclosed nature and higher incidence of vegetation cover in the valley landscapes means that they are generally small, and in many cases intimate, in scale. Broader valleys, upland plateaux and flatter, farmed areas represent larger-scale, less intimate landscapes. Enclosure here tends to be related to the degree of vegetation cover and small scale variations in landform.

7.3.99 **Complexity and order:** Coarse textured and predictable land cover and a consistent pattern of landform characterise the upland and upland plateaux landscapes. As a result, they represent a simple, well-ordered landscape. The valley landscapes are typically more complex, but still again relate to a well ordered, regular, managed landscape which is typified by its a consistent pattern of features. This also tends to be true for broader valleys and flatter, farmed areas. However, around settlements and where industrial activity has disturbed the landscape, an increase in confusing and contrasting elements within the landscape typically occurs.

7.3.100 **Manmade influence:** The existing Bowbeat, Black Law, and Hagshaw Hill Wind Farms are already a recognisable feature of the wider landscape. Such man-made wind energy infrastructure characteristics will be reinforced by the introduction of the consented Pates Hill, Tormywheel, and Harestanes Wind Farms. Equally, a number of submitted planning applications for wind energy developments would further add man-made vertical elements into the wider landscape, if approved.

7.3.101 With the exception of wind farm development, manmade influence is largely absent from the upland and upland plateaux landscapes, apart from coniferous plantations and farming. Manmade influence within the valley landscapes comprises dispersed properties that fit neatly into the pattern and form of the landscape although communication routes, including some major roads, often follow the lines of valleys. Larger settlements, along with roads and other infrastructure, tend to be present in greater concentrations within the broader valleys.

7.3.102 **Skyline:** Vegetation or enclosing landform in the near to middle distance generally forms the skyline of the valley landscapes. Panoramic views to the surrounding landscape, typically the skyline for the more elevated, upland landscapes. The skyline for more open landscapes such as broader valleys, upland plateaux and flatter, farmed areas depends on vegetation cover and local topography. Here a skyline can range form close distance vegetation or landform to distant landform.

7.3.103 **Connections with adjacent landscapes:** Connections to adjacent landscapes for valley landscapes relates to the enclosing landscapes or along valleys to adjacent landscapes. Upland landscapes are strongly connected to other upland landscapes and to lower elevation landscapes. Gentle transitions to surrounding landscapes often occur for upland plateaux and flatter, farmed areas, with visual connections to the surrounding upland landscapes.

7.3.104 **Remoteness and Tranquillity:** Generally, the upland, upland plateaux and narrower valley landscapes are peaceful and still in character. The upland landscapes, in particular, tend to be remote and wild. In broader valley and flatter, farmed landscapes, larger settlements and roads are present, contributing to a sense of noise and movement.

Overall Character

7.3.105 The 35km radius area contains a variety of different landscapes. The upland landscapes tend to be open, large scale, remote, wild and dramatic in character, with landform comprising distinctive domed and conical hills with a simple, coarsely textured upland mosaic land cover. Such upland landscapes are largely free of manmade influence. Many of the valley landscapes contrast sharply with this, tending to be smaller in scale and enclosed, even intimate in character, with simple but fine grained land cover dominated by pasture, rough grazing and woodland. Settlement in such valleys typically comprises dispersed properties, although these valleys may function as conduits for communication links. A number of broader, larger scale valleys are located within the study area, as are generally larger scale flatter, farmed areas. These tend to have more in the way of settlement, along with associated infrastructure and communications links. Generally, the valleys and upland landscapes are remote and tranquil in character. The broader valleys and farmed areas tend to have more movement and noise associated with them, especially in proximity to settlements.

Landscape Sensitivity

7.3.106 The landscape will vary in terms of its sensitivity to the type of development proposed. The sensitivities assessed for the wider landscape are based on the assessment of the upland landscapes within 15km of the proposed Glenkerie Wind Farm. These relate to a broad scale assessment of sensitivity.

7.3.107 Upland landscapes are assessed as being generally of **Medium to High** landscape sensitivity, of **High** landscape sensitivity within the South Clydesdale RSA and Tweedsmuir Hills/Upper Tweeddale AGLV, and of **High to Very High** landscape sensitivity in the Upper Tweeddale NSA.

7.3.108 Valley landscapes are assessed as being generally of **Medium** landscape sensitivity, of **Medium to High** landscape sensitivity within the South Clydesdale RSA and Tweedsmuir Hills/Upper Tweeddale AGLV, and of **High** landscape sensitivity in the Upper Tweeddale NSA.

7.3.109 Broader valley and flatter, farmed landscapes are assessed as being of generally **Medium to Low** sensitivity, of **Medium** landscape sensitivity within the South Clydesdale RSA and Tweedsmuir Hills/Upper Tweeddale AGLV, and of **Medium to High** landscape sensitivity in the Upper Tweeddale NSA.

7.3.110 Table 7.3.3 below summarises the sensitivity of the baseline landscape.

Table 7.3.2 Summary of Baseline Landscape Sensitivity

Extent of Effects	Landscape	Designation	Landscape Sensitivity
Proposed Glenkerie Wind Farm Site	Land within planning application boundary	AGLV	Medium
Immediate Landscape Setting (2.5km radius around proposed turbines)	Upland Landscapes	NSA RSA AGLV	High
	Valley Landscapes		Medium
Local Landscape Setting (15km radius around proposed turbines)	Upland Landscapes	NSA	High to Very High
	Valley Landscapes		High
	Upland Landscape	RSA AGLV	High
	Valley Landscapes		Medium to High
	Upland Landscape (Grassland with Hills)	None	Medium to High
	Stobo Castle	HGDL	Medium
Wider Landscape Setting (35km radius around proposed turbines)	Upland Landscapes	NSA	High to Very High
	Valley Landscapes		High
	Broader valley and flatter farmed landscapes		Medium to High
	Upland Landscapes	RSA AGLV	High
	Valley Landscapes		Medium to High
	Broader valley and flatter farmed landscapes		Medium
	Upland Landscapes	None	Medium to High
	Valley Landscapes		Medium
	Broader valley and flatter farmed landscapes		Medium to Low

VISUAL BASELINE

7.3.111 Figures 7.2 and 7.3 indicate the blade tip and hub height ZTVs within 35km of the proposed Glenkerie Wind Farm. These indicate that the proposed Glenkerie development would be well contained visually. Additionally, it should be noted that ZTVs should be considered to be a 'worst-case scenario' as they only reflect landform, and not other factors affecting visibility such as vegetation and built form.

7.3.112 The exact nature of visibility is linked to variations in landform and land cover, as discussed above in relation to landscape character. Following the description of baseline landscape character, three different levels of detail have been used describing the baseline visual environment, based on distance from the proposed Glenkerie Wind Farm:

- The immediate visual environment (2.5km radius around the proposed turbines)
- The local visual environment (15km radius around the proposed turbines) and
- The wider visual environment (35km radius around the proposed turbines).

Visual Receptors

7.3.113 To represent and illustrate the potential effects that the proposed Glenkerie Wind Farm may have on a range of sensitive fixed and linear route receptors found within the study area, viewpoint locations have been identified and agreed with Scottish Borders Council and SNH. These sensitive receptors and locations are listed in Table 7.3.3 below and are illustrated on ZTV Figures 7.2 and 7.3.

7.3.114 In addition, a series of linear receptors, relating to roads and other public rights of way through the 35km study area, were chosen for the assessment of sequential and cumulative sequential effects, following consultation with Scottish Borders Council and SNH. These are:

- A701;
- B7016;
- John Buchan Way;
- A702;
- A721; and
- A70.

Table 7.3.3. Viewpoint Locations and Rationale

VP	*Description*	*Easting*	*Northing*	*Rationale*
2	Culter Fell	305323	629071	RSA, Hill Top View
6	Pykestone Hill	317300	631260	NSA. Footpath, panoramic hilltop view.
9	Stanhope	312066	629708	AGLV, Local residential property
10	Polmood House	311392	627062	AGLV, Local residential property
12	Kingledores Farm	310528	628146	AGLV, Local residential property
14	Patervan Farm	311172	628721	AGLV, Local residential property
15	Tinto Hill	295293	634383	RSA. Panoramic hilltop view.
16	Trahenna Hill	313592	637408	NSA. Panoramic hilltop view
17	Glencotho	308420	629950	AGLV, Local residential property
18	Hopecarton	312720	631000	AGLV, Local residential property

20	Broadlaw	314571	623625	AGLV. Panoramic hilltop view. Viewpoint identified by consultation with neighbours
21	John Buchan Way	312656	639221	NSA. Footpath/trail. Viewpoint identified by consultation with neighbours
22	White Meldon	321934	642844	Hilltop fort. Views across NSA.
23	A701 Source of the Tweed Car Park	304947	614607	AGLV, Tourist route, Road user, Source of the Tweed
24	Hods Hill	300474	609487	RSA. Southern Upland Way. Panoramic hilltop view.
26	Minor Road South of Bellscraig	302750	641797	Road users. Views across RSA
27	A701 near Worm Hill	311651	630053	AGLV, View from A701 Scenic Route, VP recommended by Borders Council.
28	Talla Reservoir	310738	622899	AGLV, VP recommended by Borders Council.
29	Minor Road in NSA near Dreva and Quarry Hill	314810	636080	NSA, Road Users, VP recommended by SNH and Borders Council.
29a	1 & 2 Dreva Cottages	314275	636010	Residential properties within NSA
30	B7016 W of Broughton	309747	636946	Road Users, VP recommended By SNH.
31a	Elsrickle	306482	643625	RSA. Residential views from village
32	Minor Road North of Skirling	307560	639490	Road Users, VP recommended By SNH.

The Immediate Visual Environment (2.5km Radius Around the Proposed Turbines)

7.3.115 VP's 2, 9, 10, 12, 14, 17 and 27 illustrates representative views within 2.5km of the nearest turbines. As discussed above, landform exerts a strong influence on visibility of the proposed Glenkerie Wind Farm. The upland landscapes described above generally have open, long distance panoramic views across the landscape. Such views are demonstrated by VP2. Conversely, views from within valley landscapes are typically constrained by landform, as illustrated by VPs 9, 10, 12, 14, 17 and 27. The ZTVs show that while much of the raised upland topography in the immediate landscape falls within the ZTV, the majority of the valley landscapes fall outside of the ZTV, with the exception being where proximity to the site or breaks in landform allow views. Visual receptors in the valley landscapes are limited to dispersed properties and roads. Walkers and other leisure users are likely to represent the main visual receptors for the upland landscapes.

7.3.116 Table 7.3.4. below indicates the different properties, settlements, tourist attractions/recreational facilities, long distance routes and footpath and

roads located within the 2.5km study boundary. The visual receptors that fall into the ZTV are highlighted in bold.

Table 7.3.4. Visual Receptors within 2.5km of the Proposed Glenkerie Wind Farm.

Properties
Glencotho, Kingledores, Logan Cottage, **Patervan Farm, Polmood, Hopehead, Holms Waterhead**, Glenkirk, **Glenhighton**
Settlements
None identified
Routes/Footpaths
None identified
Roads
A701, the minor road connecting the A701 to the properties of Glenhighton, Glencotho, Glenkirk and Holms Waterhead.

The Local Visual Environment (15km Radius Around the Proposed Turbines)

7.3.117 Much of the local visual environment to the south, west and east of the proposed Glenkerie Wind Farm reflects that of the immediate visual environment, in terms of landform. VPs 2, 6, 20 and 23 represent the open panoramic views from upland landscapes within the local visual environment, while VPs 9, 10, 12, 14, 17, 18, 27 and 28 illustrate the generally more enclosed views from within the valley landscapes.

7.3.118 To the north and north east of the proposed Glenkerie Wind Farm, the local visual environment is more varied. Upland landscapes here continue to demonstrate similar characteristics to those to the south, west and east of the proposed Glenkerie Wind Farm. However, broader valley landscapes allow more significant middle distance views than the narrower valleys discussed previously. They also contain more settlement and communication routes, and therefore more visual receptors are present. VPs 15, 16 and 21, illustrate the uplands to the north while VPs 29, 29a and 30 illustrate the broader valley landscapes.

7.3.119 The ZTV indicates that potential visibility of some part of the proposed turbines is relatively limited within the local landscape. Due to the effects of landform, visibility occurs along a general north to south axis. This largely takes in upland areas, although some of the broader valley landscapes are also affected.

7.3.120 Table 7.3.5 below indicates the different, settlements, tourist attractions/recreational facilities, long distance routes and 'A' and 'B' roads located between the 2.5km immediate and 15km local area study boundaries. The receptors that fall within the ZTV are highlighted in bold.

Table 7.3.5 Visual Receptors within 2.5 to 15km of the proposed Glenkerie Wind Farm.

Settlements
Stanhope, Drumelzier, Bellspool, Stobo, Castlehill, Crawford, Roberton, Lamington, Wandel, Wiston, Newton, Coulter, Symington, Thankerton, Biggar, **Skirling, Candy Mill**, Broughton,
Tourist Attractions / Recreational Facilities /
The Museum south of Broughton, Dawyck Botanic Gardens, Forest walk and picnic area south east of Southey Hill, Viewpoint, walk and picnic area at Megget Reservoir, Castle and campsite at Crawford, Viewpoint on A701, Campsite at Wiston, **Viewpoint at Tinto Hill**, Campsite at Biggar
Long Distance Routes
None identified
Motorways, A and B Roads
A short section of the M74, **A72**, A73, **A701, A702**, B712, **B7016**, B7055

7.3.121 To assist the assessment Ordnance Survey Address Point data (held to be accurate on 24th November 2005) was purchased in order to identify all properties within a 5km radius of the turbines. These addresses were then plotted onto OS mapping, and the ZTV was overlain in order to determine which properties fell within the ZTV and as a consequence may have a potential view of the turbines.

7.3.122 A total of 84 postal addresses were identified in the Address Point data. Of these 84 addresses, only 16 were found to be within the ZTV. The locations of these addresses are illustrated on Figure 7.24, which shows the blade tip ZTV of the proposed turbines.

The Wider Visual Environment

7.3.123 Outside the 15km local study area to the north, the ZTVs indicate that visibility of the proposed Glenkerie Wind Farm is very limited. Limited visibility may occur at distant, remote, elevated locations and forested areas in the Moorfoot hills beyond Peebles, to the northeast, in the Pentland Hills to the north, and in the northwest of the study area to the northwest of Lanark.

7.3.124 To the south and southwest of the study area theoretical visibility is even more limited, and again is restricted to very few areas of remote hilltops and forested areas of the Lowther Hills.

APPENDIX 7.4: LANDSCAPE ASSESSMENT

7.4 LANDSCAPE AND VISUAL EFFECTS DURING CONSTRUCTION AND DECOMMISSIONING

7.4.1 A project description of the Glenkerie Wind Farm is provided in Chapter 5. This identifies a number of different temporary activities and features during construction and decommissioning which have the potential to cause both landscape and visual effects. These effects are considered separately to those that may occur during the operation of the proposed Glenkerie Wind Farm.

7.4.2 Temporary effects on landscape fabric will occur during the construction phase, which will have a duration of between six and nine months. This will involve the removal of some of the features and land cover making up the fabric of the development site. This primarily relates to the temporary loss of 'upland mosaic' land cover, although a limited loss of other types of land cover may occur. However, with the exception of the effects of the elements of the wind farm to be retained during its operational phase, any disturbance to the landscape fabric arising from construction activities will be reinstated post-construction. During decommissioning, the landscape fabric of the site will be reinstated to its pre-wind farm condition, with underground cables being left buried in-situ and foundations and hard standings being removed to a depth that would allow the continuation of current land use practices. Unless otherwise agreed and required for agricultural or forestry operations, on site access tracks will be removed and the affected area reinstated.

7.4.3 During the construction and decommissioning phases of the project, as described in Chapter 1 Section 1.8, there will be temporary visual effects, which would last for approximately six to nine months and two months respectively. The more significant temporary construction visual effects relate to vehicle movements to and from and on the site itself and the use of cranes in turbine erection, which will be tall prominent features in the local landscape. More limited visual effects will relate to vehicles entering and leaving the site via the designated access point and the temporary construction compound. The compound has been sited so as to make use of existing screening by landform and trees to the east. The construction/decommissioning activity resulting in the most prominent visual effect to the public will be when the turbines are delivered to the site and erected and, at the end of their operational life, dismantled and removed.

7.4.4 Temporary effects on landscape character will also occur during the construction phase. This will relate to changes to landscape character due to the addition of temporary new elements as a result of construction activities. This will involve the presence of the construction compound, vehicles and cranes on site. Similar temporary effects on landscape character will result from decommissioning activities

7.4.5 As a result of the limited extent of the disturbance, and the reinstatement of working areas, the construction and decommissioning phases will have only a limited, but negative, effect on landscape fabric and landscape character. Furthermore, as a result of the short duration of the works, the construction and decommissioning phases will have only a short-term and temporary effect on visual amenity.

7.4.6 Due to their short term and temporary/limited nature, construction and decommissioning phase activities are not considered to give rise to any significant residual effects.

LANDSCAPE EFFECTS DURING OPERATION

7.4.7 Within the 35km study radius, four different levels of detail have been used describing the baseline landscape character, based on distance from the proposed development. This description is provided in Appendix 7.3. The same levels of detail is used in the assessment of landscape effects during operation of the proposed development, based on:

- The landscape effects on the development Planning Application site itself
- The landscape effects on the immediate surroundings (2.5km radius around the proposed turbines)
- The landscape effects on the local landscape (15km radius around the proposed turbines); and
- The effects on the broad-scale landscape (35km radius around the proposed turbines);

7.4.8 The direct effects of the physical fabric of the landscape are assessed for the Planning Application site. Effects on the landscape character are assessed for the other three levels of detail. This assesses the way in which the proposed development will affect the key characteristics of this landscape. This relates both to aesthetic and perceptual effects resulting from the proposed development.

Landscape Effects – The Development Site

7.4.9 A number of temporary effects to the landscape fabric of the site during construction and decommissioning have been identified above. Operational effects on the landscape fabric will relate to the limited removal of some of the features and land cover making up the fabric of the development site and their replacement with the following features: the control building, the met mast, the access tracks, the crane hardstandings (the cranes themselves will be present only during construction and for emergency repairs/maintenance to the turbines); and the wind turbines and foundations. A description of the characteristics of these features is provided in Chapter 5. Following decommissioning, the landscape fabric of the site will be reinstated to its pre-wind farm condition, with underground cables being left buried in-situ and foundations and hard standings being removed to a depth that would allow the continuation of current land use practices. Unless otherwise

agreed and required for agricultural or forestry operations, on site access tracks will be removed and the affected area reinstated.

7.4.10 The proposed development represents a temporary medium-term (25 year) effect on a small proportion of the landscape fabric of the site. The majority of the landscape elements to be removed relate to loss of 'upland mosaic' land cover, although a limited loss of other types land cover may also occur. These land cover elements are common at a local, regional and national scale.

7.4.11 The sensitivity of the landscape fabric is assessed as medium to low. The magnitude of effect on the landscape fabric is assessed as small.

Landscape Effects – Immediate Landscape (2.5km Radius around the Proposed turbines)

7.4.12 The landscape character types within which the proposed turbines and immediate surroundings are located are illustrated on Figure 7.7 and represented by Viewpoints (VPs) 2, 9, 10, 12, 14, 17 and 27.

7.4.13 The ZTVs indicate that the visibility of the proposed Glenkerie Wind Farm is mainly confined to the areas identified as upland landscapes within Appendix 7.3. VP 2 illustrates views from such upland landscapes.

7.4.14 Appendix 7.3 describes the upland landscapes. These landscapes are open and large in scale and coarse in texture, with little in the way of screening, which reduces their contrast in scale with the turbines. The regular pattern of rounded hilltops also provides a framework within which the turbines are anchored, helping to provide a context that further reduces contrasts in scale.

7.4.15 Additionally, while the lack of screening does mean that the turbines can be perceived through much of the landscape, it also signifies that they are seen as a consistent and easily interpreted landscape feature.

7.4.16 Appendix 7.3 also described the valley landscapes within 2.5km of the proposed development. VPs 9, 10, 12, 14, 17 and 27 represent views from within such valley landscapes. The ZTV indicates that only relatively limited sections within the valley landscapes are affected by the proposed development. This indicates that the turbines only have the potential to influence landscape character within limited parts of these landscapes. However, where such influence occurs, it relates to a dominant new feature out of scale with these fine-grained, intimate landscapes.

7.4.17 On this basis, while the turbines would represent prominent elements that are uncharacteristic within the immediate upland landscapes, the characteristics of those landscapes serve to reduce contrasts in scale to some degree. The magnitude of landscape change for the upland landscapes in the 2.5km radius immediate landscape is assessed as being large. The turbines can only be perceived within relatively limited sections of the valley landscapes. However, where effects are perceived, they would be at a considerable variance in scale with the landform, scale and

pattern of the landscape. On this basis, landscape change for the immediate valley landscapes is assessed as being large.

Landscape Effects – Local Landscape (15km Radius around the Proposed turbines)

7.4.18 The landscape character types within which local surroundings are located are illustrated on Figure 7.7 and represented by Viewpoints (VPs) 2, 6, 9, 10, 12, 14 16, 17, 18, 20, 21, 27, 28, 29, 30 and 32.

7.4.19 The ZTV indicates that visibility of the proposed Glenkerie Wind Farm within the local landscape falls within a broad band centred on the site with a general north to south orientation. Part of this region of visibility relates to the south and south-southeast of the proposed wind farm, within the Tweedsmuir Hills/Upper Tweedale AGLV. The intermittent visibility indicated in the ZTV mainly relates to upland landscapes, although limited sections of valley landscapes are also affected. VPs 23 and 28 illustrate views from within valley landscapes, while VP 20 illustrates views from upland landscapes.

7.4.20 Upland landscapes here display the openness and coarse texture of the landscape discussed with reference to the immediate study area. As before, this continues to reduce contrasts in scale with the turbines. Equally, the regular pattern of rounded hilltops provides context for the turbines. The role of the skyline in relation to the proposed development is also important, with contrasts in scale being further reduced when the proposed development is seen against a background of those rounded hilltops. Within these local scale landscapes, the greater distances involved of view mean that the turbines become a smaller, less imposing feature than in the immediate scale landscapes.

7.4.21 The ZTV demonstrates that the visibility of the proposed Glenkerie Wind Farm will be limited for valley landscapes within the Tweedsmuir Hills/Upper Tweedale AGLV at the local scale. The valleys here retain the small scale, relatively intricate characteristics of similar landscapes at the immediate scale. However, distance will reduce the apparent scale of the turbines, reducing potential contrasts in scale.

7.4.22 With regard to the upland landscapes located within the local-scale Tweedsmuir Hills/Upper Tweedale AGLV, the proposed Glenkerie wind farm would be out of scale with the landscape, and at odds with the local pattern and landform, representing the introduction of noticeable features. Taking into consideration the likely extent of such effects on the landscape as a whole, the magnitude of landscape change is assessed as moderate. Given the more limited extent of effects within the valley landscapes, the turbines here would relate to features that would be apparent, but not dominant, within the landscape. The magnitude of landscape change is assessed as small.

7.4.23 To the west of the Tweedsmuir Hills/Upper Tweedale AGLV within the local landscape lies the South Clydesdale RSA. The majority of this RSA falls outside of the ZTV. The most notable exceptions to this are Tinto Hill

(VP15) and the Biggar Hills north east of Biggar. Given the limited visibility of the turbines within this landscape, effects are also likely to be limited, and relate to features that would be apparent, but not dominant, within the landscape as a whole. The magnitude of landscape change is assessed as small.

7.4.24 To the north of the proposed Glenkerie Wind Farm, the ZTVs indicate a similar, intermittent pattern of visibility to that described above for the south of the local study area. Some of this intermittent visibility relates to upland landscapes (Refer to VPs 16 and 21), including the grassland with hills near Skirling. In addition, the broader valley landscapes described in Appendix 7.2 are also affected (Refer to VPs 26, 29, 29a, 30, 31a and 32). This includes upland and broader valley landscapes within the Upper Tweedale NSA to the north east of the 15km radius local study area (VPs 16, 29 and 29a).

7.4.25 The effects on upland landscapes here reflect those encountered in similar landscapes in the local study area to the south of the proposed Glenkerie Wind Farm, although more limited in extent. An additional factor to consider is the influence on the existing landscape baseline of the Bowbeat Wind Farm, located approximately 25.7km to the north east of the proposed Glenkerie Wind Farm (Refer to Figure 7.9 and Figure 7.13). This is visible across a significant proportion of the upland landscapes to the north of the local study area, particularly with regard to the Upper Tweedale NSA, and signifies that vertical wind farm features currently form part of the existing baseline conditions. This effect is accentuated by the presence of transmission masts within the local landscape to the north of the proposed turbines.

7.4.26 The ZTV shows that effects on the broader valley landscapes are limited in extent, mainly being confined to the northern slopes of the valleys and parts of the valley floor. These broader valley landscapes are small to medium scale, providing a broader context than the more confined upland valleys described previously. The turbines would typically be perceived above the skyline from within these valleys. The distance to the proposed development from these landscapes reduces the apparent scale of the turbines, reducing potential contrasts in scale. Equally, the boundaries between the rectilinear fields in this landscape frequently contain tree lines. These trees provide a consistent pattern of vertical features, which relate well in scale to the turbines. These factors reduce contrasts in scale between the broader valley landscapes and the turbines. As with the upland landscapes in the Upper Tweedale NSA, the Bowbeat Wind Farm and transmission masts represent part of the existing baseline conditions.

7.4.27 The grassland hills around Skirling have a relatively high degree of vegetation screening, owing to the presence of woodland blocks and hedgerow field boundaries. VP 32 indicates how vegetation can screen, in some cases very effectively, views of the proposed Glenkerie Wind Farm. Where the turbines are visible, the distance of view would reduce their apparent scale, although such views would generally occur above the skyline. In addition, trees and woodland belts within the landscape relate

well in scale to the turbines. These factors both serve to reduce contrasts in scale.

7.4.28 The effects of the proposed Glenkerie Wind Farm are limited in extent within the northern section of 15km radius local landscape. The Bowbeat Wind Farm and transmission masts mean that vertical features are part of the existing landscape baseline, especially with regard to the Upper Tweedale NSA. The effect of distance and the elements within the different landscapes all serve to reduce contrasts in scale with the proposed turbines. This indicates that the proposed Glenkerie Wind Farm would relate to the introduction of elements that would be apparent in the landscape, but that would not be uncharacteristic. The turbines would represent features that do not quite fit into the landform and scale of the landscape. Magnitude of change within the northern section of 15km radius local landscape, including the Upper Tweedale NSA, is assessed as being small.

Landscape Effects on Historic Gardens and Designed Landscapes within the Local Landscape Setting (15km Radius around the Proposed turbines)

7.4.29 Stobo Castle is the only HGDL to fall within the ZTV within the 15km local landscape. The ZTV indicates that the proposed Glenkerie Wind Farm would only be visible in the western, wooded sections of Stobo Castle. This indicates that effects on the setting would be limited, with the turbines forming an inconspicuous, feature that would not affect landscape quality. The assessed magnitude of landscape change is very small.

Landscape effects on the broad-scale landscape (35km radius around the proposed turbines)

7.4.30 The ZTV indicates that extent of the effects of the proposed Glenkerie Wind Farm beyond the 15km local scale landscape is limited. VP 22 and VP 24 illustrate views from within the limited area where effects would occur. Where visibility of the turbines is possible, they would appear as a minor, inconspicuous feature in the wider landscape, and would have little or no effect on existing landscape quality. Wind turbines are already a readily recognisable feature of the wider landscape due to the presence of the existing wind farms and therefore the proposed Glenkerie Wind Farm would not be uncharacteristic in this context. The assessed magnitude of landscape change is very small.

CUMULATIVE LANDSCAPE EFFECTS DURING OPERATION

7.4.31 Within the 30km radius cumulative study area, three different levels of description will be used in the assessment of cumulative effects on landscape character, based on:

- Cumulative landscape and visual effects on the immediate landscape (2.5km radius around the proposed turbines);

- Cumulative landscape effects and visual on the local landscape (15km radius around the proposed turbines); and
- Cumulative landscape and visual effects on the broad-scale landscape (30km radius around the proposed turbines).

The cumulative effects on the physical fabric of the landscape itself will also be assessed.

7.4.32 Cumulative effects are assessed against the existing, consented, proposed and scoped windfarms. Assessment firstly relates to the potential cumulative effects of the proposed Glenkerie Wind Farm and the existing and consented windfarms. These effects relate to wind farms in existence or with approval to be built, and would be probable to occur.

7.4.33 Assessment then considers the potential cumulative effects of the proposed Glenkerie Wind Farm, the existing and consented windfarms and the proposed windfarms. Such effects would depend on planning consent being granted to the proposed developments, and is therefore more theoretical in nature.

7.4.34 Finally, assessment considers the potential cumulative effects of the proposed Glenkerie Wind Farm, the existing and consented windfarms, the proposed windfarms and the scoped windfarms. Such effects would depend on a decision on whether to apply for planning permission for the scoped developments, and is therefore highly theoretical in nature.

7.4.35 On this basis, the most weight should be given to the assessed cumulative effects of relating to the proposed Glenkerie Wind Farm and the existing and consented windfarms, with least weight being given to the assessed cumulative effects of the proposed Glenkerie Wind Farm, the existing and consented windfarms, the proposed windfarms and the scoped windfarms

Cumulative Effects - Landscape Fabric

7.4.36 As described above, the landscape fabric of the Planning Application site does not possess rarity value at even a local scale and the magnitude of effect on the landscape fabric is assessed as small. On this basis, there will not be a cumulative effect on rare or valued landscape elements.

Cumulative Landscape Effects – Immediate Landscape (2.5km Radius around the Proposed turbines)

7.4.37 The cumulative ZTVs (Figures 7.10 to 7.23) all indicate the visibility of the proposed Glenkerie Wind Farm and the different wind farms forming part of the cumulative assessment. These indicate that the ZTVs for the proposed Clyde Airtricity Wind Farm and the scoped Earlshaugh Wind Farm will coincide with a moderate proportion of the Glenkerie Wind Farm ZTV within the immediate surroundings. The ZTVs for the operational and consented Black Law, Bowbeat, Harestanes, Pates Hill and Tormywheel Wind Farms and the proposed Auchencorth Moss, Black Law Extension, Harrows Law, Limmer Hill and Minnygap Wind Farms will coincide with a minor proportion of the Glenkerie Wind Farm ZTV within

the immediate surroundings. The ZTVs for the existing Hagshaw Hill and Extension Wind Farm, and the proposed Minch Moor Wind Farm will coincide with little or none of the Glenkerie Wind Farm ZTV within the immediate surroundings.

7.4.38 The ZTVs suggest that cumulative effects within the immediate landscape involving the proposed Glenkerie Wind Farm and the operational or approved wind farms would be minor in nature. The distance from the local landscape to the existing and consented windfarms and the limited extent of their effect on that landscape means that very limited interactions would be possible with the Glenkerie Wind Farm. The magnitude of cumulative landscape change is assessed as being very small.

7.4.39 In terms of proposed wind farms, the Clyde Airtricity, and to a lesser extent, Limmer Hill Wind Farm would have some capacity to produce a cumulative effect in conjunction with the proposed Glenkerie Wind Farm. This would relate to windfarms becoming a more evident feature of the immediate scale landscape. The magnitude of cumulative landscape change is assessed as being very small.

7.4.40 The scoped Earlshaugh Wind Farm, in conjunction with proposed wind farms in the cumulative assessment and the proposed Glenkerie Wind Farm, would similarly contribute to windfarms becoming a feature of the immediate scale landscape. It is likely that this would lead to an obvious, but not dominant, change in the landscape. The magnitude of cumulative landscape change is assessed as being medium.

Cumulative Landscape Effects – Local Landscape (15km Radius around the Proposed turbines)

7.4.41 The cumulative ZTVs (Figures 7.10 to 7.23) all indicate the visibility of the proposed Glenkerie Wind Farm and the different wind farms forming part of the cumulative assessment. These indicate that the ZTVs for the proposed Clyde Airtricity Wind Farm and scoped Earlshaugh Wind Farm will coincide with a moderate proportion of the Glenkerie Wind Farm ZTV within the local scale landscape. The ZTVs for the existing and consented Black Law, Pates Hill and Tormywheel Wind Farms and the proposed Harrows Law and Limmer Hill Wind Farms will coincide with a small proportion of the Glenkerie Wind Farm ZTV within the local scale landscape. The ZTVs for the operational and consented Bowbeat, Hagshaw Hill and Extension and Harestanes Wind Farms and the proposed Auchencorth Moss, Black Law Extension, Minch Moor and Minnygap Wind Farm will coincide with a minor proportion of the Glenkerie Wind Farm ZTV within the local scale landscape.

7.4.42 Effects within the local landscape broadly reflect those within the immediate landscape. The distance from the local landscape to the existing and consented windfarms and the limited extent of their effect on that landscape means that very limited interactions would be possible with the Glenkerie Wind Farm. On this basis, the magnitude of cumulative landscape change relating to the interactions of the proposed Glenkerie

Wind Farm in conjunction with the existing and consented wind farms is assessed as being very small.

7.4.43 In terms of proposed wind farms, the Clyde Airtricity, and to a lesser extent, Limmer Hill Wind Farm would have the capacity to produce a cumulative effect. This would relate to windfarms becoming amore frequent feature of the local scale landscape. The magnitude of cumulative landscape change relating to the interactions of the proposed Glenkerie Wind Farm and the existing, consented and proposed and wind farms is assessed as being small. If the effect of the scoped Earlshaugh Wind Farm were included in the assessment, the magnitude of landscape change would be medium.

Landscape Effects on the Broad-scale Landscape (30km radius around the proposed turbines)

7.4.44 The ZTV indicates that extent of the effects of the proposed Glenkerie Wind Farm beyond the 15km local scale landscape is limited. This suggests that the proposed Glenkerie Wind Farm has limited potential for cumulative interactions with other wind farms on the landscape. The distance from these landscapes to the proposed Glenkerie Wind Farm reinforces this.

7.4.45 If the proposed and scoped proposals were constructed, the possibility increasingly exists that wind farms would be perceived as a common feature of the wider 30km radius broad scale landscape. While this may relate to a significant cumulative landscape effect, the role of the proposed Glenkerie Wind Farm within this would be a limited.

7.4.46 The magnitude of cumulative landscape change relating to the interactions of the proposed Glenkerie Wind Farm and the existing and consented wind farms is assessed as being very small.

7.4.47 The magnitude of cumulative landscape change relating to the interactions of the proposed Glenkerie Wind Farm and the existing, consented and proposed wind farms is assessed as being very small.

7.4.48 The magnitude of cumulative landscape change relating to the interactions of the proposed Glenkerie Wind Farm and the existing, consented, proposed and scoped windfarms wind farms is assessed as being small.

SUMMARY

7.4.49 Tables 7.4.1 and 7.4.2 provide a summary of the landscape effects and cumulative landscape effects arising from the proposed development. Significant landscape effects are limited to the upland landscapes within the immediate 2.5km radius study area around the proposed development. Significant cumulative landscape effects would only occur for the NSA within the 15km radius local scale landscape. However, such significant cumulative effects would only occur on the basis that all the proposed and scoped windfarms are consented and constructed.

Table 7.4.1 Summary of Landscape Effects

Extent of Effects	Landscape	Designation	Landscape Sensitivity	Magnitude of Landscape Change	Residual Significance of Landscape Effects
Proposed Glenkerie Wind Farm Site	Land within planning application boundary	AGLV	Medium	Small	Minor
Immediate Surroundings (2.5km radius around proposed turbines)	Upland Landscapes	NSA RSA AGLV	High	Large	Major/ Moderate
	Valley Landscapes		Medium	Large	Moderate
Local Landscape (15km radius around proposed turbines)	Upland Landscapes	NSA	High to Very High	Small	Moderate to Moderate/ Minor
	Valley Landscapes		High	Small	Moderate/ Minor
	Upland Landscape	RSA AGLV	High	Small (RSA), Small to Medium (AGLV)	Moderate/ Minor (RSA), Moderate to Moderate/ Minor (AGLV)
	Valley Landscapes		Medium to High	Small	Moderate/ Minor to Minor
	Upland Landscape (Grassland with Hills)	None	Medium to High	Small	Moderate/ Minor
	Stobo Castle	HGDL	Medium	Very Small	Minor/ Negligible
Broad Landscape (35km radius around proposed turbines)	Upland Landscapes	NSA	High to Very High	Very Small	Moderate/ Minor to Minor
	Valley Landscapes		High	Very Small	Minor
	Broader valley and flatter farmed landscapes		Medium to High	Very Small	Minor to Minor/ Negligible
	Upland Landscapes	RSA AGLV	High	Very Small	Minor
	Valley Landscapes		Medium to High	Very Small	Minor to Minor/ Negligible
	Broader valley and flatter farmed landscapes		Medium	Very Small	Minor/ Negligible
	Upland Landscapes	None	Medium to High	Very Small	Minor to Minor/ Negligible
	Valley Landscapes		Medium	Very Small	Minor/ Negligible
	Broader valley and flatter farmed landscapes		Medium to Low	Very Small	Minor/ Negligible to Negligible

Table 7.4.2 Summary of Cumulative Landscape Effects

Extent of Effects	Landscape	Designation	Landscape Sensitivity	Magnitude of Landscape Change	Residual Significance of Landscape Effects
Proposed Glenkerie Wind Farm Site	Land within planning application boundary	AGLV	Medium	Very Small	Minor to Negligible
Immediate Surroundings (2.5km radius around proposed turbines)	Upland Landscapes; and Valley Landscapes	NSA RSA AGLV	Medium to High	Very Small (Existing and consented wind farms); Small (Existing, consented and proposed wind farms); Medium (Existing, consented, proposed and scoped wind farms);	Minor to Minor/Negligible (Existing and consented wind farms); Moderate/Minor to Minor (Existing, consented and proposed wind farms); Moderate to Moderate/Minor (Existing, consented, proposed and scoped wind farms);
Local Landscape (15km radius around proposed turbines)	Upland Landscapes; Valley Landscapes; and Stobo Castle	NSA RSA AGLV HGDL	Medium to Very High	Very Small (Existing and consented wind farms); Small (Existing, consented and proposed wind farms); Medium (Existing, consented, proposed and scoped wind farms);	Moderate/Minor to Minor/Negligible (Existing and consented wind farms); Moderate to Minor (Existing, consented and proposed wind farms); Major/Moderate to Moderate/Minor (Existing, consented, proposed and scoped wind farms);
Broad Landscape (35km radius around proposed turbines)	Upland Landscapes; Valley Landscapes; and Broader valley and flatter farmed landscapes	NSA RSA AGLV None	Low to Very High	Very Small (Existing and consented wind farms); Very Small (Existing, consented and proposed wind farms); Small (Existing, consented, proposed and scoped wind farms);	Moderate/Minor to Negligible (Existing and consented wind farms); Moderate/Minor to Negligible (Existing, consented and proposed wind farms); Moderate to Minor/Negligible (Existing, consented, proposed and scoped wind farms);

APPENDIX 7.5. VISUAL ASSESSMENT

7.5 INTRODUCTION

7.5.1 The ZTV's (Figures 7.2 & 7.3) indicate that the proposed Glenkerie Wind Farm is theoretically visible over a very limited proportion of the study area and from a number of different sensitive receptors including fixed and linear route receptors.

7.5.2 A total of 33 viewpoints were selected and investigated to represent the potential outlook from existing vantage point or viewpoints, existing residential properties, public open spaces, outdoor recreation areas and linear receptors.

7.5.3 Following preliminary field survey, design optimisation and consultation with Scottish Borders Council and Scottish Natural Heritage this list was refined to a total of 23 viewpoints. Table 7.5.1 lists those agreed viewpoints included as part of this assessment.

Table 7.5.1 Viewpoint Locations for Detailed Visual Assessment

VP	*Description*	*Easting*	*Northing*	*Receptor Types*
2	Culter Fell	305323	629071	Walkers
6	Pykestone Hill	317300	631260	Walkers
9	Stanhope	312066	629708	Residential
10	Polmood House	311392	627062	Residential
12	Kingledores Farm	310528	628146	Residential
14	Patervan Farm	311172	628721	Residential
15	Tinto Hill	295293	634383	Scenic Viewpoint Walkers
16	Trahenna Hill	313592	637408	Walkers
17	Glencotho	308420	629950	Residential
18	Hopecarton	312720	631000	Residential
20	Broadlaw	314571	623625	Walkers
21	John Buchan Way	312656	639221	Walkers
22	White Meldon	321934	642844	Walkers
23	A701 Source of the Tweed Car Park	304947	614607	Road users, Tourist
24	Hods Hill	300474	609487	Walkers
26	Minor Road South of Bellscraig	302750	641797	Road users
27	A701 near Worm Hill	311651	630053	Road users
28	Talla Reservoir	310738	622899	Road users
29	Minor Road in NSA near Dreva and Quarry Hill	314810	636080	Road users
29a	1 & 2 Dreva Cottages	314275	636010	Residential, Road Users
30	B7016 W of Broughton	309747	636946	Road Users
31a	Elsrickle	306482	643625	Residential, Road Users
32	Minor Road North of Skirling	307560	639490	Residential, Road Users

7.5.4 The cumulative ZTV's (Figures 7.10 to 7.23) also indicate that cumulative visual effects may be experienced in combination, succession, and sequentially as a result of the introduction of the proposed Glenkerie Wind Farm in addition to those existing, consented, proposed and scoping wind farms included as part of this assessment.

7.5.5 The cumulative ZTV's for each wind farm were analysed to determine the numbers of wind farms theoretically visible at each viewpoint. The results of this analysis are presented in Table 7.5.2 below

Table 7.5.2 Theoretical Visibility of Cumulative Wind Farms at All Agreed Viewpoints

VP	Location	Total No. of Operational Wind Farms Theoretically Visible	Total No. of Consented Wind Farms Theoretically Visible	Total No. of Proposed Wind Farms Theoretically Visible	Total No. of Scoped Wind Farms Theoretically Visible	Total No. of Wind Farms Theoretically Visible
2	Culter Fell	3	3	6	1	13
6	Pykestone Hill	3	3	5	1	12
9	Stanhope	0	0	0	0	0
10	Polmood House	0	0	0	0	0
12	Kingledores Farm	0	0	0	0	0
14	Patervan Farm	0	0	0	0	0
15	Tinto Hill	3	3	5	1	12
16	Trahenna Hill	3	2	6	1	12
17	Glencotho	0	0	0	0	0
18	Hopecarton	0	0	0	0	0
20	Broadlaw	3	3	7	1	14
21	John Buchan Way	0	0	0	1	1
22	White Meldon	1	0	4	0	5
23	A701 Source of the Tweed Car Park	0	0	0	1	1
24	Hods Hill	0	1	3	1	5
26	Minor Road South of Bellscraig	0	0	1	0	1
27	A701 near Worm Hill	0	0	0	0	0
28	Talla Reservoir	0	0	0	0	0
29	Minor Road in NSA near Dreva and Quarry Hill	0	0	0	0	0
29a	1 & 2 Dreva Cottages	0	0	0	0	0
30	B7016 W of Broughton	0	0	0	0	0
31a	Elsrickle	2	0	2	0	4
32	Minor Road North of Skirling	0	0	2	0	2

7.5.6 Further analysis determined which of the operational, consented, proposed and scoped wind farms were visible from each viewpoint. The distance to each visible wind farm was then determined. The results of this analysis are presented in Tables 7.5.3 to 7.5.5 below.

Table 7.5.3. Theoretical Visibility of Operational Wind Farms

VP	Location	Black Law (A & B) (~Dist & Direction)	Bowbeat (~Dist & Direction)	Hagshaw Hill and Extension (~Dist & Direction)	Total No. of Operational Wind Farms Theoretically Visible
2	Culter Fell	28.6km NW	28.9km NE	24.4km W	3
6	Pykestone Hill	34.7km NW	18.9km NNE	36.3km E	3
15	Tinto Hill	19.5km NNW	35.1km NE	14.3km WSW	3
16	Trahenna Hill	27.8km NW	17.3km NE	33.2km WNW	3
20	Broadlaw	38.2km NNW	26.8km NNE	34.4km WNW	3
21	John Buchan Way	-	17.3km NE	-	1
22	White Meldon	-	7.4km ENE	28.4km SW	1
31a	Elsrickle	-	28.9km NE	24.4km W	2

Table 7.5.4. Theoretical Visibility of Consented Wind Farms

VP	Location	Harestanes (~Dist & Direction)	Pates Hill (~Dist & Direction)	Tormywheel (~Dist & Direction)	Total No. of Consented Wind Farms Theoretically Visible
2	Culter Fell	29.4km S	29.8km NNW	30.1km NNW	3
6	Pykestone Hill	35.4km SSW	32.3km NW	34km NW	3
15	Tinto Hill	34.8km S	24.3km NNE	23km N	3
16	Trahenna Hill	39.5km SSW	-	27km NW	2
20	Broadlaw	27.4km SSW	37.9km NNW	38.9km NNW	3
24	Hods Hill	9.5km S	-	-	1

Table 7.5.5. Theoretical Visibility of Proposed and Scoped Wind Farms

VP	Location	Auchencorth Moss (~Dist & Direction)	Black Law Extension (C) (~Dist & Direction)	Clyde Airtricity (~Dist & Direction)	Harrows Law (~Dist & Direction)	Limmer Hill (~Dist & Direction)	Minch Moor (~Dist & Direction)	Minnygap (~Dist & Direction)	Earlshaugh (Scoped) (~Dist & Direction)	Total No. of Proposed & Scoped Wind Farms Theoretically Visible
2	Culter Fell	31.2km NNE	28.9km NW	6.1km SW	22km N	13.8km W	-	31.8km S	12.4km SSE	7
6	Pykestone Hill	24.9km NNE	34.7km NW	18.2km SW	23.8km NW	25.9km W	-	-	17.2km SSW	6

VP	Location	Auchencorth Moss (~Dist & Direction)	Black Law Extension (C) (~Dist & Direction)	Clyde Airtricity (~Dist & Direction)	Harrows Law (~Dist & Direction)	Limmer Hill (~Dist & Direction)	Minch Moor (~Dist & Direction)	Minnygap (~Dist & Direction)	Earlshaugh (Scoped) (~Dist & Direction)	Total No. of Proposed & Scoped Wind Farms Theoretically Visible
15	Tinto Hill	33.2km NE	20.1km NNW	8.3km SSE	18.6km NNE	5.7km SW	-	-	21.5km SE	6
16	Trahenna Hill	20km NNE	27.8km NW	17.5km SE	16.6km NW	24km WSW	-	41.5km S	21.3 SSW	7
20	Broadlaw	32.9km NNE	38.6km NW	12.7km W	29.4km NNW	23.2km WNW	22.2km NE	28.9km SSW	9.3km SW	8
21	John Buchan Way	-	-	-	-	-	-	-	22.8km SSW	1
22	White Meldon	13km N	-	27.5km SW	19.2km NW		16.6km SE		-	4
23	A701 Source of the Tweed Car Park	-	-	-	-	-	-	-	2.3km E	1
24	Hods Hill			1.6km N		19.8km NNW		12.3km SSE	3.5km NE	4
26	Minor Road South of Bellscraig	-	-	-	-	16km SW	-	-	-	1
31a	Elsrickle	-	-	18.2km SSW	-	20.1km SW	-	-	-	2
32	Minor Road North of Skirling	-	-	15km SSW	-	18.9km SW	-	-	-	2

7.5.7 Following this analysis and a review of cumulative wire-frame images, 7 viewpoints were chosen in order to represent the likely cumulative visual effects resulting from the interaction of the proposed Glenkerie Wind Farm with other wind farms within the study area. These viewpoints are listed in Table 7.5.6.

Table 7.5.6 Viewpoint Locations for Detailed Cumulative Visual Assessment

VP	Location	Total No. of Operational Wind Farms Theoreticall y Visible	Total No. of Consented Wind Farms Theoreticall y Visible	Total No. of Proposed Wind Farms Theoreticall y Visible	Total No. of Scoped Wind Farms Theoreticall y Visible	Total No. of Wind Farms Theoreticall y Visible
2	Culter Fell	3	3	6	1	13
6	Pykestone Hill	3	3	5	1	12
15	Tinto Hill	3	3	5	1	12
16	Trahenna Hill	3	2	6	1	12
20	Broadlaw	3	3	7	1	14
22	White Meldon	1	0	4	0	5
24	Hods Hill	0	1	3	1	5

7.5.8 The visual and cumulative visual effects of the proposed Glenkerie Wind Farm on sensitive receptors have been identified by a review of wire-frame and photomontage, field survey, and a detailed viewpoint analysis. The results of this assessment are presented in the following sections.

Viewpoint Analysis

7.5.9 As listed in Table 7.5.1 & 7.5.2 above, the following viewpoint locations have been identified as representative locations within the study area, which are offered some degree of visual appreciation of the proposals at distances up to 35km. Visualisations of the proposals within the baseline context, and within the cumulative context, at representative viewpoint locations are depicted on wire frame and photomontage illustrations in Figures 7.25 – 7.47.

VP2 Culter Fell

7.5.10 Receptor Type: **Walkers** Receptor Sensitivity: **Very High**

7.5.11 Baseline View: Refer to Figure 7.25. The field of view illustrated from this viewpoint location extends for 146.5^{o} in an easterly direction. Representative of views available to walkers from the RSA boundary on Culter Fell towards the proposed development site and the NSA beyond. From this location panoramic, distant views are available in all directions over the dramatic large-scale landscape of rounded upland hills and valleys. The horizon is formed by such hills at varying distance. In excellent visibility the existing Bowbeat (~28.7km to the NE), Black Law (~28.6km NW) and Hagshaw (~24.7km W) Wind Farms may be discerned as distant very minor elements of the wider landscape. As a consequence of these existing wind farms, wind turbines are familiar elements within the wider landscape.

7.5.12 Predicted View: Refer to Figure 7.25. The wire-frame, photomontage and ZTV indicate that 10 hubs and 11 blade tips would be visible from this location occupying ~34 ^{o} of the field of view. The distance to the nearest visible turbine is ~3km.

7.5.13 The turbines appear as a linear arrangement, well below the horizon, viewed against the backdrop of moorland hills and forestry. The lower towers of the turbines and the hub of turbine #6 would be screened by intervening landform, with the very tip of this turbine being intermittently visible.

7.5.14 Magnitude Of Change: **Large.** The introduction of the proposed Glenkerie Wind Farm would result in a prominent change in the view. The turbines would form prominent elements within the overall view and may be easily noticed by the observer. However the overall quality or character of the view would not be affected. The large scale of the landscape, and the panoramic distant views of the open and exposed rounded upland hills and valleys would remain the dominant characteristics.

7.5.15 Significance: **Major**

7.5.16 Cumulative Baseline: With reference to Tables 7.5.2 to 7.5.5 the ZTV's indicate that a total of 3 existing, 3 consented, 6 proposed and 1 scoped wind farm developments are theoretically visible from this location.

7.5.17 As noted above, in excellent visibility the existing Bowbeat (~28.7km to the NE), Black Law (~28.6km NW) and Hagshaw (~24.7km W) Wind Farms may be discerned in successive views as distant very minor elements of the wider landscape.

7.5.18 Similarly the ZTV's indicate that the consented Harestanes (~29.4km S), Pates Hill (~29.8km NNW) and Tormywheel (~30.1km NNW) Wind Farms may be visible in succession.

7.5.19 The ZTV's also indicate that the proposed Auchencorth Moss (~31.2km NNE), Black Law Extension (~28.9km NW) Clyde (~6.1km SW), Harrows Law (~22km N), Limmer Hill (~13.8km W), and Minnygap (~31.8km S) may be visible in successive views.

7.5.20 Predicted Cumulative View: Refer to Figure7.25. The wire-frame indicates that the existing Bowbeat proposed Glenkerie (~3km) and scoped Earlshaugh (12.5km) Wind Farms would appear in successive views from northeast to south.

7.5.21 Cumulative Magnitude Of Change: **Large.** Assuming that all existing, consented, proposed and scoped wind farms are constructed, at this location the proposed Glenkerie Wind Farm would form a prominent element of successive cumulative views, and would result in effectively bringing the presence and prominence of wind turbines closer to the receptor. The proposed Glenkerie Wind Farm would result in a significant increase in the proportion of the view over which wind farms are visible. This would result in an apparent, obvious cumulative effect with other wind farms on the nature of views.

7.5.22 Cumulative Significance: **Major**

VP6 Pykestone Hill

7.5.23 Receptor Type: **Walkers** Receptor Sensitivity: **Very High**

7.5.24 Baseline View: Refer to Figure 7.26. The field of view illustrated from this viewpoint location extends for 146.5° in a westerly direction. Representative of views available to walkers from the NSA boundary on Pykestone Hill towards the proposed development site and the RSA beyond. From this location panoramic, distant views are available in all directions over the dramatic large-scale landscape of rounded moorland hills and valleys. The existing Bowbeat Wind Farm (~18.9km to the NE) may be discerned and as a consequence wind turbines are a familiar element within the wider landscape.

7.5.25 Predicted View: Refer to Figure 7.26. The wire-frame, photomontage and ZTV indicate that 11 hubs and 11 blade tips would be visible from this location occupying ~9 ° of the field of view. The distance to the nearest visible turbine is ~8.2km.

7.5.26 The turbines would appear as in full view as a compact, balanced group, with a recognisable pattern and rhythm due to the well-ordered and regular spacing of the layout. The turbines appear contained within the large scale surrounding land, and are seen against the backdrop of the moorland hills.

7.5.27 Magnitude of Change: **Medium.** The introduction of the proposed Glenkerie Wind Farm would result in a noticeable change in the view change in the view but without affecting the overall quality of the view. The turbines would form conspicuous elements within the overall view and may be readily noticed by the observer. However the overall quality or character of the view would not be affected. The large scale of the landscape, and the panoramic distant views of the open and exposed rounded upland hills and valleys would remain the dominant characteristics.

7.5.28 Significance: **Major/Moderate**

7.5.29 Cumulative Baseline: With reference to Tables A7.5.2 to A7.5.5 the ZTV's indicate that a total of 3 existing, 3 consented, 5 proposed and 1 scoped wind farm developments are theoretically visible from this location.

7.5.30 As noted above, the existing Bowbeat Wind Farm (~18.9km) is a discernable feature on the horizon to the northeast.

7.5.31 The ZTV's indicate that the existing Black Law (~34.7km NW) and Hagshaw Hill (~36.3km E) Wind Farms may be may be visible in succession.

7.5.32 The ZTV's indicate that the consented Harestanes (~35.4km SSW), Pates Hill (~32.3km NW) and Tormywheel (~34km NW) Wind Farms may be visible in succession.

7.5.33 The ZTV's also indicate that the proposed Auchencorth Moss (~24.9km NNE), Black Law Extension (~34.7km NW) Clyde (~18.2km SW), Harrows Law (~23.8km NW) and Limmer Hill (~25.9km W) may be visible in successive views.

7.5.34 Predicted Cumulative View: Refer to Figure7.26. The wire-frame indicates that the existing Bowbeat and proposed Auchencorth Wind Farms (~3km) would appear in successive views north-northeast to northeast.

7.5.35 To the south the wire-frame indicates that the consented Harestanes and scoped Earlshaugh Wind Farms may be visible in combination.

7.5.36 In successive views to the southeast, the proposed Clyde and Glenkerie Wind Farms may be seen in combination. The Clyde wind farm would be at some distance behind Glenkerie and would have a much larger horizontal extent, occupying ~ 37^{o} of the field of view. The Glenkerie wind farm would be at closer distance to the viewpoint.

7.5.37 In successive views to the west the Limmer Hill and Hagshaw Hill wind farms are effectively screened by intervening landform.

7.5.38 In successive views to the northwest the existing Black Law, and proposed Black Law extension would be seen in combination together with the consented Tormywheel Pates Hill and proposed Harrows Law. The Black Law developments would appear as one wind farm, and the Tormywheel Pates Hill and Harrows Law would be seen as distinctly separate developments due to the distance between.

7.5.39 Cumulative Magnitude Of Change: **Medium.** Assuming that all existing, consented, proposed and scoped wind farms are constructed, at this location the proposed Glenkerie Wind Farm would form a conspicuous element of successive and combined cumulative views, and would result in effectively bringing the presence and prominence of wind turbines closer to the receptor. The proposed Glenkerie Wind Farm would result in a moderate increase in the proportion of the view over which wind farms are visible. This would result in an apparent, obvious cumulative effect with other wind farms on the nature of views.

7.5.40 Cumulative Significance: **Major/Moderate**

VP9 Stanhope

7.5.41 Receptor Type: **Residential** Receptor Sensitivity: **High**

7.5.42 Baseline View: Refer to Figure 7.27. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a southwesterly direction. Representative of oblique views from Stanhope Cottages.

7.5.43 From this location short distant views are available across the Stanhope Burn and Tweed Valley towards the near distant horizon formed by open moorland of Logan Knowes, Benshaw Hill and Cocklie Rig beyond. The

lower slopes of the nearby Laigh Hill featuring a coniferous shelterbelt to the south, and close distant vegetation frame the view.

7.5.44 Predicted View: Refer to Figure 7.27. The wire-frame, photomontage and ZTV indicate that 8 hubs and 10 blade tips would be visible from this location occupying ~22 ^{o} of the field of view. The distance to the nearest visible turbine is ~2.8km.

7.5.45 The photomontage indicates that 6 hubs and blade tips would be visible above the near distant horizon, viewed against the backdrop of sky. The remaining turbines effectively screened by intervening landform, and the coniferous shelterbelt.

7.5.46 Magnitude of Change: **Large.** The introduction of the proposed Glenkerie Wind Farm would result in a prominent change in the view and would cause a prominent change in the quality and character of the view. The turbines would from prominent elements within the view and may be easily noticed by the receptor.

7.5.47 Significance: **Major / Moderate**

VP10 Polmood House

7.5.48 Receptor Type: **Residential** Receptor Sensitivity: **Low**

7.5.49 Baseline View: Refer to Figure 7.28. Representative of oblique views from Polmood. From this location short distant views are available across the grounds of Polmood House. Views are severely restricted by mature coniferous and deciduous vegetation in close proximity to the house, with short distance views across the tweed valley to the near distant valley side through gaps in the vegetation.

7.5.50 Predicted View: Refer to Figure 7.28. The wire-frame image and ZTV indicate that 5 hubs and 6 blade tips are theoretically visible above the near distant horizon, occupying ~43^{o} of the field of view. The distance to the nearest turbine is ~2.4km.

7.5.51 However, the photomontage image indicates that intervening mature coniferous and deciduous trees and landform effectively screen views of the proposed turbines, and no change to the existing view can be appreciated.

7.5.52 Magnitude of Change: **No Change**

7.5.53 Significance: **NIL**

VP12 Kingledores Farm

7.5.54 Receptor Type: **Residential** Receptor Sensitivity: **High**

7.5.55 Baseline View: Refer to Figure 7.29. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a westerly direction.

Representative of direct and oblique views from a number of properties and curtilage at Kingledores.

7.5.56 Views are restricted to near distance and dominated by the surrounding landform of rounded moorland hills. At lower elevation a prominent line of mature Scots Pine act as a shelterbelt and filters views form near adjacent properties.

7.5.57 Predicted View: Refer to Figure 7.29. The wire-frame, photomontage and ZTV indicate that 7 hubs and 9 blade tips would be visible from this location occupying ~63 ^{o} of the field of view. The distance to the nearest visible turbine is ~1.1km.

7.5.58 The proposed hubs and blade tips would be visible above the near distant horizon, viewed against the backdrop of sky. Two of the turbines would be effectively screened, with only the very tips of the rotor blades intermittently visible above the horizon. The remaining turbines would appear as two groups located either side of Cocklie Rig.

7.5.59 Magnitude of Change: **Very Large.** The introduction of the proposed Glenkerie Wind Farm would result in a dramatic change in the view and would cause a dramatic change in the quality and character of the view. The turbines would appear large scale and would dominate the near distant horizon.

7.5.60 Significance: **Major**

VP14 Patervan Farm

7.5.61 Receptor Type: **Residential** Receptor Sensitivity: **High**

7.5.62 Baseline View: Refer to Figure 7.30. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a westerly direction. Representative of direct views from Patervan Farm.

7.5.63 From this location short distant views are available across the Tweed Valley to the near distant horizon formed by the upland moorland hills. A clear contrast exists between the steep sided, rounded, open moorland hills forming the horizon and the well defined and ordered gentler lower slopes and valley floor landscape, with medium sized fields defined by drystone walls and post and wire fences. Mixed woodland follows the course of the Tweed. To the foreground a number of telegraph poles and overhead electricity lines detract form the view.

7.5.64 Predicted View: Refer to Figure 7.30. The wire-frame, photomontage and ZTV indicate that 5 hubs and 10 blade tips would be visible seen against the backdrop of sky from this location occupying ~41 ^{o} of the field of view. The distance to the nearest visible turbine is ~1.7km.

7.5.65 The intervening landform would effectively screen the turbine towers with the exception of turbine #1, 6 & 9 where the upper towers, hubs and rotor blades would be visible above the near distant horizon.

7.5.66 Magnitude of Change: **Large.** The introduction of the proposed Glenkerie Wind Farm would result in a prominent change in the view, and cause a prominent change in the quality and character of the view. The turbines would form prominent elements above the near distant horizon that may be easily noticed by the receptor.

7.5.67 Significance: **Major/Moderate**

VP15 Tinto Hill

7.5.68 Receptor Type: **Scenic Viewpoint/Walkers**
Receptor Sensitivity: **High**

7.5.69 Baseline View: Refer to Figure 7.31. The field of view illustrated from this viewpoint location extends for 146.5° in an easterly direction. Representative of uninterrupted panoramic views available from an elevated scenic viewpoint within the RSA towards the proposed development site.

7.5.70 From this location, extensive distant views are available to the northwest across the Clyde Valley towards Glasgow and surrounding conurbations. To the north, views are available across the undulating land of the Plateau Farmlands to the Plateau Moorlands. ~19.5km to the north, the existing turbines of Black Law Wind Farm are visible against the backcloth of the land. To the northeast, extensive distant views are available to the Pentland Hills. To the east and southeast extensive views are available over the rolling hills of the Scottish Borders. To the west, the existing turbines of Hagshaw Hill Wind Farm are visible against the backcloth of land at ~14.3km distance. As a consequence of these existing wind farms, wind turbines are familiar elements within the wider landscape.

7.5.71 Predicted View: Refer to Figure 7.31. The wireframe image and ZTV indicate that 1 hubs and 3 blade tips would be visible occupying ~3 ° of the field of view. The distance to the nearest visible turbine is ~14.4km.

7.5.72 The photomontage image indicates that the turbines would be barely discernable to the distant east, with blade tips intermittently overtipping an intervening ridgeline, and viewed against the backcloth of moorland hills and forestry.

7.5.73 Magnitude of Change: **Very Small.**The introduction of the proposed Glenkerie Wind Farm would result in a barely perceptible change in the view without affecting the overall quality and character of the view. The turbines would form an inconspicuous minor element of the wider large-scale landscape and may be easily missed by the observer or receptor.

7.5.74 Significance: **Minor**

7.5.75 Cumulative Baseline: With reference to Tables A7.5.2 to A7.5.5 the ZTV's indicate that a total of 3 existing, 3 consented, 5 proposed and 1 scoped wind farm developments are theoretically visible from this location.

7.5.76 As noted above, the existing Black Law (~19.5km N) and Hagshaw Hill (~14.3km W) are discernable features. The ZTV's indicate that the existing Bowbeat (~35.1km) may be may be visible to the distant northeast.

7.5.77 The ZTV's indicate that the consented Harestanes (~34.8km S), Pates Hill (~24.3km NNE) and Tormywheel (~23km N) Wind Farms may be visible in succession.

7.5.78 The ZTV's also indicate that the proposed Auchencorth Moss (~33.2km NE), Black Law Extension (~20.1km NNW), Clyde (~8.3km SSE), Harrows Law (~18.6km NNE) and Limmer Hill (~5.7km SW) may be visible in successive views.

7.5.79 Predicted Cumulative View: Refer to Figure7.31. The wire-frame indicates that the proposed Auchencorth and existing Bowbeat Wind Farms would appear in combination to the northeast. However they would appear as two separate developments due to the distance between.

7.5.80 The proposed Glenkerie Wind Farm would appear in successive views to the southeast.

7.5.81 In successive views further south the Scoped Earlshaugh and the proposed Clyde Wind farms may be visible in combination and may be perceived to be part of the same development due to the extensive horizontal spread and number of turbines proposed. The proposed Clyde Wind Farm would also serve to bring the presence and prominence of wind turbines closer to the receptor.

7.5.82 Cumulative Magnitude Of Change: **Very Small.** Assuming that all existing, consented, proposed and scoped wind farms are constructed, at this location the proposed Glenkerie Wind Farm would form an inconspicuous element of successive cumulative views. The proposed Glenkerie Wind Farm would have little effect in the proportion of the view over which wind farms are visible. This would result in little cumulative effect with other wind farms on the nature of views.

7.5.83 Cumulative Significance: **Minor**

VP16 Trahenna Hill

7.5.84 Receptor Type: **Walkers.** Receptor Sensitivity: **Very High**

7.5.85 Baseline View: Refer to Figure 7.32. The field of view illustrated from this viewpoint location extends for 146.5^{o} in a southwesterly direction. Representative of direct uninterrupted views from Trahenna Hill within the NSA, towards the proposed development site and the RSA beyond.

7.5.86 From this location distant, panoramic views are available across the surrounding large-scale landscape of rolling upland hills and valleys within the Scottish Borders to the south, across middle distant hills to the Clyde Valley beyond in the west, to the distant Pentland hills to the north and the Moorfoot Hills to the northeast. In views to the northeast the existing

Bowbeat Wind Farm (~17.3km) is a visible feature of the horizon, with turbines visible along the ridgeline seen against the backdrop of sky and of the moorland hills. In excellent visibility the existing Black Law (~28.6km NW) and Hagshaw (~33.2km WNW) Wind Farms may be discerned as distant very minor elements of the wider landscape. As a consequence of these existing wind farms, wind turbines are familiar elements within the wider landscape.

7.5.87 To the southwest, views across the lowland landscape at the confluence of Biggar Water, Holms Water and the Tweed. With views available along the Tweed and Holm Water Valleys featuring a well ordered landscape of pastoral fields and woodland blocks in contrast to the open rolling upland hills beyond.

7.5.88 Predicted View: Refer to Figure 7.32. The wireframe image and ZTV indicate that 9 hubs and 1 blade tips would be visible occupying ~5 ^{o} of the field of view. The distance to the nearest visible turbine is ~14.4km.

7.5.89 The photomontage indicates that the turbines would appear as a small compact cluster behind and partially screened by intervening landform, and seen predominantly against the backdrop of the surrounding landform.

7.5.90 Magnitude of Change: **Small**. The introduction of the proposed Glenkerie Wind Farm would result in a perceptible change in the view, without affecting the overall quality and character of the view. The turbines would form an apparent small element of the wider landscape that may be missed by the casual observer or receptor.

7.5.91 Significance: **Moderate**

7.5.92 Cumulative Baseline: With reference to Tables A7.5.2 to A7.5.5 the ZTV's indicate that a total of 3 existing, 2 consented, 6 proposed and 1 scoped wind farm developments are theoretically visible from this location.

7.5.93 As noted above, in views to the northeast the existing Bowbeat Wind Farm (~17.3km) is a visible feature. In successive views the existing Black Law (~28.6km NW) and Hagshaw (~33.2km WNW) Wind Farms may also be discerned as distant very minor elements of the wider landscape.

7.5.94 The ZTV's indicate that the consented Harestanes (~39.5km SSW), and Tormywheel (~27km NW) Wind Farms may be visible in succession.

7.5.95 The ZTV's also indicate that the proposed Auchencorth Moss (~20km NNE), Black Law Extension (~27.8km NW), Clyde (~17.5km SE), Harrows Law (~16.6km NW), Limmer Hill (~24km WSW), and Minnygap (41.5km) may be visible in successive views.

7.5.96 Predicted Cumulative View: Refer to Figure7.32. The wire-frame indicates that the scoped Earlshaugh and consented Harestanes Wind Farms would appear in combination, however Harestanes would effectively be indiscernible.

7.5.97 In short successive views to the southwest the proposed Glenkerie Wind Farm would appear in combination but to the fore of the proposed Clyde Wind Farm. The Clyde Wind Farm would be at some distance behind Glenkerie and would have a much larger horizontal extent, occupying ~ 29° of the field of view.

7.5.98 In successive views further west the proposed Limmer Hill and existing Hagshaw Hill Wind Farms would be visible in combination. The Limmer Hill wind farm would be to the fore at closer distance to the viewpoint and would occupy a much larger horizontal extent than Hagshaw Hill.

7.5.99 Cumulative Magnitude Of Change: **Small.** Assuming that all existing, consented, proposed and scoped wind farms are constructed, at this location the proposed Glenkerie Wind Farm would form a minor element of successive and combined cumulative views, and would result in effectively bringing the presence and prominence of wind turbines closer to the receptor. The proposed Glenkerie Wind Farm would result in a slight increase in the proportion of the view over which wind farms are visible. This would result in a minor cumulative effect with other wind farms on the nature of views.

7.5.100 Cumulative Significance: **Moderate**

VP17 Glencotho

7.5.101 Receptor Type: **Residential, Access Road users**
Receptor Sensitivity: **Medium**

7.5.102 Baseline View: Refer to Figure 7.33. The field of view illustrated from this viewpoint location extends for 73.26° in a southerly direction. Representative of oblique obscured views from Glencotho, and direct views to users of the minor track leading to the property.

7.5.103 From this location views are focussed along the Holms Water Valley to the north and southwest. Short distant views to the southeast are available to the near distant horizon dominated by a mature coniferous shelterbelt descending the lower slopes of Barrow Rig, which form a strong vertical element. Short distant views along Willow Wand Burn to Benshaw Hill in which forms the horizon beyond together with Middle Head in the east.

7.5.104 Predicted View: Refer to Figure 7.33. The wireframe image and ZTV indicate that 3 hubs and 3 blade tips would be visible occupying ~26 ° of the field of view, with turbine towers, hubs and rotor blades visible above the near distant horizon seen against the backdrop of the sky. The distance to the nearest visible turbine is ~1.2km.

7.5.105 The photomontage image indicates that turbine #7 would be effectively screened by the intervening coniferous shelterbelt, and that the tower of turbine #8 would be effectively screened by this shelterbelt also, with only the hub and rotor blades visible above. Turbine #10 would be in full view except for the lower tower, which is screened by intervening landform. The remainder of the proposed Glenkerie Wind Farm is effectively screened by the intervening landform.

7.5.106 Magnitude of Change: **Large.** The introduction of the proposed Glenkerie Wind Farm would result in prominent change in the existing view and would cause a prominent change in the character of the view. The turbines would form prominent elements of the near distant horizon and may be easily seen by the observer or receptor.

7.5.107 Significance: **Moderate**

VP18 Hopecarton

7.5.108 Receptor Type: **Residential** Receptor Sensitivity: **Medium**

7.5.109 Baseline View: Refer to Figure 7.34. The field of view illustrated from this viewpoint location extends for 73.26° in a southwesterly direction. Representative of oblique views from Hopecarton, which is only occasionally occupied.

7.5.110 From this location middle distant views are available along the Tweed Valley, with views dominated by the rounded landform forming the valleys sides, including Worm Hill to the fore. The lower lying valley floor features pastoral fields defined by poorly maintained drystone walls and post and wire fences. The course of the River Tweed appears well wooded with deciduous vegetation.

7.5.111 Predicted View: Refer to Figure 7.34. The wireframe image and ZTV indicate that 5 hubs and 10 blade tips would be visible occupying ~9° of the field of view. The distance to the nearest visible turbine is ~3.8km.

7.5.112 The photomontage indicates that the hubs, rotor blades and upper towers of two of the turbines would be visible above the horizon. The blade tips of a further 6 turbines may also be discerned, intermittently breaking the horizon. The remainder of the turbines would be effectively screened by intervening landform. The turbines would appear as a small group, contained by and beyond the adjacent landform.

7.5.113 Magnitude of Change: **Medium.** The introduction of the proposed Glenkerie Wind Farm would result in a noticeable change in the existing view and would cause a noticeable change in the character and quality of the view. The turbines would form conspicuous elements within the overall view and may be readily noticed by the observer or receptor.

7.5.114 Significance: **Moderate/Minor**

VP20 Broadlaw

7.5.115 Receptor Type: **Walkers** Receptor Sensitivity: **Very High**

7.5.116 Baseline View: Refer to Figure 7.35. The field of view illustrated from this viewpoint location extends for 146.5° in a northwesterly direction.

7.5.117 Representative of views available to walkers from within the AGLV towards the proposed development site, with the RSA beyond and to the east and the NSA to the north.

7.5.118 From this location panoramic, distant views are available to the north and east over the dramatic large-scale landscape of rounded moorland hills and valleys. To the northeast, distant views may be gained across and beyond the proposed development site and surrounding hills to the Clyde Valley. In excellent visibility the existing Black Law (~38.2km) and Hagshaw Hill (~33.2km) are a barely discernable feature of distant views.

7.5.119 Immediately to the north (though not illustrated), the near distant transmitter station is a distinctive and detracting feature of views. Beyond this, distant views to the Moorfoot Hills reveal the presence of the existing Bowbeat Wind Farm (~26.8km), with the turbines visible above the distant horizon and against the backdrop of the moorland hills. As a consequence of these existing wind farms, wind turbines are familiar elements within the wider landscape.

7.5.120 Predicted View: Refer to Figure 7.35. The wireframe image and ZTV indicate that 11 hubs and 1 blade tips would be visible occupying ~17^{o} of the field of view. The distance to the nearest visible turbine is ~7km.

7.5.121 The photomontage indicates that all turbines would be in full view in downward facing views. The turbines would appear as in full view as a compact, balanced group, with a recognisable pattern and rhythm due to the well-ordered and regular spacing of the layout. The turbines appear contained within the large scale surrounding landform, and are seen against the backdrop of the moorland hills.

7.5.122 Magnitude Of Change: **Medium.** The introduction of the proposed Glenkerie Wind Farm would result in a noticeable change in the view change in the view but without affecting the overall quality of the view. The turbines would form conspicuous elements within the overall view and may be readily noticed by the observer. However the overall quality or character of the view would not be affected. The large scale of the landscape, and the panoramic distant views of the open and exposed rounded upland hills and valleys would remain the dominant characteristics.

7.5.123 Significance: **Major/Moderate**

7.5.124 Cumulative Baseline: With reference to Tables A7.5.2 to A7.5.5 the ZTV's indicate that a total of 3 existing, 3 consented, 7 proposed and 1 scoped wind farm developments are theoretically visible from this location.

7.5.125 As noted above, in excellent visibility the existing Black Law (~38.2km) and Hagshaw Hill (~33.2km) Wind Farms are a barely discernable feature of distant views to the northwest. The existing Bowbeat Wind Farm (~26.8km) is visible above the distant horizon and against the backdrop of the moorland hills to the north.

7.5.126 The ZTV's indicate that the consented Harestanes (~27.4km SSW), Pates Hill (~37.9km NNW) and Tormywheel (~38.9km NNW) Wind Farms may be visible in succession.

7.5.127 The ZTV's also indicate that the proposed Auchencorth Moss (~32.9km NNE), Black Law Extension (~38.6km NW), Clyde (~12.7km W), Harrows Law (~29.4km NNW), Limmer Hill (~23.2km WNW), Minch Moor (~22.2km NE) and Minnygap (28.9km SSW) may be visible in successive views.

7.5.128 Predicted Cumulative View: Refer to Figure7.35. The wire-frame indicates that the proposed Clyde Wind Farm would cover an extensive area of the hills to the west, occupying ~53° of the field of view.

7.5.129 In successive views northwest, the proposed Limmer Hill and existing Hagshaw Hill Wind Farms would appear in combination, with the Limmer Hill turbines to the fore.

7.5.130 In successive views further to the northwest the proposed Glenkerie and existing and proposed Black Law Wind Farms would appear in combination. However the Glenkerie Wind Farm would be at much closer distance, and the Black Law turbines would be a barely discernable feature in the distance.

7.5.131 In successive views further to the northwest the consented Tormywheel, Pates Hill and existing Harrows Law Wind Farms would appear in combination. However Tormywheel and Pates Hill would be barely discernable, and all 3 would appear as separate developments.

7.5.132 Cumulative Magnitude Of Change: **Medium.** Assuming that all existing, consented, proposed and scoped wind farms are constructed, at this location the proposed Glenkerie Wind Farm would form a conspicuous element of successive and combined cumulative views, and would result in effectively bringing the presence and prominence of wind turbines closer to the receptor. The proposed Glenkerie Wind Farm would result in a moderate increase in the proportion of the view over which wind farms are visible. This would result in an apparent, obvious cumulative effect with other wind farms on the nature of views.

7.5.133 Cumulative Significance: **Major/Moderate**

VP21 John Buchan Way

7.5.134 Receptor Type: **Walkers** Receptor Sensitivity: **High**

7.5.135 Baseline View: Refer to Figure 7.36. The field of view illustrated from this viewpoint location extends for 73.26° in a southerly direction.

7.5.136 Representative of oblique views available to walkers on a short section of the John Buchan Way. From this location view are focused along the steep sided valley of Hollows Burn. The horizon is formed by the near distant hills and recedes along the valley formed by interlocking spurs. Views are limited in all directions by the surrounding landform.

7.5.137 Predicted View: Refer to Figure 7.36. The wireframe image and ZTV indicate that 5 hubs and9 blade tips would be visible occupying ~4° of the field of view. The distance to the nearest visible turbine is ~10.6km.

7.5.138 The photomontage image indicates that the turbines would be appear as a small, compact well spaced feature of the distant horizon, with the hubs and rotor blades (intermittently) visible against the back drop of the sky.

7.5.139 Magnitude Of Change: **Small.** The introduction of the proposed Glenkerie Wind Farm would result in a perceptible change in the view, without affecting the overall quality and character of the view. The turbines would form an apparent small element of the wider landscape that may be missed by the casual observer or receptor. The surrounding large-scale landform and open moorland hills would remain the dominant feature of views.

7.5.140 Significance: **Moderate/Minor**

VP22 White Meldon

7.5.141 Receptor Type: **Walkers/Hilltop Fort** Receptor Sensitivity: **Very High**

7.5.142 Baseline View: Refer to Figure 7.37. The field of view illustrated from this viewpoint location extends for 146.5^{o} in a southwesterly direction.

7.5.143 Representative of direct uninterrupted views from White Meldon Trig Point and Hill Top Fort, across the NSA towards the proposed development site, with the RSA beyond. From this location panoramic, distant views are available in all directions over the dramatic large-scale landscape of rounded moorland hills and valleys.

7.5.144 At lower elevations to the northwest, the hills are clothed with large tracts of coniferous forestry. To the northeast (though not illustrated), the existing Bowbeat Wind Farm (~7.4km) is visible above and along the horizon, with turbines seen against the backdrop of the sky. As a consequence wind turbines are familiar elements within the local landscape. Also to the northeast and east as number of telecommunications masts are visible features.

7.5.145 Predicted View: Refer to Figure 7.37. The wireframe image and ZTV indicate that 7 hubs and 10 blade tips would be visible occupying ~2^{o} of the field of view. The distance to the nearest visible turbine is ~18.6km.

7.5.146 The turbines would appear as a barely discernable, small, tight and compact cluster contained within the large scale surrounding landform, and seen against the backdrop of moorland hills.

7.5.147 Magnitude Of Change: **Very Small.** The introduction of the proposed Glenkerie Wind Farm would result in a barely perceptible change in the view without affecting the overall quality and character of the view. The turbines would form an inconspicuous minor element of the wider large-scale landscape and may be easily missed by the observer or receptor. The large scale of the landscape, and the panoramic distant views of the open and exposed rounded upland hills and valleys would remain the dominant characteristics.

7.5.148 Significance: **Moderate / Minor**

7.5.149 Cumulative Baseline: With reference to Tables A7.5.2 to A7.5.5 the ZTV's indicate that a total of 2 existing and 4 proposed wind farm developments are theoretically visible from this location.

7.5.150 As noted above, in views to the northeast the existing Bowbeat Wind Farm (~7.4km) is a visible feature. The ZTV's indicate that the existing Hagshaw Hill Wind Farm (~28.4km WSW) would be visible form this location.

7.5.151 The ZTV's indicate that the proposed Auchencorth Moss (~13km N), Clyde (~27.5km SW), Harrows Law (~19.2km NW), and Minch Moor (16.6km SE) may be visible in successive views.

7.5.152 Predicted Cumulative View: Refer to Figure7.37. The wire-frame indicates that the proposed Glenkerie and proposed Clyde Wind Farms would be visible in combination. Glenkerie would be to the fore, and Clyde would occupy a much larger extent of the field of view occupying ~22^{o}

7.5.153 Cumulative Magnitude Of Change: **Very Small.** Assuming that all existing, consented, proposed and scoped wind farms are constructed, at this location the proposed Glenkerie Wind Farm would form an inconspicuous element of successive and combined cumulative views. The proposed Glenkerie Wind Farm would have little effect in the proportion of the view over which wind farms are visible. This would result in little cumulative effect with other wind farms on the nature of views.

7.5.154 Cumulative Significance: **Moderate / Minor**

VP23 A701 Source of the Tweed Car Park

7.5.155 Receptor Type: **Tourist, Road Users**
Receptor Sensitivity: **Medium**

7.5.156 Baseline View: Refer to Figure 7.38. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a southerly direction.

7.5.157 Representative of direct, brief, transient views available to road users on the A70-2 travelling north, and for visitors to the site of the Source of the Tweed.

7.5.158 Views are aligned along the road and the tweed valley and dominated by the interlocking spurs forming the valley sides. To the foreground the views are interrupted by the presence of a line of telegraph poles crossing the view. An isolated property is located in the valley below. A combination of moorland grassees and extensive tracts of coniferous forestry clothe the valley sides.

7.5.159 Predicted View: Refer to Figure 7.38. The wireframe image and ZTV indicate that 8 hubs and 9 blade tips would be visible occupying ~4^{o} of the field of view. The distance to the nearest visible turbine is ~13km.

7.5.160 The turbines would appear as a small compact cluster above the distant horizon, and may be partially obscured by intervening coniferous forestry on the valley sides. For road users views of the turbines would be brief and would quickly change to oblique and the out of view as the direction of travel and elevation of the road changes, and intervening topography and vegetation screen views.

7.5.161 Magnitude Of Change: **Small**. The introduction of the proposed Glenkerie Wind Farm would result in a perceptible change in the view, without affecting the overall quality and character of the view. The turbines would form an apparent small element of the wider landscape that may be missed by the casual observer or receptor.

7.5.162 Significance: **Minor**

VP24 Hods Hill

7.5.163 Receptor Type: Southern Upland Way. **Walkers** Receptor Sensitivity: **High**

7.5.164 Baseline View: Refer to Figure 7.39. The field of view illustrated from this viewpoint location extends for 146.5° in a southwesterly direction.

7.5.165 Representative of views available to walkers on a short section of the Southern Upland Way, looking across the RSA to the proposed development site with the NSA beyond. From this location panoramic, distant views are available in all directions over the dramatic large-scale landscape of rounded hills and valleys. The outlook is of a landscape comprised of a simple combination of open moorland hills and hills clothed with extensive tracts of coniferous forestry. To the near distant north, a meteorological mast is a visible feature. At lower elevations a line of pylons and electricity transmission lines may be seen against the backdrop of the hills.

7.5.166 To the northwest and west a number of telecommunications towers are located on hilltops. At lower elevation to the southwest, the Daer Reservoir is a notable feature.

7.5.167 Predicted View: Refer to Figure 7.39. The wireframe image and ZTV indicate that 11 hubs and 11 blade tips would be visible occupying ~3° of the field of view. The distance to the nearest visible turbine is ~19.3km.

7.5.168 From this location the turbines would appear as a distant small compact cluster seen against a combination of the backdrop of hills and sky.

7.5.169 Magnitude Of Change: **Very Small.** The introduction of the proposed Glenkerie Wind Farm would result in a barely perceptible change in the view without affecting the overall quality and character of the view. The turbines would form an inconspicuous minor element of the wider large-scale landscape and may be easily missed by the observer or receptor.

7.5.170 Significance: **Minor**

7.5.171 Cumulative Baseline: With reference to Tables A7.5.2 to A7.5.5 the ZTV's indicate that a total of 1 consented, 3 proposed and 1 scoped wind farm developments are theoretically visible from this location.

7.5.172 The ZTV's indicate that the consented Harestanes (~9.5km) would be visible to the south.

7.5.173 The ZTV's also indicate that the proposed Clyde (~1.6km N), Limmer Hill (~19.8km NNW) Wind Farms would appear in combination and the proposed Minnygap Wind Farm (~12.3km SSE) may be visible in successive views.

7.5.174 Predicted Cumulative View: Refer to Figure7.39. The wire-frame indicates that views to the north would be dominated by the presence of the extensive Clyde Wind Farm occupying ~82^{o} of the field of view. The turbines would be at close distance to the viewpoint and they would extend far into the distance. The proposed Glenkerie Wind Farm would appear in combination, and beyond the Clyde turbines, but at much greater distance and occupying a very small proportion of the field of view. In successive views to the northeast the scoped Earlshaugh turbines would be visible, in full view occupying ~ 15^{o} of the field of view.

7.5.175 Cumulative Magnitude Of Change: **Very Small.** Assuming that all existing, consented, proposed and scoped wind farms are constructed, at this location the proposed Glenkerie Wind Farm would form an inconspicuous element of successive cumulative views. The proposed Glenkerie Wind Farm would have little effect in the proportion of the view over which wind farms are visible. This would result in little cumulative effect with other wind farms on the nature of views. The scoped Earlshaugh, and to a greater extent the proposed Clyde Wind Farms, would dominate cumulative views and give rise to significant cumulative effects.

7.5.176 Cumulative Significance: **Minor**

VP26 Minor Road South of Bellscraig

7.5.177 Receptor Type: **Road Users** Receptor Sensitivity: **Low**

7.5.178 Baseline View: Refer to Figure 7.40. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a southerly direction.

7.5.179 Representative of oblique, transient views available to road users travelling south. From this location open views are available to a near distant horizon across undulating medium to large sized pastoral fields defined by post and wire fences. The outlook features occasional small mixed shelterbelts and woodland blocks, and small coniferous plantations. Beyond the near horizon, views may be afforded to a distant horizon formed by rounded hills in the vicinity of the proposed site.

7.5.180 Predicted View: Refer to Figure 7.40. The wireframe image and ZTV indicate that 4 hubs and 6 blade tips would be visible occupying ~4 ^{o} of the field of view. The distance to the nearest visible turbine is ~14.7km.

7.5.181 The hubs and rotor blades of 4 of the turbines would be the only feature of the development discerned, and due to the transient nature of the views would be brief.

7.5.182 Magnitude Of Change: **Very Small**. The introduction of the proposed Glenkerie Wind Farm would result in a barely perceptible change in the view without affecting the overall quality and character of the view. The turbines would form an inconspicuous minor element of the wider large-scale landscape and may be easily missed by the observer or receptor.

7.5.183 Significance: **Negligible**

VP27 A701 Near Worm Hill

7.5.184 Receptor Type: **Road Users, Scenic Route** Receptor Sensitivity: **Medium**

7.5.185 Baseline View: Refer to Figure 7.41. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a southerly direction.

7.5.186 Representative of views available to road users on the A701 travelling south. From this location views are directed along the road and the valley of the Tweed and the landscape is enclosed by the steep sided hills forming the valley sides. The spur of Benshaw hill dominates the middle distance and restricts views south.

7.5.187 Predicted View: Refer to Figure 7.41. The wireframe image and ZTV indicate that 0 hubs and 3 blade tips would be visible occupying ~13^{o} of the field of view. The distance to the nearest visible turbine is ~2.5km.

7.5.188 The images indicate that only the very tips of 3 rotor blades would be visible, intermittently breaking the middle distant horizon. The remainder of the development would be effectively screened by intervening landform.

7.5.189 Magnitude Of Change: **Very Small.** The introduction of the proposed Glenkerie Wind Farm would result in a barely perceptible change in the view without affecting the overall quality and character of the view. The turbines would form an inconspicuous minor element of the wider large-scale landscape and due to the transient, oblique and brief duration of available views the turbines may be easily missed by the observer or receptor.

7.5.190 Significance: **Minor / Negligible**

VP28 Talla Reservoir

7.5.191 Receptor Type: **Road Users, Recreational**
Receptor Sensitivity: **Low**

7.5.192 Baseline View: Refer to Figure 7.42. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a northerly direction.

Representative of oblique, transient views available to road users passing Talla reservoir, and recreational users (fishing) of the reservoir.

7.5.193 From this location views are focussed to the north along the narrow Talla water valley and across the Tweed valley to Nether Oliver Dod seen above the intervening coniferous trees. The steep sides of Talla valley are formed by Quarter Hill to the southwest and Cockiland Hill to the northeast, and are clothed in coniferous woodland. The whitewashed Victoria Lodge is a prominent feature of the foreground.

7.5.194 Predicted View: Refer to Figure 7.42. The wire-frame image and ZTV indicate that the very tip of 1 rotor tip is theoretically visible intermittently breaking the horizon, occupying less than ~1^{o} of the field of view. The distance to this turbine is 5km.

7.5.195 The wire-frame and photomontage suggest the all turbines would be effectively screened by intervening landform, except for the very tip of one rotor blade. This blade tip would be intermittently visible breaking the distant horizon, however due to the oblique and transient nature of views and the very tiny amount of blade tip theoretically visible no change to the existing view would be appreciated for the majority of observers or receptors.

7.5.196 Magnitude Of Change: **No Change**

7.5.197 Significance: **Nil**

VP29 Minor Road in NSA near Dreva and Quarry Hill

7.5.198 Receptor Type: **Road Users** Receptor Sensitivity: **Medium**

7.5.199 Baseline View: Refer to Figure 7.43. The field of view illustrated from this viewpoint location extends for 73.26^{o} in a southwesterly direction.

7.5.200 Representative of oblique, transient views available to road users within the NSA, travelling west along the minor road located to the northern side of the River Tweed Valley. From this location distant views may be afforded along the Tweed Valley. Medium to large sized pastoral fields gently slope to the flat valley floor. The fields are defined by drystone walls, and by post and wire fences and hedgerows with occasional hedgerow trees on the valley floor. The River Tweed meanders along the valley floor and is occasionally flanked by deciduous woodland. The well ordered lower valley sides and floor contrast with the steep upper valley sides formed by the hills, which form the horizon.

7.5.201 Predicted View: Refer to Figure 7.43. The wireframe image and ZTV indicate that 1 hubs and 6 blade tips would be visible occupying ~1 ^{o} of the field of view. The distance to the nearest visible turbine is ~8.8km.

7.5.202 The turbines would appear as a very small, compact feature above the horizon, and is contained by the landform. The majority of the development is effectively screened by intervening landform.

7.5.203 Magnitude Of Change: **Very Small.** The introduction of the proposed Glenkerie Wind Farm would result in a barely perceptible change in the view without affecting the overall quality and character of the view. The turbines would form an inconspicuous minor element of the wider large-scale landscape and due to the transient, oblique and brief duration of available views the turbines may be easily missed by the observer or receptor.

7.5.204 Significance: **Minor / Negligible**

VP29a 1 & 2 Dreva Cottages

7.5.205 Receptor Type: **Residential** Receptor Sensitivity: **High**

7.5.206 Baseline View: Refer to Figure 7.44. The field of view illustrated from this viewpoint location extends for 73.26° in a southwesterly direction.

7.5.207 Representative of oblique, transient views available to road users within the NSA, travelling west along the minor road located to the northern side of the River Tweed Valley, and also oblique views from the front aspect of Dreva Cottages. From this location distant views may be afforded along the Tweed Valley. Medium to large sized pastoral fields gently slope to the flat valley floor. The fields are defined by drystone walls, and by post and wire fences and hedgerows with occasional hedgerow trees on the valley floor. The River Tweed meanders along the valley floor and is occasionally flanked by deciduous woodland. The well ordered lower valley sides and floor contrast with the steep upper valley sides formed by the hills, which form the horizon.

7.5.208 Predicted View: Refer to Figure 7.44. The wireframe image and ZTV indicate that 2 hubs and 5 blade tips would be visible occupying ~1 ° of the field of view. The distance to the nearest visible turbine is ~8.5km.

7.5.209 The turbines would appear as a very small, compact feature above the horizon, and is contained by the landform. The majority of the development is effectively screened by intervening landform.

7.5.210 Magnitude Of Change: **Very Small.** The introduction of the proposed Glenkerie Wind Farm would result in a barely perceptible change in the view without affecting the overall quality and character of the view. The turbines would form an inconspicuous minor element of the wider large-scale landscape and may be easily missed by the observer or receptor.

7.5.211 Significance: **Minor**

VP30 B7016 West of Broughton

7.5.212 Receptor Type: **Road Users** Receptor Sensitivity: **Low**

7.5.213 Baseline View: Refer to Figure 7.45. The field of view illustrated from this viewpoint location extends for 73.26° in a southerly direction. Representative of oblique, transient views available to road users on the B7016.

7.5.214 From this location distant views are available across the gently undulating lowland landscape of the Biggar Water Valley to the distant rounded upland hills that form the horizon and dominate views to the south.

7.5.215 Predicted View: Refer to Figure 7.45. The wire-frame image and ZTV indicate that 1 blade tip is theoretically visible intermittently breaking the distant horizon, occupying less than ~1° of the field of view. The distance to this turbine is ~7.8km.

7.5.216 The wire-frame and photomontage suggest the all turbines would be effectively screened by intervening landform, except for the very tip of one rotor blade. This blade tip would be intermittently visible breaking the distant horizon, however due to the oblique and transient nature of views this would be difficult to discern unless actively searched for, and therefore no change to the existing view would be appreciated for the majority of observers or receptors.

7.5.217 Magnitude Of Change: **No Change**

7.5.218 Significance: **Nil**

VP31a Elsrickle

7.5.219 Receptor Type: **Residential / Road Users**
Receptor Sensitivity: **Medium**

7.5.220 Baseline View: Refer to Figure 7.46. The field of view illustrated from this viewpoint location extends for 146.5° in a southerly direction. Representative of direct and oblique views available to a small number of residential properties in the village of Elsrickle. Also representative of oblique views available to road users travelling southwest, approaching Elsrickle.

7.5.221 From this location views are available to a near distant horizon across undulating medium to small sized pastoral fields. Hedgerows and post and wire fences define the fields. Shelterbelts of trees also defined some field boundaries, and small coniferous woodland blocks are a feature of lower lying land and lower slopes. To the northeast, a number of telecommunications masts are a detracting feature of the near distant hilltop. Beyond the near horizon, views may be afforded to a distant horizon formed by rounded hills in the vicinity of the proposed site.

7.5.222 Predicted View: Refer to Figure 7.46. The wireframe and ZTV indicate that 5 hubs and 7 blade tips would be visible above the distant horizon, occupying ~6° of the field of view. The distance to the nearest visible turbine is ~14.8km.

7.5.223 When visible in good climatic conditions, the hubs and blade tips indicated would appear as a compact, balanced grouping on the distant horizon, contained by and in scale with the surrounding landform. The remaining turbines would be effectively screened by intervening landform.

7.5.224 Magnitude Of Change: **Small**. The proposed turbines would result in a perceptible change in the view, without affecting the overall quality and character of the view. The turbines would form an apparent small element of the wider landscape and may be missed by the casual observer or receptor.

7.5.225 Significance: **Minor**

VP32 Minor Road North of Skirling

7.5.226 Receptor Type: **Road Users/Residential**
Receptor Sensitivity: **Low**

7.5.227 Baseline View: Refer to Figure 7.47. The field of view illustrated from this viewpoint location extends for 73.26° in a southerly direction. Representative of direct to slight oblique views available to road users and some residential properties within the village of Elsrickle. Form this location views are severely limited due to the surrounding close distance landform and mature coniferous and deciduous vegetation. Occasional glimpsed distant views may be afforded above the rooftops, and vegetation to distant hills.

7.5.228 Predicted View: Refer to Figure 7.47. The wire-frame image and ZTV indicate that 4 hubs and 5 blade tips are theoretically visible above the distant horizon, occupying ~4° of the field of view. The distance to the nearest turbine is ~10.5km.

7.5.229 However, the photomontage image indicates that intervening mature coniferous and deciduous trees effectively screen views of the proposed turbines, and no change to the existing view can be appreciated.

7.5.230 Magnitude Of Change: **No Change.**

7.5.231 Significance: **Nil**

Table 7.5.7 Summary of Viewpoint Analysis

VP No	Location	Easting	Northing	Visual Receptor Type/s	Receptor Sensitivity	~ Distance to Nearest Turbine (km)	Aspect of View	No. of Hubs (H) & Blade Tips (T) Theoretically Visible	~Field of View Turbines Occupy	Magnitude of Effect	Significance
2	Culter Fell	305323	629071	Walkers	Very High	3.0km	Direct/Uninterrupted	10H 11T	34^{O}	Large	Major
6	Pykestone Hill	317300	631260	Walkers	Very High	8.2km	Direct/Uninterrupted	11H 11T	9^{O}	Medium	Major/Moderate
9	Stanhope	312066	629708	Residential	High	2.8km	Oblique	8H 10T	22^{O}	Large	Major/Moderate
10	Polmood House	311392	627062	Residential	Low	2.4km	Oblique/Obstructed	5H 6T	43^{O}	No Change	NIL
12	Kingledores	310528	628146	Residential	High	1.1km	Direct/Uninterrupted	7H 9T	63^{O}	Very Large	Major
14	Patervan Farm	311172	628721	Residential	High	1.7km	Direct/Slight Oblique	5H 10T	41^{O}	Large	Major/Moderate
15	Tinto Hill	295293	634383	Walkers	High	14.4km	Direct/Uninterrupted	1H 3T	3^{O}	Very Small	Minor
16	Trahenna Hill	313592	637408	Walkers	Very High	9.3km	Direct/Uninterrupted	9H 11T	5^{O}	Small	Moderate
17	Glencotho	308420	629950	Residential	Medium	1.2km	Oblique/Limited/Obscured	3H 3T	26^{O}	Large	Moderate
18	Hopecarton	312720	631000	Residential	Medium	3.8km	Slight Oblique/Uninterrupted	5H 10T	9^{O}	Medium	Moderate/Minor
20	Broadlaw	314571	623625	Walkers	Very High	7.0km	Direct/Uninterrupted	11H 11T	17^{O}	Medium	Major/Moderate
21	John Buchan Way	312656	639221	Footpath/trail. Walkers	High	10.6km	Transient/Oblique	5H 9T	4^{O}	Small	Moderate/Minor
22	White Meldon	321934	642844	Hilltop fort	Very High	18.6km	Direct/Uninterrupted	7H 10T	2^{O}	Very Small	Moderate/Minor

VP No	Location	Easting	Northing	Visual Receptor Type/s	Receptor Sensitivity	~ Distance to Nearest Turbine (km)	Aspect of View	No. of Hubs (H) & Blade Tips (T) Theoretically Visible	~Field of View Turbines Occupy	Magnitude of Effect	Significance
23	A701 Source of the Tweed Car Park	304947	614607	Tourist. Scenic Route. Road users.	Medium	13.0km	Transient/Direct/Obscured	8H 9T	4^{O}	Small	Minor
24	Hods Hill	300474	609487	Southern Upland Way. Walkers	High	19.3km	Direct/Uninterrupted	11H 11T	3^{O}	Very Small	Minor
26	Minor Road South of Bellscraig	302750	641797	Road users	Low	14.7km	Transient/Oblique	4H 6T	4^{O}	Very Small	Negligible
27	A701 near Worm Hill	311651	630053	Tourist. Scenic Route. Road users.	Medium	2.5km	Transient/Oblique	0H 3T	13^{O}	Very Small	Minor/Negligible
28	Talla Reservoir	310738	622899	Road Users, Recreational	Low	5.0km	Oblique/Obscured	0H 1T	$<1^{O}$	No Change	NIL
29	Minor Road in NSA near Dreva and Quarry Hill	314810	636080	Road users	Medium	8.8km	Transient/Oblique	1H 6T	1^{O}	Very Small	Minor/Negligible
29a	1 & 2 Dreva Cottages	314275	636010	Residential	High	8.4km	Oblique	2H 5T	1^{O}	Very Small	Minor
30	B7016 W of Broughton	309747	636946	Road users	Low	7.8km	Transient/Oblique	0H 1T	$<1^{O}$	No Change	NIL
31a	Elsrickle	306482	643625	Residential, Road users	Medium, Low	14.7km	Direct, Transient/Oblique	5H 9T	6^{O}	Small	Minor, Minor/Negligible

VP No	Location	Easting	Northing	Visual Receptor Type/s	Receptor Sensitivity	~ Distance to Nearest Turbine (km)	Aspect of View	No. of Hubs (H) & Blade Tips (T) Theoretically Visible	~Field of View Turbines Occupy	Magnitude of Effect	Significance
32	Minor Road North of Skirling	307560	639490	Residential, Road users	Low	10.5km	Direct/Obscured	4H 5T	4^{O}	No Change	NIL

Table 7.5.8 Summary of Cumulative Viewpoint Analysis

VP No	Location	~ Distance to Glenkerie	Operational Wind Farms Theoretically Visible (~Distance)	Consented Wind Farms Theoretically Visible (~Distance)	Proposed Wind Farms Theoretically Visible (~Distance)	Scoped Wind Farm Theoretically Visible (~Distance)	Receptor Sensitivity	Cumulative Magnitude of Change	Cumulative Significance
2	Culter Fell	3.0km	Black Law (A & B) - 28.6km Bowbeat - 28.9km Hagshaw Hill & Ext - 24.4km	Harestanes - 29.4km Pates Hill - 29.8km Tormywheel - 30.1km	Auchencorth - 31.2km Black Law Ext - 28.9km Clyde - 6.1km Harrows Law - 22km Limmer Hill - 13.8km Minnygap - 31.8km	Earlshaugh - 12.4km	Very High	Large	Major
6	Pykestone Hill	8.2km	Black Law (A & B) - 34.7km Bowbeat - 18.9km Hagshaw Hill & Ext - 36.3km	Harestanes - 35.4km Pates Hill - 32.3km Tormywheel - 34km	Auchencorth – 24.9km Black Law Ext – 34.7km Clyde – 18.2km Harrows Law – 23.8km Limmer Hill – 25.9km	Earlshaugh – 17.2km	Very High	Medium	Major/Moderate

VP No	Location	~ Distance to Glenkerie	Operational Wind Farms Theoretically Visible (~Distance)	Consented Wind Farms Theoretically Visible (~Distance)	Proposed Wind Farms Theoretically Visible (~Distance)	Scoped Wind Farm Theoretically Visible (~Distance)	Receptor Sensitivity	Cumulative Magnitude of Change	Cumulative Significance
15	Tinto Hill	14.4km	Black Law (A & B) - 19.5km Bowbeat - 35.1km Hagshaw Hill & Ext - 14.3km	Harestanes - 34.8km Pates Hill - 24.3km Tormywheel - 23km	Auchencorth - 33.2km Black Law Ext – 20.1km Clyde – 8.3km Harrows Law – 18.6km Limmer Hill – 5.7km	Earlshaugh – 21.5km	High	Very Small	Minor
16	Trahenna Hill	9.3km	Black Law (A & B) - 27.8km Bowbeat - 17.3km Hagshaw Hill & Ext - 33.2km	Harestanes - 39.5km Tormywheel - 27km	Auchencorth – 20.0km Black Law Ext – 27.8km Clyde – 17.5km Harrows Law – 16.6km Limmer Hill – 24.0km Minnygap – 41.5km	Earlshaugh – 21.3km	Very High	Small	Moderate
20	Broadlaw	7.0km	Black Law (A & B) - 38.2km Bowbeat - 26.8km Hagshaw Hill & Ext - 34.4km	Harestanes - 27.4km Pates Hill - 37.9km Tormywheel - 38.9km	Auchencorth – 32.9km Black Law Ext – 38.6km Clyde – 12.7km Harrows Law – 29.4km Limmer Hill – 23.2km Minch Moor – 22.2km Minnygap – 28.9km	Earlshaugh – 9.3km	Very High	Medium	Major/Moderate
22	White Meldon	18.6km	Bowbeat – 7.4km Hagshaw Hill & Ext - 28.4km	Not Visible	Auchencorth – 13.0km Clyde – 27.5km Harrows Law – 19.2km	Not Visible	Very High	Very Small	Moderate/Minor

VP No	Location	~ Distance to Glenkerie	Operational Wind Farms Theoretically Visible (~Distance)	Consented Wind Farms Theoretically Visible (~Distance)	Proposed Wind Farms Theoretically Visible (~Distance)	Scoped Wind Farm Theoretically Visible (~Distance)	Receptor Sensitivity	Cumulative Magnitude of Change	Cumulative Significance
					Minch Moor – 16.6km				
24	Hods Hill	19.3km	Not Visible	Harestanes - 9.5km	Clyde – 1.6km Limmer Hill - 19.8km Minnygap – 12.3km	Earlshaugh – 3.5km	High	Very Small	Minor

APPENDIX 8.1: PHASE 1 HABITAT SURVEY TARGET NOTES

Phase 1 Habitat Survey 2/8/07 Glenkerie

1. NT 10274 28047
Improved grassland on the flood plain of the Kingledores Burn – *Cynosurus cristatus, Lolium perene, Poa annua, Ranunculus* spp*, Bellis perennis, Cirsum* spp and *Ajuga reptens*.
Otter (*Lutra lutra*) tracks and spraints along Kingledores Burn, dipper seen, several birds nests under bridge. Brown trout (*Salmo trutta*) in Burn.

2. NT 10199 28075
Dense bracken – with an improved grassland understorry. *Pteridium aquilinum, Calluna vulgaris, Thymus polytrichus, Teucrium scorodonia, Digitalis purpurea, Potentilla erecta, Juncus squarrosus, Euphrasia nemorosa, Achillea millefollium* and *Ranunculus* spp

3. NT 10031 28171
Dry heath – dominated by *Calluna vulgaris* with some pleurocarpous mosses on thin peat (5-10cm). Some scattered bracken. Scree slopes with a couple of Scots pine.

4. NT 09928 27902
Isolated *Fagus sylvaticus* woodland. Mature to 20m – with some *Fraxinus excelsior* (to 5m) standing dead wood, understorry of improved grassland

5. NT 09821 28045
Dry heath – dominated by *Calluna vulgaris* and *Erica cinerea*, with occasional *Deschampsia flexuosa, Anthoxanthum odoratum, Teucrium scorodonia, Campanula rotundifolia, Dryopteris* spp*, Pinus sylvestris.* Scree slopes.

6. NT 09599 27882
Scattered broad leaved woodland in valley (cleuch) – dominated by *Sorbus aucuparia* and *Betula pendula* with ground cover mainly *Pteridium aquilinum* over semi improved grassland.

7. NT 08633 28441
Mosaic down slope through mire, heath and semi improved acid grassland.
The mire (peat depth 0.5m or less) is dominated by *Calluna vulgaris, Erica tetralix* and *Eriophorum vaginatum* with *Eriophorum angustifolium, Empetrum nigrum, Sphagnum* spp (*capillifolium, palustre* and *papillosum*).
The wet to dry heath is dominated by Calluna vulgaris, Erica tetralix, Eriophorum vaginatum (some V angustifolium), with some Deschampsia flexuosa, Sphagnum capillifolium, Arctostaphylos uva-ursi and Vaccinium myrtillus.
The dry heath to acid grassland is dominated by Calluna vulgaris and Juncus squarrosus, Nardus stricta, with Anthoxanthum odoratum, Deschampsia flexuosa, Festuca ovina, Molinia caerulea, Poa spp and Vaccinium myrtillus.

8. NT 08448 28453

Dry heath – dominated by *Calluna vulgaris* and *Vaccinium myrtillus*, with occasional *Erica cinerea, Tricophorum caespitosum* and *Deschampsia flexuosa*. Further upslope the heath contains *Arctostaphylos uva-ursi* and *Empetrum nigrum* – then it moves to mire.

9. NT 08307 28471
Wet heath – dominated by *Calluna vulgaris*, *Erica tetralix* and *Eriophorum vaginatum* tussocks, with occasional *Trichophorum cespitosum* and *Deschampsia flexuosa* and *Empetrum nigrum*.
Common lizard (*Lacerta agilis*) caught - several more seen basking.

10. NT 08890 28596
Mire (peat depth 0.5m or less) – dominated by *Erica tetralix* and *Eriophorum vaginatum* tussocks, *Sphagnum* spp with only occasional *Calluna vulgaris*, *Trichophorum cespitosum*, *Vaccinium myrtillus, Deschampsia flexuosa* and *Empetrum nigrum*.
The dry heath to the north is dominated by *Calluna vulgaris, Deschampsia flexuosa*. Some areas are more grass like with *Molinia caerulea*, *Nardus stricta*, and *Juncus squarrosus*

11. NT 09033 28694
Common lizard (*Lacerta agilis*) caught - several more seen basking. Mountain hare seen, form found and several red grouse (*Lagopus lagopus scoticus*) lifted.

12. NT 09383 29194
Mire to wet heath – mire dominated by *Eriophorum vaginatum* and *Erica tetralix* with *Sphagnum* spp (*papillosum, palustre* and *cuspidatum*) over peat less than 0.5m deep.
Wet heath to acid grassland – dominated by *Deschampsia flexuosa, Molinia caerulea* and *Carex nigra*.

13 NT 09498 28831
Wet heath acid grassland mosaic – *Calluna vulgaris, Erica tetralix, Sphagnum capillifolium*. Moving to *Molinia caerulea, Deschampsia flexuosa, Carex echinata, Carex nigra, Polytrichum commune*.

14 NT 09546 28505
Wet heath acid grassland mosaic – *Calluna vulgaris, Erica tetralix, Sphagnum capillifolium*. Moving to *Molinia caerulea, Deschampsia flexuosa, Carex echinata, Carex nigra, Polytrichum commune*.

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15 NT 08129 27729
Semi improved acid grassland - *Deschampsia flexuosa*, *Polytrichum commune, Nardus stricta*, *Poa annua* and *Juncus effusus*. Areas of exposed bedrock – shattered mudstone/shale, peat 0.25m deep here.

16 NT 07920 27714
Mire – wet flush at head of burn contains *Juncus effusus* and *Carex echinata*. The mire is dominated by *Calluna vulgaris* and *Eriophorum vaginatum* with *Empetrum nigrum*, *Sphagnum* spp (*papillosum, palustre* and *cuspidatum*) and *Erica tetralix*

over peat less than 0.5m deep. Some bog pools with *Eriophorum angustifolium* and *Sphagnum cuspidatum*.

17 NT 07766 27643
Wet heath and semi-improved acid grassland mosaic – wet heath dominated by *Calluna vulgaris*, *Erica tetralix*, *Sphagnum capillifolium*. Moving to acid grassland dominated by *Molinia caerulea*, *Deschampsia flexuosa*, *Juncus squarrosus*, *Carex echinata*, *Carex nigra* and *Polytrichum commune*. Fox moth (*Macrothylacia rubi*)

18 NT 07981 27331
Dry heath – dominated by *Calluna vulgaris* and *Vaccinium myrtillus*, with *Deschampsia flexuosa*, *Juncus squarrosus*, *Vaccinium vitis idaea*, and *Polytrichum commune*.

19 NT 08297 27237
Mire – dominated by *Eriophorum vaginatum*. With *Erica tetralix*, *Calluna vulgaris*, *Sphagnum* spp (*cuspidatum, fallax, palustre, papillosum, capillifolium*) – evidence of old peat cuts and drainage channels – some peat 0.5m – 0.75m deep here.

20 NT 08472 26997
Semi improved acid grassland – dominated by *Deschampsia flexuosa*, with *Nardus stricta*, *Calluna vulgaris*, *Juncus squarrosus* and *Molinia caerulea*.

21 NT 08575 26811
Dry heath – dominated by *Calluna vulgaris*, *Erica cinerea*, with *Deschampsia flexuosa* and *Cynosorus crystatus*.

22 NT 08776 26783
Small stand of trees – Pine *Pinus sylvestris* (20m)

23 NT 08848 26916
Larger stand of trees – mostly pine *Pinus sylvestris*, one sycamore *Acer pseudoplatanus* (20m)

24 NT 09167 27261
Drinking access point for field.

27 NT 09893 27744
Pair of Otter (*Lutra lutra*) tracks in point bar – one large set and one small set.

28 NT 10260 27980
3 fresh otter (*Lutra lutra*) spraints under bridge by weir. Dipper (*Cinculus cinculus*) seen, Hirundine nest under bridge.

29 NT 07482 26560
Recent burn of heath. Large area of fire damage.

30 NT 08779 26523
Marshy grassland/rush pasture – on flood plain dominated by *Juncus effusus* and *Juncus acutiflorus*, with *Cirsum* spp. This marshy grassland is continuous down to Bridge.

Species List

Latin Name	Common Name
Dryopteris	Fern
Larix decidua	European Larch
Pinus sylvestris	Scots Pine
Pinus contorta	Lodgepole Pine
Ranunculus acris	Meadow Buttercup
Ranunculus repens	Creeping Buttercup
Ranunculus flammula	Lesser Spearwort
Urtica dioica	Common Nettle
Betula pendula	Silver Birch
Stellaria media	Common Chickweed
Stellaria palustris	Marsh Stitchwort
Stellaria graminea	Lesser Stitchwort
Cerastium arvense	Field Mouse-ear
Persicaria bistorta	Common Bistort
Rumex acetosella	Sheep's Sorrel
Rumex acetosa subsp. acetosa	Common Sorrel
Tilia cordata	Small-leaved Lime
Viola riviniana	Common Dog-violet
Viola reichenbachiana	Early Dog-violet
Viola canina	Heath Dog-violet
Empetrum nigrum subsp. nigrum	Crowberry
Arctostaphylos uva-ursi	Bearberry
Calluna vulgaris	Heather
Erica tetralix	Cross-leaved Heath
Erica cinerea	Bell Heather
Vaccinium vitis-idaea	Cowberry
Vaccinium myrtillus	Bilberry
Filipendula ulmaria	Meadowsweet
Rubus fruticosus agg.	Bramble
Potentilla palustris	Marsh Cinquefoil
Potentilla anserina	Silverweed
Potentilla erecta	Tormentil
Aphanes arvensis	Parsley-piert
Sorbus aucuparia	Rowan
Lotus corniculatus	Common Bird's-foot-trefoil
Trifolium repens	White Clover
Trifolium pratense	Red Clover
Polygala serpyllifolia	Heath Milkwort
Thymus polytrichus	Wild Garden
Plantago lanceolata	Ribwort Plantain
Fraxinus excelsior	Ash
Digitalis purpurea	Foxglove
Euphrasia nemorosa	Eye bright
Pedicularis sylvatica	Lousewort
Pinguicula vulgaris	Common Butterwort
Campanula rotundifolia	Harebell
Galium saxatile	Heath Bedstraw
Succisa pratensis	Devil's-bit Scabious
Cirsium vulgare	Spear Thistle

Cirsium palustre	Marsh Thistle
Cirsium arvense	Creeping Thistle
Leontodon autumnalis	Autumn Hawkbit
Bellis perennis	Daisy
Achillea millefolium	Yarrow
Juncus squarrosus	Heath Rush
Juncus acutiflorus	Sharp-flowered Rush
Juncus effusus	Soft-rush
Juncus conglomeratus	Compact Rush
Eriophorum angustifolium	Common Cottongrass
Eriophorum vaginatum	Hare's-tail Cottongrass
Trichophorum cespitosum	Deergrass
Carex nigra	Common Sedge
Carex echinata	Star Sedge
Festuca rubra	Red Fescue
Festuca ovina	Sheep's-fescue
Lolium perenne	Perennial Rye-grass
Cynosurus cristatus	Crested Dog's-tail
Poa annua	Annual Meadow-grass
Poa trivialis	Rough Meadow-grass
Poa pratensis	Smooth Meadow-grass
Dactylis glomerata	Cock's-foot
Deschampsia flexuosa	Wavy Hair-grass
Holcus lanatus	Yorkshire-fog
Anthoxanthum odoratum	Sweet Vernal-grass
Agrostis capillaris	Common Bent
Molinia caerulea	Purple Moor-grass
Narthecium ossifragum	Bog Asphodel

Bryophytes

Sphagnum capillifolium
Sphagnum cuspidatum
Sphagnum papillosum
Sphagnum palustre
Sphagnum fallax
Polytrichum commune
Dicranium scoparium
Hylocomium splendens
Pleurozium schreberi
Scleropodium purum
Hypnum cupressiforme
Rhytidiadelphus squarrous/loreus

APPENDIX 9.1: BIRD SURVEYS AND COLLISION RISK ASSESSMENT

9.1 INTRODUCTION

9.1.1 This technical appendix presents the following information in support of Chapter 9 of the Glenkerie Wind Farm Environmental Statement. The following information is discussed:

- Baseline survey methodology;
- Baseline description;
- Collision risk modelling; and
- Summary of results

9.2 METHODS

Scoping Survey

9.2.1 A scoping survey was carried out by West Coast Energy Ltd in May 2005. Baseline surveys were carried out by West Coast Energy's ecology team (now Atmos Consulting) between May 2005 to December 2006 to quantify the use of the proposed wind farm area at Glenkerie by breeding and non-breeding birds, and to allow an estimate of the theoretical risk of bird collision with the turbines. Figure 9.1 shows the survey areas covered during the survey period May 2005 to December 2007.

9.2.2 Field surveys were undertaken by the following experienced surveyors:

- John Inglis (JI) (Atmos Consulting Ltd)
- Tim Drew (TD) (Atmos Consulting Ltd)
- Eric Donnelly (ED) (Atmos Consulting Ltd)
- Tristan Reid (TR) (Atmos Consulting Ltd)
- Vince Fertacz (VF) (freelance ornithologist)
- Gary Mortimer (GM) (freelance ornithologist)
- Alan Rothery (AR) (freelance ornithologist)
- Harry Hussey (HH) (freelance ornithologist)
- Hugh Bell (HB) (freelance ornithologist)
- Chris Watts (CW) (Atmos Consulting Ltd)

9.2.3 Atmos Consulting Ltd carried out a site reconnaissance to determine appropriate survey methodology to be used at Glenkerie. Survey types selected were based on the habitat types and species recorded during this site visit, following SNH guidance on survey methods (SNH, 2005):

- Upland breeding bird survey (Brown and Shepherd);

- Vantage point (VP) watches (breeding and non-breeding seasons);
- Black Grouse Survey; and
- Goose vantage point watches (autumn migration 2006).

Breeding Bird Survey

9.2.4 A Brown and Shepherd upland bird survey was carried out as described in Gilbert et al. 1998. The Brown and Shepherd upland bird survey is used to census upland breeding waders such as golden plover, dunlin and others. A minimum of three visit survey visits are recommended (SNH, 2005) and this method was carried out over the development area, where access was permitted. The survey is timed and a predetermined route is followed through each square. This survey was undertaken in 2005 covering the initial site layout and in 2006 covering the entire revised site layout. For this assessment, the method was modified in that, the location and behaviour of all species (not just waders) encountered during the survey visits were recorded, this was considered satisfactory as there were low numbers of waders present.

9.2.5 The behaviour and location of the birds were recorded on 1:25,000 scale maps. Records from each survey/surveyor were combined into a final visit map, so that duplicate records of the same birds could be removed. Birds were assumed to be breeding or holding territory at the recorded location if one or more of the following was observed:

- Courtship, displaying or singing;
- Presence of a nest, eggs or young (including newly fledged);
- Agitated behaviour, including alarm calls or distraction display; and
- Territorial disputes.

9.2.6 In the absence of any of these indicative behaviours, a pair observed together in suitable habitat was considered to represent a breeding pair. Other records were considered to be of non-breeding birds.

9.2.7 Within visits, duplicate records of birds separated by less than a threshold distance of 500m for waders (200m for dunlin) were arbitrarily considered to correspond to birds of the same pair, while those separated by more than these threshold distances were considered to be from different pairs. Exceptions to this are where surveyors recorded that birds seen within this threshold distance of each other represented different pairs and vice versa. Appropriate annotations were made on the field maps to indicate where this was the case.

9.2.8 Estimates of the number of pairs or territories for each species recorded were derived by comparing the three visit maps between May and July 2005, and the three visit maps between May and July 2006. The central location of each territory or breeding location, within and between visits, was plotted onto two maps, one for 2005 (Figure 9.1) and one for 2006 (Figure 9.2). A list of the other species recorded during the Common Bird Census breeding survey was compiled.

Diurnal VP Watches

9.2.9 VP watches were undertaken using the methods devised by Mike Madders and recommended by SNH (2005). Each VP watch was undertaken by a single observer in conditions of good visibility. Surveyors positioned themselves as inconspicuously as possible to minimise their effects on the birds' natural behaviour.

9.2.10 During each watch, the landscape was scanned continuously until a target bird species[1] was detected. Once detected, the bird was observed until it landed or flew out of sight. The time of first detection was noted, and the flight height was recorded for each 15 second period that the bird was in view, in one of three height bands: <20m, 20-100m and >100m. This height banding was used from May 2005 to February 2006. These band heights were changed to band 1: <20m, band 2: 20-120m and band 3: >120m March 2006 onwards to allow for changes in the proposed turbine height. The paths of all observed flights were drawn onto 1:10,000 scale maps in the field.

9.2.11 Table 9.1 presents the grid references for all VP locations used between May 2005 and December 2006. Figure 9.3 shows the positions of the Vantage points and their viewsheds. Modifications to the site layout resulted in VP locations being changed and moved. The latest proposed current site development area being central to the original and revised layouts has been covered consistently from VP3 Glenlood Hill, VP2 Benshaw Hill also provided excellent coverage of the current layout but had not been consistently used to cover this. VP3 Glenlood Hill along with VP4 Blakehope Head were used in May and June 2006 to cover the current layout. VP4 Blakehope Head however, was less effective than VP2 Benshaw Hill so watches from July 2006 to December 2006 were undertaken from VP3 Glenlood Hill and VP2 Benshaw Hill.

9.2.12 VP1 Worm Hill and VP5 Gathersnow Hill have not been included in the total hours covering the current layout. This is because VP1 Worm Hill only covered a small area not covered by VP4 Blakehope Head and this area is not part of the development site, and there were no records made of any target species from VP1. VP1 had a total of 18 hours 30 minutes of observation time accumulated between May 2005 and July 2005. VP5 Gathersnow Hill is considered too far away (more than 2 kilometres) from the south western development site boundary. VP5 had a total of 17 hours of observation time accumulated between October 2005 and January 2006.

9.2.13 No data is available for February and April 2006, in February 2006 surveys were attempted but continued bad weather did not facilitate completion. In April 2006 the tenant farmer at Kingledores did not want surveys carried out as this would disturb the lambing sheep. Tables 9.2, 9.3, 9.4, 9.5 and 9.6 summarise the observation effort of VP watches over the breeding seasons of 2005 and 2006, and the non-breeding season

[1] Target species included divers, grebes, swans, geese, Annex 1 (European Birds Directive) raptors, Black Grouse, Annex 1 waders, Barn Owl and Short-eared Owl.

2005/06 and 2006. Full details of the dates, timing, duration and surveyor for each VP watch and weather conditions are provided in Table 9.13.

9.2.14 Another apparent short falls in survey effort was in September 2006 the Table 9.6 highlights a short fall of 3 hours at VPs 2 and 3. This short fall was covered by the start of the goose VPs which covered an additional 6 hours per VP although the first hour was before sunrise and the last hour was after sunset any early movements of raptors would have been observed.

Goose VP watches

9.2.15 VP watches were undertaken using the methodology devised by Mike Madders and supplied by SNH (2005). Each VP watch was undertaken by a single observer. No VP watches were cancelled due to poor weather conditions. Surveyors positioned themselves as inconspicuously as possible to minimise their effects on the birds' natural behaviour. VP watches were to concentrate survey effort around the hours of dawn and dusk, watches starting one hour before sunrise and continuing for two hours after, watches at dusk would start two hours before dusk to one hour after.

9.2.16 During each watch, the landscape was scanned continuously until a target bird species[2] was detected. Once detected, the bird was observed until it landed or flew out of sight. The time of first detection was noted, and the flight height was recorded for each 15 second period that the bird was in view, in one of three height bands: 1: <20m, band 2: 20-120m and band 3: >120m. The paths of all observed flights were drawn onto 1:10,000 scale maps in the field.

9.2.17 Table 9.1 presents the grid references for all VP locations used between September 2006 and December 2006. Figure 9.3 shows the positions of the Vantage points and their viewsheds. VP3 Glenlood Hill and VP2 Benshaw Hill VP locations were used also for the goose watches.

9.2.18 A map of the paths of each of the observed target species flights was compiled in GIS and the flight duration and height data collected in the field were entered into a Microsoft Access database and prepared for use in a theoretical collision risk model.

[2] Target species included divers, grebes, swans, geese, Annex 1 (European Birds Directive) raptors, Black Grouse, Annex 1 waders, Barn Owl and Short-eared Owl.

Table 9.1: Location of VPs

	No.	Location Name	View bearing °	Grid reference		
Vantage Point	**1**	**Worm Hill**	**216**	**NT**	**311133**	**630749**
Vantage Point	**2**	**Benshaw Hill**	**180**	**NT**	**309606**	**629478**
Vantage Point	**3**	**Glenlood Hill**	**222**	**NT**	**308079**	**628208**
Vantage Point	**4**	**Blakehope Head**	**127**	**NT**	**310081**	**630860**
Vantage Point	**5**	**Gathersnow Hill**	**126**	**NT**	**305871**	**625688**

Table 9.2: VP Observation effort during breeding season 2005 (hrs)

VP	May	Jun	Jul	Aug	Sep	Total
VP1	06:00	06:30	06:00			**18:30**
VP2	06:00	05:00	06:00	06:00	05:35	**28:35**
VP3	06:00	06:00	06:00	06:00	07:45	**31.45**
VP4		06:00	06:00	06:00	06:00	**24:00**

Table 9.3: VP Observation effort during the non-breeding season 2005/06 (hrs)

VP	Oct	Nov	Dec	Jan	Feb	Mar	Total
VP2					00:00	06:00	**6:00**
VP3	03:00	05:30	06:00	06:00	00:00	06:00	**26:30**
VP4	03:00	08:00	06:00	06:25	00:00		**23:25**
VP5	03:00	06:00	06:00	02:00			**17:00**

Table 9.4: VP Observation effort during the breeding season 2006 (hrs)

VP	Apr	May	Jun	Jul	Aug	Sep	Total
VP2	NA	05:55	05:55	06:50	06:00	03:00	**26:50**
VP3	NA	06:00	00:00	05:55	06:00	03:00	**20:55**
VP4			06:00				**06:00**

Table 9.5: VP Observation effort during the autumn goose migration 2006 (hrs)

VP	Sept	Oct	Nov	Dec	Total
VP2	06:00	12:00	12:00	12:00	**42:00**
VP3	06:00	12:00	12:00	12:00	**42:00**

Table 9.6: VP Observation effort during the non-breeding season 2006 (hrs)

VP	Oct	Nov	Dec	Total
VP2	06:00	06:00	06:00	**18:00**
VP3	06:00	06:00	06:00	**18:00**

Black Grouse Survey

9.2.19 **Black Grouse Survey 2006** – Black grouse lek surveys were undertaken in 2006, broadly following the method of Etheridge and Baines (1995), summarised in Gilbert *et al.* (1998). These areas and all accessible areas of the site that contained suitable habitat within a 1.5km of the proposed site boundary of 2006 were visited during the period before and shortly after dawn on 11th May 2006 as per methodology. In open areas, the landscape was scanned from suitable vantage points, listening and looking for lekking birds. (only one survey was undertaken)

9.3 RESULTS

Scoping Survey

9.3.1 Identified during the survey was an assemblage of birds typical of an upland site. Raptors observed were common buzzard and kestrel. Curlew and lapwing were the only waders observed. Song thrush, skylark, wheatear and meadow pipit were the passerines recorded through out the site.

Breeding Bird Survey

9.3.2 During the breeding season in 2005, one species of wader (curlew) was recorded during three bird survey visits 1 curlew breeding territory was identified in the development area. In 2006 four species of wader (curlew, lapwing, oystercatcher and snipe) were recorded during three bird survey visits. An estimated 3 curlew, 2 lapwing and 1 snipe breeding territories were identified in the development area. The estimated numbers of breeding wader and other breeding bird territories are shown in Table 9.7 for 2005 and 2006, and for each year within the development area.

9.3.3 The approximate central locations of the recorded territories of all species (Gregory et al. 2002) are displayed in Figure 9.1 for 2005 and Figure 9.2 for 2006.

9.3.4 Table 9.7: Estimated Numbers of Breeding Bird Territories Recorded at Glenkerie (2005 and 2006)

Species	BTO code	Estimated Number of Breeding Territories			
		Surveyed area 2005	Proposed Development area	Surveyed area 2006	Proposed Development area
Red Grouse *Lagopus lagopus scoticus*	RG	4		5	
Oystercatcher *Haematopus ostralegus*	OC			1	
Lapwing *Vanellus vanellus*	L.			3	2
Common Snipe *Gallinago gallinago*	SN			1	1
Curlew *Numenius arquata*	CU	2	1	4	3
Wood Pigeon *Columba palumbus*	WP			1	
Skylark *Aluada arvensis*	S.	30	12	23	11
Meadow Pipit *Anthus pratensis*	MP	54	18	14	8
Grey Wagtail *Motacilla cinerea*	GL	2	2		
Pied Wagtail *Motacilla alba*	PW	1	1	2	
Wren *Troglodytes troglodytes*	WR	4	1	4	2
Dunnock *Prunella modularis*	D.	2		1	
Robin *Erithicus rubecula*	R.	4	2	6	1
Whinchat *Saxicola rubetra*	WC	2	2		
Stonechat *Saxicola toruata*	SC	3	1		
Northern Wheatear *Oenanthe oenanthe*	W.	7	4	4	3
Blackbird *Turdus merula*	B.	1	1`	2	1
Song Thrush *Turdus philomelos*	ST	3	2	2	1
Mistle Thrush *Turdus viscivorus*	M.	2	1	5	3
Whitethroat *Sylvia communis*	WH	2		1	1
Willow Warbler *Phylloscopus trochilus*	WW	2	1	3	1
Goldcrest *Regulus regulus*	GC	1			
Coal Tit *Parus ater*	CT			3	
Blue Tit *Parus caeruleus*	BT			2	1
Great Tit *Parus major*	GT	2	1	2	2
Carrion Crow *Corvus corone*	C.			2	1
Chaffinch *Fringilla coelebs*	CH	4	2	6	1
Reed Bunting *Emberiza schoeniclus*	RB			1	
Red Grouse *Lagopus lagopus scoticus*	RG	2		5	**2**
Oystercatcher *Haematopus ostralegus*	OC			1	
Lapwing *Vanellus vanellus*	L.			3	**2**
Common Snipe *Gallinago gallinago*	SN			1	**1**
Curlew *Numenius arquata*	CU	1		4	**3**
Wood Pigeon *Columba palumbus*	WP			1	
Skylark *Aluada arvensis*	S.	22	**16**	23	**16**
Meadow Pipit *Anthus pratensis*	MP	34	**23**	14	**12**
Grey Wagtail *Motacilla cinerea*	GL	2	**2**		
Pied Wagtail *Motacilla alba*	PW	1	**1**	2	

Wren *Troglodytes troglodytes*	WR	4	**1**	4	**2**
Dunnock *Prunella modularis*	D.	2		1	
Robin *Erithicus rubecula*	R.	3		6	**2**
Whinchat *Saxicola rubetra*	WC	2			
Stonechat *Saxicola toruata*	SC	2	**1**		
Northern Wheatear *Oenanthe oenanthe*	W.	5	**4**	4	**4**
Blackbird *Turdus merula*	B.	1		2	**1**
Song Thrush *Turdus philomelos*	ST	3		2	**1**
Mistle Thrush *Turdus viscivorus*	M.	2	**1**	5	**3**
Whitethroat *Sylvia communis*	WH	1	**1**	1	**1**
Willow Warbler *Phylloscopus trochilus*	WW	2	**1**	3	**2**
Goldcrest *Regulus regulus*	GC			1	
Coal Tit *Parus ater*	CT			3	
Blue Tit *Parus caeruleus*	BT			2	**1**
Great Tit *Parus major*	GT	2		2	**1**
Carrion Crow *Corvus corone*	C.			1	
Chaffinch *Fringilla coelebs*	CH	4	**1**	6	**1**
Reed Bunting *Emberiza schoeniclus*	RB			1	

VP Watches

9.3.5 During the VP watches between May 2005 and December 2006, target species were recorded including: waterfowl (pink-footed, greylag and one flight of 2 unidentified geese) and one wader (curlew).

9.3.6 Information collected in Schedule 1 raptors has been omitted this copy of the ES.

Table 9.8 Target Species Flight Line Data.

Date	Species	BTO Code	VP	No of birds	At risk (seconds)	Total time of flight (minutes & seconds)
11-May-05	Curlew	CU	2	1	45	03:45
	Curlew	CU	2	1	90	02:00
	Curlew	CU	2	1	15	01:00
	Curlew	CU	2	1	60	01:45
02-Jun-05	Curlew	CU	2	1	15	00:35
07-Jul-05	Curlew	CU	4	1	30	01:15
	Curlew	CU	4	1	0	00:30
14-Oct-05	Pink-footed goose	PG	4	20	15	02:12
	Pink-footed goose	PG	4	26	15	02:01
	Unidentified goose	UO	3	2	0	02:10
12-Dec-05	Greylag goose	GJ	3	4	0	00:45
	Pink-footed goose	PG	2	75	120	02:15
11-May-06	Curlew	CU	2	1	0	00:30
12-Jun-07	Curlew	CU	4	1	0	00:15
	Curlew	CU	4	1	30	00:30
	Greylag goose	GJ	2	3	0	01:15

9.3.7 A full list of all bird species recorded during the survey work is provided in Table 9.10. This list includes some species not previously mentioned, that were recorded either during the breeding bird surveys, but were not considered to be breeding within the development area, or recorded during other surveys as secondary species (non-target species).

Table 9.10: List of all Bird Species Recorded

Species	BTO code	Annex 1 EU Birds Directive	Schedule 1 WCA 1981	Red List	Amber List	UK BAP priority species	Sensitive to Wind Farms
Grey Heron *Ardea cinerea*	H						
Pink-footed Goose *Anser brachyrhynchus*	PG				√		√
Greylag Goose *Anser anser* (feral)	GJ				√		
Mallard *Anas platyrhnynchos*	MA						
Sparrowhawk *Accipiter nisus*	SH						
Common Buzzard *Buteo buteo*	BZ						
Kestrel *Falco tinnunculus*	K.				√		
Red Grouse *Lagopus lagopus scoticus*	RG				√		
Black Grouse *Tetrao tetrix*	BK	√		√		√	√
Pheasant *Phasianus colchicus*	PH						
Oystercatcher *Haematopus ostralegus*	SD				√		
Lapwing *Vanellus vanellus*	L.				√		
Common Snipe *Gallinago gallinago*	SN				√		
Curlew *Numenius arquata*	CU				√		√
Common Gull *Larus canus*	CM				√		
Lesser Black-Backed Gull *Larus fuscus*	LB				√		
Herring Gull *Larus argentatus*	HG				√		
Wood Pigeon *Columba palumbus*	WP						
Cuckoo *Cuculus canorus*	CK				√		
Swift *Apus apus*	SI						
Skylark *Aluada arvensis*	S.			√		√	
Swallow *Hirundo rustica*	SL				√		
House Martin *Delichon urbica*	HM				√		
Meadow Pipit *Anthus pratensis*	MP				√		
Grey Wagtail *Motacilla cinerea*	GL				√		
Pied Wagtail *Motacilla alba*	PW						
Wren *Troglodytes troglodytes*	WR						
Dunnock *Prunella modularis*	D.				√		
Robin *Erithicus rubecula*	R.						
Whinchat *Saxicola rubetra*	WC				√		
Stonechat *Saxicola toruata*	SC				√		
Northern Wheatear *Oenanthe oenanthe*	W.						
Blackbird *Turdus merula*	B.						
Fieldfare *Turdus pilaris*	FF		√		√		
Song Thrush *Turdus philomelos*	ST			√		√	
Redwing *Turdus iliacus*	RE		√		√		
Mistle Thrush *Turdus viscivorus*	M.				√		
Whitethroat *Sylvia communis*	WH						
Willow Warbler *Phylloscopus trochilus*	WW				√		
Goldcrest *Regulus regulus*	GC				√		
Coal Tit *Parus ater*	CT						
Blue Tit *Parus caeruleus*	BT						
Great Tit *Parus major*	GT						
Magpie *Pica pica*	MG						
Jackdaw *Corvus monedula*	JD						

Species	BTO code	Annex 1 EU Birds Directive	Schedule 1 WCA 1981	Red List	Amber List	UK BAP priority species	Sensitive to Wind Farms
Rook *Corvus frugilegus*	RO						
Carrion Crow *Corvus corone*	C.						
Raven *Corvus corax*	RN						
Chaffinch *Fringilla coelebs*	CH						
Siskin *Carduelis spinus*	SK						
Linnet *Carduelis cannabina*	LI			√		√	
Lesser Redpoll *Carduelis cabaret*	FR				√		
Snow Bunting *Plectrophenax nivalis*	SB		√		√		
Reed Bunting *Emberiza schoeniclus*	RB			√		√	

Black Grouse Survey

9.3.8 Black Grouse were not recorded within the site boundary. A lek of five birds was recorded, outside the site boundary, during the Black Grouse survey in 2006. The location was recorded as half a kilometre to the south on the lower north western slopes of Nether Oliver Dod (grid ref NT08900 265750). A single cock was also observed to the southeast of the development site (NT09405 27350) on 6th May 2006 during a breeding bird survey. No evidence of breeding on site was recorded but there is potential for breeding to occur.

9.4 COLLISION RISK MODELLING

9.4.1 The general methodology used to predict collision risk is provided by SNH (SNH, 2000b). In summary, the following steps were followed in this assessment:

- Review the flight line data, which in this instance indicated that a random collision analysis should be conducted for each species;
- Digitise all flight lines and record relevant characteristics (including species, number of birds, start time of flight and height at 15 second intervals) in linked database;
- Define a turbine envelope and identify all flights for each species which are at any point within the rotor height (i.e. 'at risk') and sum the total 'at risk' flight duration for each vantage point;
- Calculate an 'occupancy rate' for each vantage point, defined as the observed 'at risk' activity levels divided by total observation time and area observed, giving an occupancy per unit time and unit area for each vantage point;
- Average the occupancy rate across the vantage points using an un-weighted mean approach;
- Apply the average occupancy rate to the wind farm site, applying a factor to estimate the total time that the birds could theoretically be active during the period of interest, to determine total predicted transits through the rotor volume;
- Run the collision model with relevant turbine and ornithological parameters to calculate the theoretical proportion of transits resulting in a collision assuming no avoiding action; and
- Multiply the number of transits by the collision rate, avoidance factor and operating parameters of the project to estimate the theoretical number of collisions per year.

9.4.2 The predicted mortality through collision is dependent on a number of variables, including flight activity within the turbine envelope, the species' physiology, nocturnal flight behaviour and flight velocity, weather conditions, the predicted avoidance rate, the number, rotational speed and dimensions of the turbines and the proportion of the time that the turbines are operational throughout the year.

9.4.3 Due to the changes in site design over the survey period 5 vantage points have been utilized both VP 2 and 3 give good coverage of the development site and have been the VPs that have been utilized the most VP3 being the only VP consistently used throughout the study. VP4 also covers areas to the northeast and gives some overlap with VP2. VPs 1

and 5 have not been analysed in the collision modelling due to the reasons explained in section 9.2.12.

9.4.4 Due to the changes in the recording of height bands (see details section 9.2.10) a worst case scenario has been analysed for collision risk modelling. All flights recorded for curlew before the change to the risk band "2" 20-120 metres (that was recording of band "2" at 20-100 metres) any flights recorded at band "3" above 100 metres will be assumed to have been at between 100 and 120 metres.

9.4.5 For a given analysis, all of these variables may be defined with an acceptable degree of accuracy, other than the avoidance rate. A precautionary figure of 95% avoidance for waders and raptors has been assumed for collision modelling purposes in the past, but a review of post-construction monitoring studies which combined flight observations with corpse surveys, controlling for search effectiveness, indicates that a much higher avoidance rate of 99.82% is likely to be more accurate (Fernley et al., in press). This is consistent with Percival (2004), in which an avoidance rate of 99.62% for waterfowl was calculated.

9.4.6 Studies of raptor avoidance behaviour have indicated 98% + avoidance rate would be a more accurate assumption (Whitfield & Madders, 2006). Whitfield & Madders (2006) state that 'in the absence of any means to use any empirically derived avoidance rate, two options are available in practice; use a generic 95% 'precautionary' rate or use a rate based on empirically derived measures in other birds of prey'. They then state 'most estimates of avoidance rates in bird of prey lie between 98% and 100%. At least at some sites avoidance rates are not 100% in red kites and so an initial assumption was made that red kites would show an avoidance rate of above or equal to 98% but below 100%' Their study did not contradict this initial assumption (Whitfield & Madders, 2006).

9.4.7 This study presents a collision model using a 'central estimate' of a 95% avoidance rate (a precautionary value according to the papers cited above) also presented is a model using 98% avoidance rate.

9.4.8 Curlew was modelled due to the number of flights recorded and their sensitivity to wind farms. Table 9.11 summarises the predicted mortality rates and Table 9.12 shows collision modelling parameters and results.

9.4.9 Pink-footed geese were observed on one occasion flying over the development area at risk height, as there was only one flight no collision risk modelling was considered necessary. (Another two flights were observed to the north east of the site).

Table 9.11: Predicted Collision Mortality Based on Two Avoidance Rates

Collision Risk	**95% Avoidance**		**98% Avoidance**	
	Years per Collision	**Number of Collisions per 25 years**	**Years per Collision**	**Number of Collisions per 25 years**
Curlew	15.62	1.60	39.04	0.64

Table 9.12: Collision Risk Modelling (95% and 98% avoidance rate)

Collisions per Year 95% Avoidance			Collisions per Year 98% Avoidance		
Species			Species		
Curlew	0.06		Curlew	0.02	
Years per Collision		Collisions over 25 years	Years per Collision		Collisions over 25 years
Species			Species		
Curlew	16.57	1.51	Curlew	41.43	0.60

Wind Farm Parameters	
Number of Turbines	11
Blades per Turbine	3
Rotor Radius (m)	40
Maximum Chord (m)	3.25
Pitch (degrees)	15
Rotation Period (secs)	4
Proportion Operational	0.85

Biological Parameters	PE	CU	EA
Bird Length (m)	0.45	0.5	0.88
Wingspan (m)	1	0.85	2.2
Bird speed (m/s)	16	8	13.3
Bird aspect ratio	0.45	0.59	0.40
Total hours activity during period	7240	7240	7240
Avoidance rate 98%	0.95	0.95	0.95
Avoidance rate 95%	0.98	0.98	0.98

Vantage Point Number	Visible Area (ha)	Observation Time (mins)	Seconds 'at risk'		
2	328.22	7470	0	420	0
3	441.84	7810	210	0	60
4	421.07	3560	0	90	0
Total Visible Area (Vt)	1191.14				
Number of VPs (Vp)	3				

9.5 SUMMARY OF RESULTS

9.5.1 Species (pink-footed geese, black grouse and curlew) sensitive to wind farms have been identified during the studies at Glenkerie proposed Wind Farm all have been observed infrequently. Black grouse have been identified lekking close to the development area and potentially could be breeding in the development area. Curlew were identified as breeding on the development area but in low numbers (maximum of 3 pairs).

Table 9.13 Details of VP Watches (For a key to recorders and weather data see bottom of table and Table 9.14)

Date	Recorder	VP no	Start	Finish	Weather
11-May-05	TR	3	11:30	14:30	WS=3-4, D=W
11-May-05	TR	3	14:30	17:30	WS=3-4, D=W
11-May-05	JGI	1	11:30	14:30	WS=4/5, D=W
11-May-05	JGI	1	14:30	17:30	WS=3/4, D=W
11-May-05	TD	2	11:30	14:30	WS=3, D=N
11-May-05	TD	2	14:30	17:30	WS=3, D=N
11-Jun-05	TR	3	12:00	15:00	WS=0-1, D=W
02-Jun-05	HH	1	12:30	14:30	N/A
02-Jun-05	TD	2	11:30	14:30	WS=4,D=SW
02-Jun-05	TR	3	11:15	14:15	WS=3/4, D=SW
03-Jun-05	TR	2	12:30	14:30	WS=4,D=SW
03-Jun-05	HH	1	10:00	14:30	N/A
02-Jun-05	JGI	4	12:30	14:00	WS=4/5, D-=SW
03-Jun-05	JGI	4	09:45	14:15	WS=3/5 D=S/SW
08-Jul-05	TR	3	09:45	11:45	WS=0-1, D=W
08-Jul-05	TD	2	10:20	12:20	WS=1, D=NE
07-Jul-05	CW	2	10:40	14:40	WS=1-2,D=S
08-Jul-05	HH	1	10:30	12:30	WS=1, D=NE
07-Jul-05	HH	1	10:30	14:30	WS=1-2,D=S
07-Jul-05	TR	3	10:00	14:00	WS=1-2,D=S
07-Jul-05	JGI	4	10:40	14:30	WS=2/3,D=NW
08-Jul-05	JGI	4	10:30	12:40	WS=1, D=NE
03-Aug-05*	TD	3	09:00	12:00	Calm, CC=0-1/8
03-Aug-05*	TD	3	12:00	15:00	Calm, CC=0/8
03-Aug-05*	TR	2	09:00	12:00	Calm, CC=0-1/8
03-Aug-05*	TR	2	12:00	15:00	Calm, CC=0-1/8
03-Aug-05*	JGI	4	09:00	12:00	Calm, CC=0-1/8
03-Aug-05*	JGI	4	12:00	15:00	Calm, CC=0-1/8
01-Sep-05	TR	3	11:00	15:45	WS=2/3,D=W,CC=4
01-Sep-05	JGI	4	13:05	16:05	D=W,CC=2/8
01-Sep-05	JGI	4	10:05	13:05	WS=3,D=W,CC=4/8
01-Sep-05	TD	2	10:00	12:35	WS=3, D=W
02-Sep-05	TD	2	13:30	16:30	WS=2, D=W
02-Sep-05	TR	3	09:45	12:45	WS=2-3,D=W,CC=4
17-Oct-05	ED	3	11:20	14:20	WS=20,D=W,CC=6/8
14-Oct-05	JGI	4	11:45	14:45	WS=3/4,D=5,CC=5/8
14-Oct-05	TR	5	11:40	14:40	WS=3-4,D=SW,CC8/8
24-Nov-05	TD	4	09:00	11:00	WS=7,D=N,CC=7/8
24-Nov-05	JGI	5	09:30	11:30	WS=6+,D=N,CC=7/8
09-Nov-05	TR	5	10:30	14:30	WS=1-2,D=SW,CC=3/8
09-Nov-05	TD	4	10:15	13:15	WS=3-4,D=W,CC=6/8
09-Nov-05	TD	4	13:15	16:15	WS=3-4,D=W,CC=6/8
09-Nov-05	JGI	3	10:30	13:30	WS=4,D=W,CC=4/8
09-Nov-05	JGI	3	13:30	16:00	WS=4,D=W,CC=2/8
12-Dec-05	TR	4	09:20	15:20	WS=1-2,D=W,CC=2/8
12-Dec-05	TD	3	09:00	15:00	WS=1,CC=1/8
12-Dec-05	JGI	5	09:30	12:30	WS=2/3,D=N,CC=0/8
12-Dec-05	JGI	5	12:30	15:30	WS=1,D=N,CC=0/8
09-Jan-06	JGI	5	09:15	11:15	WS=5,D=W,CC=8/8
09-Jan-06	TD	3	09:15	11:15	WS=5,D=W,CC=8/8
09-Jan-06	TR	4	09:20	11:15	WS=4-5,D=W.CC=8/8
30-Jan-06	TD	3	09:30	13:30	WS=1,CC=2/8
30-Jan-06	TR	4	09:05	13:35	WS=1-2,D=SW,CC=3/8
22-Mar-06	JGI	3	09:50	12:50	WS=2,D=SE,CC=5/8
22-Mar-06	JGI	3	12:50	15:50	WS=3,D=W,CC=7/8

Date	Recorder	VP no	Start	Finish	Weather
22-Mar-06	AR	2	09:30	13:35	WS=3D=S,CC=5/8
22-Mar-06	AR	2	13:35	15:30	WS=5,D=SSW,CC=8/8
11-May-06*	TD	4	09:00	12:00	WS=1-2,D=W,CC=2
11-May-06*	TD	4	12:00	15:00	WS=3,D=W,CC=4/8
11-May-06	HB	2	09:00	12:00	WS=1-2,D=W,CC=2
11-May-06	HB	2	12:05	15:00	WS=3,D=W,CC=4/8
12-Jun-06	AR	2	11:30	15:30	WS=3,D=W,CC=8
12-Jun-06	AR	2	15:30	17:30	WS=3,D=W,CC=8/8
12-Jun-06	TD	4	11:30	14:30	WS=3-4,D=W,CC=8/8
12-Jun-06	TD	4	14:35	17:30	WS=3-4,D=W,CC=8/8
25-Jul-06	AR	2	10:00	14:10	WS=3,D=S,CC=3/8
25-Jul-06	AR	2	14:10	16:00	WS=3,D=S,CC=2/8
25-Jul-06	TD	3	10:00	13:00	WS=3,D=S,CC=4
25-Jul-06	TD	3	13:05	16:00	WS=3,D=S,CC=3/8
31-Aug-06	AR	2	09:00	12:00	WS=2,D=SW,CC=1/8
30-Aug-06	AR	2	13:30	16:30	WS=2,D=SW,CC=4/8
31-Aug-06	GM	3	09:00	12:00	WS=1-2,D=SW,CC=1/8
30-Aug-06	GM	3	13:30	16:30	WS=2-3,D=SW,CC=7/8
27-Sep-06	GM	2	13:00	16:00	WS=2,D=W,CC=8/8
27-Sep-06	AR	3	13:00	16:00	WS=2,D=W,CC=8/8
27-Sep-06	AR	3	17:05	20:05	WS=3,D=W,CC=8/8
27-Sep-06	GM	2	17:05	20:05	WS=3,D=W,CC=8/8
28-Sep-06	GM	2	06:05	09:05	WS=3,D=W,8/8
28-Sep-06	AR	3	06:05	09:05	WS=3,D=W,CC=8/8
12-Oct-06	GM	3	12:30	15:30	WS=3-4,D=SW,CC=4/8
12-Oct-06	VF	2	12:30	15:30	WS=4,D=SW,CC=3/8
13-Oct-06	VF	2	06:35	09:35	WS=2,D=SW,CC=8/8
13-Oct-06	GM	2	06:35	09:35	WS=2,D=SW,CC=8/8
12-Oct-06	GM	3	16:15	19:15	WS=3,D=SW,CC=3/8
12-Oct-06	VF	2	16:15	19:15	WS=3,D=SW,CC=4/8
25-Oct-06	VF	2	11:45	14:45	WS=3,D=SE,CC=8/8
25-Oct-06	GM	3	11:45	14:45	WS=1,D=E,CC=8/8
25-Oct-06	GM	3	15:45	18:45	WS=2,D=SE,CC=8/8
25-Oct-06	VF	2	15:45	18:45	WS=3-4,D=SE,CC=8/8
26-Oct-06	GM	3	07:10	10:10	WS=6-7,D=S,CC=8/8
26-Oct-06	VF	2	07:10	10:10	WS=6-7,D=S,CC=8/8
09-Nov-06	VF	2	10:30	13:30	WS=1-2,D=SW,CC=1/8
09-Nov-06	GM	3	10:30	13:30	WS=0-1,D=W,CC=1/8
09-Nov-06	VF	2	14:15	17:15	WS=1-2, D=SW, CC=1/8
09-Nov-06	GM	3	14:15	17:15	WS=1,D=SW,CC=1/8
10-Nov-06	VF	2	06:30	09:30	WS=4-5,D=SW,CC=8/8
10-Nov-06	GM	3	06:30	09:30	WS=3-4,D=SW,CC=8/8
26-Nov-06	GM	2	13:40	16:40	WS=0-1,D=SW,CC=0/8
26-Nov-06	VF	3	13:40	16:40	WS=1,D=W,CC=0/8
27-Nov-06	VF	2	07:15	10:15	WS=3-4,D=W,CC=4/8
27-Nov-06	GM	3	07:15	10:15	WS=3-4,D=W,CC=5/8
27-Nov-06	VF	2	11:00	14:00	WS=3-4,D=W,CC=6/8
27-Nov-06	GM	3	11:00	14:00	WS=3,D=W,CC=4/8
11-Dec-06	TD	2	11:55	13:25	WS=4-5,D=W,CC=8/8
11-Dec-06	GM	3	11:55	13:25	WS=4,D=W,CC=7/8
11-Dec-06	TD	2	13:40	16:40	WS=4-5,D=W,CC=7/8
11-Dec-06	GM	3	13:40	16:40	WS=4,D=SW,CC=6/8
12-Dec-06	GM	2	07:30	10:30	WS=4-5,D=SW,CC=8/8
12-Dec-06	TD	3	07:30	10:30	WS=3-4,D=W,CC=8/8
12-Dec-06	GM	2	10:30	12:00	WS=5,D=SW,CC=8
12-Dec-06	TD	3	10:35	12:05	WS=5,D=W,CC=8/8
27-Dec-06	VF	2	10:00	13:00	WS=1-2,D=SW,CC=8/8
27-Dec-06	GM	3	10:00	13:00	WS=2,D=ESE,CC=8/8

Date	Recorder	VP no	Start	Finish	Weather
27-Dec-06	VF	2	13:35	16:35	WS=1-2,D=SE,CC=8/8
27-Dec-06	GM	3	13:35	16:35	WS=2,D=SE,CC=8/8
28-Dec-06	GM	2	07:45	10:45	WS=1-2,D=SE,CC=8/8
28-Dec-06	VF	3	07:45	10:45	WS=1-2,D=SE,8/8

JGI: John Inglis, TD: Tim Drew, TR: Tristan Reid, HH: Harry Hussey, ED: Eric Donelly, VF: Vince Fertacz, GM: Gary Mortimer, AR: Alan Rothery, HB: Hew Bell, CW: Chris Watts (* data unavailable)

9.5.2 The codes used for weather conditions are given below in table 9.14:

Table 9.14 Weather Codes

Wind-Speed (WS)		**Wind-Direction (D)**	**Cloud Cover (CC)**	
Calm	0	N	In eighths	
Light air	1	NE	*e.g.*	3/8
Light breeze	2	E		
Gentle breeze	3	SE		
Mod. breeze	4	S		
Fresh breeze	5	SW		
Strong breeze	6	W		
Mod. gale	7	NW		
Fresh gale	8			
Strong gale	9			
Whole gale	10			
Storm	11			
Hurricane	12			

APPENDIX 11.1: NOISE MEASUREMENTS

Figures A11.1.1 and A11.1.2 show the background noise levels that were recorded at the two locations, Glencotho and Kingledores, and the corresponding wind speeds. The background noise level refers to the ambient noise level that is already present within the environment and is measured in the absence of any noise that would be generated by the wind farm.

Figure A11.1.1

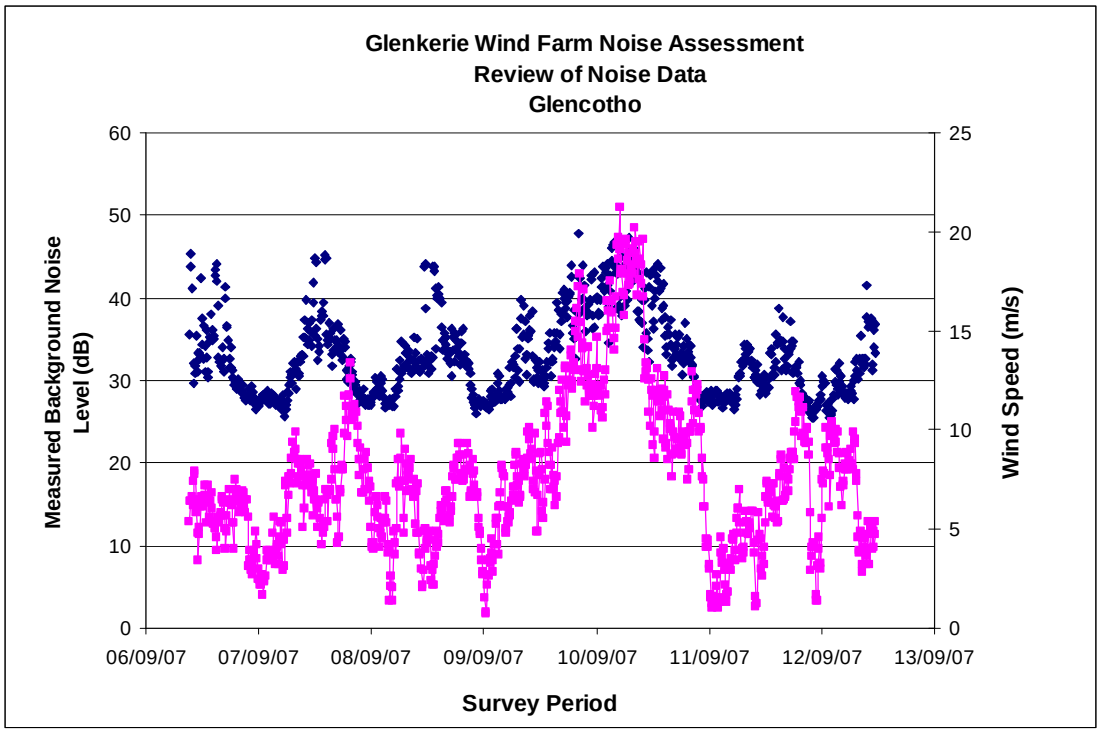
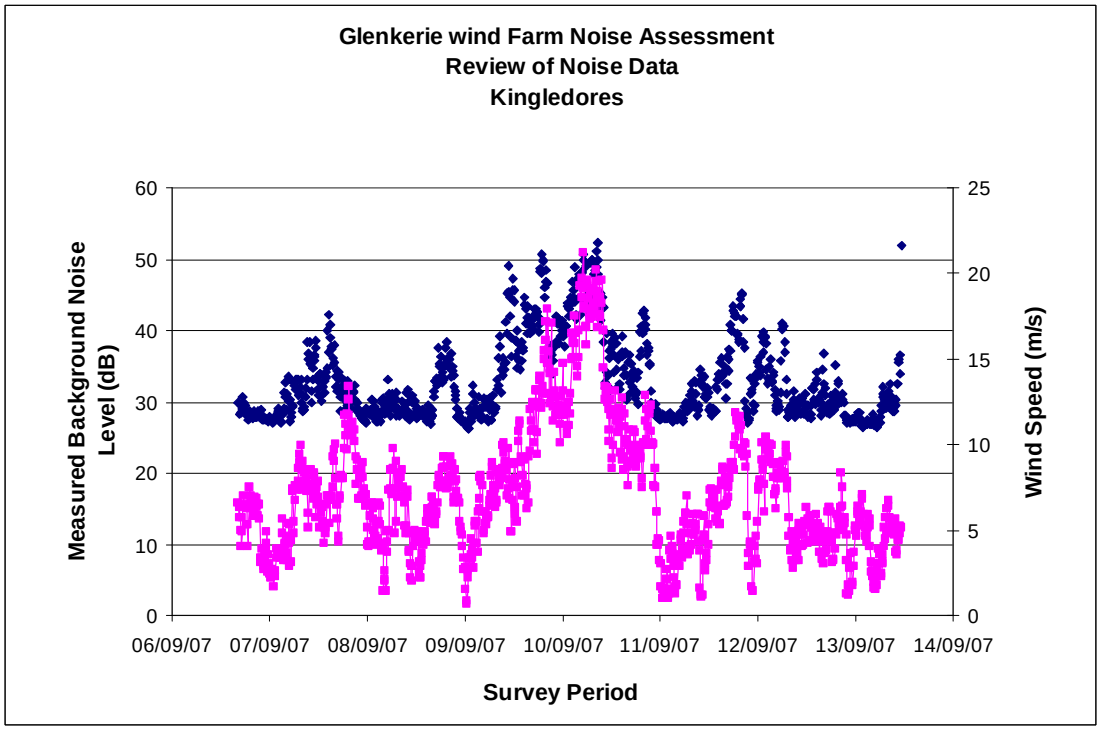


Figure A11.1.2



Figures A11.1.3 to A11.1.6 show the relationship between background noise and wind speed at each location and this relationship is shown by a polynomial regression analysis, in the form of a regression curve for each series of plots. The regression curve has been used for the definition of the limit criterion for each location.

Figure A11.1.3

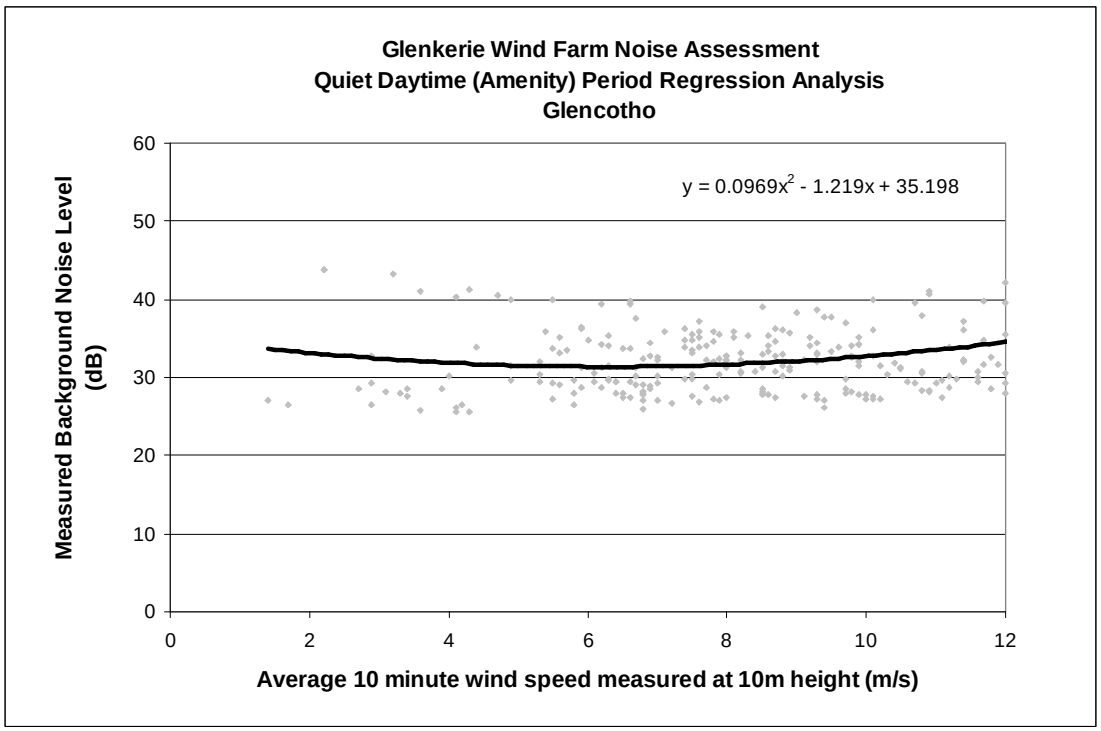


Figure A11.1.4

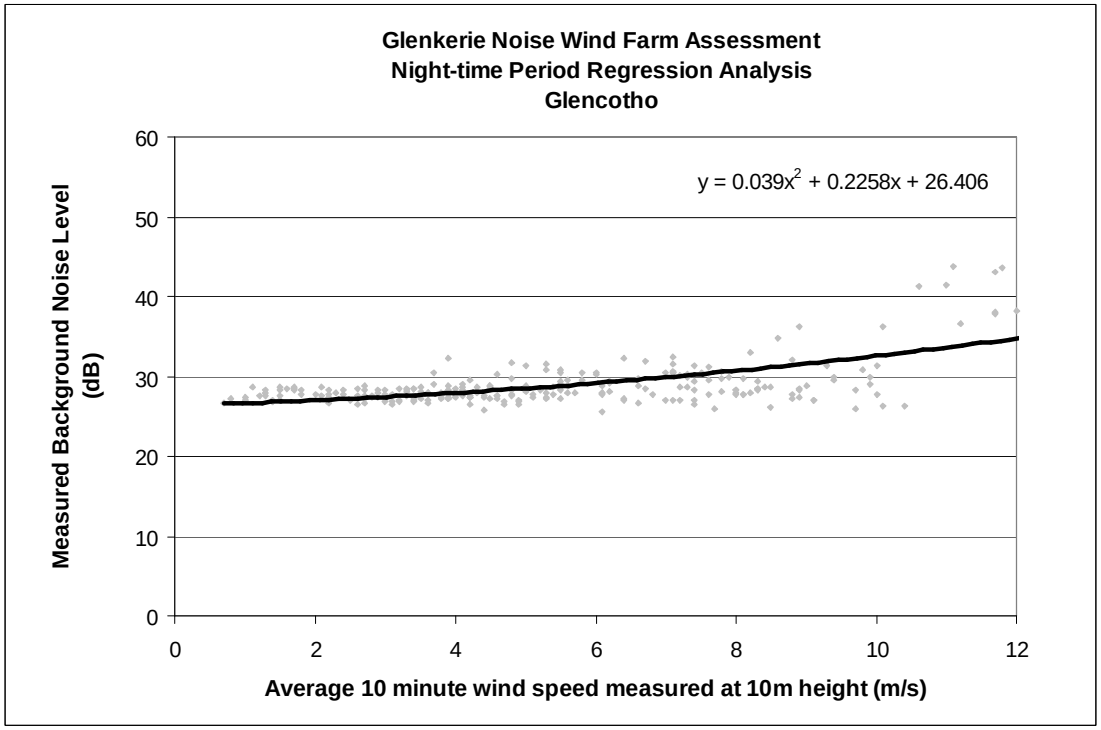


Figure A11.1.5

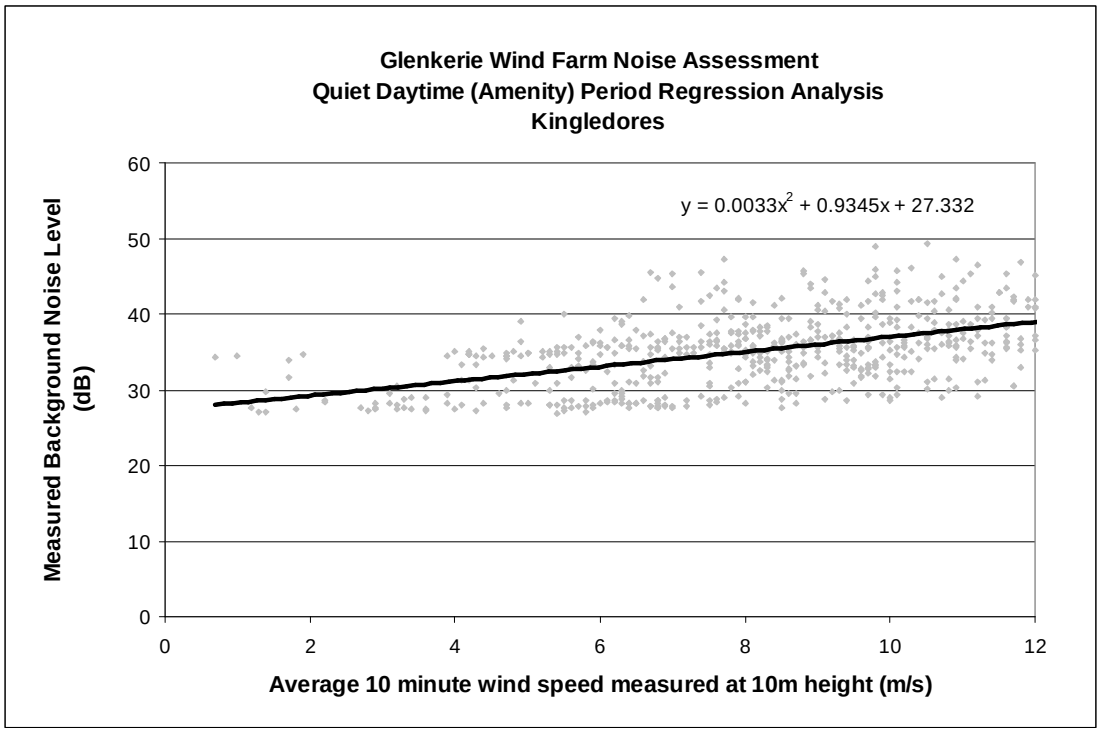
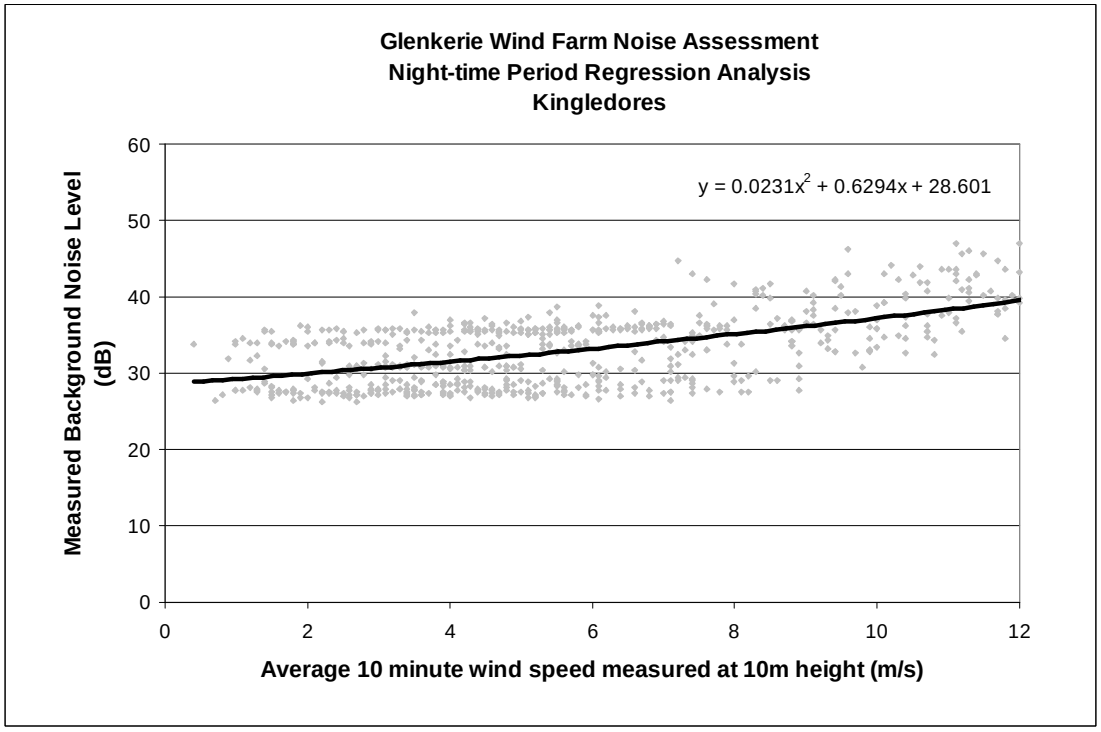


Figure A11.1.6



Figures A11.1.7 to A11.1.10 show the noise criterion curves that were produced for both locations, based on the ETSU guidance. Each figure shows three curves; the regression curve based on the measured background data, the level 5 dB above this regression curve and the ETSU noise limits of 35 dB(A) for daytime periods and 43 dB(A) for night-time.

Figure A11.1.7

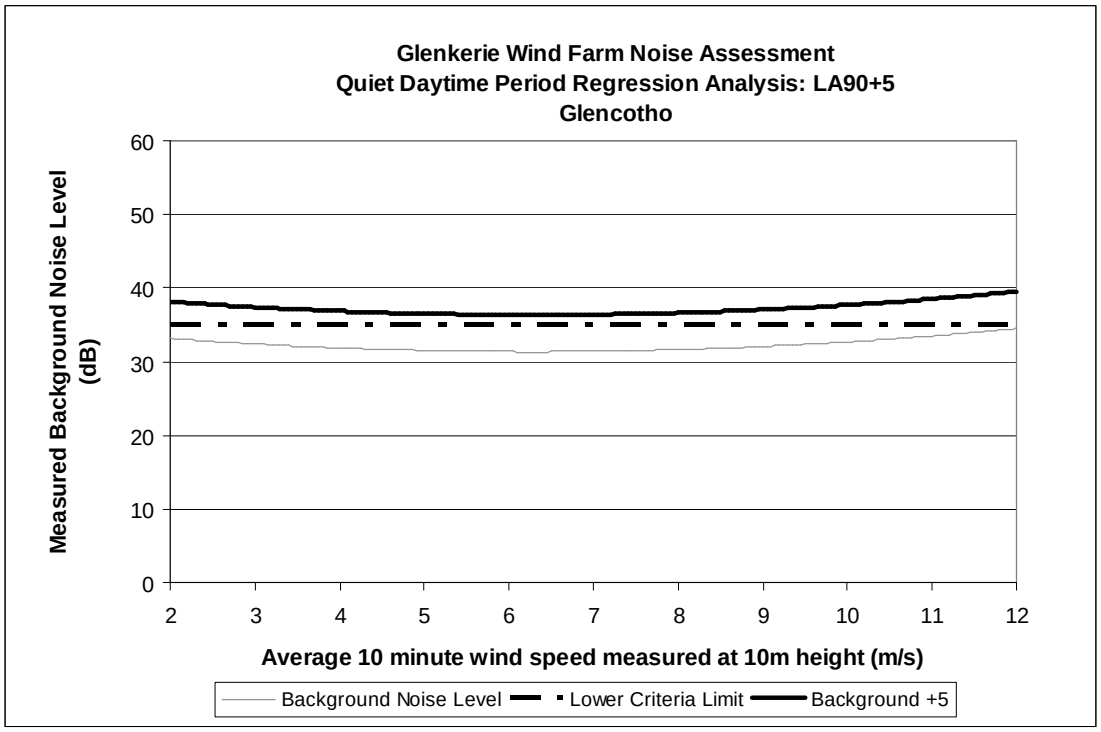


Figure A11.1.8

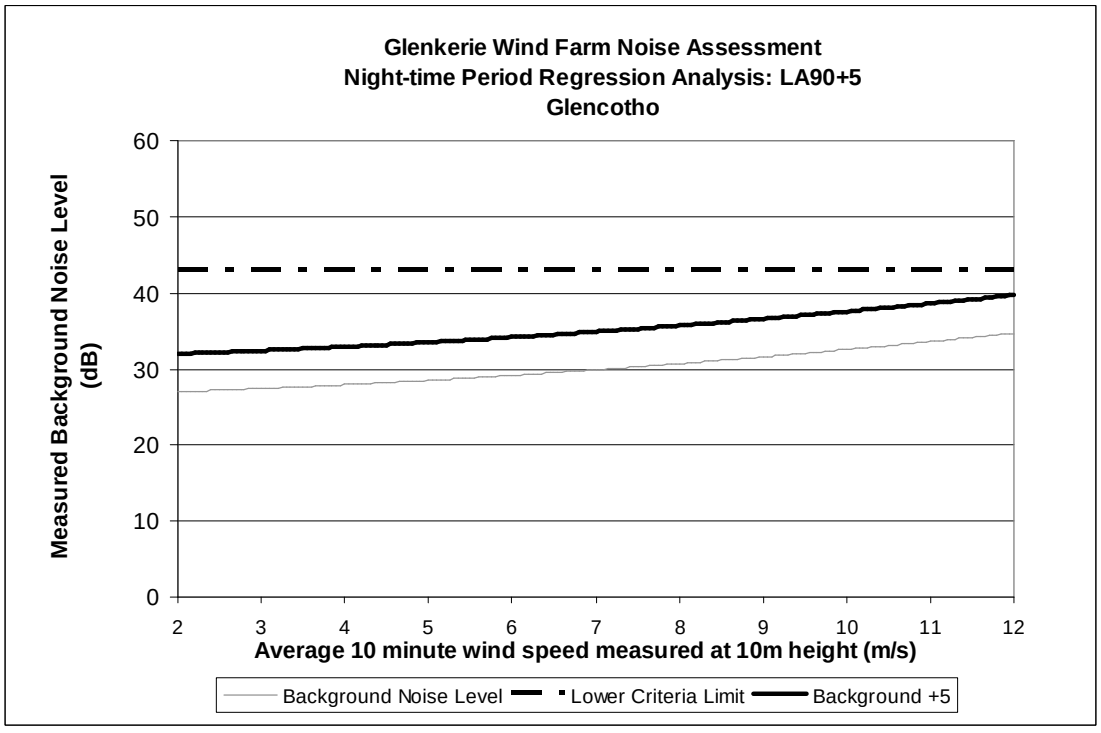


Figure A11.1.9

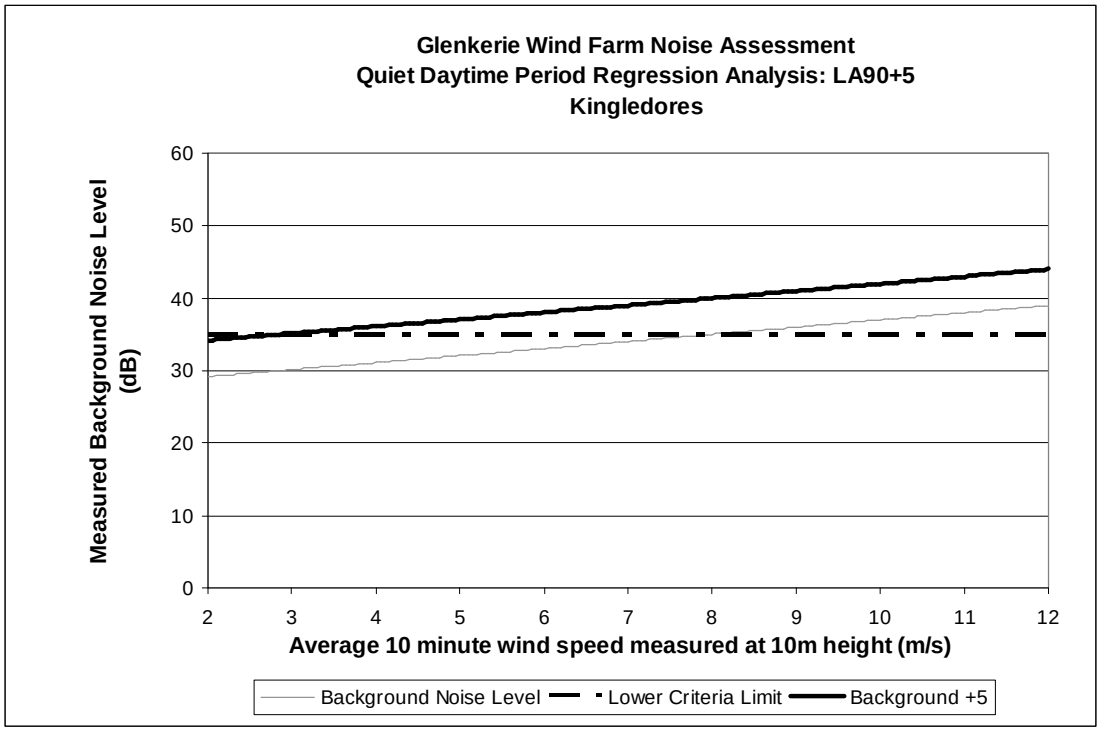
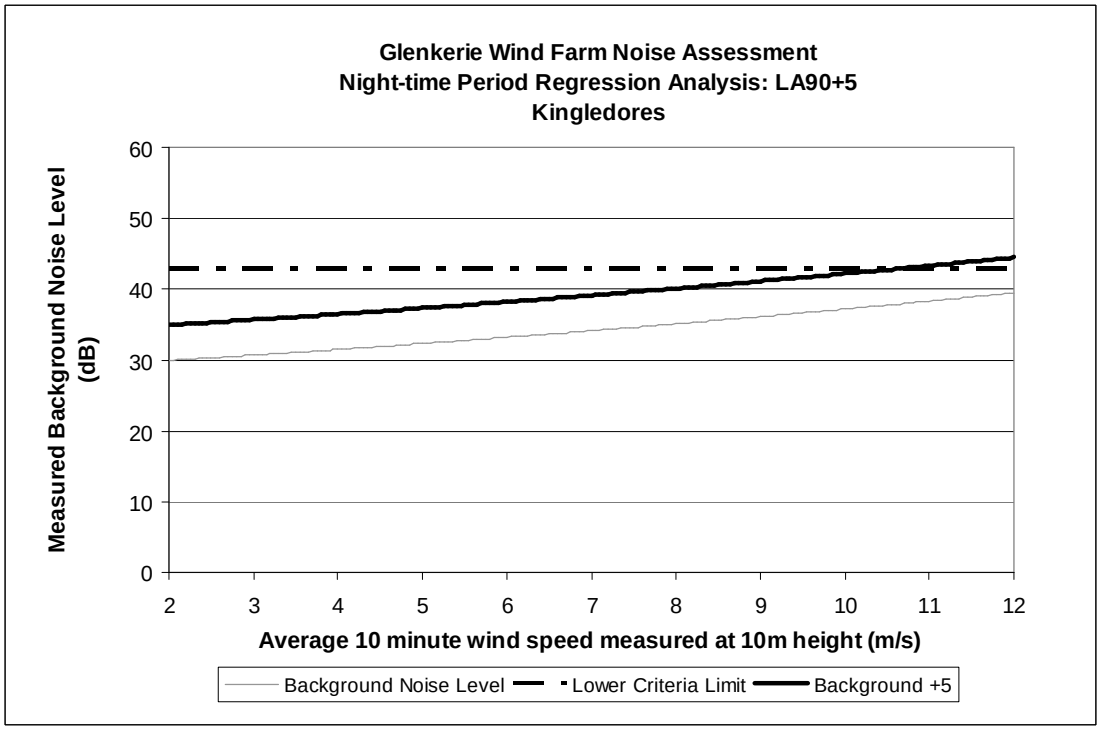


Figure A11.1.10



Figures A11.1.11 to A11.1.14 show the criterion curves for each receptor location for both the daytime and night-time period, based on the ETSU limits as modified by the background curve.

Figure A11.1.11

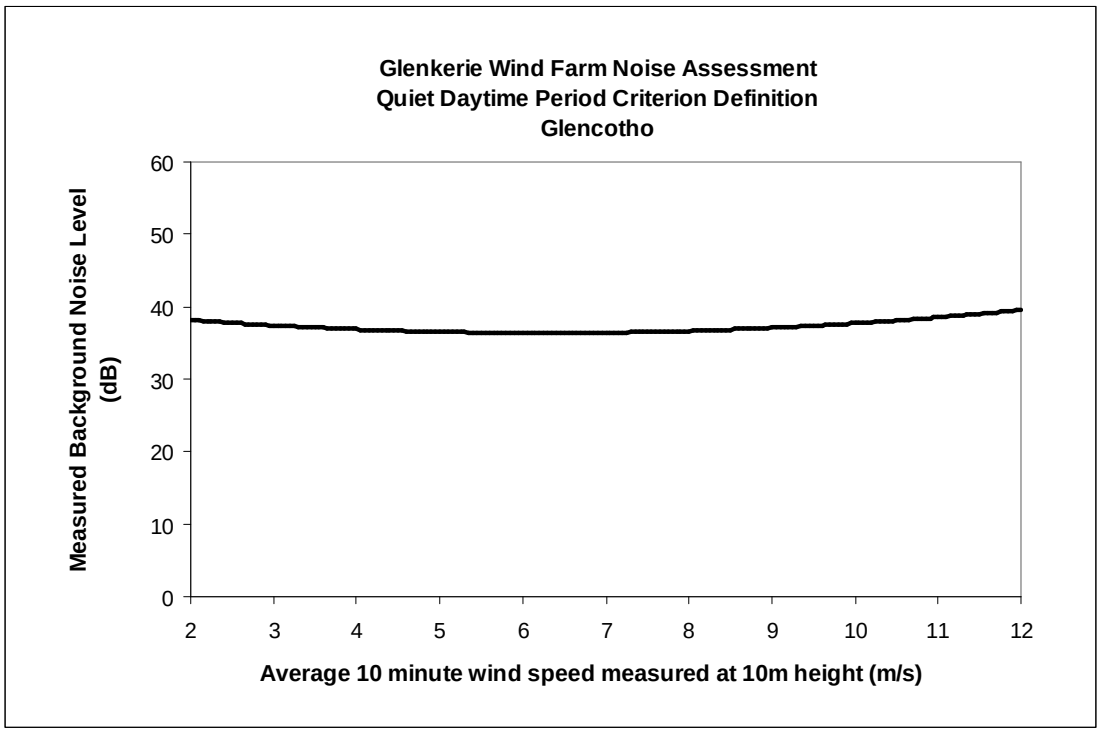


Figure A11.1.12

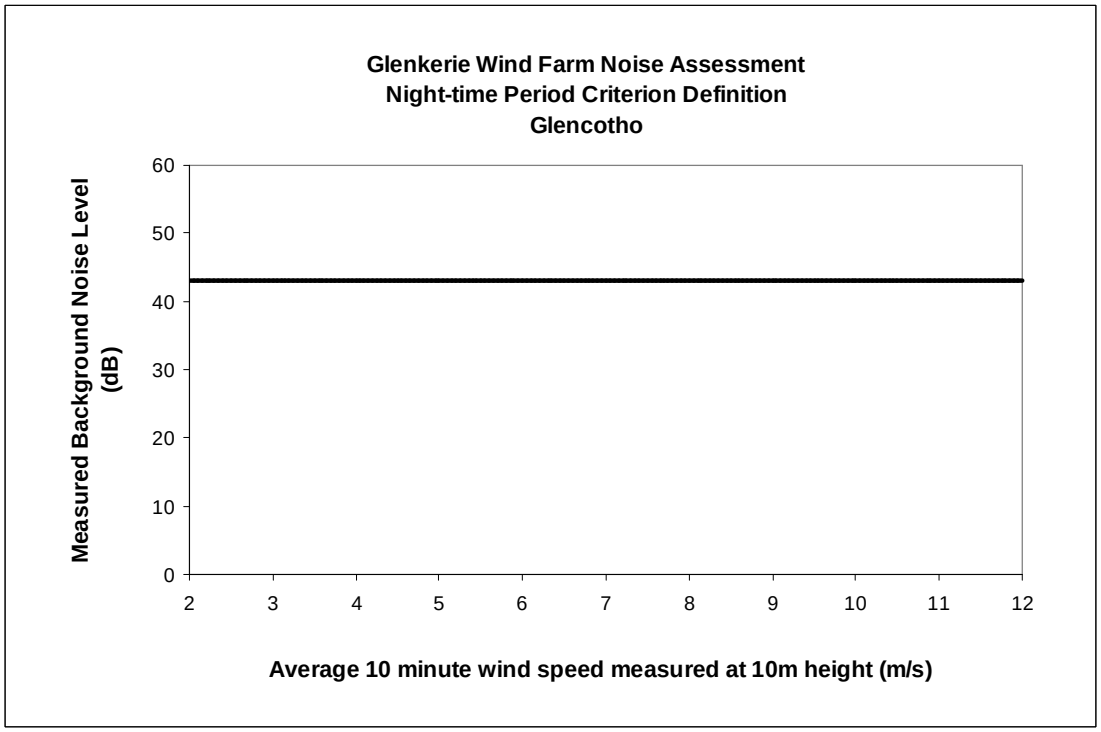


Figure A11.1.13

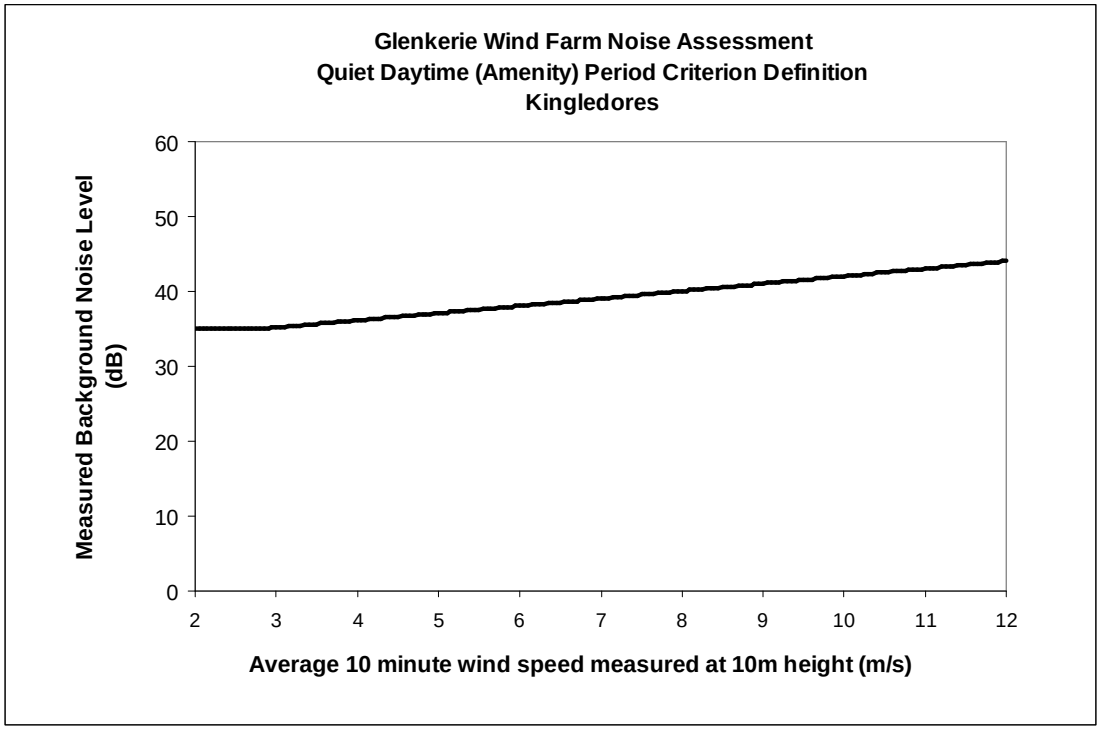
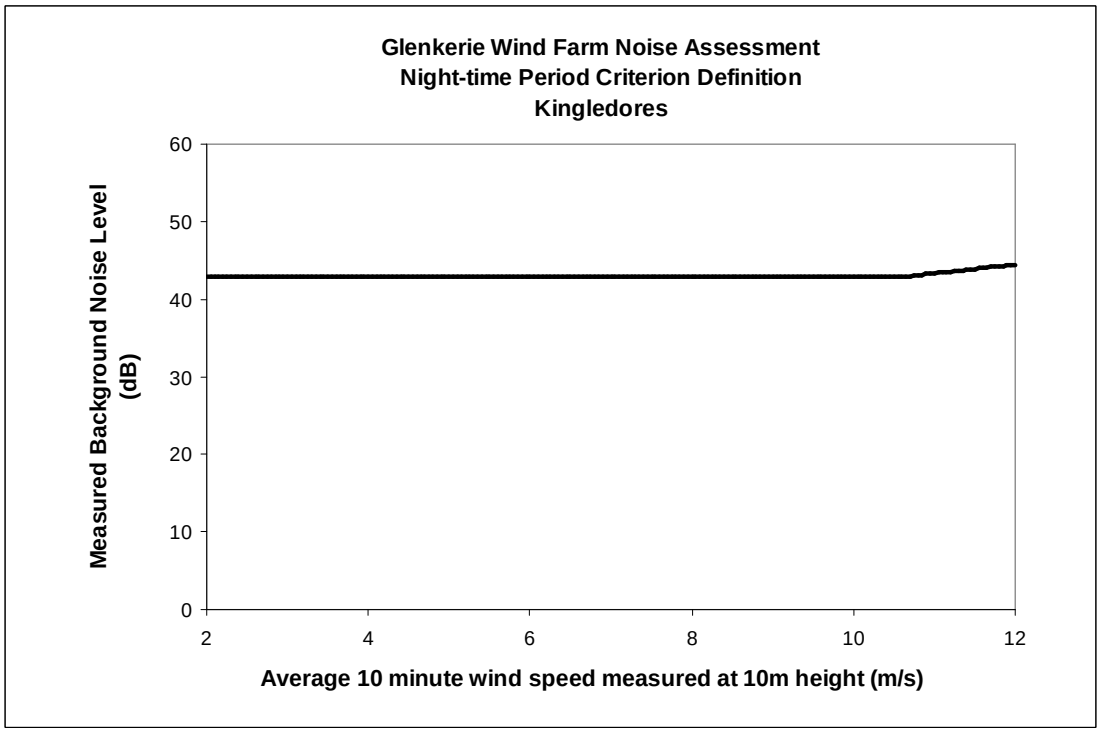


Figure A11.1.14



Figures A11.1.15 to A11.1.18 show the daytime and night-time noise limits compared to the predicted noise levels resulting from the wind farm at both locations.

Figure A11.1.15

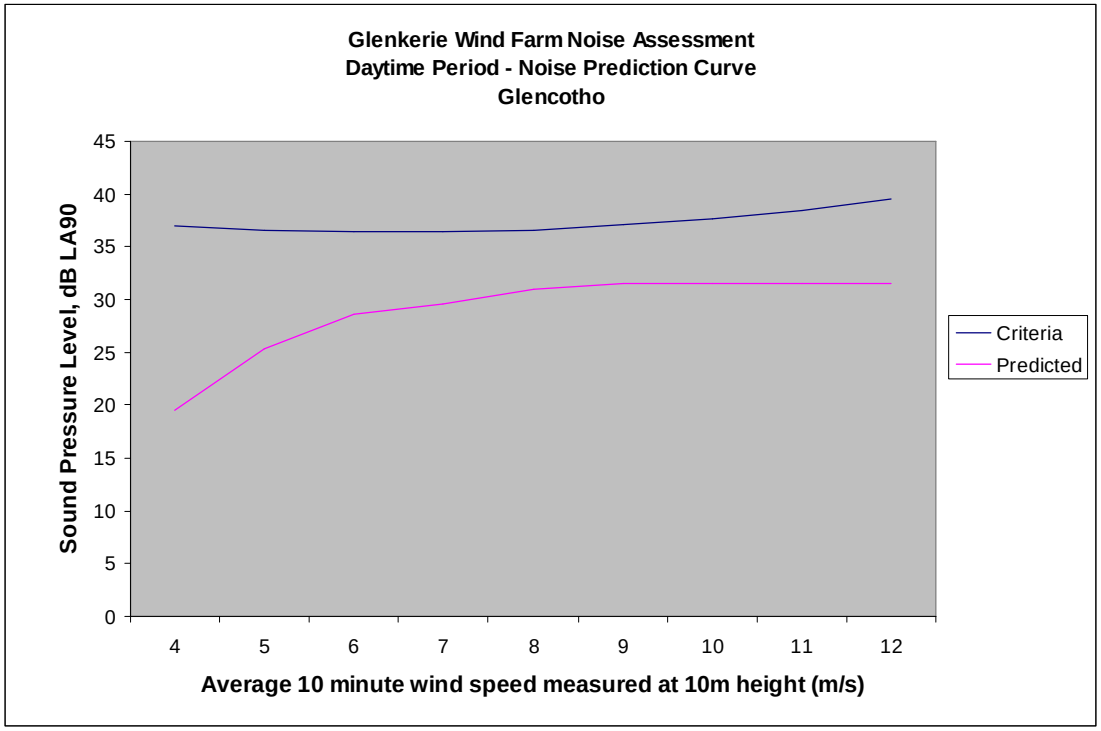


Figure A11.1.16

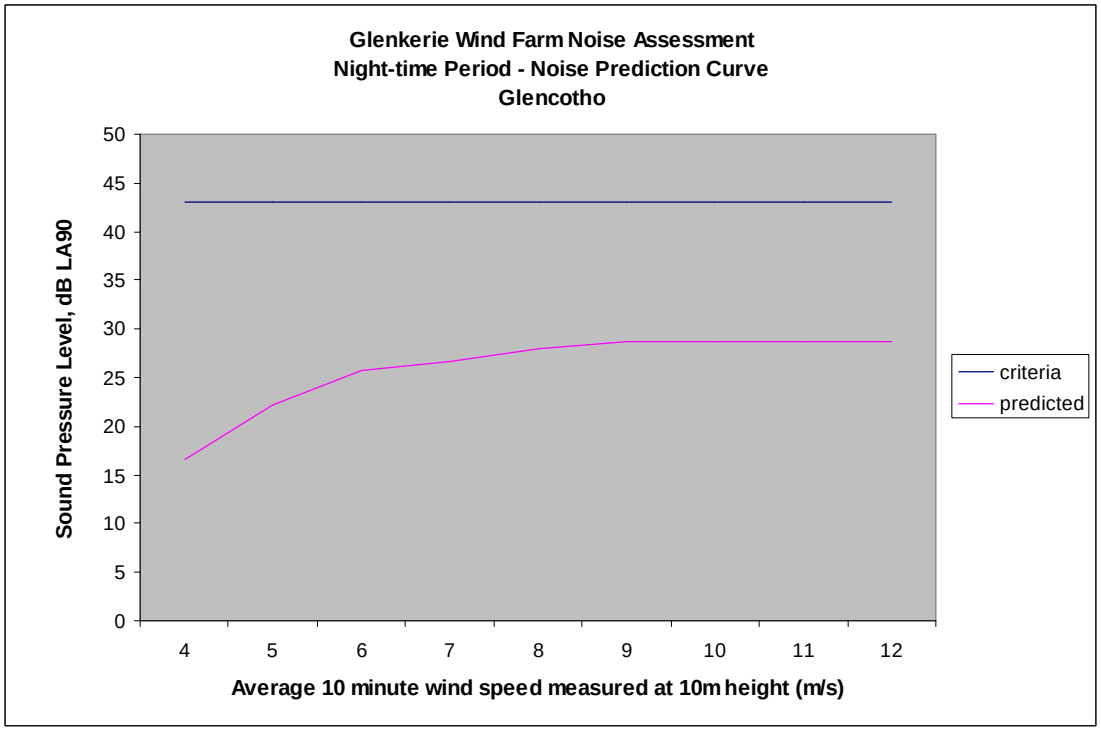


Figure A11.1.17

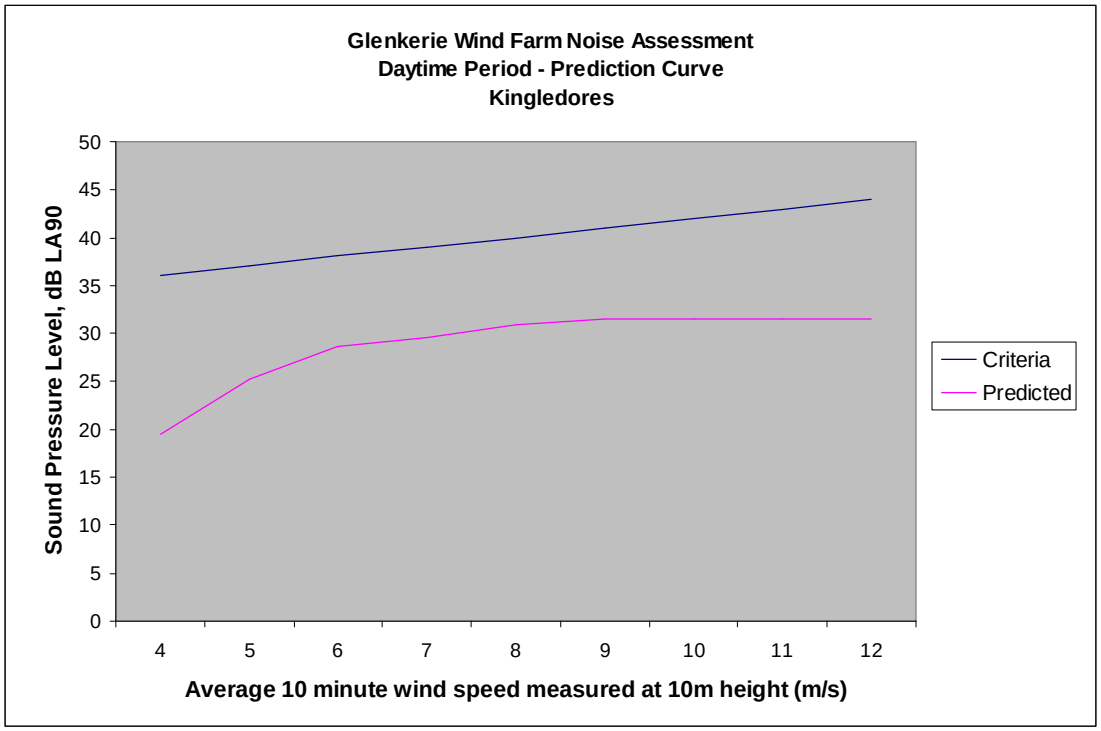


Figure A11.1.18