

## Terrestrial Television and Radio Baseline Reception Survey Report

Plocks Farm

GA Pet Food Partners Group Limited

March 2026



## ADMINISTRATION PAGE

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## EXECUTIVE SUMMARY

### Report Purpose

Pager Power has been commissioned to investigate the potential impact upon terrestrial television and radio reception in the surrounding area of the proposed wind development at Plocks Farm. This report serves as a baseline to the current terrestrial television and radio reception prior to installation and operation of the wind development.

### Conclusions

The area surrounding the proposed wind development is rural and relatively sparsely populated. Individual dwellings and small villages/towns are present in the wider area.

The baseline television reception survey was undertaken on the 29<sup>th</sup> of January 2026 and allows for a 'before and after' comparison in the event of reported interference.

The baseline survey confirmed that terrestrial television services are provided in the surrounding residential areas by the Winter Hill main transmitter. Terrestrial service coverage and FM/DAB radio coverage was available at all seven of the surveyed locations. The baseline television reception survey confirmed that television coverage in the surrounding areas is, on average, very good for the main multiplexes.

One assessed location may be within the forward scatter region relative to the Winter Hill transmitter. A lack of observed aeriols suggests terrestrial services may not be used in this location. The baseline signal strength of the main multiplexes is very good, and the baseline signal strength of radio services is good to very good. Impacts due to the proposed development cannot be ruled out at this location, however, the strong baseline signal means that significant impacts are unlikely.

Other areas of residential properties are not within the forward scatter region relative to the Winter Hill main transmitter. Significant terrestrial television and radio interference caused by the wind turbine development is not predicted.

### Next Steps

The prospect of interference cannot be ruled out entirely due to the possibility that services from a given transmitter could be receivable at isolated locations outside of its nominal coverage zone.

It is recommended a post-construction survey is carried out to measure reception after the proposed development is constructed.

There is no requirement to undertake pre-emptive mitigation as it is likely that there will be no noticeable effects. Mitigation options are presented for reference in Section 6.



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## ABOUT PAGER POWER

Pager Power is a specialist technical consultancy based in the United Kingdom and has been providing independent expertise on planning issues for solar, wind, and building developments for over 20 years.

Established in 1997, the company initially specialised in assessing the impact of wind turbines on radar systems. Pager Power has since expanded into a multidisciplinary technical planning consultancy that offers a comprehensive range of services and has supported renewable and building projects in more than 60 countries.

Pager Power's core competencies now include:

- Aviation and Radar;
- Daylight, Sunlight and Overshadowing;
- Glint and Glare;
- Shadow Flicker;
- Telecommunications.

Using proprietary modelling software, each study is tailored to the individual project, ensuring that results are relevant, defensible, and aligned with current national and international standards. The company also provides planning support and stakeholder consultation across all service areas, helping clients to understand constraints, explore potential mitigation options, and forge a path forward for their projects.

Pager Power's work helps clients identify potential risks, inform project design, and support the decision-making process. The company can provide support at any stage of a project, from initial feasibility through to completion. Pager Power's assessments – recognised for their objectivity, accuracy, and technical integrity – are designed to withstand legal scrutiny and are trusted by developers and stakeholders alike.



## 1 PROPOSED DEVELOPMENT DETAILS

### 1.1 Turbine Details

The proposed turbine details are presented in Table 1 below.

Eastings	Northings	Longitude (°)	Latitude (°)	Turbine Tip Height (m) agl	Turbine Hub Height (m) agl	Rotor Diameter (m)
346225	419368	-2.81539	53.66801	179.8	110.64	138.25

Table 1 Assessed Wind Development details

### 1.2 Wind Development Location

The site layout<sup>1</sup> is shown in Figure 1 on the following page, with the turbine location marked within the red line site boundary.

<sup>1</sup> Source: 2022-143-SL03D - Proposed Full Site Layout



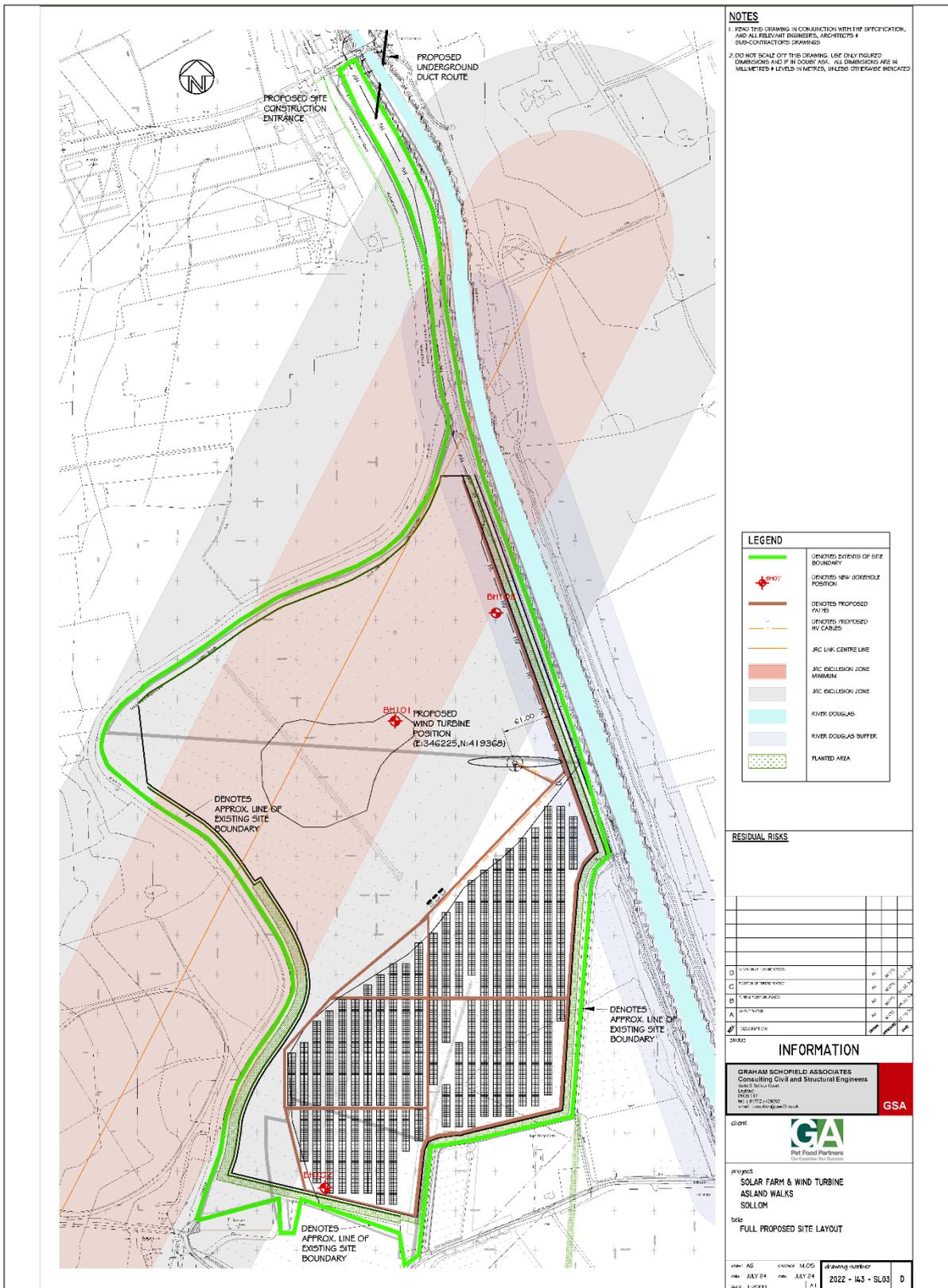


Figure 1 Site layout

The location of the proposed wind turbine is shown in Figure 2 on the following page.





Figure 2 *Wind development location*



## 2 TELEVISION AND RADIO TRANSMISSIONS DETAILS

### 2.1 Overview

Digital television services are broadcast via Ultra High Frequency (UHF) signals; no analogue television signals are broadcast. Digital and FM radio services are also broadcast. The transmitter information is presented in the following section.

A comprehensive search of transmitter and coverage maps revealed that the Winter Hill transmitter is the main transmitter most likely to be serving the area around the building development. Winter Hill is one of the UK's main television transmitters located approximately 20.45km east of the Proposed Development (published coordinates SD66051446).

### 2.2 Winter Hill Main Transmitter

#### 2.2.1 Television Services

Digital television services are broadcast, the details of which are presented in Table 2 and Table 3 below.

	Public (PSB)			Commercial (COM)		
Service	BBC A	Digital 3&4	BBC B	SDN	Arqiva A	Arqiva B
Channel	32	34	35	29	31	37
Power (kW)	100					

Table 2 Winter Hill Transmissions (main multiplexes)

Service	L-MAN	G-MAN
Freq. (MHz)	24	27
Power (kW)	2 kW	1 kW

Table 3 Winter Hill Transmissions (local multiplexes)

#### 2.2.2 Radio Services

Radio services are provided in many ways within the UK, including:

- Analogue transmissions from transmitters – including Winter Hill;
- Analogue services via cable;
- Digital transmissions;
- Television;
- Web/podcast; and



- Mobile devices.

Of the sources above, the most relevant with regard to interference from the consented wind development is terrestrial analogue transmissions. It is expected that radio services in the surrounding area will be provided by the Winter Hill main transmitter, however, this is not guaranteed as it is not always straightforward to identify which radio transmitters/sources are serving a particular area.

Receivers for radio services include mobile users, including within vehicles and dwelling locations. It is possible for dwellings to have external receiving aerials for radio services, although this is relatively uncommon.

Details of assessed radio services are presented in Table 4 below.

Service	BBC Radio Lancashire	Digital One	Lancashire	BBC National DAB
Freq. (MHz)	103.9	222.064	223.936	225.648
Power (kW)	2	10	1.5	10

Table 4 Winter Hill radio transmissions

### 2.3 Transmitter Location

Figure 3 below shows the assessed transmitter relative to the proposed development.



Figure 3 Identified transmitter



## 3 RELEVANT GUIDANCE AND ASSESSMENT METHODOLOGY

### 3.1 Overview

There is little in the way of official guidance with regards to managing television and radio interference issues associated with wind developments. However, there are some publications that warrant consideration when evaluating potential impacts.

### 3.2 Guidance for Evaluating Potential Interference

The most relevant advice for considering potential interference for digital television signals can be found in ITU-R BT.2142-1. Key points within this publication are:

- Small interference signals can be dealt with by a standard antenna whilst larger ones can typically be mitigated by a more directional antenna;
- In the backscatter region there is little effect from scattering from wind turbines on the performance of digital television, but in the forward scattering region, if there is significant blockage of the direct signal, significant interference to the reception of the digital television signal is possible.

The above is not an extensive review of the ITU publication, however these two points are particularly relevant with regard to quantifying potential interference.

### 3.3 Practical Experience

The results of Pager Power's model also compare well with real-world cases. Cases of television interference that have been reported post-construction are almost always in areas where potential impacts have been predicted by the model. The author is not aware of any occasions where interference attributable to a particular development has occurred outside a modelled zone of interference.

Reported impacts on radio signals due to wind developments are very rare in practice. In Pager Power's experience effects from wind farms on television signals are unlikely beyond distances of 10-15km. Effects on radio services are judged to be unlikely beyond distances of 15km.



## 4 ASSESSMENT METHODOLOGY

### 4.1 Technical Overview

Terrestrial television services are provided by means of Ultra-High Frequency (UHF) radio waves which propagate from transmitters to receiving aerials which then relay the signal to a television set.

The quality of the image and sound on a television set is dependent on both the strength of the signal received directly from the transmitter (carrier signal) and the strength of interference signals from other sources. In this case the interference signals are modelled as reflections of the carrier signal by a wind turbine.

In an environment such as the one in which the proposed development is located, the potential for interference in practice will be predominantly dependent on:

- The transmitter that can provide reliable coverage at the receiving location in question;
- Whether the receiving location is within the forward scatter region for this transmitter.

Survey locations have been selected based on residential areas in close proximity of the proposed wind turbine development. At each location, the available transmitter and quality of the coverage was recorded, and this was considered relative to the wind turbine development's forward scatter region to evaluate the likelihood of noticeable interference occurring.

### 4.2 Forward Scatter Region

The relevant literature and practical experience both suggest that interference is most likely within the forward scatter region. Figure 4 on the following page, taken from ITU-BT.805, illustrates the forward scatter region.



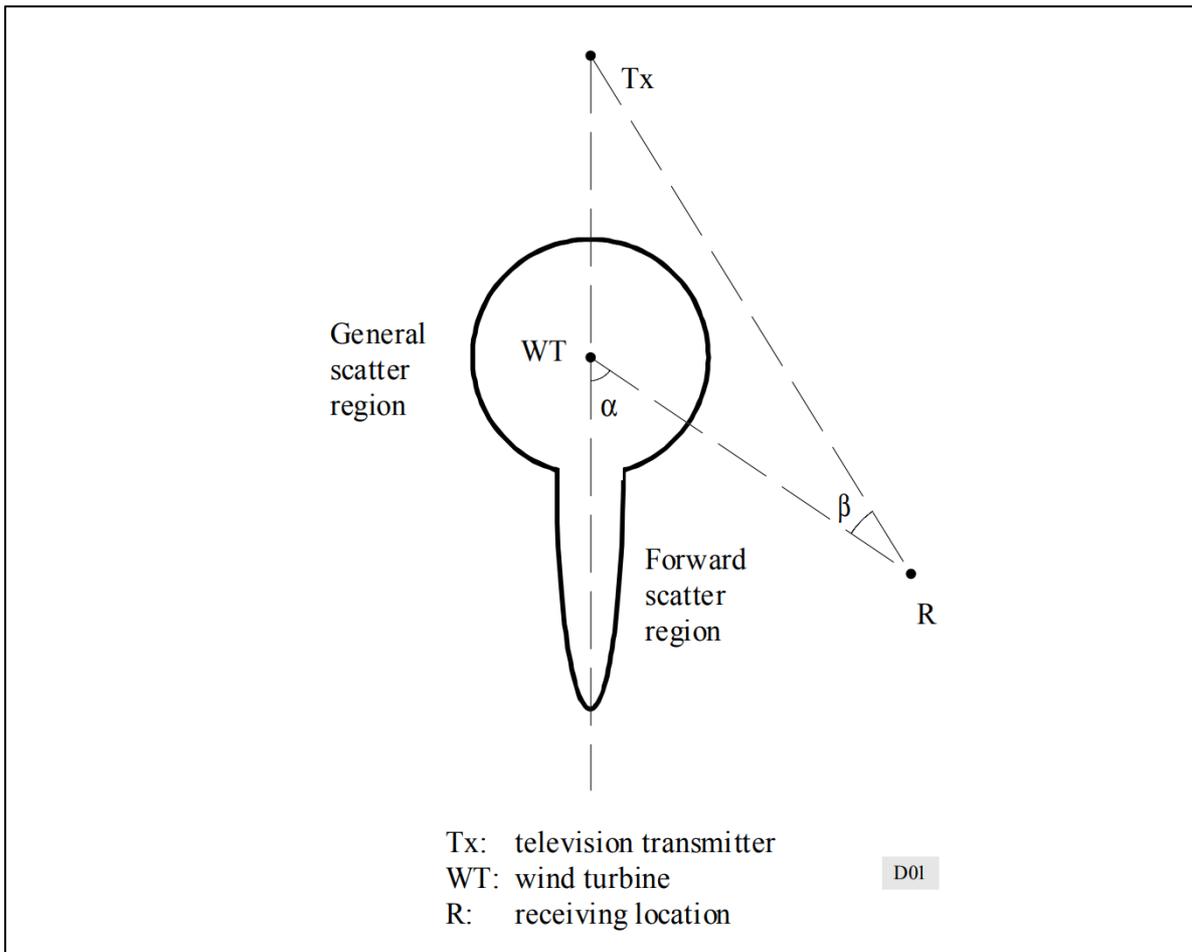


Figure 4 Plan view of forward scatter region

Further details on the forward scatter regions in the context of multiple transmitters are presented below. Figures 5 and 6 on the following page demonstrate the forward scatter regions for two transmitters with respect to a wind turbine development. The blue and orange areas show the forward scatter regions for transmitters 1 and 2 with respect to a notional wind turbine development, respectively.

In this example, the dwelling is in the forward scatter region of transmitter 1; however, it is not in the forward scatter region of transmitter 2. If there is no television reception for the dwelling with respect to transmitter 1, then it is not possible for interference effects to exist for the dwelling with respect to transmitter 1. If the dwelling receives services from transmitter 2, then interference is not predicted from the wind development because it is not in the forward scatter region for that transmitter.

If no television services are currently available from any transmitter for a particular dwelling, then interference effects are not predicted to occur due to the wind turbine development.

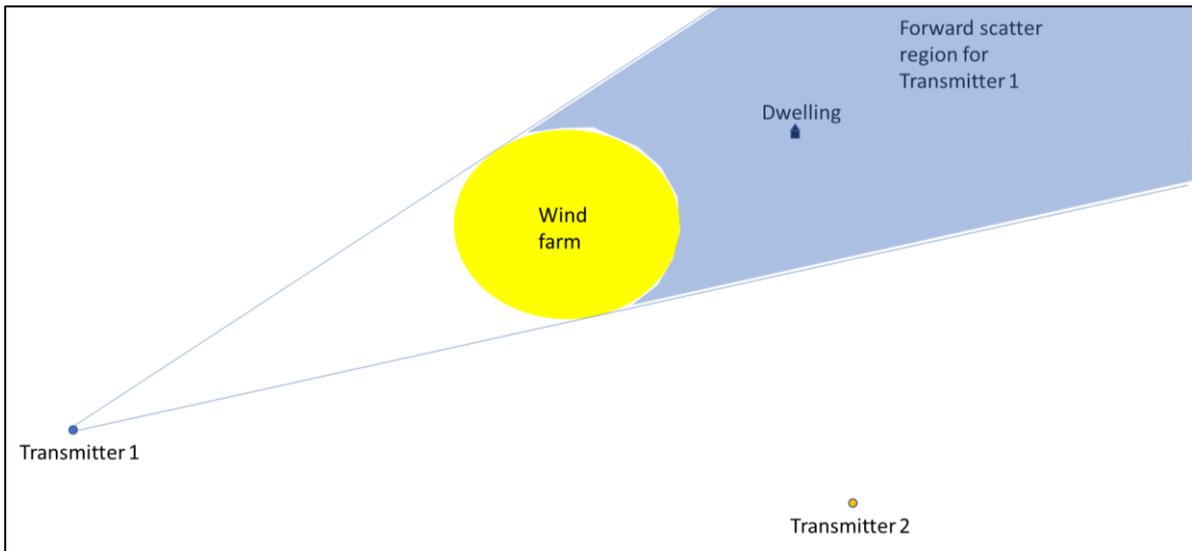


Figure 5 Forward scatter region for 'Transmitter 1'

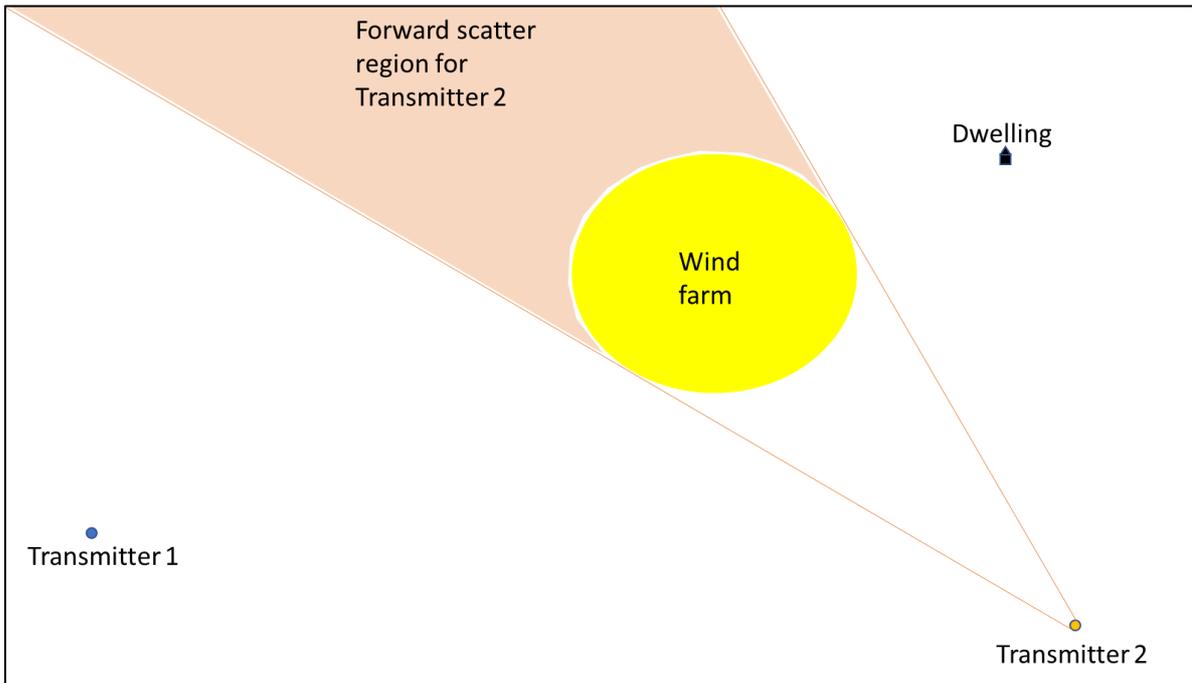


Figure 6 Forward scatter region for 'Transmitter 2'

### 4.3 Susceptibility of Radio Transmissions to Wind Turbine Interference

In principle, radio transmissions are subject to the same interference mechanisms as television transmissions.

Radio services are, in general, more robust to interference than television signals are. This is partly due to the fact that radio services are audio only and partly due to the fact that radio systems are generally designed to operate in a dynamic environment. Broadly speaking, the interference zones for television services from a transmitter will be applicable for radio services from the same transmitter, although the risk of radio interference is judged to be lower.

## 5 TELEVISION AND RADIO BASELINE SURVEY RESULTS

### 5.1 Overview

The purpose of a baseline survey is to establish current signal strength and quality in the area. The baseline survey serves three purposes these are:

1. It confirms which transmitter is serving most homes in the areas surveyed (for television);
2. It provides an indicator regarding the likelihood of interference. If current signals are of good quality, minor degradation is less likely to have a noticeable effect;
3. It allows a 'before and after' comparison to be made in the event that a complaint is received.

Baseline television and radio reception surveys were undertaken for the proposed development on the 29<sup>th</sup> of January 2026.

Survey measurements were taken using Pager Power's custom survey vehicle with a wideband UHF aerial extended to a height of 10 metres above ground level. This was connected to a television analyser to record the signal strength and stability.

The strength of the recorded signals is categorised in accordance with Table 8 below.

Average Signal Strength (dB)	Subjective Signal Strength Definition
< 35	Low
35-45	Moderate
45-55	Good
> 55	Very Good

Table 5 Signal strength categories

### 5.2 Survey Locations

Figure 10 on the following page shows the surveyed locations, numbered 1 to 7, for both television and radio reception. The coordinates of each location are presented in Appendix A.

Survey locations were chosen pre-survey, identified by choosing locations close to residential areas where reception is utilised.





Figure 7 Survey locations

### 5.3 Television Survey Results

A summary of survey results is presented in Table 6 on the following pages. The full technical data is shown in Appendix A. Survey photographs are presented in Appendix B.

The survey findings include commentary on the existing coverage and a visual review of aerials and satellite dishes identified on the surrounding dwellings. This is relevant, as it can provide further evidence on the current level of services available, the transmitter that is potentially (or historically) providing service<sup>2</sup>, and if mitigation solutions are already in place such as the use of a satellite dishes.

Significant terrestrial television interference caused by the wind turbine development is not predicted. Any locations are either not within the forward scatter region to a transmitter providing good existing signal strength or there is good existing baseline signal strength.

<sup>2</sup> The directional of an aerial can indicate which transmitter it is relevant. The orientation of the aerial can also indicate if the aeriels are pointing to a main transmitter (horizontally polarised aerial) or a relay transmitter (vertically polarised aerial).



Location	Average Measured Signal Strength (dB)		Number of Channels with Fine Picture and/or Audio Quality	Observations	Conclusion
1	All	55.7	Main multiplexes 6/6 Local multiplexes 0/2	No aerials or satellite dishes were observed  The location is approximately 1.19km from the proposed turbine	This location is not within the forward scatter region of the Winter Hill transmitter  Significant interference effects due to the proposed development are not predicted at this location
	Main TV MUX	65.7			
	Local TV MUX	25.5			
	FM	53.2	4/4		
	DAB	59.4			
2	All	64.0	Main multiplexes 6/6 Local multiplexes 0/2	No aerials or satellite dishes were observed  The location is approximately 0.55km from the proposed turbine	This location is not within the forward scatter region of the Winter Hill transmitter  Significant interference effects due to the proposed development are not predicted at this location
	Main TV MUX	75.0			
	Local TV MUX	30.9			
	FM	40.9	4/4		
	DAB	59.0			



Location	Average Measured Signal Strength (dB)		Number of Channels with Fine Picture and/or Audio Quality	Observations	Conclusion
3	All	54.6	Main multiplexes 6/6 Local multiplexes 0/2	Multiple Horizontally Polarised (HP) aerials and satellite dishes were observed	This location is not within the forward scatter region of the Winter Hill transmitter  Significant interference effects due to the proposed development are not predicted at this location
	Main TV MUX	64.7			
	Local TV MUX	24.1			
	FM	46.0	4/4	The location is approximately 0.92km from the proposed turbine	
	DAB	49.67			
4	All	60.9	Main multiplexes 6/6 Local multiplexes 0/2	Multiple satellite dishes were observed	This location may be within the forward scatter region of the Winter Hill transmitter  A lack of observed aerials suggests terrestrial services may not be used in this location  The baseline signal strength of the main multiplexes is very good, and the baseline signal strength of radio services is good to very good  Impacts due to the proposed development cannot be ruled out at this location, however, the strong baseline signal means that significant impacts are unlikely
	Main TV MUX	72.7			
	Local TV MUX	25.5			
	FM	57.9	4/4	The location is approximately 1km from the proposed turbine	
	DAB	51.8			



Location	Average Measured Signal Strength (dB)		Number of Channels with Fine Picture and/or Audio Quality	Observations	Conclusion
5	All	63.3	Main multiplexes 6/6 Local multiplexes 0/2	Multiple Horizontally Polarised (HP) aerials and satellite dishes were observed	This location is not within the forward scatter region of the Winter Hill transmitter  Significant interference effects due to the proposed development are not predicted at this location
	Main TV MUX	75.9			
	Local TV MUX	25.3			
	FM	44.3	4/4	The location is approximately 1.79km from the proposed turbine	
	DAB	50.8			
6	All	47.8	Main multiplexes 6/6 Local multiplexes 0/2	Multiple satellite dishes were observed	This location is not within the forward scatter region of the Winter Hill transmitter  Significant interference effects due to the proposed development are not predicted at this location
	Main TV MUX	55.2			
	Local TV MUX	25.7			
	FM	60.6	4/4	The location is approximately 1.05km from the proposed turbine	
	DAB	48.1			



Location	Average Measured Signal Strength (dB)		Number of Channels with Fine Picture and/or Audio Quality	Observations	Conclusion
7	All	61.2	Main multiplexes 6/6 Local multiplexes 0/2	No aerials or satellite dishes were observed  The location is approximately 1.04km from the proposed turbine	This location is not within the forward scatter region of the Winter Hill transmitter  Significant interference effects due to the proposed development are not predicted at this location
	Main TV MUX	72.9			
	Local TV MUX	26.1			
	FM	45.4	4/4		
	DAB	55.8			

Table 6 Survey results



## 6 MITIGATION

### 6.1 Mitigation Requirement

A requirement for pre-emptive mitigation has not been identified.

If an adverse effect on television or radio reception occurs and is attributable to the proposed development, mitigation may be required. The most effective form of mitigation is dependent on the specific impact.

Mitigation options for terrestrial television include:

- Replacement of receiving aerial with a more directional or higher gain aerial;
- Repositioning the receiving aerial so that the received signal is stronger;
- Directing the receiving aerial to an alternative transmitter that covers the area and retuning the television accordingly;
- Upgrading antenna cabling and connections;
- Installation of signal amplifiers;
- Development of a bespoke local solution using a receiving aerial some distance from the dwelling;
- A combination of the above;
- Replacing terrestrial reception equipment with satellite reception equipment or cable.

Mitigation options for radio include:

- Re-tuning the radio;
- Relocation of the radio;
- Upgrading the aerial or the radio itself;
- Provision of an external aerial for receiving radio services.

### 6.2 Recommended Options

If interference were to occur for a small number of dwellings it is likely that installation of satellite television receiver would likely be the most suitable option.

If effects are experienced for dwellings with poor quality or low receiving aerials, the best option may be to upgrade and/or elevate the existing aerial.

The most appropriate solution if radio services at residences are affected may be provision of a new radio or an external aerial.



## 7 OVERALL CONCLUSIONS

### 7.1 Conclusions

The area surrounding the proposed wind development is rural and relatively sparsely populated. Individual dwellings and small villages/towns are present in the wider area.

The baseline television reception survey was undertaken on the 29<sup>th</sup> of January 2026 and allows for a 'before and after' comparison in the event of reported interference.

The baseline survey confirmed that terrestrial television services are provided in the surrounding residential areas by the Winter Hill main transmitter. Terrestrial service coverage and FM/DAB radio coverage was available at all seven of the surveyed locations. The baseline television reception survey confirmed that television coverage in the surrounding areas is, on average, very good for the main multiplexes.

One assessed location may be within the forward scatter region relative to the Winter Hill transmitter. A lack of observed aerials suggests terrestrial services may not be used in this location. The baseline signal strength of the main multiplexes is very good, and the baseline signal strength of radio services is good to very good. Impacts due to the proposed development cannot be ruled out at this location, however, the strong baseline signal means that significant impacts are unlikely.

Other areas of residential properties are not within the forward scatter region relative to the Winter Hill main transmitter. Significant terrestrial television and radio interference caused by the wind turbine development is not predicted.

### 7.2 Next Steps

The prospect of interference cannot be ruled out entirely due to the possibility that services from a given transmitter could be receivable at isolated locations outside of its nominal coverage zone.

It is recommended a post-construction survey is carried out to measure reception after the proposed development is constructed.

There is no requirement to undertake pre-emptive mitigation as it is likely that there will be no noticeable effects. Mitigation options are presented for reference in Section 6.



## APPENDIX A – DETAILED SURVEY RESULTS

### Location 1

Coordinates: 53.659476°, -2.804589°

Observations: No aerials or satellite dishes were identified.

### Television

Winter Hill - Television					
Channel	Service	Signal Strength (dB $\mu$ V)	BER	Picture	Audio
24	LTVmux	25.5 $\pm$ 0.5	DND	DND	DND
27	Glmux	25.5 $\pm$ 0.5	DND	DND	DND
29	SDN	67.0 $\pm$ 0.5	1x10 <sup>-7</sup>	Fine	Fine
31	Arqiva A	66.7 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
32	BBC A	67.4 $\pm$ 0.1	1x10 <sup>-7</sup>	Fine	Fine
34	Digital 3&4	65.5 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
35	BBC B	64.0 $\pm$ 0.5	1x10 <sup>-7</sup>	Fine	Fine
37	Arqiva B	63.7 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine

### Radio

Winter Hill - Radio			
Frequency (MHz)	Service	Signal Strength (dB $\mu$ V)	Audio
103.9 (FM)	BBC LANC	53.2 $\pm$ 0.1	Fine
222.064 (DAB)	Digital One	62.5 $\pm$ 0.3	Fine
223.936 (DAB)	Lancashire	58.3 $\pm$ 0.3	Fine
225.648 (DAB)	BBC National DAB	57.5 $\pm$ 0.5	Fine



**Location 2**

Coordinates: 53.663186°, -2.813838°

Observations: No aerials or satellite dishes were identified.

**Television**

Winter Hill - Television					
Channel	Service	Signal Strength (dB $\mu$ V)	BER	Picture	Audio
24	LTVmux	29.4 $\pm$ 0.5	DND	DND	DND
27	Glmux	32.3 $\pm$ 0.2	DND	DND	DND
29	SDN	73.0 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
31	Arqiva A	75.0 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
32	BBC A	75.8 $\pm$ 0.1	1x10 <sup>-7</sup>	Fine	Fine
34	Digital 3&4	75.8 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
35	BBC B	75.0 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
37	Arqiva B	75.3 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine

**Radio**

Winter Hill - Radio			
Frequency (MHz)	Service	Signal Strength (dB $\mu$ V)	Audio
103.9 (FM)	BBC LANC	40.9 $\pm$ 0.3	Fine
222.064 (DAB)	Digital One	62.5 $\pm$ 1	Fine
223.936 (DAB)	Lancashire	55.5 $\pm$ 1	Fine
225.648 (DAB)	BBC National DAB	59.0 $\pm$ 0.5	Fine



### Location 3

Coordinates: 53.662755°, -2.825930°

Observations: Multiple horizontally polarised aerials and satellite dishes.

### Television

Winter Hill - Television					
Channel	Service	Signal Strength (dB $\mu$ V)	BER	Picture	Audio
24	LTVmux	23.9 $\pm$ 0.2	DND	DND	DND
27	Glmux	24.2 $\pm$ 0.1	DND	DND	DND
29	SDN	66.2 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
31	Arqiva A	65.7 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
32	BBC A	65.0 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
34	Digital 3&4	65.0 $\pm$ 0.1	1x10 <sup>-7</sup>	Fine	Fine
35	BBC B	64.9 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
37	Arqiva B	61.5 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine

### Radio

Winter Hill - Radio			
Frequency (MHz)	Service	Signal Strength (dB $\mu$ V)	Audio
103.9 (FM)	BBC LANC	46.0 $\pm$ 0.2	Fine
222.064 (DAB)	Digital One	50.0 $\pm$ 1	Fine
223.936 (DAB)	Lancashire	47.0 $\pm$ 0.5	Fine
225.648 (DAB)	BBC National DAB	52.0 $\pm$ 0.5	Fine



**Location 4**

Coordinates: 53.670709°, -2.829716°

Observations: Multiple satellite dishes.

**Television**

Winter Hill - Television					
Channel	Service	Signal Strength (dB $\mu$ V)	BER	Picture	Audio
24	LTVmux	25.2 $\pm$ 0.2	DND	DND	DND
27	Glmux	25.8 $\pm$ 0.2	DND	DND	DND
29	SDN	71.5 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
31	Arqiva A	72.0 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
32	BBC A	72.5 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
34	Digital 3&4	73.3 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
35	BBC B	73.2 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
37	Arqiva B	73.5 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine

**Radio**

Winter Hill - Radio			
Frequency (MHz)	Service	Signal Strength (dB $\mu$ V)	Audio
103.9 (FM)	BBC LANC	57.9 $\pm$ 0.1	Fine
222.064 (DAB)	Digital One	52.0 $\pm$ 0.5	Fine
223.936 (DAB)	Lancashire	47.9 $\pm$ 0.5	Fine
225.648 (DAB)	BBC National DAB	55.5 $\pm$ 0.7	Fine



**Location 5**

Coordinates: 53.679654°, -2.833994°

Observations: Multiple horizontally polarised aerials and satellite dishes.

**Television**

Winter Hill - Television					
Channel	Service	Signal Strength (dB $\mu$ V)	BER	Picture	Audio
24	LTVmux	24.2 $\pm$ 0.3	DND	DND	DND
27	Glmux	26.4 $\pm$ 0.2	DND	DND	DND
29	SDN	75.0 $\pm$ 0.1	1x10 <sup>-7</sup>	Fine	Fine
31	Arqiva A	75.9 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
32	BBC A	76.3 $\pm$ 0.1	1x10 <sup>-7</sup>	Fine	Fine
34	Digital 3&4	76.0 $\pm$ 0.2	1x10 <sup>-7</sup>	Fine	Fine
35	BBC B	76.7 $\pm$ 0.1	1x10 <sup>-7</sup>	Fine	Fine
37	Arqiva B	75.6 $\pm$ 0.1	1x10 <sup>-7</sup>	Fine	Fine

**Radio**

Winter Hill - Radio			
Frequency (MHz)	Service	Signal Strength (dB $\mu$ V)	Audio
103.9 (FM)	BBC LANC	44.3 $\pm$ 0.1	Fine
222.064 (DAB)	Digital One	55.5 $\pm$ 0.2	Fine
223.936 (DAB)	Lancashire	48.6 $\pm$ 0.2	Fine
225.648 (DAB)	BBC National DAB	48.4 $\pm$ 0.3	Fine



**Location 6**

Coordinates: 53.675421°, -2.825317°

Observations: Multiple satellite dishes.

**Television**

Winter Hill - Television					
Channel	Service	Signal Strength (dB $\mu$ V)	BER	Picture	Audio
24	LTVmux	25.2 +/-0.3	DND	DND	DND
27	Glmux	26.2 +/- 0.2	DND	DND	DND
29	SDN	58.1 +/- 0.1	1x10 <sup>-7</sup>	Fine	Fine
31	Arqiva A	53.7 +/-0.2	1x10 <sup>-7</sup>	Fine	Fine
32	BBC A	57.2 +/-0.2	1x10 <sup>-7</sup>	Fine	Fine
34	Digital 3&4	51.8 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine
35	BBC B	54.0 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine
37	Arqiva B	56.2 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine

**Radio**

Winter Hill - Radio			
Frequency (MHz)	Service	Signal Strength (dB $\mu$ V)	Audio
103.9 (FM)	BBC LANC	60.6+/-0.1	Fine
222.064 (DAB)	Digital One	49.9 +/-1	Fine
223.936 (DAB)	Lancashire	45.5 +/- 0.5	Fine
225.648 (DAB)	BBC National DAB	49.0 +/- 1	Fine



**Location 7**

Coordinates: 53.674656°, -2.804359°

Observations: No aerials or satellite dishes were identified.

**Television**

Winter Hill - Television					
Channel	Service	Signal Strength (dB $\mu$ V)	BER	Picture	Audio
24	LTVmux	24.7 +/- 0.5	DND	DND	DND
27	Glmux	27.5 +/- 0.5	DND	DND	DND
29	SDN	70.3 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine
31	Arqiva A	72.2 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine
32	BBC A	73.3 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine
34	Digital 3&4	73.5 +/- 0.1	1x10 <sup>-7</sup>	Fine	Fine
35	BBC B	73.5 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine
37	Arqiva B	74.7 +/- 0.2	1x10 <sup>-7</sup>	Fine	Fine

**Radio**

Winter Hill - Radio			
Frequency (MHz)	Service	Signal Strength (dB $\mu$ V)	Audio
103.9 (FM)	BBC LANC	45.4 +/- 0.1	Fine
222.064 (DAB)	Digital One	60.5 +/- 0.5	Fine
223.936 (DAB)	Lancashire	54.0 +/- 1	Fine
225.648 (DAB)	BBC National DAB	53.0 +/- 2	Fine



APPENDIX B – SURVEY PHOTOGRAPHS

Location 1



Location 2



Location 3



Location 4



Location 5



Location 6



Location 7





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