

13 EXISTING INFRASTRUCTURE

This chapter describes and assesses the potential effects of the Development on existing infrastructure including:

- Television reception;
- Telecommunications links;
- Aviation and Defence; and
- Existing utilities.

13.1 CONSULTATION

Consultation has been undertaken with the main communications and utilities providers in the area, along with aviation bodies and the Ministry of Defence (MoD), as shown in Table 13.1.

Table 13.1 Summary of Consultation

Consultee	Summary of Response
Arqiva	No objection to the Development
BBC Online Reception Tool ¹	The turbines would be likely to affect 226 homes for whom there is no alternative transmission
BT	No objection to the Development
CSS Spectrum Management	No objection to the Development
Joint Radio Company (JRC)	No objection to the Development
Leeds Bradford Airport	Provided details of the Airport's safeguarding consultant. Preliminary assessment indicates that the Development will be acceptable.
Ministry of Defence - Defence Estates	No objection to the Development ²
National Air Traffic Service En Route Plc (NERL) ³	Site is within an area where the turbines could have an impact on operational infrastructure
National Grid Regional Gas Transmission	Provided details of plant within Development area and requested appropriate separation distance from turbines ²
National Grid UK Transmission	Negligible risk to operational electricity and gas transmission networks ²
Northern Gas Networks	Provided details of plant within Development area and requested appropriate separation distance from turbines ²
Ofcom	Identified one BT link in the vicinity of the Development ²
Robin Hood Airport	No objection to the Development ²
Sheffield City Airport	No objection to the Development ²
Yorkshire Water	No infrastructure within the Development area ²

¹ Online tool provides information on the likely number of homes that may be affected by the wind turbines, based on their grid reference <http://windfarms.kw.bbc.co.uk/cgi-bin/rd/windfarms/windfarm.cgi>

² Consultation response was from the original proposal for 5 turbines, which was submitted in April 2008. The consultee has been re-consulted on the revised scheme, although has not yet responded. See Chapter 2, Section 1.3.1 and Table 2.2 for further details.

³ The NERL pre planning assessment can be undertaken using the online tool at <http://www.bwea.com/aviation/nats.html>

13.2 LEGISLATION AND GUIDANCE

There are a number of documents which provide guidance in relation to aviation and telecommunications considerations for wind farm developments. Key guidance is provided in the following documents;

- Wind Energy and Aviation Interests – Interim Guidelines. Wind Energy, Defence and Civil Aviation Interests Working Group⁴
- Civil Aviation Authority (CAA), Safety Regulation Group (SRG), CAP 764: CAA Policy and Guidelines on Wind Turbines, Directorate of Airspace Policy, July 2006
- CAA, SRG, CAP 760: Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases, 13th January 2006
- CAA, SRG, CAP 738: Safeguarding of Aerodromes, February 2003
- CAA, SRG, CAP 670: Air Traffic Services Safety Requirements, Part B, Section 4, June 2003
- Civil Aviation Authority, CAP 168: Licensing of Aerodromes, February 2001
- Best Practice Guidelines for Wind Energy Development, British Wind Energy Association (BWEA)⁵
- Planning Policy Guidance 8 (PPG8): Telecommunications⁶
- The impact of Large Buildings and Structures (including wind farms) on Terrestrial Television Reception⁷
- United Kingdom Onshore Pipeline Operator's Association (UKOPA) (2006) Requirements for the siting of wind turbines close to pipelines containing hazardous fluids UKOPA/06/0019

The potential effects of the Development have been assessed taking the foregoing advice into consideration.

13.3 METHODOLOGY

Baseline conditions and potential effects have been assessed through consultation responses, confirmation field surveys and desk based technical assessments.

The British Wind Energy Association (BWEA) and Ofcom Guidance advise that the effects of construction and decommissioning phases of the wind farm, on television reception, aviation and telecommunications should not be assessed, and that it is not standard practice to do so^{8,9}. In relation to below ground infrastructure, however, there is the potential for effects to occur during both construction and decommissioning. Effects associated with the construction and decommissioning phase of the Development are classified as temporary, short term effects.

⁴ Wind Energy and Aviation Interests - Interim Guidelines (2002) Working Group for Wind Energy, Defence and Civil Aviation Interests - <http://www.bwea.com/pdf/Wind-Energy-and-aviation-interim-guidelines.pdf>

⁵ Best Practice Guidelines for Wind Energy Development (1994) British Wind Energy Association - <http://www.bwea.com/pdf/bpg.pdf>

⁶ Planning Policy Guidance 8: Telecommunications (2001) Department for Communities and Local Government - <http://www.communities.gov.uk/publications/planningandbuilding/ppg8>

⁷ The impact of Large Buildings and Structures (including windfarms) on Terrestrial Television Reception (2001) BBC Ofcom - http://www.bbc.co.uk/reception/info/pdf/buildings_factsheet.pdf

⁸ Best Practice Guidelines for Wind Energy Development, British Wind Energy Association (BWEA). <http://www.bwea.com/ref/bpg.html>

⁹ The only possible effects are likely to be as a result of tall cranes. These cranes are likely to be in the vicinity of the proposed turbines, and as such are likely to have similar effects. As the turbines have been sited in accordance with clearance requirements of telecommunications link operators where possible, they are unlikely to affect the identified links. In addition, the cranes are temporary structures which will not be erected for long periods of time. As a result, any effects during construction are likely to be similar in nature but of a smaller magnitude than operational effects.

Potential effects associated with the operation phase of the Development are classified as long-term effects. These can potentially apply across all infrastructure elements described within this chapter.

Effects relating to existing infrastructure are not environmental effects, and there is no requirement to include an assessment of these effects under the EIA Regulations. However, given the nature of wind farm developments, the potential to affect fixed telecommunications links, television reception, airports and MoD low flying and radar exists, and, these effects are therefore considered in this Chapter.

The general approach to wind farm development is to avoid effects on infrastructure where possible, and to find appropriate technical mitigation solutions where this cannot be achieved. These solutions should be agreed between the Developer and the infrastructure owner/ operator, and will often continue through the planning process. On agreement of an appropriate technical solution, wind farm developments will have no effects on existing infrastructure.

Following this approach, it is inappropriate to apply significance criteria to these effects, as the mitigated effect will be either no effect, or a negligible effect, which should be deemed to be acceptable to the relevant infrastructure operator.

13.4 BASELINE DESCRIPTION

The following installations and systems have been identified through consultation, confirmation field surveys, and desk based assessments.

13.4.1 Television reception

Consultation with the BBC, via the online assessment tool, identified two transmitters which could potentially be affected by the wind turbines, details of which are provided in Table 13.2.

Table 13.2 Local Television Transmitters

Name	NGR	Power	Distance (km)
Emley Moor	SE222128	870 kW	7.5
Emley Moor CH5	SE222128	870 kW	7.5

It is important to recognise that if properly mitigated, effects on telecommunications, television and radio broadcasting links or scanning telemetry are not a significant constraint to wind farm development. Terrestrial television transmissions for domestic reception within the UK are the joint responsibility of the BBC and Ofcom. Distribution links and other communication links are provided and operated on behalf of the broadcasters by Arqiva.

The Development lies within an area under the BBC's jurisdiction where, at the moment, digital and analogue signals are broadcast simultaneously.

13.4.2 Telecommunications Links

One microwave link was identified by Ofcom as being in the vicinity of the proposed wind farm. Details of the link were collected through consultation with the link operator.

The Joint Radio Company (JRC) initially identified that there were no foreseeable problems with the Development, and hence no links were provided for consideration during Development design.

Through consultation with their individual clients CSS Spectrum Management (CSS) identified no VHF radio telemetry links that were likely to be affected by the proposal.

13.4.3 Aviation and Defence

There are no safeguarded civil aerodromes within the 30 km consultation zone¹⁰. The closest safeguarded civil aerodromes are Leeds Bradford Airport, at approximately 37.5 km north of the Development, and Robin Hood Airport approximately 40 km to the east of the Development.

There are no known MoD installations within 50 km of the Development.

13.4.4 Utilities

National Grid UK Transmission has identified no plant in the vicinity of the site, and has stated that the risk to their operational electricity transmission network and operational national gas transmission network as a result of the proposed turbines is negligible.

A high pressure gas pipeline was identified by both Northern Gas Networks (NGN) and National Grid Regional Gas Distribution. The location of the pipeline is shown in Figure 13.1, and crosses the border of the areas for which the two operators have control. Both operators requested that turbines be sited in accordance with UKOPA guidelines on wind turbines and pipelines containing hazardous fluids¹¹, which is a distance 1.5 times the mast (hub) height of the turbine between the turbine base and the pipeline.

Yorkshire Water has identified no plant within the site boundary associated with water or sewage transmission or treatment.

13.5 ASSESSMENT OF EFFECTS

13.5.1 Construction Effects

13.5.1.1 Utilities

There is the potential for disturbance to above and below ground infrastructure to occur during construction as a result of engineering activities. The only existing infrastructure identified within the vicinity of the Development is the high pressure gas pipeline.

13.5.2 Operational Effects

13.5.2.1 Television Reception

Wind turbines and other structures have the potential to create interference with television and telecommunication transmissions. Interference to television reception can occur in any direction within 500m of a turbine (reflection zone), or within 5km of a turbine in the line of sight between transmitter and receiver (shadow zone)¹². These potential zones of effect are shown in Figure 13.2. Wind turbines have the potential to cause varying scales of picture and/ or sound degradation where signals are blocked by wind turbines, and can also cause 'ghosting', where analogue signals are received directly from a transmitter, as well as via reflection from the turbines.

¹⁰ Wind Energy and Aviation Interests - Interim Guidelines (2002) Working Group for Wind Energy, Defence and Civil Aviation Interests - <http://www.bwea.com/pdf/Wind-Energy-and-aviation-interim-guidelines.pdf>

¹¹ UKOPA (2006) Requirements for the siting of wind turbines close to pipelines containing hazardous fluids UKOPA/06/0019 - <http://www.ukopa.co.uk/publications/pdf/SitingWindTurbines.pdf>

¹² The Impact of Large Buildings and Structure (Including Wind Farms) on Terrestrial Television Reception.

Starting in 2008 the UK analogue television broadcasts are being phased out, region by region, to be replaced by digital transmissions. The process of switchover will be complete by 2012. In 2012 the analogue signal in the Yorkshire region will be switched off and viewers without digital receivers will be faced with a blank screen. Digital television transmissions do not generally suffer from the same type of ghosting effects as analogue signals, although can be affected as a result of signals being blocked by turbines.

Arqiva states that the wind farm is unlikely to affect any UHF Re-Broadcast feeds and hence do not object. The BBC wind farm planning tool advised that reception at up to 226 homes may be adversely affected by the proposed wind farm, with effects likely to be on signals from the Emley Moor transmitter.

13.5.2.2 Telecommunications Links

Ofcom identified one fixed link in the vicinity of the proposed wind farm, belonging to BT. Consultation with BT has indicated that the link identified by Ofcom is more than 1km from the Development, and as such will not be affected.

The JRC and CSS manage scanning telemetry links throughout the UK on behalf of individual operators. Both JRC and CSS have indicated that the proposal is unlikely to affect their operations in the area, and as such have no objection to the Development.

13.5.2.3 Aviation and Defence

NATS En Route Plc ("NERL") has replaced its pre-planning consultation process with an online assessment tool for developers.¹³ The online maps provide developers with information about areas where wind turbines may be of concern to NERL. Maps are displayed for a range of tip heights from 20-140m. The 84m tip height map was analysed for the proposed wind farm. The assessment shows the turbines to be within an area where there are likely to be some effects on the operational infrastructure of NERL. However, these maps are indicative and for guidance only and NERL would also assess the application at the planning stage.

Robin Hood, Sheffield City and Leeds Bradford Airports were consulted and none have identified an objection to the proposed wind farm. It is considered unlikely therefore, that the wind turbines will affect operational procedures or safety at either airport.

Consultation has been undertaken with the MOD, which has indicated that the Development is unlikely to affect current MOD and defence estates interests and operations.

13.5.2.4 Utilities

The Development is considered unlikely to affect existing utilities once it becomes operational. Current UK guidance on the siting of wind farms close to pipelines containing hazardous fluids recommends that the distance between turbines and such pipelines should be one and a half times the hub height of the turbine¹⁴. The closest proposed turbine to the pipeline at Spicer Hill is approximately 125 m, which exceeds the minimum distance required by the UKOPA guidelines.

13.5.3 Decommissioning Effects

Potential decommissioning effects are likely to be similar in nature to those encountered during construction, only of less magnitude. It is therefore considered that there will be no foreseeable additional effects beyond those discussed in section 13.5.1 which arise as a result of decommissioning.

¹³ <http://www.bwea.com/aviation/nats.html>

¹⁴ Requirements for the siting of wind turbines close to pipelines containing hazardous fluids. United Kingdom Onshore Pipeline Operators Association (UKOPA)

13.6 MITIGATION

13.6.1 Television Reception

Any adverse impacts with regard to television interference can be resolved through technical solutions that will be agreed between the Developer and the local planning authority. Mitigation measures can include

- Change in receiving aerial height or configuration;
- Replacement of receiving aerials;
- Retuning of television receivers; and
- Provision of satellite or cable services to affected households.

13.6.2 Telecommunications Links

As there are no telecommunications operations that are likely to be affected by the Development, no mitigation is required.

13.6.3 Aviation and Defence

As no effects are predicted as a result of the Development, no mitigation is required. However, the MoD would be advised before construction commences, in order that military air crew can be advised of the potential obstruction. The turbine locations will be forwarded to the Civil Aviation Authority to allow the turbines to be plotted on aviation maps.

Preliminary assessment of the proposal by Leeds Bradford Airport's aviation consultant indicates that the Development is likely to be acceptable to the airport without compromising airport operations. Confirmation from Leeds Bradford Airport is awaited on this matter.

13.6.4 Utilities

The high pressure gas pipeline has been avoided during the site design process in accordance with the relevant guidelines outlined in section 13.4.4. The operators of the gas pipeline will be re-consulted prior to construction.

13.7 RESIDUAL EFFECTS

13.7.1 Television Reception

Following implementation of any necessary mitigation measures set out in 13.6.1, no effect on television reception is predicted.

13.7.2 Telecommunications Links

No effects on telecommunications are predicted as a result of the Development, and hence no residual effects are predicted.

13.7.3 Aviation and Defence

No residual effects are predicted as a result of the Development.

13.7.4 Utilities

No residual effects are predicted as result of the Development.

13.8 SUMMARY OF EFFECTS

Table 13.3 Summary of Effects

Receptor	Mitigation	Residual Effect
Construction		
Utilities	Location of utilities taken into account during site design. Operators will be advised prior to construction.	No effect
Aviation and Defence	CAA and MoD will be advised of turbine co-ordinates prior to construction.	No Effect
Operation		
Television Reception	Any effects can be resolved through technical solutions including a change in aerial height, or realignment of aerial.	No effect
Utilities	Location of utilities taken into account during site design.	No effect
Decommissioning		
Utilities	Operators will be advised prior to decommissioning.	No effect

