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# 14. Aviation and Telecommunications

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## 14.1 Introduction

- 14.1.1 Aviation radar, microwave and other electromagnetic signals are transmitted throughout the country by a wide range of operators, including statutory agencies and commercial companies. There is potential for interference to affect the transmission of these signals from any large structure, including wind turbines. To understand the potential of the Mynydd Llanhilleth Wind Farm scheme ('the Proposed Development') to affect radar, microwave and other radio operations in the area, consultation has been undertaken with authorities and companies working in this field in Wales.
- 14.1.2 This chapter presents the assessment of the likely significant effects of the Proposed Development with respect to Aviation and Telecommunications. The assessment is based on information obtained to date. It should be read in conjunction with the Project description provided in **Chapter 4: Description of the Proposed Development**.
- 14.1.3 This chapter describes:
- The legislation, policy and technical guidance that has informed the assessment (**Section 14.2**);
  - Consultation and engagement that has been undertaken and how comments from consultees relating to Aviation and Telecommunications have been addressed (**Section 14.3**);
  - The methods used for baseline data gathering (**Section 14.4**);
  - Overall baseline (**Section 14.5**);
  - Embedded measures relevant to Aviation and Telecommunications (**Section 14.6**);
  - The scope of the assessment for Aviation and Telecommunications (**Section 14.6**);
  - The methods used for the assessment (**Section 14.7**);
  - The assessment of Aviation and Telecommunications effects (**Section 14.8**);
  - Assessment of cumulative (inter-project) effects (**Section 14.9**);
  - A summary of the significance conclusions (**Section 14.10**); and
  - Further work to be undertaken (**Section 14.11**).

## Limitations and assumptions

- 14.1.4 The Draft ES has been produced to fulfil Pennant Walters's consultation duties and enable consultees to develop an informed view of the likely significant effects of the Project.
- 14.1.5 Some service providers have not responded to the consultations. Generally, where consultees do not respond, it is presumed their services would be unaffected by the Proposed Development. **Table 14.6** provides a list of consultees.
- 14.1.6 Given the above, there is the possibility that the consultation process has not picked up some services. However, the process has been as inclusive as possible.

## 14.2 Relevant legislation, planning policy and technical guidance

- 14.2.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to Aviation and Telecommunications. Further information on policies relevant to the Proposed Development is provided in **Chapter 5: Legislation and policy overview**.

### Planning and legislative context

#### Aviation

- 14.2.2 A summary of the national and local planning policy of relevance to Aviation is given in **Table 14.1**.

**Table 14.1 Planning policy relevant to the Aviation assessment**

Policy	Policy context
<b>National planning policy</b>	
<b>Future Wales: the National Plan 2040<sup>1</sup></b>	This states: <i>"Policy 18 – Renewable and Low Carbon Energy Developments of National Significance            ... 8. there are no unacceptable impacts on the operations of defence facilities and operations (including aviation and radar) or the Mid Wales Low Flying Tactical Training Area (TTA-7T);"</i>
<b>Technical Advice Note (TAN) 8: Planning for Renewable Energy (2005)<sup>2</sup></b> (revoked however used as a guide for this assessment)	Paragraph 2.35 states: <i>"Developments within a specified radius of major airports and aerodromes are subject to mandatory consultation with the Civil Aviation Authority (CAA) and/or the Ministry of Defence (MoD) under the Town and Country Planning (Aerodromes and Technical Sites) Directive 1992. The CAA will inform the applicant of any civilian airfields that are likely to be affected, but it is the responsibility of the applicant/ planning authority to consult the airfield management at the airfield in question."</i>  Paragraph 2.36 states: <i>"Lights are only required on structures that are over 150 m high."</i> Paragraph 2.38 states: <i>"Any large structure is liable to show up on radar, but wind turbines can present a particular problem as they can be interpreted by radar as a moving object, which is only intermittently seen (as the nacelle rotates to face the wind). There is a consultation zone and an advisory zone around every civilian and military air traffic radar, but objections may sometimes be raised in respect of developments further afield. Consultations are also required in respect of other defence and meteorological radar. Developers will need to closely consult over aviation and other radar issues and the British Wind Energy Association web site gives details of how this can be</i>

<sup>1</sup> Welsh Government (2021). Future Wales: the national plan 2040. (Online) Available at: <https://gov.wales/future-wales-national-plan-2040> (Accessed September 2022).

<sup>2</sup> Geography & Technology, Welsh Government (2005). Technical Advice Note (TAN) 8: Planning for Renewable Energy. (Online) Available at: <https://apps.caerphilly.gov.uk/LDP/Examination/PDF/W66-TAN-8-Renewable-Energy.pdf> (Accessed September 2022).

Policy	Policy context
	<p>achieved. Local planning authorities should be aware of the statutory consultees applicable to their particular area."</p> <p>Paragraph 2.39 gives a list of aviation (amongst other) consultees in addition to statutory consultees. The aviation consultees referred to are: The Civil Aviation Authority (CAA), the Ministry of Defence (MoD), and National Air Traffic Services (NATS).</p>
<b>Local planning policy</b>	
<p><b>Blaenau Gwent County Borough Council Local Development Plan up to 2021 (Adopted November 2012)</b></p> <p><b>Policy DM4 Low and Zero Carbon Energy</b></p>	<p>With respect to Aviation, this policy states:</p> <p><i>"(e) They will not lead to electromagnetic disturbance to existing transmitting and receiving systems (which includes navigation and emergency services), thereby prejudicing public safety;"</i></p>

## Technical guidance

- 14.2.3 A summary of the technical guidance for Aviation and Telecommunications is given in Table 14.2.

**Table 14.2 Technical guidance relevant to the Aviation assessment**

Technical guidance document	Context
<b>CAP 168 – Licensing of Aerodromes<sup>3</sup></b>	<p>Chapter 4 – The Assessment and Treatment of Obstacles, Paragraph 1.1, states:</p> <p><i>"The effective utilisation of an aerodrome may be considerably influenced by natural features and man-made constructions inside and outside its boundary. These may result in limitations on the distance available for take-off and landing and on the range of meteorological conditions in which take-off and landing can be undertaken. For these reasons certain areas of the local airspace must be regarded as integral parts of the aerodrome environment. The degree of freedom from obstacles in these areas is as important to the granting and retention of an aerodrome license as the more obvious physical requirements of the runways and their associated runways strips".</i></p>
<b>CAP 670 – Air Traffic Services Safety Requirements<sup>4</sup></b>	<p>Part B, Section 4, GEN 01, sub-section 3:</p> <p><i>"Windfarms need to be considered as a safeguarding activity. The ATS [Air Traffic Service] Provider is responsible for ensuring, as far as is reasonably practicable, that such development does not impact on the safety of the ATS environment.</i></p> <p><i>The ATS Provider is responsible for deciding whether or not it can accept any degradation to the ATS environment. If the ATS Provider predicts that</i></p>

<sup>3</sup> Civil Aviation Authority (2022). Licensing of Aerodromes. CAP 168. (Online) Available at: <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=6114> (Accessed September 2022).

<sup>4</sup> Civil Aviation Authority (2019). Air Traffic Services Safety Requirements. CAP 670. (Online) Available at: [https://publicapps.caa.co.uk/docs/33/CAP670%20Issue3%20Am%201%202019\(p\).pdf](https://publicapps.caa.co.uk/docs/33/CAP670%20Issue3%20Am%201%202019(p).pdf) (Accessed September 2022).

Technical guidance document	Context
	<p><i>the degradation is unacceptable then it should make representations to the appropriate local Authority.</i></p> <p><i>The CAA does not have the power to veto Windfarm development (other than on the land actually owned by the CAA).</i></p> <p><i>The ATS provider is responsible for mitigating against any deterioration to the Air Traffic Services caused by wind farms”.</i></p>
<b>CAP 738 – Safeguarding of Aerodromes<sup>5</sup></b>	<p>Chapter 1 – Safeguarding of Aerodromes, Paragraph 1.1, states: “A process of consultation between a Local Planning Authority (LPA) and consultees, which is made obligatory by Statutory Direction, safeguards some aerodromes and aeronautical technical sites in the United Kingdom. This is called ‘statutory’ or ‘official’ safeguarding”.</p>
<b>CAP 764 – CAA Policy and Guidelines on Wind Turbines<sup>6</sup></b>	<p>Chapter 3 – Safeguarding Considerations, Paragraph 1a, states: “Developers will be referred to the aerodrome licensee of aerodromes with a surveillance radar facility within 30km of the proposed wind turbine development or to the distance specified by the aerodrome or indicated on the aerodromes published wind turbine consultation map”.</p>
<b>Planning Circular 2/2003 Safeguarding of Aerodromes, Technical Sites and Military Explosive Storage Areas<sup>7</sup></b>	<p>Planning Circular 2/2003 sets out criteria outlining how planning authorities must consult with aviation Consultees and which processes they must follow in order to ensure that Consultee responses to proposals are taken into account.</p> <p>Where planning authorities are minded to award planning permission against the advice of NATS, the CAA (Civil Aviation Authority) or the MOD, they are obliged to inform Welsh Ministers.</p>

## Telecommunications

- 14.2.4 A summary of the national and local planning policy of relevance to Telecommunications is given in **Table 14.3**.

**Table 14.3 Planning policy relevant to the Telecommunications assessment**

Policy	Policy context
<b>National planning policy</b>	
<b>Future Wales: The National Plan 2040<sup>1</sup></b>	<p>This states:</p> <p><i>“Policy 18 – Renewable and Low Carbon Energy Developments of National Significance</i></p> <p><i>... 7. there are no unacceptable adverse impacts by way of shadow flicker, noise, reflected light, air quality or electromagnetic disturbance;”</i></p>

<sup>5</sup> Civil Aviation Authority (2020). Safeguarding of Aerodromes. CAP 738. (Online) Available at: <https://publicapps.caa.co.uk/docs/33/CAP738%20Issue%203.pdf> (Accessed September 2022).

<sup>6</sup> Civil Aviation Authority (2016). CAA Policy and Guidelines on Wind Turbines. CAP 764. (Online) Available at: <https://publicapps.caa.co.uk/docs/33/CAP764%20Issue6%20FINAL%20Feb.pdf> (Accessed September 2022).

<sup>7</sup> Scottish Government (2003). Planning Circular 2/2003: Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) (Scotland) Direction 2003. (Online) Available at: <https://www.gov.scot/publications/planning-circular-2-2003-scottish-planning-series-town-country-planning/> (Accessed September 2022).

Policy	Policy context
<p><b>Technical Advice Note 8: Planning for Renewable Energy<sup>2</sup> (TAN8) Paras 2.29-2.30</b> (revoked however used as a guide for this assessment)</p>	<p>TAN 8 states: “A wind turbine can interfere with electromagnetic transmissions in two ways – by emitting an electromagnetic signal itself, and by interfering with other electromagnetic signals. Provided careful attention is paid to siting, wind turbines should not cause any significant problems of electromagnetic interference, i.e. adverse effects on communication systems which use electromagnetic waves as the transmission medium (e.g. television, radio or microwave links). Specialist organisations responsible for the operation of the electromagnetic links typically require a 100m clearance either side of a line of sight link from the swept area of turbine blades.”</p> <p>The document goes on to recommend a list of possible consultees referring to the Office of Communications (Ofcom) which holds a central register of all civil radio communication operators in the UK and acts as a central point of contact for identifying specific consultees relevant to a site. It does recognise that this list is not exhaustive and that it may be necessary to consult local utility companies and emergency services along with any other organisations which may be deemed relevant.</p>

**Local planning policy**

<p><b>Blaenau Gwent County Borough Council Local Development Plan up to 2021 (Adopted November 2012)</b></p>	<p>With respect to Telecommunications, this policy states:</p> <p><i>“(e) They will not lead to electromagnetic disturbance to existing transmitting and receiving systems (which includes navigation and emergency services), thereby prejudicing public safety”</i></p>
<p><b>Policy DM4 Low and Zero Carbon Energy</b></p>	

**Technical guidance**

14.2.5 A summary of the technical guidance for Aviation and Telecommunications is given in **Table 14.5**.

**Table 14.4 Technical guidance relevant to the Telecommunications assessment**

Technical guidance document	Context
<p><b>Practice Guidance – Planning Implications of Renewable and Low</b></p>	<p>The assessment will take due cognisance of the following paragraphs from the guidance document:</p> <p>“Wind turbines, including micro turbines, can also interfere with telecommunications (i.e. TV, radio and phone signals) by blocking or deflecting those requiring line of sight or by the scattering of transmission signals. Links crossing the site of wind farms should be identified by consultation with Ofcom. Ofcom will check whether any part of a wind turbine site, either individual turbines or part of a wind farm, falls within 0.5 – 1.0km (depending on the signal frequency) of the path of a fixed link, and if so, will instruct the developer to contact the appropriate fixed link operator. Developers may also wish to contact interested bodies directly, including local utility companies and emergency services. Scattering of signals mainly affects domestic TV (both analogue and to a lesser extent digital TV) and radio broadcasts. Wind turbines can affect domestic television reception up to 5km from the turbines. Terrestrial</p>



Technical guidance document	Context
<b>Carbon Energy.<sup>8</sup> Welsh Assembly Government (2011). Para 3.4.24-3.4.26</b>	<p>television transmissions for domestic reception within the UK are the joint responsibility of the BBC and Ofcom.</p> <p>Where fixed link signals are potentially blocked by proposed wind turbines, a detailed investigation of the likely impact should be sought from a competent supplier. It is often possible to mitigate impacts by careful siting of individual turbines within a site so that turbine blades avoid a buffer zone, typically 100m either side of the signal path. Failing this, it may be necessary for the developer to pay for a signal to be re-routed around the wind turbine(s). Where site investigations reveal a likely impact on domestic radio or TV reception, various solutions are possible including upgrading of domestic aerials or delivery of the signal by other means, for example by cable.”</p>

## 14.3 Consultation and engagement

### Overview

- 14.3.1 The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Section 2.4 of Chapter 4: Approach to Environmental Impact Assessment**.

### Scoping Direction

- 14.3.2 A Scoping Direction was issued by Planning and Environment Decisions Wales (PEDW, formerly Planning Inspectorate Wales), on behalf of the Welsh Ministers, in August 2021. A summary of the relevant responses received in the Scoping Direction in relation to Aviation and Telecommunications and confirmation of how these have been addressed within the assessment to date is presented in **Table 14.5**.

**Table 14.5 Summary of EIA Scoping Direction responses for Aviation and Telecommunications**

Consultee	Consideration	How addressed in this Draft ES
PEDW	<p>The Inspectorate welcomes the assurance that these matters will be addressed in the ES. Any necessary aviation lighting should be addressed in the relevant chapters dealing with visual impacts (LVIA, Heritage, BBNP International Dark Sky Reserve designation).</p> <p>Dŵr Cymru’s consultation response indicates that there is a trunk / distribution watermain that crosses the site. The ES should clarify have the development has avoided / proposes to mitigate any impacts on this feature.</p>	<p>The consultation has been undertaken with relevant non-statutory consultees, i.e. operators who may be concerned that the proposal could affect their services, in line with the Scoping Direction.</p> <p>Also an aviation consultant has undertaken analysis and is consulting with NATS/Cardiff Airport as to appropriate mitigation.</p>

<sup>8</sup> Welsh Assembly Government (2011). Practice Guidance – Planning Implications of Renewable and Low Carbon Energy. (Online) Available at: <https://gov.wales/sites/default/files/publications/2018-09/planning-implications-renewable-low-carbon-energy-development.pdf> (Accessed September 2022).

## Technical engagement

14.3.3 Technical engagement with consultees in relation to Aviation and Telecommunications is ongoing. A summary of the technical engagement undertaken to date is outlined in **Table 14.6**.

**Table 14.6 Technical engagement on the Aviation and Telecommunications assessment**

Issue raised	Consultee	Consideration	How addressed in this Draft ES
Telecommunications	BT	Consulted as part of exercise.	Responded with no objection.
	Joint Radio Coordination (JRC)	Consulted as part of exercise.	Responded initially with an objection. Therefore a further detailed analysis was commissioned from JRC (see <b>Appendix 14C</b> ). They determined that <i>“Whilst it was initially thought that this proposal might impact upon the operation of two UHF links, following detailed analysis, particularly considering Turbine 8, this note concludes that the proposal can be considered as being just acceptable.”</i>  They therefore have withdrawn their initial objection and have cleared based on the current turbine locations.
	MLL Telecom	Consulted as part of exercise.	Responded with no objection.
	CSS Spectrum Management Services Ltd	Consulted as part of exercise.	No response.
	Ofcom	Reviewed Ofcom Spectrum Information System <sup>9</sup> to identify potential affected links.	Four links were identified that run close to the Site and the relevant operators were consulted; Vodafone; JRC and Arqiva Limited.
	Orange (EE)	Consulted as part of exercise.	No response.
	Telefonica / O2	Not consulted as not identified by Ofcom Spectrum Information System.	-
	Vodafone	Consulted as part of exercise.	Responded with no objection.

<sup>9</sup> Ofcom (2022). Spectrum Information System (Online) Available at: <https://www.ofcom.org.uk/spectrum/information/spectrum-information-system-sis> (Accessed September 2022).



Issue raised	Consultee	Consideration	How addressed in this Draft ES
	Arqiva	Consulted as part of exercise.	Responded that they have links passing over the Site and that turbine T7 may interfere in their operation. Further discussions are ongoing in relation to potential technical mitigation.
	Airwave Solutions Limited	Consulted as part of exercise.	No response.
	Met Office	Reviewed the Met Office Safeguarding maps. The development is not sited within any of their meteorological radio facilities safeguarding areas. <sup>10</sup>	No action required.
<b>Radar and Aviation Safeguarding</b>	Ministry of Defence (MoD)  (MoD queries are handled by the Defence Infrastructure Organisation (DIO))	Wood commissioned a review by an independent aviation consultant, Wind Power Aviation Consultant (WPAC). Their analysis has shown that there would be no impact to MOD infrastructure (see <b>Appendix 14A</b> ).	<p>They have determined the following:</p> <ul style="list-style-type: none"> <li>• MoD ATC Radar – no radars affected;</li> <li>• MoD Low Flying – the site is in a Green area and an MoD low flying objection is extremely unlikely;</li> <li>• MoD Air Defence Radar – none affected; and</li> <li>• Met Office Radar – none affected.</li> </ul> <p>With turbines in excess of 150 metres to tip there is a requirement to illuminate them with medium intensity red obstruction lights on the nacelle. There is also the requirement to provide IR lighting for the MoD. There is also a requirement for mid mast lights, halfway up the tower. These are low intensity red lights but are very poorly designed and often have a greater visual impact than the hub lights, therefore as part of mitigation agreement discussion, where feasible WPAC would look to negotiate a waiver to this requirement with the CAA.</p>

<sup>10</sup> Met Office (2022). Safeguarding Maps (Online) Available at: <https://www.metoffice.gov.uk/services/business-industry/energy/safeguarding> (Accessed April 2022).

Issue raised	Consultee	Consideration	How addressed in this Draft ES
	Civil Aviation Authority (CAA)	Consulted as part of exercise.	No response.
	NATS En Route Plc ("NERL") / NATS	As part of the WPAC review they analysed NATS Enroute infrastructure and found that all the turbines will be visible to the Clee Hill radar. WPAC were of the view that NERL will likely object due to the location and mitigation will be required.	<p>A Combined Technical and Operational Assessment (TOPA) assessment from NATS was commissioned (see <b>Appendix 14B</b>). NATS manage radar for Cardiff Airport and they assess impacts on the NERL radar system.</p> <p>They determined that in relation to their Clee Hill RADAR <i>"the terrain screening available will not adequately attenuate the signal, and therefore this development is likely to cause false primary plots to be generated. A reduction in the RADAR's probability of detection, for real aircraft, is also anticipated.... This has been deemed to be unacceptable both in relation to En-route air traffic as well as the approach control at Cardiff Airport."</i></p> <p>NERL have been contacted to understand their position and as to whether they will require any mitigation</p>
	Cardiff Airport	The WPAC review indicated that the wind farm could have impacts on their radar system. This was also indicated by the NATS TOPA.	<p>NATS manage radar for Cardiff Airport. They determined that: <i>"The planned development site is inside controlled airspace, in an area frequently used by commercial flights operating in and out of Cardiff Airport, as such the anticipated impact has been assessed as being unacceptable."</i></p> <p>Review and their analysis by the independent Aviation Consultants, WPAC confirms that every turbine would be exposed to the radar to a greater or lesser extent and would be likely to generate 'clutter' (unwanted radar returns) and other effects such</p>

Issue raised	Consultee	Consideration	How addressed in this Draft ES
			<p>as track obscuration over the Site.</p> <p>The review stated that there are mitigation options available and is in further discussions with NATS/Cardiff Airport to agree the mitigation and potential planning condition.</p>

- 14.3.4 Liaison is continuing with NATS/Cardiff Airport with respect to their En-Route navigation aid and radar impacts to agree likely mitigation options, details of which will be provided in the Final ES.
- 14.3.5 Liaison is continuing with Arqiva in relation to their affected microwave link and potential mitigation measures.

## 14.4 Data gathering methodology

### Study area

- 14.4.1 Due to the nature of telecommunications and aviation systems, impacts are based on the locations, blade tip height, hub height and rotor diameter of the wind turbines as illustrated on **Figures 3.1** and **4.4**.

### Desk study

- 14.4.2 A desk-based consultation exercise was undertaken to identify any telecommunications or aviation interests that may be affected by the Proposed Development. The results of the exercise are discussed in **Table 14.5** in **Section 14.3**.

## 14.5 Overall baseline

### Current baseline

- 14.5.1 A number of microwave links were identified in the wider area, including a link operated by Arqiva that runs across the Site (see **Table 14.5**).
- 14.5.2 NATS/Cardiff Airport indicated that the scheme would be visible to Cardiff Airport's radar (see **Table 14.5**).
- 14.5.3 NERL indicated that the scheme would be visible to their Clee Hill RADAR (see **Table 14.5**).

### Future baseline

- 14.5.4 On the basis of the information currently available, no changes to the baseline conditions are anticipated in the event that the Proposed Development does not proceed.

## 14.6 Scope of the assessment

- 14.6.1 The scope of the assessment has been derived from policy guidance discussed in **Table 14.3**.
- 14.6.2 No Aviation and Telecommunication effects would arise from the proposed grid connection. This element of the Proposed Development is therefore not considered further in this chapter.

### Temporal scope

- 14.6.3 Aviation and Telecommunications is an operational effect of the wind farm and is not present during construction or decommissioning. Therefore, the temporal scope of the assessment of Aviation and Telecommunications covers the operational period of the wind farm.

### Environmental measures embedded into the proposed development

- 14.6.4 A range of environmental measures have been embedded into the development proposals as outlined in **Section 4.8** of this ES. **Table 14.7** outlines how these embedded measures will influence the Aviation and Telecommunications assessment.

**Table 14.7 Summary of the embedded environmental measures related to Aviation and Telecommunications**

Receptor	Potential changes and effects	Embedded measures	Compliance mechanism
<b>Telecommunications</b>	Interference with fixed microwave link	Explore mitigation options with Arqiva in relation to turbine 7	DNS planning condition
<b>Aviation</b>	Potential obstacles for MoD low flying exercises	MoD may request aviation lighting to ensure turbines visible at night to their aircraft	DNS planning condition
	Potential visibility on Cardiff Airport ATC radar	Options to be discussed with Cardiff Airport – details to be finalised but agreed in principle. For example, a number of other wind farm developers are in discussion with Cardiff Airport about funding the provision of a radar upgrade, which would enable operation of wind farms without radar interference.	DNS planning condition
	Potential visibility on Clee Hill NERL radar	Options to be discussed with NERL – details to be finalised but agreed in principle.	DNS planning condition

## 14.7 Assessment methodology

- 14.7.1 The basis of the assessment has been to consult with a number of organisations known to have an interest within the areas stated in the scope. The consultation list was drawn together based on advice given in TAN 8.
- 14.7.2 The risk of interference with aviation and telecommunications has been assessed through consultation with the relevant organisations. The consultation list was drawn together based on identifying the local telecommunication bodies, other relevant parties identified by Spectrum Licensing (Ofcom) and key aviation stakeholders.

## 14.8 Preliminary assessment of effects

### Predicted effects: Operation

#### Radar and Aviation Safeguarding

- 14.8.1 The turbines would potentially be visible to Cardiff Airport and Clee Hill NERL radar and technical mitigation will be required, as discussed in **Section 14.6**.

#### Telecommunication links

- 14.8.2 If a reduction in television reception quality occurs in the surrounding area, it is most likely to be noticed when the proposed wind farm becomes operational. Should planning permission be granted and to mitigate any problems with reception arising, the developer would assess current television signals in advance of development and mitigate post-development problems to television reception arising where effects are attributable to the proposed wind farm. Consultation suggests adverse effects may not occur and that in the unlikely event that interference does occur, this would be localised. This could be controlled by planning condition that would require the developer to meet the cost of investigating and effectively rectifying any problems should they arise and to implement solutions in a timely manner so as to minimise any inconvenience to residents.
- 14.8.3 Viewing quality can be improved by considering each or a combination of the following mitigation techniques:
- Replace or upgrade the receiving aerials (e.g. with directional receiving aerials) for affected households;
  - Re-tune the television receivers at affected households;
  - Re-align the television aerial to an alternative transmitter and re-tune the receiver at affected households; and
  - Provision of a bespoke 'self-help' solution (this could comprise a new low powered transmitter, a cable network, a satellite receiver, or a combination of these measures).
- 14.8.4 The Ofcom Spectrum Information System was reviewed, and four links were identified that run across/close to the Site; Vodafone; JRC and Arqiva Limited. Based on the current response status no objections have been received from Vodafone and after further analysis JRC also cleared the site in relation to the infrastructure that they manage. In relation to Arqiva further discussions are being held to understand potential technical solutions to mitigate impacts as a result of the wind farm.

## 14.9 Preliminary assessment of cumulative effects

- 14.9.1 It is anticipated that the proposed measures discussed in **Table 14.7** would ensure no significant effects on telecommunications or aviation would arise from the Proposed Development. Any telecommunications effects would be limited to the Site and therefore cumulative effects with other developments would not arise. With regards to aviation, further discussions are proposed with NATS/Cardiff Airport to agree suitable measures are adopted and how these will be secured. Other developments would need to undergo a similar exercise in avoiding aviation effects. Significant cumulative effects are therefore considered unlikely to occur.

## 14.10 Preliminary summary of effects

- 14.10.1 The degradation of microwave and other electromagnetic signals has been identified as much as possible as a result of consultation with stakeholders.
- 14.10.2 The Applicant is prepared to resolve any such problems should they arise as a result of construction and operation of the wind farm. Discussions are ongoing to agree a technical approach and planning condition(s) that would mitigate microwave link impacts.
- 14.10.3 The MoD have highlighted that there may be a requirement for aviation lighting however have not yet advised as such.
- 14.10.4 The proposed turbines would potentially be visible on the Cardiff Airport and Clee Hill NERL Radar. Discussions are ongoing to agree a technical approach and a planning condition that would mitigate radar impacts.

## 14.11 Further work to be undertaken

- 14.11.1 As stated above, further consultation with NATS/Cardiff Airport is being undertaken. The results of this consultation, and any measures agreed to mitigate effects on radar, will be made available and reported in the Final ES.
- 14.11.2 Further discussions with Arqiva in relation to technical mitigation to avoid impacts on the microwave links will be undertaken and the results reported in the Final ES.