

15. AIR QUALITY AND CLIMATE

INTRODUCTION

- 15.1. This chapter examines the potential impacts and subsequent effects on air quality and climate associated with the proposed windfarm development. Local air quality issues relate to construction activities, in particular emissions from traffic in the local area and dust generation e.g. from borrow pit activities and excavations. More global air quality and climate issues relate to the ongoing operation of the windfarm as an alternative to emissions generating fossil fuel fired plant.
- 15.2. Further details on traffic movement can be found in **Chapter 12. Chapter 2** provides further background on the role of renewable energy in combating climate change.
- 15.3. This part of the assessment has been undertaken by Arupscotland. A fuller description of the company's relevant experience is provided in **Appendix I.I.**

POTENTIAL SIGNIFICANT EFFECTS

- 15.4. **Table 15.1** identifies potential effects on air quality and climate. Potential effects are those which could result from the construction and operation of a windfarm, according to the project, site and receptor characteristics and their interactions, and their inclusion in **Table 15.1** does not imply that they will occur, or be significant at Gordonbush. The assessment of effects on air quality and climate is based upon an assessment of the potential effects, in order to identify predicted effects.

Table 15.1 Summary of Potential Effects Air Quality and Climate

- Effects on receptors from changes in air quality as a result of dust arising from construction activities
- Effects on receptors from changes in air quality as a result of emissions from construction vehicles
- Contribution to combating climate change and improving air quality through displacement of emissions produced by the generation of electricity from fossil fuels.

CONSULTATION

- 15.5. **Table 15.2** summarises relevant responses to the consultation on air quality and climate.

Table 15.2: Consultation Responses Relating to Air Quality and Climate

Respondent	Comments
Scottish Executive	Scottish Executive Environment Group did not make any comment on air quality issues.
SEPA	SEPA did not have any comments with regard to air quality aspects of the project.
Highland Council	There was no air quality data available from Highland Council.

SOURCES OF INFORMATION:

- 15.6. The following sources of information have been used to inform the assessment:

- *The UK National Air Quality Information Archive* (www.airquality.co.uk)ⁱ
- *The State of the Environment Air Quality Report*ⁱⁱ
- *British Wind Energy Association (BWEA) Calculations for Wind Energy Statistics* (accessed April 2003), (www.britishwindenergy.co.uk/edu/calcs.html)⁽ⁱⁱⁱ⁾
- *Scottish Executive Climate Change in Scotland* (www.scotland.gov.uk/climatechange/)^{iv}

POLICY CONTEXT

- 15.7. The assessment has been undertaken within the following policy context:

- *UK Climate Change Policy and Renewables Obligation*
- *Air Quality (Scotland) Regulations 2000*
- *NPPG 6 Renewable Energy Developments*, which highlights issues for wind energy projects including those associated with air quality such as construction traffic.^v
- *PAN 45 Renewable Energy Technologies*. which provides guidance on issues relating to windfarms.^{vi}
- *PAN 50 Controlling the Environmental Effects of Surface Mineral Workings: Annex C: The Control of Traffic at Surface Mineral Workings; Annex B: Control of Dust at Surface Mineral Workings.*^{vii}
- *Highland Structure Plan W12 Air Quality* states that 'The Council will work closely with partner agencies to ensure that high standards of air quality are maintained within the Highland area. Where appropriate, new developments will be required to submit an environmental assessment, which addresses the subject of air pollution.'^{viii}

ASSESSMENT APPROACH

Overview

- 15.8. The assessment has been carried out as a qualitative desk study using available information on existing local air quality and likely construction methodology for the development. It included reviewing information provided by the UK National Air Quality Archiveⁱ Potential impacts of the development and sensitive receptors in the form of land uses within the vicinity of the site were identified. An assessment was then made of the potential effect during construction on these land uses and control measures proposed where necessary.
- 15.9. Once the site is operational only a small number of vehicles would visit the site for turbine maintenance and servicing. An assessment of the effect from exhaust emissions during this phase of the development was therefore not considered to be necessary.
- 15.10. An assessment of displaced emissions was based on theoretical emissions factors.

Evaluation method

- 15.11. The baseline information was collated through a desk study. A field survey was not required. The study involved examining construction methodology, construction traffic routes and flows to and from the turbine area, and calculation of the potential for emissions savings relative to traditional sources of power generation. References and professional judgement have been used in the evaluation.
- 15.12. Research undertaken by the United States Environmental Protection Agency^x shows that in excess of 90% of total airborne dust returns to rest within 100m of the emission source and over 98% within 250m. This suggests that the potential for dust effects is greatest within 100m of construction activities. The environmental assessment has found there are no sensitive land uses within 100 m of the turbine area which is the main construction area (see 15.16), it has therefore been judged that a quantitative assessment of the impact from fugitive dust emissions is not required.
- 15.13. A quantitative assessment of the development in relation to climate change and greenhouse gases was conducted using the British Wind Energy Association guidelines.

Significance Criteria

- 15.14. The following significance criteria have been used to evaluate the effects of the development:

Table 15.3: Significance Criteria for the Air Quality and Climate Assessment

Criteria	Description
Major Significance	Air quality standards exceeded
Moderate Significance	Increase in pollutant concentrations affecting sensitive receptors (e.g. schools, residential areas) and significant dust generation
Minor Significance	Increase in dust generation, noticeable at sensitive receptors
Negligible	No noticeable change in pollutant concentrations or dust generation at potential receptors

- 15.15. Specific criteria for displaced emissions have not been proposed.

EXISTING SITUATION

General Context

- 15.16. The windfarm is located in a rural area. Given the low population density predominantly agricultural land use, and the generally low levels of traffic, local air quality is assumed to be good.

Designations

- 15.17. Local Authorities are required to periodically review and assess air quality. Where concentrations of traffic related pollutants (benzene, carbon monoxide, nitrogen dioxide & PM10) are predicted to exceed UK Government air quality objectives, the Local Authority is required to designate an Air Quality Management Area (AQMA) and draw up Action Plans

containing measures to improve air quality. The Council has completed their air quality review and there is no AQMA designation for the Sutherland area of Highland Council.

Previous Studies / Data

- 15.18. The National Air Quality Information Archive⁽ⁱ⁾ (developed on behalf of the Scottish Executive & DEFRA) stores air quality statistics and background pollution maps for the UK. The maps provide an estimate of the annual mean background concentration, in 1996 and 2005, of each pollutant on a 1km grid across the UK.
- 15.19. In the vicinity of the windfarm site at Gordonbush, the reported concentrations of benzene, carbon monoxide, nitrogen dioxide, sulphur dioxide and total particulates (PM₁₀) were all well within National Air Quality Objectives.

Future Situation without the Scheme

- 15.20. Without the windfarm scheme, the existing air quality and levels of pollutant emissions are likely to alter in line with national predicted rates.

Summary – Sensitive Receptors

- 15.21. The sensitivity of different land uses and facilities to dust can be categorised from high to low^x. Examples are shown in **Table 15.4**.

Table 15.4: Sensitivity to Dust^(ix)

High Sensitivity	Medium Sensitivity	Low Sensitivity
Hospitals and clinics	Schools	Farms
Hi-tech industries	Residential areas	Light & heavy industry
Painting and finishing	Food retailers	Outdoor storage
Food processing	Greenhouses & nurseries	
	Horticultural land	

- 15.22. The nearest occupied property to the turbine area is Gordonbush Lodge, approximately 4km to the south west. The access track passes the properties at Ascoile and Moulin Cottage. These would be classified as medium sensitivity facilities according to **Table 15.4**. The access route also runs alongside Loch Brora.

ASSESSMENT OF POTENTIAL EFFECTS

Project Assumptions

- 15.23. It is assumed that environmental controls will be implemented during the construction of the windfarm to suppress dust emissions from the site and access track. The contractor will be responsible for implementing suitable measures on site. This would include as a minimum:

- Identification of haul roads and access points for construction traffic;
- Restricting vehicle speeds on the access track and unsurfaced areas e.g. borrow pits and construction areas;

- Use of a dust suppressant, such as water sprayed on the access tracks and construction area;
- Prior to exiting the site, vehicles would use wheel wash facilities, to ensure mud and/or other wastes are not tracked onto the adjacent public road;
- Regular inspection of public roads outside the site for cleanliness, and clean-up as necessary;
- Off-site maintenance of all construction plant and vehicles to ensure they comply with the relevant air emission standards.
- Ensuring appropriate transport of dust generating materials including vehicles to have loads enclosed or tarpaulined when travelling on the public roads to restrict release of particulate matter;
- Material handling systems and any site stockpiling of materials to be designed and laid out to minimise exposure to wind as far as practicable including use of dust barriers as necessary;
- Stabilisation and rehabilitation of the area immediately after construction, and phasing of the works to minimise areas of exposed ground

Construction Effects

Exhaust emissions

- 15.24. The operation of site equipment, vehicles and machinery will result in emissions to the atmosphere of waste exhaust gases containing the pollutants nitrogen oxides (NO_x), particles (PM₁₀), volatile organic compounds (VOCs), carbon monoxide (CO) and carbon dioxide (CO₂). The quantities emitted depend on factors such as engine type, service history, pattern of usage and composition of fuel.
- 15.25. Any effect from traffic during construction of the windfarm and associated infrastructure would be limited to a temporary period, along the traffic routes employed by haulage vehicles, construction vehicles and employees. Given traffic levels throughout construction are not considered to be significant (refer to **Chapter 12 Traffic, Transportation and Access**), such emissions are subsequently unlikely to have a significant effect, particularly when set in the context of current local air quality and road traffic emissions.

Dust

- 15.26. There are not considered to be any sensitive receptors within the vicinity of the turbine area. Ascoile, Moulin Cottage, together with Loch Brora are potential receptors situated along the access track route.
- 15.27. Dust emissions from construction activities are likely to be variable and will depend upon type and extent of the activity, soil conditions (moisture), track surface condition and weather conditions. Soils are inevitably drier during the summer period and periods of dry weather. When combined with higher winds, these conditions have the potential to generate the most dust. The construction activities that are the most significant sources of dust emissions are:

- earth moving, due to the excavation, handling, storage and disposal of soil and subsoil materials;
- construction aggregate usage, due to the transport, unloading, storage and use of dry and dusty materials;
- borrow pit activities;
- movement of heavy site vehicles on dry hard surfaced or untreated surfaces;
- movement of vehicles over surfaces contaminated by muddy materials brought off the site, for example, over public roads.

15.28. The activities outlined above generally respond well to appropriate dust control measures, such as those outlined in *PAN 50, Controlling the Environmental Effects of Surface Mineral Workings*^{vi}, and any effects will be temporary, both in terms of the duration of the construction period and occurrence during the period, and localised (see 15.10). Combined with the absence of sensitive receptors, construction dust effects are judged to be **negligible**.

Ongoing and Operational Effects

15.29. Contribution to combating climate change and improving air quality through displacement of emissions produced by the generation of electricity from fossil fuels.

Energy Generation / Climate Effects

- 15.30. The operation of the turbines will not emit air pollutants therefore the development will have no impact or consequential effect on concentrations of air pollutants locally.
- 15.31. It is assumed that, in an electrical system where generation is varied in order to meet changes in consumer demand, a unit generated at a windfarm results in a commensurate reduction of output at a fossil fuel fired power station. In the existing system operation, power stations, including coal fired power stations, stop or start generating, or vary their output to match system demand, with the most marginal plant generally being the first to change output. Typically within Scottish and Southern Energy's generation and trading activities, such a power station would be coal fired. It is anticipated, therefore, that additional renewable capacity will displace Scottish and Southern Energy's fossil fuel generationⁱ. A decrease in annual output from coal fired generation will result in a reduction in the amount of coal burned, and hence a reduction in emissions of carbon dioxide (which results from oxidation of carbon in the coal), sulphur dioxide (which results from oxidation of sulphur in the fuel) and nitrogen oxides (which primarily result from oxidation of nitrogen in combustion air). The BWEA has developed a method for calculating this reductionⁱⁱⁱ, based on emissions factors of 0.86 CO₂ kg/kWh, 0.01 SO₂ kg/kWh and 0.003 NO_x kg/kWh.
- 15.32. It is conservatively assumed that the load factor at the Gordonbush windfarm would be 30%, in accordance with the BWEA methodology. On this basis it is estimated that the scheme will contribute annual emission reductions of approximately:
- 158000 tonnes of CO₂

ⁱ In cases where changes in demand are met by varying hydro output rather than fossil fuel output, in general water will be stored in reservoirs for subsequent generation and fossil fuel output displacement.

- 1800 tonnes of SO₂
- 500 tonnes of NO_x

- 15.33. In practice, based on wind data collected at the site, a higher output and hence greater emission reductions, are predicted
- 15.34. Whilst the development of individual windfarms may not lead to significant improvements in air quality or reductions in greenhouse gas emissions, the cumulative effect of these energy sources, if utilised as an alternative to fossil fuels, will assist in the reduction of air pollutant and greenhouse gas emissions at a national level. The 2010 10% renewable obligation equates to aiming to deliver approximately 20 to 23 TWh² of additional renewable output^{3xi} Using the BWEA factors, this equates to a displacement of approximately 17 to 19 million tonnes of carbon dioxide. Therefore, with other proposed windfarms and other renewable projects, the Gordonbush scheme can, potentially, have a significant cumulative effect on the UK's target to reduce greenhouse gas emissions.

Mitigation

- 15.35. The dust emitting activities outlined in this chapter are expected to respond well to the dust control measures presented in section 15.18 therefore no mitigation measures are considered necessary for the construction phase of the windfarm.
- 15.36. Furthermore, no monitoring of air emissions is proposed. However, the contractor would be required to keep records of any nuisance complaints from the public, and to act on them.

Residual Effects

- 15.37. No residual effects due to exhaust emissions are predicted
- 15.38. It is inevitable that some dust emissions may arise from the construction operations, however these would be a temporary effect only. It is concluded there will be negligible adverse residual effects on air quality.

² terawattour =1000 million
³ kilowattours (kWh) or 'units'

SUMMARY AND CONCLUSIONS

15.39. **Table 15.5** below summarises the predicted effects, mitigation and residual effects of the windfarm in relation to Air Quality and Climate

Table 15.5 Summary of the Effects of the Windfarm on Air Quality and Climate

Potential Effects	Significance	Mitigation	Residual Effect
Effects on receptors from changes in air quality as a result of dust arising from construction activities	Negligible (temporary)	No mitigation measures required, as environmental controls form part of construction strategy	Negligible
Effects on receptors from changes in air quality as a result of emissions from construction vehicles	Negligible	No mitigation measures required, as environmental controls form part of a construction strategy	Negligible
Combating climate change and improving air quality: contributing to UK Emissions Reduction (cumulative effect)	Major potential (beneficial)	N/a	N/a

REFERENCES

- ⁱ Scottish Executive, DEFRA, (2003), *The UK National Air Quality Information Archive* (www.airquality.co.uk)
- ⁱⁱ Scottish Environment Protection Agency, (1999), *The State of the Environment Air Quality Report*
- ⁱⁱⁱ British Wind Energy Association, (accessed April 2003), *Calculations for Wind Energy Statistics* (www.britishwindenergy.co.uk/educalcs.html)
- ^{iv} Scottish Executive, *Climate Change in Scotland* (www.scotland.gov.uk/climatechange)
- ^v Scottish Executive, (Revised 2000), *NPPG6 - Renewable Energy Developments*
- ^{vi} Scottish Executive, (Revised 2002), *Planning Advice Note 45 - Renewable Energy Technologies*
- ^{vii} Scottish Executive, (1998), *Planning Advice Note 50 Controlling the Environmental Effects of Surface Mineral Workings: Annex C: The Control of Traffic at Surface Mineral Workings; Annex B: Control of Dust at Surface Mineral Workings.*
- ^{viii} Highland Council, (2001), *Highland Structure Plan*
- ^{ix} Cowheard at al, (1990), *Pollution Technology Review*
- ^x *Journal of Quarry Management* (n.d.)
- ^{xi} DTI, *New & Renewable Energy, Prospects for the 21st Century The Renewables Obligation*, Preliminary Consultation

16. RECREATION AND TOURISM

INTRODUCTION

- 16.1. This Chapter addresses the potential direct and indirect effects of the scheme on recreation and tourism. It considers specifically the access and site tracks, and more generally effects arising from the construction and existence of the windfarm as a whole.
- 16.2. Recreation includes leisure activities of both a sporting and non sporting nature. In the context of the ES, recreation is considered in terms of outdoor activities which are both formal (e.g. golf) and informal (e.g. walking), since it is outdoor activities that are potentially affected by the presence of the windfarm. Tourism involves the use of local recreational resources by people from outwith the area (i.e. tourists). Both recreation and tourism can be important socio-economic activities, both in terms of recreational resources operated on a commercial basis, and services such as accommodation which support tourism. However although there is some overlap with the socio-economic analysis set out in the next Chapter (particularly in terms of tourism), recreation and tourism have been considered separately as a result of their potential significance in relation to the proposal. This has allowed for a sufficiently detailed assessment to be made of these two closely interrelated issues.
- 16.3. The study has focused on recreation and tourism resources within approximately 30km of the windfarm because there is a strong link with the potential landscape and visual effects of the windfarm, and this is the area which has been considered within **Chapter 7**. The conclusions of the landscape and visual assessment form a basis for part of the recreation and tourism assessment. The assessment is also related to the archaeology and cultural heritage, and the ecological assessments (in terms of potential effects on salmon and deer). In turn the conclusions of the assessment feed into the socio-economic assessment.
- 16.4. This part of the assessment has been undertaken by Land Use Consultants. A fuller description of the relevant experience of the company is provided in **Appendix I.1**.

POTENTIAL EFFECTS

- 16.5. **Table 16.1** identifies potential effects on recreation and tourism. Potential effects are those which could result from the construction and operation of a windfarm, according to the project, site and receptor characteristics and their interactions, and their inclusion in **Table 16.1** does not imply that they will occur, or be significant at Gordonbush. The recreation and tourism assessment is based upon an assessment of the potential effects, in order to identify predicted effects.

Table 16.1 Summary of Potential Effects on Recreation and Tourism

- Temporary or permanent closure or diversion of permissive paths and tracks;
- Creation of new access routes with potential for informal recreational use;
- Noise and dust effects on recreational users, including horse riding, walking and mountain biking;
- Changes in the landscape character of the area, in terms of the secondary effects this may have on recreational and tourism activities, in particular golf, traditional highland estate sporting activities, walking, horse riding, cycling and sight seeing;
- Disturbance of deer with consequential effects on stalking;
- Construction effects on water quality, with consequential effects on fisheries and fishing.

CONSULTATION

Approach to the Consultation

- 16.6. The consultation process had two aims. Firstly, it aimed to obtain comments on the development and views on the scope of the recreation and tourism assessment. Secondly, it aimed to obtain information about recreation and tourism resources and activities in the vicinity of the development site. The consultation was undertaken in two phases. Phase 1 was the general consultation exercise reported in **Chapter 3**; Phase 2 included a specific exercise focused on recreation and tourism.
- 16.7. During the specific consultation, two types of organisation were contacted. Firstly, those organisations that might use the area for recreation, identified through internet search and by suggestions from contacts in the area. The consultees were asked to mark any areas which they use on a map, and to indicate how often they use each area. Information was also requested on any other known forms of recreation that take place within the study area, and other possible contacts.
- 16.8. Secondly, other groups and organisations that might be able to provide information on recreation and tourism in the area were contacted by phone, letter or email. These consultees were also asked to map areas which are used, and to provide an indication of levels of use.
- 16.9. This direct consultation on recreation was supplemented by comments received during the more general consultation undertaken by Scottish and Southern Energy.

Summary of Consultation Responses

- 16.10. The responses received during the scoping exercise which relate to recreation and tourism were outlined in **Chapter 3, (Table 3.4)**. They included:
- the Scottish Executive noted that that impacts on access and recreation, fishing and views from archaeological monuments should be taken into account in the EIA.

- The Highland Council Planning Department noted that ongoing VisitScotland research on the impact of windfarms on tourism in Scotland should be taken into account.

16.11. As summarised in **Table 3.5** in **Chapter 3**, in addition to the formal scoping exercise, the following views were expressed by consultees:

Table 16.2 Summary of recreation and tourism consultation responses

Consultee	Summary of comments
Borrobol Estate	Concerns about visual effects. Concerns about effects on deer stalking and importance on the landscape and its wilderness feel for visitors. Notes that reduction in sporting customers could reduce spending in the wider local economy. (This is therefore also addressed in Chapter 17).
Brora Community Council	Raised general concerns about impacts on tourism in the area.
Brora District Salmon Fishery Board	Identifies areas of the River Brora used for fishing and current levels of use.
Budnillidh Sport Club	Do not envisage any significant impacts.
Dalcham Caravan Site	Users make use of the area as a whole for walking, cycling and riding, but it is not anticipated that they would be troubled by the development.
Deer Commission of Scotland	State that structures are unlikely to have an adverse effect on deer when constructed and that there should be liaison with estate managers to allow for appropriate timing on construction.
Kildonan Estates	No specific recreation or tourism issues raised.
Kintradwell Estate	Concern about impact of the windfarm on sporting tourists using the estate. Suggest that visitors would not use the estate as a result of visual impacts of the windfarm. Consequent concerns about potential implications on estate jobs and by implication the local economy (therefore also addressed in Chapter 17).
Scottish Natural Heritage	Note that path networks appear to be largely concentrated around settlements, although there is scope for the networks to expand onto the neighbouring hill ground if appropriate.
Scottish Rights of Way and Access Society	Confirmed that there are no formally recognised rights of way affecting the site, although less formal routes may exist on the site or in the wider area.
Suisgill Estate	Request that the EIA takes into account visual impacts in relation to gold panners at Baile an Or and on the Suisgill burn.
Sutherland Estates	Indicated area of estate used for stalking and field sports, numbers of users and seasonal use. Also noted use of River Brora by salmon fishermen.
Sutherland Partnership	Concern about cumulative visual impacts on the landscape character of Sutherland, and the resulting effects this may have on the local tourism. Noted the importance of tourism as a key part of the local economy.
Sutherland Walkers Group	Club remaining strictly neutral on the development. Note that access tracks and turbines may aid access and navigation, but that visual amenity will be impaired. Club do not use the area regularly due to terrain.
VisitScotland	No response

16.12. Some consultees also made reference to the use of secondary sources, which in turn have been included in the analysis. Specific references are set out in the next section.

POLICY CONTEXT

16.13. Several policies provide the context for the assessment of the recreation and tourism effects of the proposed windfarm development, including:

- NPPG I I, *Sport, Physical Recreation and Open Space*ⁱ
- *A New Strategy for Scottish Tourism*ⁱⁱ
- *The Highland Structure Plan*ⁱⁱⁱ
- *Tourism in the Highlands – Towards 2005*^{iv}
- *South and East Sutherland Local Plan*^v
- *Sutherland Local Tourism Action Plan*^{vi}.

16.14. *NPPG I I* provides the national planning policy framework for this topic area. The Guidance notes that local authorities have a duty to maintain public rights of way and access routes within their respective areas. It also notes the importance of maintaining existing open spaces and other recreation resources, partly by safeguarding them from encroachment by developers. With particular regard to rural areas, *NPPG I I* states that planning policies should support traditional rural recreations and other forms of leisure that are in keeping with the landscape, infrastructure and economy.

16.15. Also at the national level, the *New Strategy for Scottish Tourism* sets out the need for the country as a whole to develop a modern tourism industry to ensure that it forms a central part of Scotland's economy. It notes that there has been major growth in visits by people from overseas, and that this is expected to continue. Short breaks and business tourism are key areas of potential growth for the domestic visitor market.

16.16. At the regional level, paragraph 2.7.1 of the *Highland Structure Plan* states that:

“Tourism is a vital element of the Highland economy. Highland’s identity, including its built heritage, rich wildlife, scenic beauty, history and culture are the foundations on which tourism and recreation activities are based. Access to and interpretation of historic and nature conservation sites and opportunities to participate in outdoor pursuits such as walking, cycling, skiing, fishing and wildlife watching are key visitor attractions. The Structure Plan strategy aims to build on the Highland identity and to take a proactive approach to the wide use of the natural environment as primary resources for tourism, as well as other economic development activities.”

16.17. Policy T2 of the Structure Plan (*Tourism Developments*) sets out support for high quality proposals for tourism development in the area. Policy T5 also sets out the Council's support for the development and maintenance of high quality multimodal tourist routes in the area.

16.18. *Tourism in the Highlands – Towards 2005* emphasises the importance of the local culture and environment to tourism. Key niches for further development include golf, culture and heritage, walking and nature-based tourism.

16.19. The *South and East Sutherland Local Plan* also notes the commitment of the Council to improving recreation and tourism facilities in the plan area. Paragraph 1.2.6 of the plan notes

the importance of tourism as part of the area's economy, and the contribution which the natural environment makes to attracting visitors to the area. Policy ENV3 paragraph 32 states that at Loch Brora, the Council will consider providing basic interpretation, picnic and car parking facilities. In addition, the Council will encourage the upgrading of the Golspie/Brora coastal footpath. The Plan notes the role of Helmsdale as a local service centre and a tourist base, and supports the enhancement of Golspie to encourage greater levels of use.

16.20. The *Sutherland Local Tourism Action Plan (Draft Revision)* was prepared by the Sutherland Partnership's Tourism Forum, and sets out local priorities for the industry. The plan identifies priority markets for the area including wildlife, culture, activities, archaeology / heritage /genealogy and geology. More specifically, the plan notes that it is important that Sutherland is perceived as a place where walking is encouraged and enjoyable. It also notes that the Highland Clearances form a key part of the area's cultural and heritage which is of international significance. It notes that the planned Clearances Centre in Helmsdale will form a focus for visitors in the future.

ASSESSMENT APPROACH

Overview

16.21. The assessment comprises:

- a review of existing formal and informal recreational and tourist provision and use in the vicinity of the site (baseline analysis)
- prediction of potential direct and indirect effects of the windfarm on recreation and amenity use;
- evaluation of predicted effects;
- input to the design of the windfarm to avoid / minimise any potential adverse effects;
- description of any residual effects.

Baseline Assessment

16.22. The assessment of the recreational and tourist use of the site and the surrounding area has been undertaken through desk based research and has been informed by the consultation exercise. The desk based assessment drew from the following resources:

- *The Highlands Visitor Survey*^{vii},
- *Tourism in the Highlands: Towards 2005*^{viii},
- *Sutherland Local Tourism Action Plan (Draft Revision)*^{ix},
- *Caithness and Sutherland Path Audit and Network Scoping Study*^x.
- Consultation responses as noted in **Table 16.2** above.

16.23. Field survey work was also used to verify the findings of the baseline assessment.

Effects Assessment

16.24. The assessment has been undertaken by comparing the existing situation (baseline) with the anticipated situation should the scheme be developed. Impacts relate to the nature of construction activities, the siting of the turbines / associated infrastructure, and the routing of access tracks. These have been examined against the recreational use of the site and nearby facilities as well as in terms of their relationship with tourism activity in the area. Wider research has also been taken into account to inform the analysis including:

- Research on Visitor Perceptions of Windfarms in Scotland^{xi}
- Research on Visitor Perceptions of Windfarms in Argyll^{xii}.

Significance Criteria

16.25. The following significance criteria have been used to evaluate the effects of the development:

Table 16.3 Significance Criteria for Assessing Effects on Recreation and Tourism

Criteria	Description
Major Significance	<ul style="list-style-type: none"> • access to a recreational or tourism area / facility is either positively created or severely restricted / completely removed; or • the extent of indirect effects on recreation and / or tourism (e.g. noise, dust, visual intrusion) is major in scale due to the magnitude of the impact and/or the nature of the receiving environment (e.g. sensitive nature of the recreational / tourism facility or area, extent of use etc.)
Moderate significance	<ul style="list-style-type: none"> • moderate change in access to a recreational area / facility (increase or decrease); or • the extent of indirect effects on recreation and / or tourism (e.g. noise, dust, visual intrusion) is moderate in scale due to the magnitude of the impact and / or the nature of the receiving environment (e.g. sensitive nature of the recreational / tourism facility or area, extent of use etc.)
Minor significance	<ul style="list-style-type: none"> • minor change in access to a recreational area / facility (increase or decrease); or • the extent of indirect effects on recreation and / or tourism (e.g. noise, dust, visual intrusion) is small in scale due to the magnitude of the impact and / or the nature of the receiving environment (e.g. sensitive nature of the recreational / tourism facility or area, extent of use etc.)
Insignificant	<ul style="list-style-type: none"> • no change in access to the recreational or tourism area / facilities; • the extent of indirect effects on recreation and / or tourism (e.g. noise, dust, visual intrusion) is insignificant or negligible in scale due to the magnitude of the impact and / or the nature of the receiving environment (e.g. sensitive nature of the recreational / tourism facility or area, extent of use etc.)

16.26. These criteria combine the assessment of magnitude of effects with a more value based assessment relating to the importance, level of use and / or sensitivity of recreation and tourism receptors.

EXISTING SITUATION

General Context

16.27. As with many areas of the Highlands, South East Sutherland has recreation and tourism activities based on a range of outdoor pursuits including:

- sightseeing / touring;
- walking and cycling;
- stalking;
- fishing;
- golf;
- natural heritage;
- built heritage.

16.28. According to the 1997 visitor figures for the area, around 62% of visitors to Caithness and Sutherland Enterprise area are domestic tourists whilst around 37% come from overseas. This latter share of the market is proportionally higher than figures for the Highlands as a whole (27%). Some 48% of visitors to the area considered the area's scenery to be its greatest asset, whilst a further 25% felt that its natural environment was most important. Around 77% of visitors to the area undertake outdoor pursuits or sporting activities whilst on holiday in the area, of which around 85% of activities were walking based^{xiii}.

Designations

16.29. No relevant designations apply to the site or the surrounding area, with the exception of the Moray Firth Tourist Route, located more than 20km to the south of the site.

Previous Studies / Data

16.30. SNH recently commissioned a scoping study which aimed to assess the Caithness and Sutherland Path Network^{xiv}. The study, which was undertaken by the Footpath Trust on behalf of Caithness and Sutherland Enterprise and Scottish Natural Heritage assessed the extent, condition, use and importance of routes in the area, and work required. The study showed that access to the countryside around Brora is generally good, although access from crofts around the village into Brora is sometimes difficult. It also identified that a number of Brora's best walks are "hidden away some distance inland, away from the village, without physical links or promotion to make them more widely known." The report notes that Sutherland and Gordonbush estates both currently promote and tolerate access subject to land management and operational needs relating to countryside sports.

16.31. In general access at Brora currently focuses on use of paths along the coast and the study considers it unlikely that Brora will become a destination for walking in its own right.

However, the study's recommendations focus on the ways in which the network would benefit from improved paths and new links from the village to the small hills immediately surrounding it, for the use of both visitors and local residents particularly in outlying crofting townships.

16.32. The study identifies three path priorities for the area:

1. Improvement of coastal routes to both north and south by improving safety for rail and road crossings and path alignment on narrow sections.
2. Improvement of the promotion of longer low level walks, particularly around Loch Brora.
3. The old paths leading to Ben Horn, Beinn Smeorail, Col-bheinn and the agreement of longer mountain cycle routes.

Desk Assessment

16.33. **Table 16.4** and **Figure 16.1** summarise key resources within the area.

Table 16.4 Recreation and Tourism Resources within the Vicinity of the Site

Activity category	No	Resource	Description	Source of Information	
Walking, cycling and horse riding	1	National cycle route	Cycle route – widely promoted	Sustrans	
	2	Coastal path north harbour	Informal walking route	Caithness and Sutherland Path Audit and Network Scoping Study (Footpath Trust, on behalf of CASE and SNH, 2000)	
	3	Coastal Path south to Golspie	Informal walking route		
	4	Glen Loth Circuit	Informal walking route		
	5	Brora to Golspie	Informal walking route		
	6	Carrol Rock	Informal walking route		
	7	Beinn Smeorail	Informal walking route		
	8	Distillery walk and routes in the crofting hinterland, Brora	Informal walking route		
	9	An Dubh Lochan	Informal walking route		
	10	Col-bheinn	Informal walking route		
	11	Ben Horn	Informal walking route		
	12	An Dubh Lochan track	Informal walking route		
	13	Around Loch Brora	Informal walking route		
	14	Blackwater - Sciberscross	Informal walking route		
	15	Morven	Informal walking route		
	16	Beinn Bhragaidh	Informal walking route and monument		
	Visitor attractions / purpose made facilities	18	Baile an Or		Gold panning interpretation / Layby
19		Brora Visitor Centre	Local visitor centre / information point		
20		Brora Golf Course	Golf course		
21		Dornoch Jail Craft Centre	Retail and visitor facilities		
22		Dunrobin Castle and Garden Museum	House and gardens popular		
23		Falls of Shin	Natural resource with interpretation centre		
24		Ferrycroft Countryside Centre	Interpretation centre		
25		Golspie Experience	Interpretation centre		
26		Golspie Golf Club	Golf club		
27		Historylinks Museum	Interpretation centre		
28		Royal Dornoch Golf Course	Golf course		
29		Orcadian Stone Company, Golspie	Retail and visitor information, mineral museum		
Stalking *	33	Sutherland Estates Land	Deer stalking and grouse shooting	defined by Sutherland Estates	
	34	Kintradwell Estates Land		defined by Kintradwell Estate	
	35	Gordonbush Estate			
	36	Suisgill Lodge			
	Fishing	37	Loch Brora	Fishing by boat – estate and hotel boats	
		38	River Brora	Fishing - lower end to the sea open to the public – southern bank	
		39	River Helmsdale	Fishing from banks	
Natural heritage	40	Forsinard	RSPB visitor centre		
	41	Loch Fleet	Bird and sea life watching		
Built and Cultural heritage	42	Brora Harbour	500 year old harbour		
	43	Clearances monument (proposed)	Community heritage initiative with genealogical significance		
	44	Clyne Cemetery	Genealogical tourism and heritage		
	45	Dornoch Cathedral	Built and cultural heritage		
	46	Helmsdale Harbour	Harbour		
Touring routes	47	Kinbrace Cemetery	Genealogical tourism and heritage		
	48	A897	Popular, but not officially designated tourist route		
	49	Moray Firth Tourist Route	Included as a National Tourist Route		

* Borrobol and Kildonan Estates Land in use for sporting activities was not defined during consultation

16.34. This information is not comprehensive, as many tourism and recreation opportunities are informal and / or not confined to a specific area. However, it does illustrate the range and location of many of the resources which are available locally.

Footpaths and Rights of Way

16.35. There are no designated footpaths in the immediate vicinity of the site, although they do exist within the wider environs covered by the ZVI. Most of the routes which would potentially be affected by the development are of a less formal nature (see below). The national cycle route extends along the coast, forming part of a network which connects the south of England with the northern coast.

Walking, Horse Riding and Cycling

16.36. Informal walking, cycling and horse riding are popular throughout South and East Sutherland. Although there are no officially designated walking routes in the area, the local network study highlighted some key popular areas as well as paths which could be developed and promoted more proactively to enhance the overall network. These included routes up Ben Horn, Beinn Smeorail and Col-bheinn, whilst identified priorities for improvement and promotion are not currently widely used. The latter is included in a local guidebook as a recommended route. A route around Loch Brora currently exists, but would require significant improvements to allow for wider use by recreational users, including cyclists. A route from Balnacoil Lodge along the Blackwater is also shown in the path feasibility study audit as having low levels of use at present, but being of potential interest to visitors.

Visitor Attractions

16.37. Key visitor attractions within the area include golf courses at Dornoch, Golspie and Brora. Visitor interpretation facilities also exist at a number of locations including within the main settlements. Closer to the site, the key purpose-built tourist resources include the interpretative information provided in relation to gold panning at Baile an Or which is a popular tourist activity on the River Helmsdale. The Clynelish Distillery is also a well known stop-off for visitors passing through the area. These resources tend to form a focus for visitor activity, and in particular organised holidays and tours passing through the area. Key themes used for interpretation in the area include genealogy, local heritage and natural heritage.

Fishing

16.38. Fishing is popular activity within the area, along the River Brora (which is known as a salmon river) and on Loch Brora which is fished by boat only. The southern banks of the lower reaches of the River Brora form the main areas which are open to the area. Other lochs in the area contain wild Brown Trout and rare Atlantic Char. Fishing is undertaken between February and the end of October, and includes the letting of around 16 rods each week on the River Brora, amounting to an estimated 700 users annually. Estate boats are available for public hire, as well as boats owned by local hotels. The River Helmsdale to the north of the site along the Strath of Kildonan is also well known and frequently used for salmon and trout fishing.

Stalking

16.39. The consultation responses showed that countryside sports are a relatively important part of the local tourism product. Several estates in the area, including Gordonbush, undertake

sporting activities, focusing primarily on visitors from further afield. Borrobol Estate undertakes deer stalking, as does the Sutherland Estates with an estimated 200-300 people using the land to the south west of the site (around Strath Brora), on and around Ben Horn and along the Black Water. Kintradwell Estate marches with Gordonbush Estate in part along the watershed of the hills on the eastern part of the site, and deer stalking is the main activity. Both Kintradwell and Borrobol Estates expressed concerns during the consultation that the visual effects of the windfarm would have an adverse impact on enjoyment of activities. Particular concerns related to the loss of American tourists who form a large part of the customer base. Stalking is also undertaken at Kildonan Estate.

Natural Heritage

- 16.40. Whilst informal wildlife watching occurs at many sites throughout the area, the main sites where interpretation is actively provided and promoted include the RSPB centre at Forsinard and Loch Fleet where there is a bird and sea life watching area and nature reserve. Limited access (for conservation management reasons) is provided at Forsinard via the visitor centre which is located at Forsinard station. Guided walks and a nature trail are also available at the site.

Built and Cultural Heritage

- 16.41. Reviews of tourist literature relating to the area show that cultural heritage and genealogy are important aspects of the local tourism product. Links with archaeological heritage and cemeteries are therefore important, although not widely promoted in a formal sense (e.g. through a published tourist trail). A community monument to the Highland Clearances is planned to be erected on the hill behind Helmsdale. Harbours at Helmsdale and Brora are also widely promoted as visitor resources. At Clyne, a local heritage group has undertaken restoration work on the cemetery, and its interpretation includes links with genealogy based promotion.

Touring Routes

- 16.42. The Moray Firth Tourist Route forms part of the network of national tourist routes, extending as far north as Lairg. More locally, the A897 is a popular route for visitors, by car, and railway journeys along the line which also extends through Strath Fleet and Strath of Kildonan are also likely to be used by touring visitors.

Future Situation without the Scheme

- 16.43. It is not envisaged that there would be significant changes to recreation and tourism activity in the area, should the scheme not be undertaken. However, planned improvements in the area, including promotion and interpretation around Loch Brora, improvements to key routes from the village onto the hills and connections between crofting communities could help to improve the range and quality of resources available in the long term.

Summary – Sensitive receptors

- 16.44. Of the receptors identified, sensitive ones are likely to be those where landscape is core to the recreational experience, or access is taken on land which is directly affected by the development. The most sensitive receptors are therefore likely to be:
- the Moray Firth Tourist Trail and the A897;

- the site itself and its immediate surroundings for informal recreation (e.g. hillwalking).

- 16.45. Sensitive receptors are likely to be those where landscape forms an important element of the recreational experience or where the visual impact of the development could potentially indirectly have an adverse effect on enjoyment of activities. These are likely to include:

- sporting activities on the Gordonbush, Kintradwell, Kildonan, Sutherland, Suisgill, Balnacoil and Borrobol Estates;
- fishing on Loch Brora, the River Brora and the Helmsdale River;
- existing walking routes within the area, or the potential priority routes identified by ongoing network planning and development;
- golf courses with a view of the development, with potential for user distraction as a result of the movement of the blades;

- 16.46. The least sensitive receptors are likely to be those where landscape forms a minor or incidental element of the recreational experience, and are likely to include:

- most of the purpose built tourist attractions and thematic sites of interest (e.g. Baile an Or), visitors to Forsinard and Loch Fleet;
- genealogical tourism.

ASSESSMENT OF POTENTIAL EFFECTS

Project Assumptions

- 16.47. The following assumptions have been made with regard to the construction and operation of the project:

- that access to the site would be restricted during construction for safety and security purposes;
- that vehicular access to the site would be restricted during operation;
- that a network of tracks would be established as per **Figure 6.1**;
- that dust and noise effects during construction would not be significant (**Chapter 10**);
- that the landscape and visual effects would be as concluded in **Chapter 7**.

Construction Effects

Closure or diversion of permissive paths and tracks

- 16.48. No paths which are either officially designated or informally used would be closed as a result of the proposed development. The only exception to this may be the existing estate tracks at Gordonbush which would be closed during the construction process. Given that levels of usage of these tracks is currently low, and that closure during construction would be temporary, the effect of this is considered to be **insignificant**.

Creation of new access routes

- 16.49. No new access routes would be created and made available to the public during the construction period. This effect would therefore be **insignificant**.

Effects of dust and noise

- 16.50. Noise and dust emissions may arise during construction. Most of the existing and potential areas of formal and informal visitor activity are located at some distance from the site. The key exception to this would be stalking on the Gordonbush Estate, as well as at the periphery of Kintradwell and Kildonan Estates which march close to the location of the turbines (see below). Given that the potential for construction noise and dust is of a temporary nature and is itself not considered to be significant (see **Chapter 10** and **Chapter 15**), and in light of the low levels of usage of the site itself for wider informal recreation or tourism, potential effects on informal recreational users and tourists are considered to be **insignificant**.

Enjoyment of the Landscape

- 16.51. The landscape and visual assessment concludes that the effects of the development during construction would be of minor significance overall, given the lack of visibility of the site from most of the surrounding area, and due to the main impacts arising from the height of the turbines during operation. As a result, the effects of the development during construction on enjoyment of the landscape are considered to be **insignificant**.

Effects on Stalking

- 16.52. The main effects on stalking at the construction stage relate to access to the site itself, and are therefore direct. The windfarm will have a direct effect on stalking by restricting access to an area which is currently in use. This will affect only the Gordonbush Estate during the construction period and it is understood that use of alternative areas of the estate would be used for such activities. Following construction, sporting activities would resume on the site (see operational effects below), making this a temporary and therefore **insignificant** effect.

Effects on Fisheries and Fishing

- 16.53. There is a risk that pollution to watercourses from construction activities may occur. The ecology and hydrological assessments (see **Chapters 8** and **14**) note that as a result of the relationship of the relationship between watercourses on the site and the wider network of habitats, and due to the use of appropriate practices during construction, the effects of this would not be significant. This effect would therefore be **insignificant** in relation to fisheries and fishing in the area.

Operational effects

Closure or diversion of permissive paths and tracks

- 16.54. As with the construction period, no permissive paths or tracks would be closed during the operation of the windfarm. Given that little informal recreation for walking, cycling or riding is reported to take place on the site itself and the areas which would be directly affected by the development components, this effect is predicted to be **insignificant**.

Creation of new access routes

- 16.55. Non vehicular public access to the site would be permitted during the operation of the windfarm. Given the lack of current use of the area, possibly arising as a result of the few formal routes which are available, the significance of this effect is predicted to be **minor (positive)**.

Effects of dust and noise

- 16.56. As with the construction period, the overall operational effects of dust and noise are predicted to be **insignificant**, as a result of the low levels of dust generated during operation, and the lack of noise sensitive areas and low noise levels which are predicted in **Chapter 10**.

Enjoyment of the Landscape

- 16.57. The key potential operational effects of the development relate to recreation and tourism activity in the area and its relationship with the landscape and visual effects of the development.
- 16.58. In terms of the sensitive receptors, it is concluded that the main areas requiring consideration are routes used by tourists passing through the area or sightseeing. As noted previously, the Moray Firth Tourist Route is the closest of the network of national tourist routes to the area. Because of the distance of the proposed development to the nearest parts of the Tourist Route (more than 20km) and the very limited visibility from the road which has been predicted (see **Chapter 7**, Viewpoint 9) we judge there to be **no significant effect** on the users of this route.
- 16.59. The other key touring route is the A897 to the north of the site. The landscape and visual assessment showed that views from this route, and from visitor interpretation points on it such as at Baile an Or would be of minor to moderate significance, and that views from the route as a whole would be limited and intermittent. Depending on the predisposition of the viewer to what can be seen in the landscape when touring, visibility of the windfarm may reduce or enhance the person's enjoyment of the activity, or could have no effect at all. The effect on users of this route is therefore judged to be **insignificant**.
- 16.60. **Figure 6.1** shows the tourist resources in the area in relation to the ZVI as defined for the landscape and visual assessment. This shows that many of the area's more formal tourism and recreation resources are located within settlements or on the coast, and that the windfarm would not be visible from many of these areas. The windfarm would only be visible to a very limited extent from formal and informal touring routes in the area. There would be only limited visibility from the River Brora, Loch Brora and the River Helmsdale. Visual and landscape effects relating to tourism and recreation will, however, arise in areas inland which are used for informal walking or for countryside sports.
- 16.61. As noted above, several secondary sources of information can be used to inform the analysis including recent work undertaken by System Three on behalf of VisitScotland on visitor perceptions of windfarms. This work was carried out to inform the development of a national policy statement on the development of windfarms and their impact on tourism experiences. The work as a whole highlighted the emotive nature of windfarm development in relation to the industry. Of businesses consulted, views tended to be positive towards windfarms, or at least in terms of a range of conditions which might ameliorate impacts.

16.62. Visitors tended to have a more mixed perspective, with a significant share of respondents having concerns about visual impacts on the landscape. However, the research also showed that overall, more than 75% of visitors surveyed tended to be neutral towards the idea of windfarm developments, with around 21% having a more negative perspective on such developments. It is important to note that this overall view is based on reactions to questions which explore not only impacts on the landscape, but also more general views on renewable energy generation.

16.63. More specifically, key findings of the visitor survey itself showed that:

- as with the Sutherland area, scenery is a key influence in decisions to visit an area;
- just under half of the respondents had experienced windfarms in Scotland either on this trip or on a previous trip.
- when questioned on which facilities or developments detracted from their experiences of the area, 29% mentioned windfarms and turbines. However, 18% felt that windfarms and turbines enhanced their experiences.
- 31% of respondents felt that the scenery and landscape would be spoiled by windfarm developments and a further 7% felt that the magnitude of this impact would be significant. Most other respondents were neutral on this issue or felt that impacts would depend on the location/area (22%), if they were camouflaged (7%) or the number of turbines (4%).
- 63% of visitors felt that if the numbers of windfarms increased, it would not have an influence on the likelihood of them taking holidays in the area in the Scottish Countryside in the future. At the same time 15% said they would 'steer clear' of the area and 10% would be less likely to come back. In terms of returning to the same area where a windfarm had been developed, 70% of respondents said that it would have no influence on their decision making on whether or not to return to the area.

16.64. The MORI study was published in September 2002 and focused on discussions with visitors at five locations in Argyll. The survey highlighted:

- the importance of scenery and views as a factor in attracting people to the area (cited by 48%) with 83% also noting that the countryside and landscape were of particular interest to them;
- 49% of the visitors had seen one or more of the windfarms in Argyll;
- of those who were aware of the windfarms in the area, 43% of respondents felt that they had a positive effect on their impression of Argyll as a tourist destination, whilst 8% felt it had a negative effect (with the remainder being neutral);
- 91% of all respondents felt that the presence of windfarms would have no impact on any future decisions to visit the area;
- 80% of respondents would be interested in visiting a windfarm if it was open to public and had a visitor centre.

16.65. These two key studies relating to tourism and recreation underline the difficulty in defining in conclusive terms the extent and influence of windfarms in relation to tourism. However, a shared finding relates to the lack of influence which the existence of windfarms has on

influencing decisions to visit an area. The surveys have shown that whilst tourist views on the effects of a windfarm development in relation to the scenic quality and landscape of areas vary, with a significant proportion considering such effects to be negative, a similar proportion also view the windfarms as a positive addition to the landscape or a site of interest in its own right.

Effects on Stalking

16.66. Ongoing effects of the development on stalking would be indirect and would result from the relationship between the activity and visual and landscape perception during the operational phase. The ZVI map included in **Chapter 7** illustrates that surrounding areas including parts of neighbouring estates will have views of the windfarm. It is reasonable therefore to assume that from certain areas used for stalking the windfarm may also be visible. Both Kintradwell and Borrobol Estates expressed concerns that this may affect stalking activities on their land. At Kintradwell, visibility is limited to the ridgeline where the estate marches with Gordonbush. At Borrobol, visibility will also be limited to the higher land with southern aspects. Depending on the predisposition of the viewer to what can be seen in the landscape when stalking, visibility of the windfarm may reduce or enhance the person's enjoyment of the activity, or could have no effect at all.

16.67. Taking into account these potential significant but indirect impacts and the uncertainty associated with assessing perceptions of the development, the effects of the development on deer stalking in the study area as a whole is considered to be of **insignificant - minor** significance overall.

Effects on Fisheries and Fishing

16.68. Hydrological effects during operation would, as with those identified for the construction period, be negligible. Visibility of the site from Loch Brora itself, the Helmsdale and Brora Rivers would also be limited, with there being limited views of the site from the River Helmsdale (as defined in **Chapter 7**). As a result, the effects of the windfarm on fisheries and fishing within the vicinity of the site are assessed as **insignificant**.

Secondary Effects / Interactions

16.69. Secondary effects on the local economy may arise from the tourism implications of the development noted above. This is considered further in the next chapter. The links between recreation and tourism and the landscape and visual, hydrological and ecological effects of the proposal have been outlined above.

Mitigation

16.70. No mitigation measures are proposed in relation to the recreation and tourism effects of the development.

Residual Effects

16.71. The residual effects of the proposed development would be as defined previously.

SUMMARY AND CONCLUSION

16.72. **Table 16.5** below summarises the predicted effects, mitigation and residual effects of the windfarm in relation to recreation and tourism.

Table 16.5 Summary of Effects of the Windfarm on Recreation and Tourism

Effects	Significance	Mitigation	Residual effects
Construction Effects			
Temporary or permanent closure or diversion of permissive paths and tracks.	Insignificant	N/A	Insignificant
Creation of new access routes with potential for informal use.	Insignificant	N/A	Insignificant
Noise and dust impacts on recreational users	Insignificant	N/A	Insignificant
Changes to enjoyment of the landscape	Insignificant	N/A	Insignificant
Effects during construction on stalking	Insignificant	N/A	Insignificant
Effects during construction and operation on fisheries and fishing	Insignificant	N/A	Insignificant
Operational Effects			
Temporary or permanent closure or diversion of permissive paths and tracks.	Insignificant	N/A	Insignificant
Creation of new access routes with potential for informal use.	Minor (positive)	N/A	Minor (positive)
Noise and dust impacts on recreational users	Insignificant	N/A	Insignificant
Changes to the landscape character and its influence on recreation and tourism enjoyment during construction	Insignificant	N/A	Insignificant
Effects during construction on stalking	Insignificant - Minor	N/A	Insignificant - Minor
Effects during construction and operation on fisheries and fishing	Insignificant	N/A	Insignificant