

14 MISCELLANEOUS ISSUES

INTRODUCTION

14.1. This chapter describes and assesses the potential effects of the proposed wind farm at Spittal Hill on a range of issues that are not addressed elsewhere in this Environmental Statement:

- Communications;
- Aviation;
- Waste;
- Health and Safety; and
- Other Infrastructure.

METHODOLOGY

14.2. In respect of each of the matters to be considered, the general approach to the assessment of effects outlined in Chapter 2 and required by The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 has been followed.

14.3. Where appropriate, baseline conditions have been established through desk-top study and consultation. Potential effects of the windfarm have been identified and assessed. Where relevant, mitigation measures have been identified.

COMMUNICATIONS

14.4. In common with other large structures, wind turbines have the potential to interfere with various forms of communications, including:

- Telecommunications;
- Television and radio broadcasting links; and
- Civil aviation, military, maritime and emergency services

14.5. Both the turbine tower and the effect of the rotating blades can cause interference.

14.6. The following documents have been used for guidance on effects on communication assessment methodology:

- Scottish Executive (2001) Planning Advice Note (PAN) 62: Radio Telecommunications
- Department of Trade and Industry (2002) Wind Energy and Aviation Interests: Interim Guidelines
- BBC, RA, ITC (2001) The impact of large buildings and structures (including wind farms) on terrestrial television reception

14.7. PAN 62 considers radio telecommunication disruption caused by large and prominent structures such as wind farms, due to obstruction or reflection of signals. Section 117 advises that:

'Planning authorities can grant planning permission for such prominent structures subject to a condition that before development commences the developer will propose measures by which the quality of reception affected by the proposal will be maintained.'

14.8. Hence, it is important to recognise that if effectively mitigated, communications impacts are not an absolute constraint to development.

Telecommunications

14.9. Mobile radio communication consulted and their responses are shown in Table 14.1 below:

Table 14.1: Summary of Mobile Radio Telecommunication Organisations' Responses

Organisation	Issued Raised and Recommendations
Ofcom	BT, Scottish and Southern Energy and T-Mobile fixed microwave links may be affected and should be consulted.
BT wholesale Radio solutions unit	Initial response (September 2004) indicated that turbine 31 could affect the radio network. Subsequently responded there would be no effect.
O2 (UK) Limited	No response.
Vodafone Limited	No impact.
T-Mobile	No Objection.
Scottish and Southern Energy	No Objection.
CCS Spectrum Management (on behalf of Scottish Water communications)	No Objection.
Joint Radio Communications Ltd	No Objection.
Cable and Wireless Frequency Management Services	No response.

14.10. The potential effects of the development on telecommunications, which were investigated further, were:

- Interference with one Northern Constabulary point to point radio link;
- Interference with one T Mobile fixed link; and
- Interference with one Scottish and Southern Energy fixed link.

14.11. Further consultation resulted in all parties confirming that no interference with their links are predicted.

Television Reception and Radio Broadcasting

14.12. The following two television services are provided by the broadcasters:

- **Permanent broadcast links**, which provide television programme distribution by means of landlines, microwave links and UHF In-Band rebroadcast links (RBL). RBL is the major part of the distribution system. Both microwave and rebroadcast links can be affected by wind farms. The transmission network within the UK is provided and operated on behalf of the broadcasters by Crown Castle and National Transcommunications Ltd (ntl).
- **Domestic Television Reception**. Terrestrial analogue and digital television within the UK is sub-divided into areas for which the BBC or the Independent Television Commission (ITC) is responsible. Within Caithness ntl undertakes assessments of impacts of wind farms on Terrestrial analogue and digital domestic television services for domestic reception on behalf of the ITC.

14.13. Wind farms can potentially cause interference to domestic television reception where a viewer is in the 'shadow' of the wind turbines and their aerial is pointing through the wind farm. Periodic obstructions may occur due to the rotating blades. TV viewers in close proximity to the proposed wind farm may find that TV pictures are delayed due to the reflection of signals off the turbine structures, and periodic reflection off the blades. These delayed images are likely to flicker as the blades rotate. Ntl state that experience has shown that it is unlikely significant interference will be caused beyond about 5 to 10 m behind the turbines or beyond 0.5km elsewhere around the wind farm.

14.14. Consultation responses from television reception and radio providers are summarised in Table 14.2.

14.15. Crown Castle have stated that the proposal is in proximity of the RBL from Rumster Forest to Thurso, however ntl have responded that there is unlikely to be an impact and that they do not wish to object.

14.16. In the event that broadcast links were affected, there are several measures that could be taken to restore:

- Re-siting of existing aerial arrays, or change in aerial height;
- Replace receiving aerials;
- Retuning TV receivers;
- Provision of self help cable systems CAT.

14.17. By provision of the above, the development of the wind farm could ultimately lead to an overall improvement in reception at some properties compared to baseline quality. Hence, after any mitigation, it is not foreseen that the wind farm will cause any significant negative effects on television and radio broadcasting in the area.

Table 14.2: Summary of Television and Radio Consultation Responses

Organisation	Role/Responsibilities	Issued Raised and Recommendations
Crown Castle UK Ltd	Responsible for providing the BBC's transmission network and ensuring the integrity of re-broadcast links within certain areas.	Proposal located within an area of ntl's responsibility. Note that it is close to the path of the RBL from Rumster Forest to Thurso. NTL will be able to advise if there is likely to be an adverse effect on the operation of this link.
Ofcom	TV Broadcast Transmissions	No Response.
National Transcommunications Ltd (ntl)	Permanent broadcast links, which provide television programme distribution Undertakes assessment of large building interference on domestic reception on behalf of Independent Television commission (ITC) which is part of Ofcom	Response March 2007 indicated that the proposed development would be unlikely to affect any UHF re-broadcast links and ntl did not wish to object
BBC	Provides radio reception in certain areas	No Comment.

Civil Aviation, Maritime, Military and Emergency Services

14.18. Wind turbines have the potential to interfere with military and civil aviation operations, primarily through effects on radar systems but also in respect of their location within military low flying areas. The consultation responses regarding civil aviation, maritime, military and emergency services telecommunications are summarised in Table 14.3.

Table 14.3: Summary of Television Reception and Radio Broadcasting

Organisation	Role/Responsibilities	Issued Raised and Recommendations
National Air Traffic Services (NATS)	Provides air traffic control services to aircraft flying in UK airspace, and over the eastern part of the North Atlantic.	No Technical Safeguarding objections to the proposal.
Civil Aviation Authority (CAA)	Aviation regulator.	Advised consultation with MoD, CAA, Kirkwall Airport and Wick Airport.

Highlands and Islands Airports Limited (HIA)	Responsible for aerodromes located at Barra, Benbecula, Campbeltown, Inverness, Islay, Kirkwall, Stornoway, Sumburgh, Tiree and Wick.	No objection. Changes in Instrument Flight Procedures will be required, which would take 6 months to effect. Associated costs to be met by developer. Require red obstruction light on highest point of T17 (highest turbine)
British Airport Authority	Responsible for various aerodromes across UK.	No objection.
Defence Estates	Responsible for safeguarding Ministry of Defence radar, communications and low flying.	No objection. Requested notification of commencement of construction and location of turbines for avoidance.
Northern Constabulary	Emergency Services communications	Identified potential interference between towers at Orlig and Benachielt. Require 400 m turbine free corridor.

14.19. Following the initial consultation undertaken at the scoping stage further consultation was undertaken with various groups following design freeze. The outcome of this is that no consultees have raised objections to the windfarm on the basis of communications or interference with microwave links.

WASTE MANAGEMENT

14.20. The purpose of this section is to provide an assessment of the potential waste streams generated during construction, operation and decommissioning of the proposed windfarm. Methods to incorporate best practice waste management techniques and incorporation of the waste hierarchy into all aspects of the site management are described. The management of both construction waste and operational waste is considered, whilst wastewater arising from construction is considered in Chapter 8, Hydrology, Hydrogeology and Geology. Construction of a windfarm is substantial new development and developers should demonstrate:

- That the development includes construction practices to minimise the use of raw materials and maximise the use of secondary aggregates and recycled or renewable materials; and
- Waste material generated by the proposal is reduced and re-used or recycled where appropriate on site (for example in landscaping not resulting in excessive earth moulding and mounding).

Consultation

14.21. During consultation, the Scottish Environment Protection Agency (SEPA) stated that Spittal Quarry (flagstone) is located at the southern end of the proposed site and should be appraised as a local source of aggregate. Waste streams associated with the works should be assessed and it should be demonstrated that the use of raw materials is minimised and the use of secondary aggregates is maximised. The Highland Council also mentioned Spittal Quarry as a local source of aggregate.

Assessment of Waste Streams

Construction

14.22. A number of potential waste streams have been identified in the construction phase. Wastes likely to arise during the construction phase of the windfarm development include the following:

- Wastes from non-metalliferous excavation, gravel, tailings and crushed rocks;
- Oil wastes including hydraulic oils, engine gear and lubricating oils;
- Wastes from metal degreasing and machinery maintenance, including solvents;
- Packaging, including absorbents, wiping cloths, filter materials and protective clothing;
- Miscellaneous waste including batteries and accumulators, storage and tank cleaning; and
- Mixed construction including concrete waste.

Operation

14.23. Wind generation produces no pollutants, waste emissions or pollutants. However there will be a small amount of waste associated with the operation of the windfarm. These are likely to be restricted to waste associated with the control building from employees and visiting contractors, storage of chemicals / fuel and septic tank sludge.

Decommissioning

14.24. It is anticipated that waste generated during decommissioning will be similar to construction however; the disposal and decommissioning of end-of life turbines will generate a greater amount of waste.

Mitigation

14.25. Generally, there are few wastes associated with the construction of the windfarm. All turbine components and infrastructure are pre-fabricated and will be assembled on-site. The following sections describe the mitigation measures to be adopted during the construction, operation and decommissioning phase of the windfarm with regards to waste.

Construction

14.26. To manage wastes effectively during construction, general practices will be followed to ensure appropriate management of different waste streams. These are summarised in Table 14.4.

Table 14.4: Management of Waste Arising from Construction

Waste	Proposed Management
Waste resulting from quarrying and excavations.	Borrow pits will not be required on site. Due to the close proximity of Banniskirk and Spittal Quarries, flagstone will be won from these sites for hardstanding areas. This means that exact volume of aggregate can be extracted with little on site waste. Smaller aggregate size class can be crushed, screened then used as backfill for cable trenches, if required, to minimise sand requirements. Generally, materials generated from these activities are re-used or recycled

	where appropriate on site (for example in landscaping). All soils will be removed and reused. Other wastes collected, binned and removed.
Oil Wastes	Licensed disposal of oil and any accumulation of fuel residues in the bunded refuelling area will be disposed of as special waste by licensed tanker facilities and accompanied by a consignment note.
Packaging	Most packaging materials will be returned to manufacturers, including cable drums and pallets
Wastes not otherwise specified	Septic tank systems will be emptied by licensed carriers in line with requirements of SEPA consent.

- 14.27. In addition, general guidelines will be adhered to by the contractors, these are summarised below.
- 14.28. **Storage and handling of waste** - site operatives will segregate different waste types to maximise potential for reusing. Waste containers will be clearly marked with intended content. Containers suitable for contents will be used to minimise risk of accidental spillages and leaks. Covers and bunds will be provided to prevent evaporation and spillage of wastes and to ensure that wastes cannot be blown away.
- 14.29. **Waste transfer notes and special waste** - responsibility will be taken to dispose of waste arising in accordance with the Environment Protection Act 1990 (as amended) and the Environment Protection (Duty of Care) Regulations 1991. Waste leaving the site will be accompanied by a waste transfer note or special waste consignment note that records the description of the waste, its current holder, the person collecting it and its destination.
- 14.30. **Reducing, reusing and recycling.** Site operative will reuse and recycle wastes generated on-site whenever possible.
- 14.31. It is not anticipated that any of the operations will require an exemption under the Waste Management Licensing Regulations 1994. However should the need arise, to register an exemption, appropriate agreement will be sought with SEPA.

Operation

- 14.32. Sludge from septic tank will be collected by an authorised carrier and disposed of to a consented wastewater treatment works.

Decommissioning

- 14.33. End of life scenario for turbine disposal cannot be accurately predicted for 20 –30 years however turbines will be reused or recycled in accordance with industry best practice at the time.

Conclusion

- 14.34. A number of waste streams will be generated throughout the construction, operation and decommissioning phases. Implementing general techniques to handle, store and audit waste will reduce initial generation of waste. Specific reduction / recycling and reuse methods will be employed to manage construction wastes.

HEALTH AND SAFETY

Consultation

- 14.35. The written responses received regarding health, safety and security are included in Table 14.5.

Table 14.5: Summary of Responses regarding Safety and Security Issues

Organisation	Role/ Responsibilities	Issues Raised and Recommendations
Department of Trade and Industry, Energy Group Engineering Inspectorate	Public Safety	Measures to protect the public from danger associated with the electrical plant and equipment servicing and development Specific measures must comply with the requirements of the Electricity Safety, Quality and Continuity Regulations 2002
Health and Safety Executive	Protection of the H&S of people affected by work activities	Comply with the requirements of the Electricity Safety, Quality and Continuity Regulations 2002.

Design and Construction

- 14.36. The construction site will be managed and operated in accordance with Health and Safety at Work etc Act 1974 and comply with relevant Health and Safety Regulations, including:
- The Management of Health and Safety at Work Regulations 1999;
 - The Construction (Health, Safety and Welfare) Regulations 1996;
 - Construction (Design and Management) Regulations 1994 (as amended); and
 - Electricity Safety, Quality and Continuity Regulations 2002.
- 14.37. Potentially hazardous areas such as excavation and electrical installation works will be fenced off and posted with appropriate signage and all unattended machinery will be stored in the site compound or immobilised to prevent unauthorised use.
- 14.38. Although there are no formal rights of way across the site, a number of tracks exist that may be used for informal access. During the construction process, this access will be restricted in order to safeguard the safety of the public. Appropriate signage will be displayed at site entrances and boundaries.

Operation

- 14.39. An operational management plan will be prepared outlining Health and Safety mechanisms and procedures to protect operational staff and visitors to site.
- 14.40. Wind farms are designed and constructed to withstand extreme wind and weather conditions. In very high winds the blades are braked and parked in a safe position. The turbines are also

equipped with lightning protection equipment so that strikes will be conducted from the nacelle down the tower into the earth. The turbines selected for this site will have a proven record in terms of safety and reliability.

- 14.41. A Supervisory Control and Data Acquisition (SCADA) system will be provided to monitor wind farm operations. Provision of such information means faults can be tracked and turbines shut down. Information and alarms can also be sent to the maintenance engineers before emergency situations occur.

OTHER INFRASTRUCTURE

- 14.42. Scottish Water has indicated that they have no objection to the wind farm however there are services in the vicinity of the proposal which services should be marked on site by a Scottish Water representative before work commences.

SUMMARY OF MITIGATION MEASURES

- 14.43. This chapter has examined the impacts arising due to the construction and operation of the wind farm on communications (including Telecommunications, Television and radio broadcasting links and Civil aviation, military, maritime and emergency services) health and safety and other infrastructure.
- 14.44. The following mitigation measures have either been included within the design of the wind farm or will be adopted during construction:
- Health and Safety procedures will comply with legislative requirements;
 - Any interference to domestic television reception resulting from wind farm operations will be investigated and rectified by the developer;
 - Existing underground services will be demarcated on site by Scottish Water prior to construction commencing; and
 - Waste streams will be managed appropriately and according to best practice.
- 14.45. The above measures will ensure the wind farm does not disrupt existing communications and other services in the area.