# 14 Television and Radio

**Executive Summary**

This chapter describes the potential impacts and effects of the Proposed Development on terrestrial television and radio reception and includes mitigation and good practice measures to reduce the impacts of the Proposed Development on terrestrial television and radio reception.

The Proposed Development is predicted to have a Very Low magnitude of impact upon surrounding terrestrial television and radio services. This would be Negligible for Medium sensitivity receptors.

If interference is reported at isolated residences and is attributed to the Proposed Development, a Medium magnitude of impact would be predicted, which would be Moderate adverse.

Mitigations are available. Any isolated interference mitigation would reduce the magnitude of impact to Very Low once implemented, which would be Negligible for Medium sensitivity receptors and therefore **no likely significant residual effects** are predicted.

Additional information to support the assessment includes **TA 14.1: Desk-Based Television and Radio Interference Assessment (Volume 4**).

## 14.1 Introduction

14.1.1 This chapter considers the likely significant effects on terrestrial television and radio reception associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the chapter are to:

- describe the terrestrial television and radio reception baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- describe the potential effects, including direct, indirect, and cumulative effects;
- describe the mitigation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation.

14.1.2 The assessment has been carried out by Ricky Tso BEng Mechanical and Aerospace, Technical Analyst, from Pager Power Limited with six months of experience and reviewed by Michael Sutton BSc (Hons) Business Analytics, Operations Manager, from Pager Power Limited with 5 years of experience.

14.1.3 This Chapter is supported by the following Technical Appendix (TA) (**EIAR Volume 4)** listed in **Table 14-1,** which is referenced throughout the Chapter.

**Table 14-1: Supporting Figures and Technical Appendices**

| Document Location | Document Description |
|---|---|
| Technical Appendix 14.1 – Desk-Based Television and Radio Interference Assessment | The technical report assessing the potential television and radio interference using desk-based modelling. The report identifies the study area, surrounding residential areas, and the relevant transmitters serving these areas. |
| Technical Appendix 14.2 – Television and Radio Assessment Methodology | Technical appendix setting out the assessment methodology, significance and sensitivity criteria. |

### Assessment Methodology and Significance criteria

#### Scope of Assessment

14.1.4 The assessment of terrestrial television and radio reception impacts due to the Proposed Development has been undertaken following Pager Power Guidelines (detailed in **TA 14.1, EIAR Volume 4**) and considers the following main potential impacts upon surrounding residential properties associated with construction, operation and decommissioning of the Proposed Development:

- Interference to terrestrial television signal reception;
- Interference to terrestrial radio signal reception.

14.1.5 The assessment is based on the Proposed Development as described in **Chapter 2: Development Description (EIAR Volume 1).**

14.1.6 The scope of the assessment has been informed by consultation responses regarding the assessment methodology outlined in Appendix A of **TA 14.1 (EIAR Volume 4**) and summarised in **Table 14-1** and the key legislation, planning policy and guidance[12345].

1 BBC: The impact of large buildings and structures (including wind farms) on terrestrial televisions reception.

2 International Telecommunications Union, Assessment of impairment caused to television reception by a wind turbine, Recommendation ITU-R BT805*, 1992.

3 Hall, SH, The assessment and avoidance of electromagnetic interference due to wind farms, Wind Engineering Vol 16 No 6, 1992.

4 Dabis, HS, The establishment of guidelines for the installation of wind turbines near radio systems, Proceedings of the eighteenth BWEA Wind Energy Conference, 1996.

5 S Vila-Moreno, A Methodology to Assess Interference to TV Reception due to Wind Farms, RES, 2005.

**Consultation**

14.1.7 **Table 14-2** summarises the consultation undertaken throughout the EIAR process, including Scoping and further pre-application consultation, relevant to Television and Radio.

**Table 14.2: Consultation Responses**

| Organisation and Type of Consultation | Response | How Response has been Considered |
|---|---|---|
| Perth and Kinross Council (PKC) - Scoping | PKC has no objection to the scope and assessment methodology proposed. | Noted. |
| BT – Scoping | BT conclude that the project should not cause interference to BT's current and planning radio network. | Noted. |
| Joint Radio Company (JRC) | JRC identify that they do not foresee any potential problems based on interference and data provided within the scoping report.<br>It is recommended that re-coordination prior to submission should be carried out due to the dynamic and changing nature of the spectrum. | Noted. |

14.1.8 Full details of all consultation undertaken is provided in **TA 1.2: Consultation Register (Volume 4**).

**Potential Effects Scoped Out**

14.1.9 The potential effects that have been scoped out of the assessment are as follows:

- Construction effects;
- Decommissioning effects.

14.1.10 The wind turbine generator (WTG) blades will not be rotating during the construction and decommissioning phases, therefore the potential for terrestrial television and radio interference to be experienced is negligible.

**Method of Baseline Characterisation**

*Extent of the Study Area*

14.1.11 According to report ITU-R BT.2142-2, television interference caused by wind turbines is theoretically possible at locations up to 13.5 km away from a transmitter site. In Pager Power's experience, effects from wind turbines on television and radio signals are unlikely beyond distances of 10 km.

14.1.12 A Study Area of 10 km centred on the Proposed Development has therefore been used to capture potential terrestrial television and radio interference effects. The Study Area is shown in **Figure 11** in **TA 14.1 (EIAR Volume 4)**.

*Desk Study*

14.1.13 A comprehensive desk-based review was undertaken to inform the baseline for television and radio reception. Television and radio transmitters coverage data were obtained from UK Free TV online[6] coverage checker service. A signal interference analysis based on terrain, atmospheric refraction and Carrier-to-Interference Ratio (CI Ratio) had been undertaken for five transmitters for the desk base study.

6 Website link: https://ukfree.tv/maps/freeview

14.1.14 The analysis was carried out by Pager Power in-house software[7], with results presented using Google Earth as a platform.

*Field Survey*

14.1.15 No field surveys were required to inform this assessment.

**Method of Assessment**

14.1.16 The assessment methodology, including criteria for assessing sensitivity and magnitude of change and overall significance criteria, is detailed in **TA 14.2: Television and Radio Assessment Methodology (EIAR Volume 4)**.

*Limitations and Assumptions*

14.1.17 All analysis is desk-based, no site surveys have taken place. This does not significantly affect the certainty of the results because the information sources are reliable and have, where appropriate, been cross-checked using multiple sources[8][9].

14.1.18 The model considered average service frequency for each individual transmitter, which is a suitable representation frequency. In practice, transmitters provide television and radio services across several frequencies.

14.1.19 The analysis only considered Terrain, Atmospheric Refraction and the CIR. Other additional obstructions, such as buildings and vegetation, are not included in the model.

## 14.2 Baseline Conditions

**Current Baseline**

14.2.1 The development is situated in a remote and uninhabited region, with surrounded by locations of rural dwellings with varied terrain elevations in the surrounding area.

14.2.2 Five transmitters providing television have been identified in surrounding area of the Site. Angus is the main transmitter for television and radio coverage in the area. Killin, Lochearnhead, St Fillans and Crieff are smaller relay transmitters that receive television signals from Angus and broadcast to the small surrounding towns.

14.2.3 The towns of Killin, Lochearnhead, St Fillans and Dunira (receptors) are located approximated 4 km to 10 km to the North, West and South of the Proposed Development.

**Future Baseline**

14.2.4 No change to the current baseline is anticipated.

**Sensitive Receptors**

14.2.5 A summary of identified sensitive/ important residential areas is provided within Table 14-3. Sensitivity criteria is outlined in **TA 14.2: Television and Radio Assessment Methodology (EIAR Volume 4)**.

7 Information of the model can be found in Appendix A of TA 14.1 (EIAR Volume 4)
8 Website link: https://www.freeview.co.uk/
9 Website link: https://ukfree.tv/maps/freeview

**Table 14-3: Summary of Identified Sensitive/ Important residential areas**

| Receptor | Sensitivity |
|---|---|
| Killin | Medium |
| Lochearnhead | Medium |
| St Fillans | Medium |
| Dunira | Medium |

## 14.3 Assessment of Likely Effects

**Embedded Mitigation**

14.3.1 No embedded mitigation will be implemented in relation to television and radio.

**Potential Operational Effects**

14.3.2 The Proposed Development is predicted to have a **Very Low** magnitude of impact upon surrounding terrestrial television and radio services. This would be **Negligible** for **Medium** sensitivity receptors.

14.3.3 If interference is reported at isolated residences and is attributed to the Proposed Development, a **Medium** magnitude of impact would be predicted, which would be **Moderate** adverse.

**Potential Cumulative Operational Effects**

14.3.4 No other wind turbines are identified in the Study Area. No cumulative operational effects are predicted.

## 14.4 Additional Mitigation

14.4.1 Mitigation is not predicted to be required. If isolated interference is reported, the following mitigation options can be considered.

- Direct the receiving aerial to an alternative transmitter that covers the area;
- Replace receiving aerial with a more directional, or higher gain aerial;
- Reposition the receiving aerial;
- Upgrade antenna cabling and connections;
- Install signal amplifiers;
- Replace terrestrial reception equipment with satellite or cable reception equipment; and
- Receive television services via the internet.

## 14.5 Assessment of Residual Effects

**Residual Operational Effects**

14.5.1 Any isolated interference mitigated through one of the options we outline in Section 14.4 would reduce the level of impact to Very Low resulting in **no significant residual effects**.

**Residual Cumulative Operational Effects**

14.5.2 No other wind turbines are identified in the Study Area. No cumulative operational effects are predicted.

## 14.6 Monitoring

**Operation Phase Monitoring**

14.6.1 No specific monitoring of television and radio signal strength in the surrounding area is required.

## 14.7 Summary

14.7.1 **No significant residual effects** upon terrestrial television and radio are predicted to be experienced due to the Proposed Development.

14.7.2 It is typical for reports of interference to be investigated and mitigation to be implemented if the interference is attributable to the Proposed Development. The suitable mitigation measure from those identified in Section 14.4 will be determined on a case-by-case basis. This will involve investigating any reports of interference and submit report to planning authority with any necessary works from mitigation list above to be implemented within three months following report.