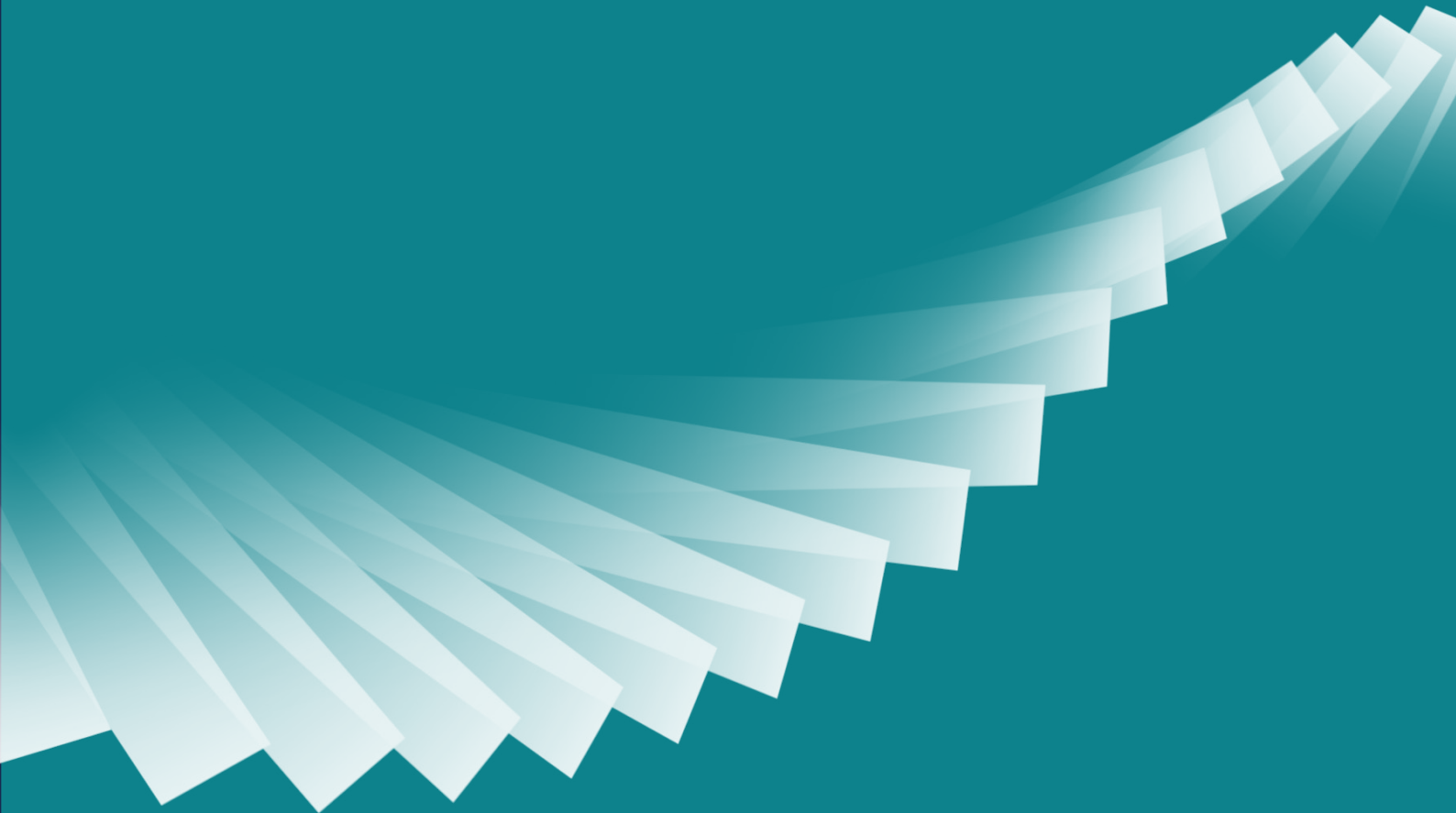




Bute Energy
Aberedw Energy Park

Appendix 2.4:

Telecommunications Impact Assessment



Telecommunications Impact Assessment

Aberedw Energy Park

Land Use Consultants

April 2025

PLANNING SOLUTIONS FOR:

- Solar
- Telecoms
- Railways
- Defence
- Buildings
- Wind
- Airports
- Radar
- Mitigation

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ADMINISTRATION PAGE

Job Reference:	12377E
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Issue	Date	Detail of Changes
1	February 2024	Initial issue
2	April 2025	Updated to consider revised turbine layout

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EXECUTIVE SUMMARY

Report Overview

Pager Power has been commissioned to investigate the potential impact of a proposed wind development, located near Aberedw, Powys, Wales, upon wireless communications infrastructure (point-to-point links) in the surrounding area.

An initial layout for the proposed development consisted of 18 wind turbine locations. A further 32 notional wind turbine locations and the site boundary were shared with link operators to represent the extent of the site and to determine potential constraints should turbine locations change. The proposed turbines have a tip height of 200 metres above ground level and rotor diameter of 163 metres.

A revised layout comprising 18 turbines was subsequently shared with telecommunications operators to confirm their position and any relevant communications infrastructure.

Overall Results

The site is partially constrained by telecommunications link paths. The constraints are due to the wireless Re-Broadcast link (RBL) operated by Arqiva from Llandrindod Wells to Erwood, and one Mobile Broadband Network Limited (MBNL) link and mast¹.

Cellnex has provided details of a mast with no link details. The mast² is approximately 413m from the site boundary. Based on past project experience, it is understood that all link operators that operate with Cellnex will have already been contacted through this consultation process and therefore has not been taken forward for technical assessment.

No new link infrastructure has been provided as a result of re-consultation with the revised layout. Pager Power is awaiting responses to the consultation process from some consultees.

Revised Turbine Layout Results

The assessment results for the revised turbine layout are stated below. These conclusions are for the link details that have been provided to Pager Power through the consultation process or obtained following a review of the Ofcom database.

Revised Turbine Layout Results – Ofcom-Recommended Methodology

For the initial layout of 18 turbines, no mitigation is required based on the consultation responses and information obtained thus far. The closest turbines to a link path, turbines 16 to 18, are clear of the link path exclusion zone for an MBNL link³ by a lateral distance of at least 158.6m.

¹ MBNL 1671600 link path, MBNL 770389 mast – See section 4.2 for link details.

² Easting: 307260, Northing: 252330

³ MBNL 1671600

Revised Turbine Layout Results – Specific Stakeholder Requests

Arqiva and MBNL have requested a 100-metre clearance to the direct link path from the blade tip. Furthermore, MBNL also requested a 250-metre exclusion zone to the link ends (Pager Power's also applies a 250-metre exclusion zone to microwave link ends).

The closest turbines to a link path, turbines 16 to 18, are clear of the link path exclusion zone for 'MBNL 1671600' by a lateral distance of at least 117.7m.

Mitigation

For the revised layout of 18 turbines, no mitigation is required based on the consultation responses and information obtained thus far. An overview of possible mitigation strategies has been provided for reference (see Section 5).

LIST OF CONTENTS

Administration Page	2
Executive Summary	3
Report Overview.....	3
Overall Results.....	3
Revised Turbine Layout Results	3
Mitigation.....	4
List of Contents	5
List of Figures.....	6
List of Tables.....	6
About Pager Power.....	7
1 Background	8
1.1 Introduction.....	8
2 Proposed Wind Development Details	9
2.1 Initial Layout.....	9
2.2 Revised Layout	10
3 Telecommunications Consultation Summary	11
3.1 Process	11
3.2 Consultation Overview	11
4 Technical Assessment.....	15
4.1 Methodology.....	15
4.2 Identified Telecommunication Links – Consultation Process.....	17
4.3 Identified Telecommunication Links – Ofcom Database Review	17
4.4 Exclusion Zone Chart – Ofcom-Recommended Methodology	18
4.5 Exclusion Zone Chart – Including Stakeholder Requests	22
4.6 Discussion.....	26
5 Mitigation	27
5.1 Microwave Link Mitigation.....	27

5.2	UHF Telemetry Links.....	28
6	Conclusions.....	30
6.1	Overall Results.....	30
6.2	Revised Turbine Layout Results.....	30
6.3	Mitigation.....	30
	Appendix A – Coordinate Data.....	31
	Initial Layout.....	31
	Revised Layout	33

LIST OF FIGURES

Figure 1	Proposed development initial turbine layout – 18 turbines.....	9
Figure 2	Proposed development initial turbine layout (1 to 18) and further 32 notional wind turbine locations.....	10
Figure 3	Proposed development revised turbine layout – 18 turbines	10
Figure 4	Exclusion zone calculation	18
Figure 5	Telecommunications link exclusion zone chart – zoomed out	19
Figure 6	Telecommunications link exclusion zone chart – zoomed in	20
Figure 7	Telecommunications link exclusion zone chart – zoomed out	23
Figure 8	Telecommunications link exclusion zone chart – zoomed in	24

LIST OF TABLES

Table 1	Telecommunications stakeholder consultation.....	14
Table 2	Identified telecommunications links	17
Table 3	Initial turbine layout results summary – Ofcom recommended methodology.....	22
Table 4	Initial turbine layout results summary - Specific Stakeholder Requests	26

ABOUT PAGER POWER

Pager Power is a dedicated consultancy company based in Suffolk, UK. The company has undertaken projects in 61 countries within Europe, Africa, America, Asia and Oceania.

The company comprises a team of experts to provide technical expertise and guidance on a range of planning issues for large and small developments.

Pager Power was established in 1997. Initially the company focus was on modelling the impact of wind turbines on radar systems. Over the years, the company has expanded into numerous fields including:

- Renewable energy projects.
- Building developments.
- Aviation and telecommunication systems.

Pager Power prides itself on providing comprehensive, understandable, and accurate assessments of complex issues in line with national and international standards. This is underpinned by its custom software, longstanding relationships with stakeholders and active role in conferences and research efforts around the world.

Pager Power's assessments withstand legal scrutiny and the company can provide support for a project at any stage.

1 BACKGROUND

1.1 Introduction

Pager Power has been commissioned to investigate the potential impact of a proposed wind development, located near Aberedw, Powys, Wales, upon wireless communications infrastructure (point-to-point links) in the surrounding area.

An initial layout for the proposed development consisted of 18 wind turbine locations. A further 32 notional wind turbine locations and the site boundary were shared with link operators to represent the extent of the site and to determine potential constraints should turbine locations change. The proposed turbines have a tip height of 200 metres above ground level and rotor diameter of 163 metres.

A revised layout comprising 18 turbines was subsequently shared with telecommunications operators to confirm their position and any relevant communications infrastructure.

In detail, this report contains:

- Site description.
- Stakeholder consultation and Ofcom database review to identify relevant:
 - Microwave links.
 - UHF Telemetry links.
- Technical analysis including:
 - Exclusion zone calculations (Ofcom-recommended methodology).
 - Exclusion zone calculations (Including Stakeholder Requests).
- High-level overview of common mitigation options.

2 PROPOSED WIND DEVELOPMENT DETAILS

2.1 Initial Layout

The layout of the proposed development was not yet finalised when consultation was initially conducted. Figure 1 below shows the initial layout utilised for the first round of consultation, consisting of 18 wind turbine locations (radial icons). Figure 2 on the following page shows a further 32 notional wind turbine locations and the site boundary (red) both of which were shared with the link operators to represent the extent of the site and to determine potential constraints should turbine locations change. Further details are shown in Appendix A.

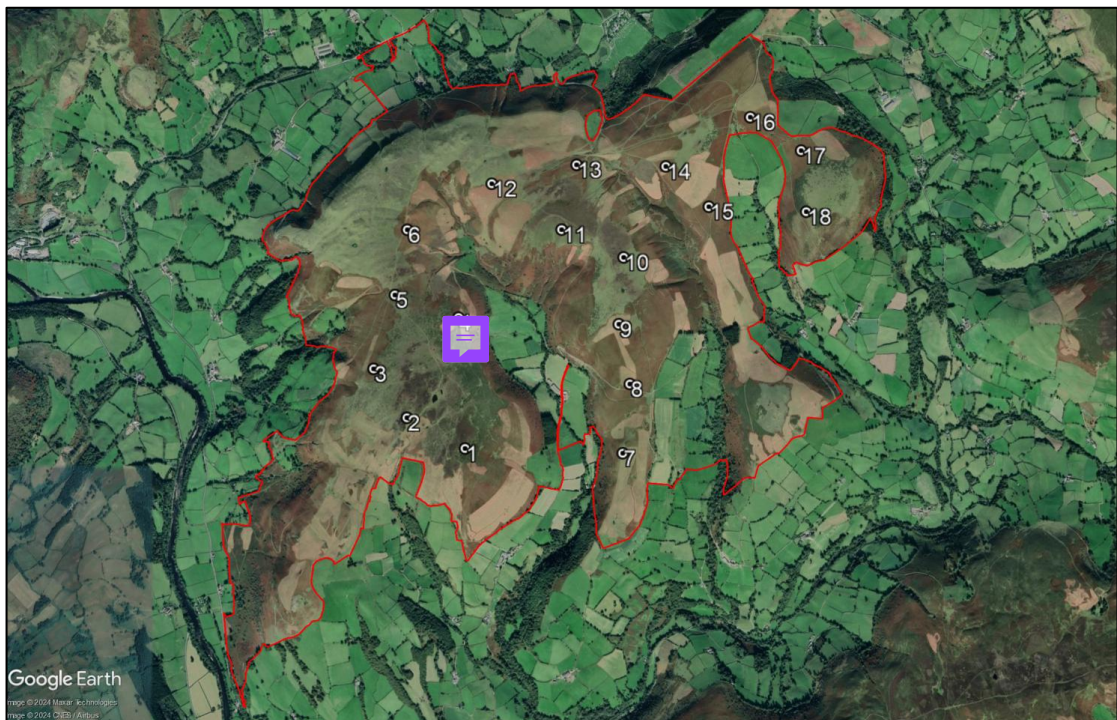


Figure 1 Proposed development initial turbine layout – 18 turbines

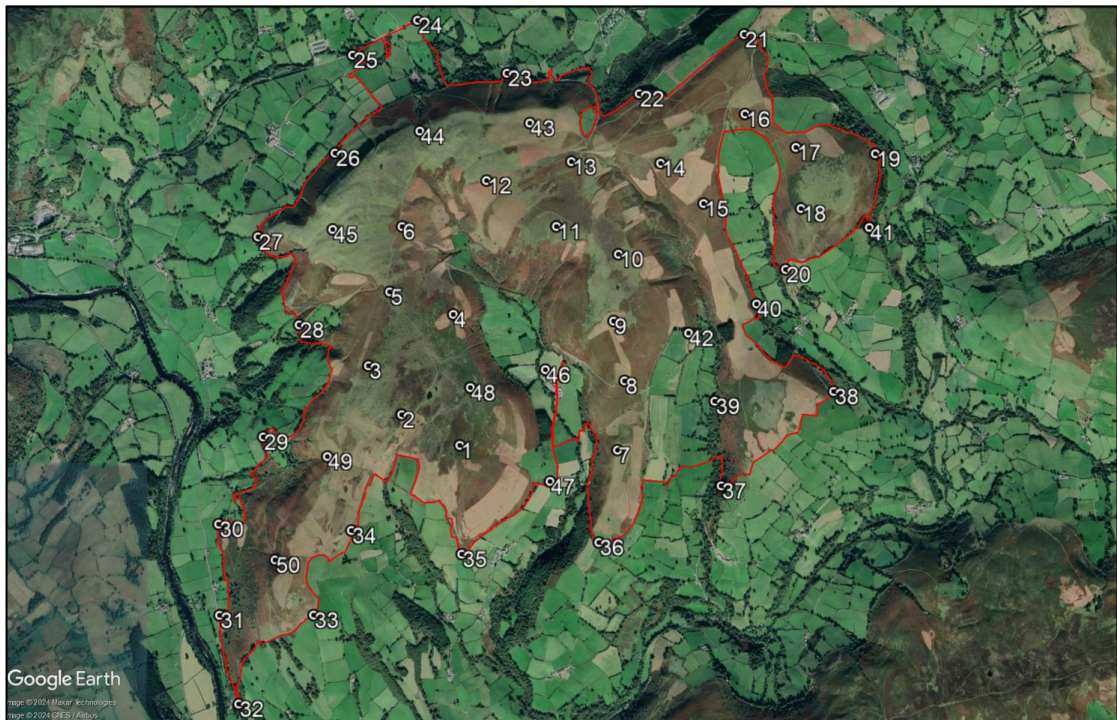


Figure 2 Proposed development initial turbine layout (1 to 18) and further 32 notional wind turbine locations

2.2 Revised Layout

Figure 3 below shows the revised layout utilised for the second round of consultation, consisting of 18 wind turbine locations (radial icons). Further details are shown in Appendix A.



Figure 3 Proposed development revised turbine layout – 18 turbines

3 TELECOMMUNICATIONS CONSULTATION SUMMARY

3.1 Process

Pager Power has consulted wireless link operators to establish the most up to date wireless link network in the vicinity of the proposed development. Consultation was undertaken directly with the most prevalent operators⁴ in order to obtain link details.

3.2 Consultation Overview

Table 1 below presents a summary of the consultation to date.

Stakeholder	Summary
Ofcom	Ofcom was not consulted as they no longer respond to consultation requests. See https://www.pagerpower.com/news/uk-ofcom-suspends-microwave-link-consultation-due-to-gdpr/ A review of link details contained within the Ofcom database was undertaken (See Section 4.3).
Airwave (Motorola Solutions)	Airwave is a company that safeguards fixed communication links for the emergency services and does not provide link details due to confidentiality reasons. An Airwave assessment has been requested. 26/01/24 – Airwave assessment requested. 01/02/24 – Airwave assessment fee provided. 09/02/24 – Airwave assessment provided. No objection.
Arqiva	26/01/24 – PP link request sent. 02/02/24 – Response received. Full link details provided. Arqiva requested a 100-metre clearance to the direct link path from the blade tip. The technical assessment in section 4 presents both the Fresnel zone calculations (Ofcom recommended guidance) and the requested 100m clearance. 07/04/25 – PP link request sent. Awaiting a response.

⁴ Based on Pager Power's experience and contacts database.

Stakeholder	Summary
Atkins & Dŵr Cymru (Welsh Water)	26/01/24 – PP link request sent. 01/02/24 – PP link request sent forwarded to Dŵr Cymru (Welsh Water). 12/02/24 – Follow up message sent to Dŵr Cymru (Welsh Water). Awaiting a response. 07/04/25 – PP link request sent. Awaiting a response.
BT	26/01/24 – PP link request sent. 08/02/24 – Response received. No objection. 07/04/25 – PP link request sent. Awaiting a response.
Cellnex	26/01/24 – PP link request sent. 07/02/24 – Response received. 07/02/24 – Further details and clarification requested. Awaiting a response. Cellnex has provided details of a mast with no link details. The mast⁵ is approximately 413m from the site boundary. Based on past project experience, it is understood that all link operators that operate with Cellnex will have already been contacted through this consultation process and therefore has not been taken forward for technical assessment. 07/04/25 – PP link request sent. Awaiting a response.

⁵ Easting: 307260, Northing: 252330

Stakeholder	Summary
Mobile Broadband Network Limited (MBNL)	26/01/24 – PP link request sent. 30/01/24 – Response received. 30/01/24 – Further details and clarification requested. 31/01/24 – Response received. Partial link details provided. MBNL requested a 100-metre clearance to the direct link path from the blade tip. The technical assessment in section 4 presents both the Fresnel zone calculations (Ofcom recommended guidance) and the requested 100m clearance. MBNL also requested a 250-metre exclusion zone to the link ends. The technical assessment in section 4 presents a 250-metre exclusion zone to microwave link masts and a 500-metre exclusion zone is applied to UHF link masts. 07/04/25 – PP link request sent. Awaiting a response.
MLL Telecom	26/01/24 – PP link request sent. 29/01/24 – Response received. No objection. 07/04/25 – PP link request sent. 10/04/25 – Response received. No objection.
The Joint Radio Company (JRC)	26/01/24 – PP link request sent. 29/01/24 – Response received. No objection. 07/04/25 – PP link request sent. 11/04/25 – Response received. No objection.
Virgin Media O2 ⁶	26/01/24 – PP link request sent. 26/01/24 – Response received. No objection. 07/04/25 – PP link request sent. 09/04/25 – Response received. No objection.

⁶ Previously known as Telefonica.

Stakeholder	Summary
Vodafone	26/01/24 – PP link request sent. 12/02/24 – Follow up message sent. Awaiting a response. 07/04/25 – PP link request sent. Awaiting a response.

Table 1 Telecommunications stakeholder consultation

4 TECHNICAL ASSESSMENT

4.1 Methodology

Microwave and UHF⁷ wireless communication links are used to transmit information between two antennae via radio waves within a particular frequency band.

The exclusion zones associated with the identified links have been calculated based on the telecommunications data provided. Further 2-dimensional clearance calculations have then been undertaken to determine the extent of any clearance or infringement of the proposed development. The following subsections present an overview of the interference mechanisms and methodology.

4.1.1 Fresnel Zones

A Fresnel Zone takes the form of an ellipsoid surrounding a link path and represents the area in which obstructions should not be sited in order to avoid diffraction losses. The width of the zone at any point along the link path is determined by the Fresnel Zone number, the frequency of the link and the distance from each link end. The width of the zone is maximal at the midpoint of the link path.

4.1.2 Diffraction – Microwave and UHF Links

Obstructions such as wind developments which are sited in between two microwave link antennae can partially block the radio signal passing between them, thereby reducing the functionality of the link. This can occur even if the obstruction is not directly between the antennae but close to the link boresight⁸. This kind of blocking is called 'diffraction'.

There are various approaches to safeguarding microwave links against from obstruction via wind developments. The most common approaches are:

1. Implementation of a fixed stand-off distance around the link boresight;
2. Safeguarding the relevant Fresnel Zone (discussed below).

The first approach is used by many operators who request a set buffer distance. Set stand offs are occasionally conservative and produce a large exclusion zone distance. The second approach is to assess an obstruction on a case-by-case basis to calculate the most accurate exclusion zone. Pager Power considers the Second Fresnel zone when assessing the effect of a wind turbine upon microwave and the 60% of the First Fresnel zone when assessing UHF links¹.

⁷ Ultra-High Frequency

⁸ This is the straight line between the two antennae.

4.1.3 Reflections – UHF Links

Obstructions can affect UHF links by reflecting the signal between transmitter and receiver. This is not a significant concern for microwave links because they are highly directional. Reflection effects are not anticipated as no UHF links have been identified. Typically, diffraction effects are likely to be the most significant concern due to the greater abundance of microwave point-to-point links and because both microwave and UHF links are safeguarded against diffraction effects.

4.2 Identified Telecommunication Links – Consultation Process

Table 2 below presents the details of the identified communications links via the consultation process.

Operator	Type	Link ID / Ref	Frequency	A End	B End
Arqiva	Re-Broadcast Link (RBL) - Assessed as UHF	Arqiva RBL Link Llandrindod Wells to Erwood	470 to 694 (Assessed at 470 MHz on a conservative basis)	301860E 263520N	308980E 242870N
MBNL	Assumed to be Microwave	MBNL 1671600	MBNL would not provide the link frequencies. Link details could not be found on the Ofcom database. A 1Ghz link frequency has been applied to the Fresnel zone calculations on a conservative basis.	313144E 251065N	301865E 263523N
		MBNL 770389	Link end mast coordinates provided. A 250m exclusion zone has been applied to the mast.	310530.1E 253229.6N	-
		MBNL 769941	Link end mast coordinates provided. A 250m exclusion zone has been applied to the mast.	307143.1E 252299.6N	-

Table 2 Identified telecommunications links

4.3 Identified Telecommunication Links – Ofcom Database Review

No further communications link details were identified via the Ofcom database review.

4.4 Exclusion Zone Chart – Ofcom-Recommended Methodology

4.4.1 2D Exclusion Zone Chart Overview

The exclusion zone for each communications link is defined by the Fresnel zone radius [B], rotor radius [A/2], and additional 25-metre buffer zone [E]. This is shown in Figure 4 below. A 250-metre exclusion zone is applied to microwave link masts and a 500-metre exclusion zone is applied to UHF link masts.

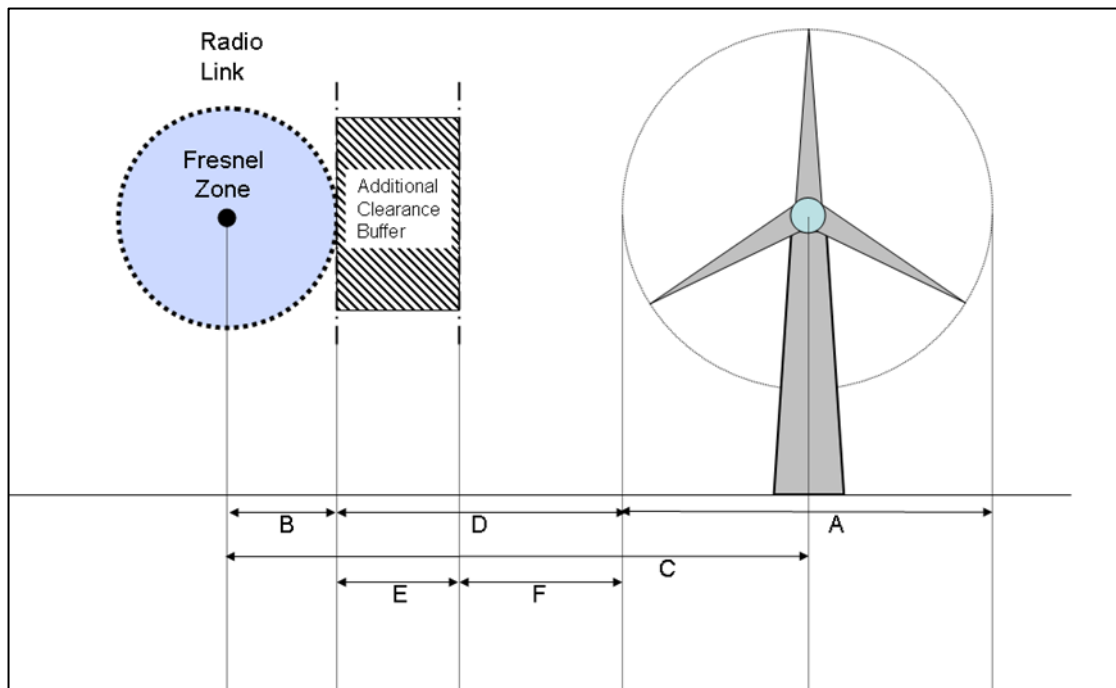


Figure 4 Exclusion zone calculation

4.4.2 2D Exclusion Zone Chart – Results

Figures 5 and 6 on the following pages show the identified link path exclusion zones associated with the identified links. Figure 6 shows a zoomed in chart and includes the revised layout for the proposed development consisting of 18 wind turbine locations. The exclusion zones are shown by two lines, marking the edges of the exclusion zones. An additional 25 metre buffer is applied to allow for uncertainties in the coordinate data. The exclusion zones also include the maximum rotor radius. Any turbines located between the lines would infringe the zone in two dimensions.

Two MBNL mast are shown with a 250-metre exclusions zone without a link path exclusion zone. The links associated with these masts do not cross the proposed development and therefore the other link end coordinates were therefore not provided.

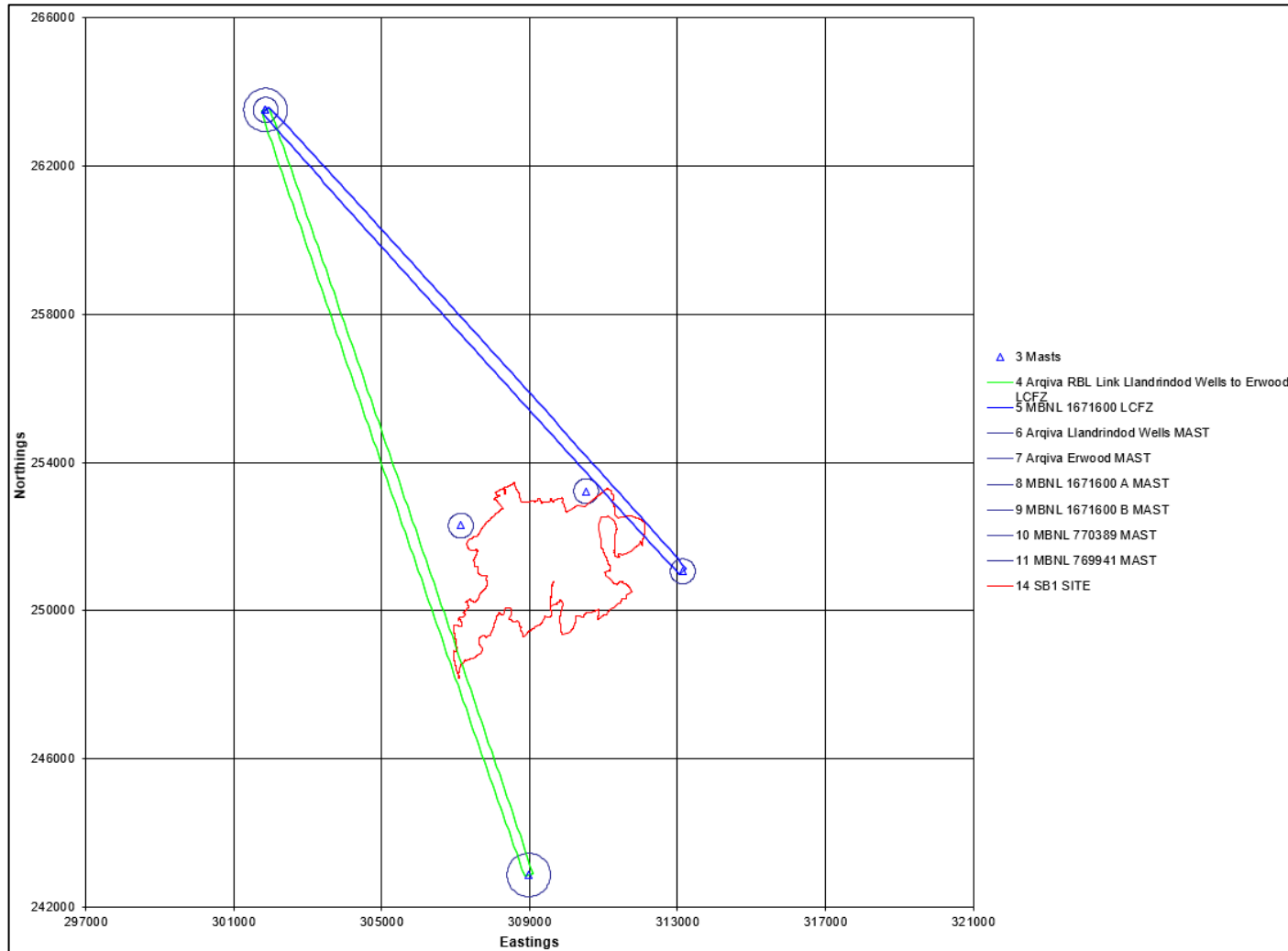


Figure 5 Telecommunications link exclusion zone chart – zoomed out
Telecommunications Impact Assessment

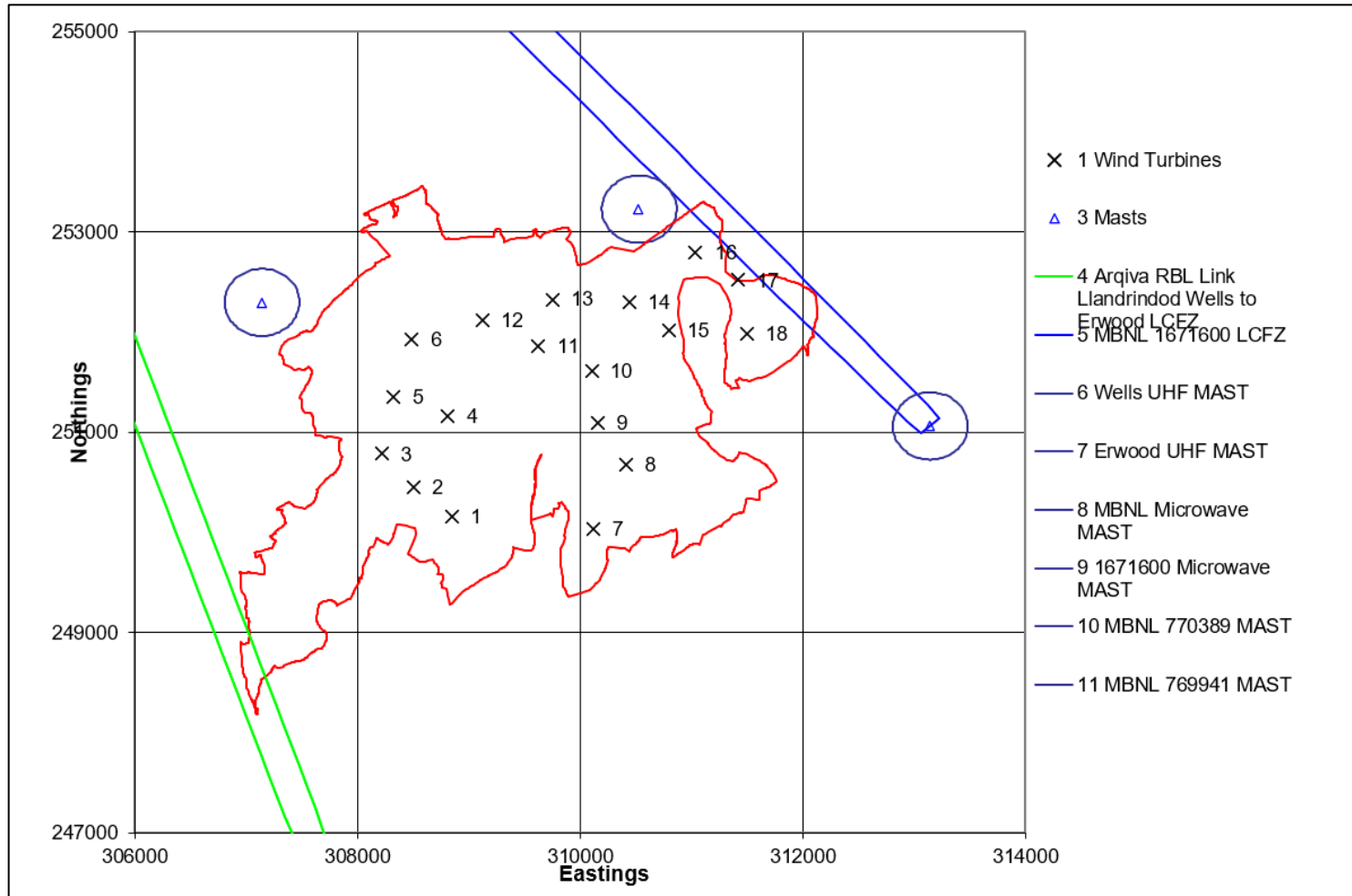


Figure 6 Telecommunications link exclusion zone chart – zoomed in

4.4.3 Initial Turbine Layout Results – Ofcom-Recommended Methodology

The proposed development consists of 18 wind turbine locations. A summary of the results of the exclusion zone charts are shown within Table 3 below. No turbines infringe the exclusion zones for any links for which link details have been provided.

Turbine	Exclusion Zones Results
1	Clear of the exclusion zones for the links (with link details)
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	Clear of link path exclusion zone for 'MBNL 1671600' by a lateral distance of 250.1m
17	Clear of link path exclusion zone for 'MBNL 1671600' by a lateral distance of 158.6m

Turbine	Exclusion Zones Results
18	Clear of link path exclusion zone for 'MBNL 1671600' by a lateral distance of 458.9m

Table 3 Initial turbine layout results summary – Ofcom recommended methodology

4.5 Exclusion Zone Chart – Including Stakeholder Requests

4.5.1 2D Exclusion Zone Chart – Specific Stakeholder Requests

Arqiva and MBNL have requested a 100-metre clearance to the direct link path from the blade tip. Furthermore, MBNL also requested a 250-metre exclusion zone to the link ends (Pager Power's also applies a 250-metre exclusion zone to microwave link ends). The exclusion zones, as shown in Figures 7 and 8 on the following pages, apply these additional requests. Figure 8 shows a zoomed in chart and includes the initial layout for the proposed development consisting of 18 wind turbine locations.

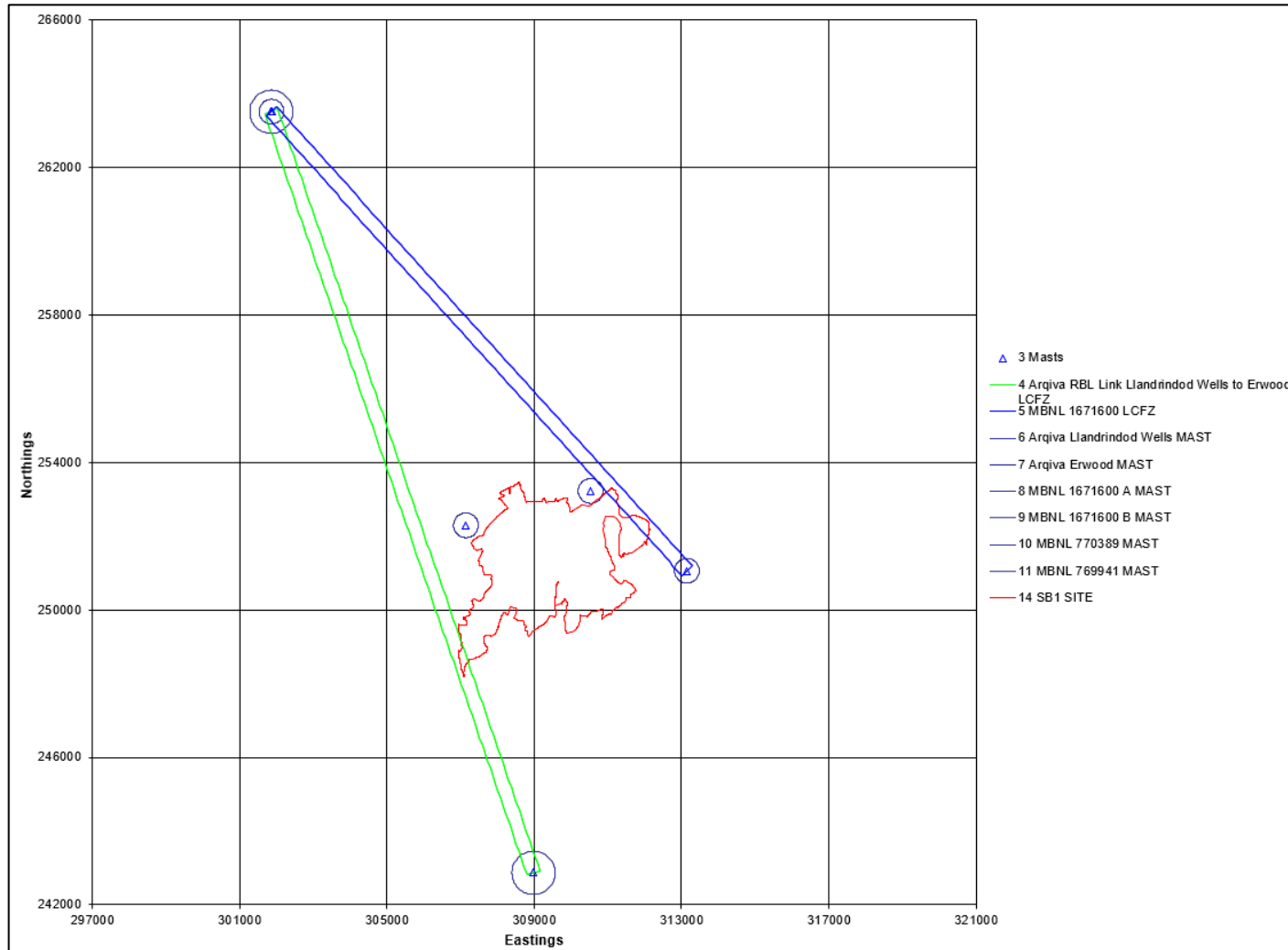


Figure 7 Telecommunications link exclusion zone chart – zoomed out
Telecommunications Impact Assessment

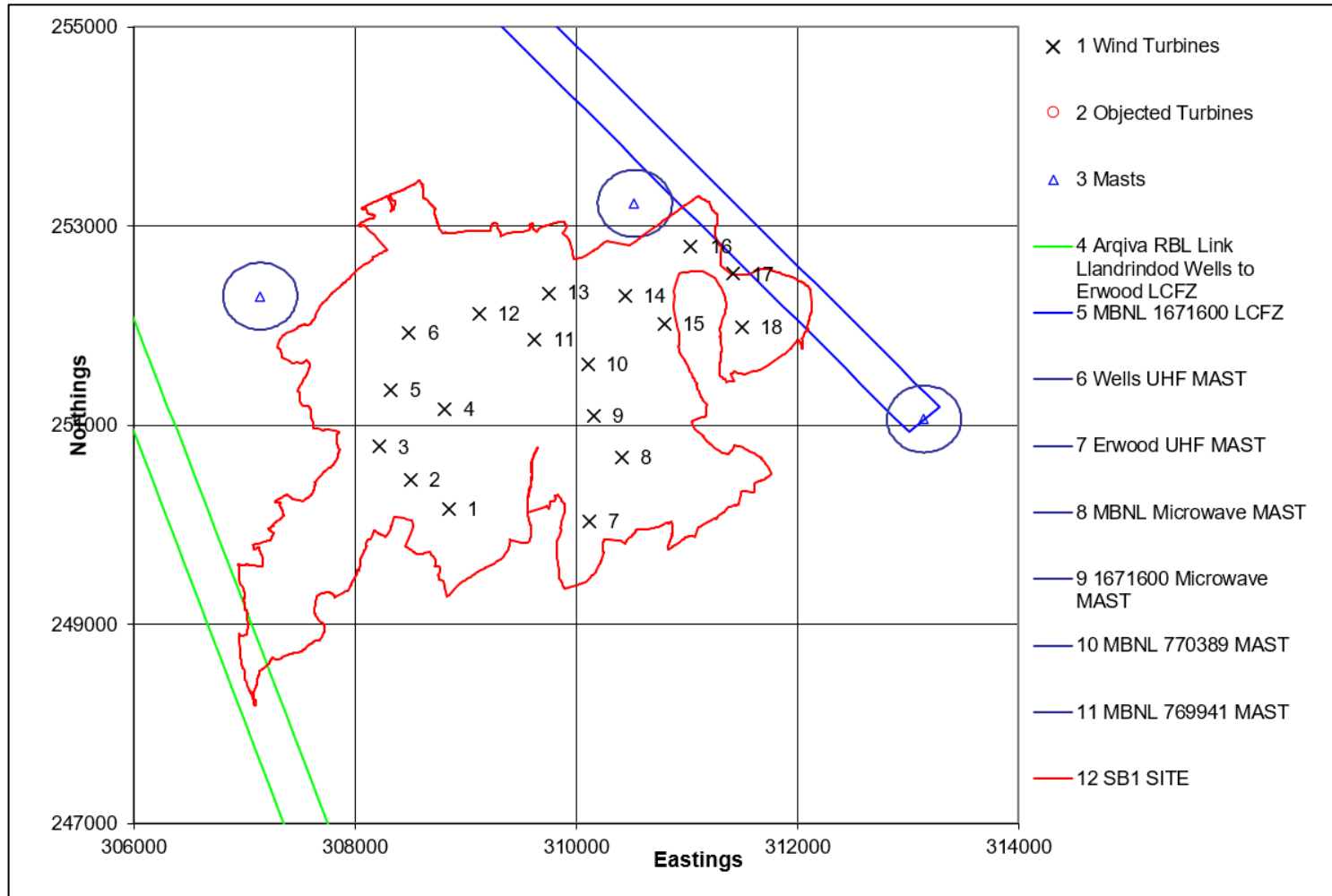


Figure 8 Telecommunications link exclusion zone chart - zoomed in

4.5.2 Initial Turbine Layout – Specific Stakeholder Requests

The proposed development consists of 18 wind turbine locations. A summary of the results of the exclusion zone charts are shown within Table 4 below. No turbines infringe the exclusion zones for any links for which link details have been provided.

Turbine	Exclusion Zones Results
1	Clear of the exclusion zones for the links (with link details)
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	Clear of link path exclusion zone for 'MBNL 1671600' by a lateral distance of 212.0m
17	Clear of link path exclusion zone for 'MBNL 1671600' by a lateral distance of 117.7m

Turbine	Exclusion Zones Results
18	Clear of link path exclusion zone for 'MBNL 1671600' by a lateral distance of 414.9m

Table 4 Initial turbine layout results summary - Specific Stakeholder Requests

4.6 Discussion

For the revised layout of 18 turbines, no mitigation is required based on the consultation responses and information obtained thus far.

5 MITIGATION

5.1 Microwave Link Mitigation

5.1.1 Overview

When an impact on a microwave link has been identified, the recommended solutions to consider could include:

- Micrositing / Layout Optimisation;
- Re-networking of the link via existing telecommunications sites;
- Use of a leased line.

Further information regarding these options is given below. Other options that can be considered are:

- Construction of a new telecommunications site for the purpose of re-networking solution;
- Use of an alternative technology such as a satellite link.

These options are less likely to be feasible and are not discussed in detail. They could be explored if an impact could not be mitigated by other means.

5.1.2 Micrositing / Layout Optimisation

This is potentially the simplest solution, depending on the available site area depending on the viability of developing the wind farm around the telecommunication link exclusion zones.

Ensuring that turbines remain outside the exclusion zones associated with the microwave links and remain more than 250 metres from a microwave link end is likely to remove any potential impact.

5.1.3 Re-networking Solution

In some cases, it is possible to re-network a microwave link via an existing telecommunications site that lies away from the wind farm.

This involves adding an extra node on the link path, so that instead of the signal being sent from End A to End B, it is sent from End A to a re-networking site, and from the re-networking site to End B.

Implementation of such a solution requires identification of a suitable re-networking site, and assessment of the intervening terrain to ensure the appropriate Fresnel zone would not be infringed by terrain for the re-networked link.

The costs and timescales associated with such a solution are variable, however it is likely to be more cost-effective and have a shorter timescale than construction of a new telecommunications site.

5.1.4 Use of a Leased Line

In some cases, it is possible to replace the wireless link with a leased line between the link ends, thereby avoiding potential interference due to the wind development.

The feasibility of such a solution is dependent on the accessibility of each link end with regard to installation of a leased line.

The costs and timescales of the solution are variable and dependent on the individual site locations and the distance between them.

5.2 UHF Telemetry Links

5.2.1 Overview

Three of the most common and cost-effective mitigation options for UHF telemetry link that are affected by wind turbines are:

- Micrositing / Layout Optimisation;
- Use of an alternative scanner;
- Replacement of the UHF telemetry link with a microwave link.

Further information regarding these options is given below. Other options that can be considered are:

- Use of a leased line or fibre optic connection;
- Construction of a new scanning station;
- Use of an alternative technology such as a satellite link.

These options are less likely to be feasible and are not discussed in detail. They could be explored if an impact could not be mitigated by other means.

5.2.2 Micrositing / Layout Optimisation

This is potentially the simplest solution, depending on the available site area depending on the viability of developing the wind farm around the telecommunication link exclusion zones. Relocation of any turbines that have the largest interference contribution could prevent any impacts on the link.

Relocating problem turbines away from the link paths and link ends may be sufficient to overcome the operator's concerns.

5.2.3 Use of an Alternative Scanner

In some cases, it is possible to direct the outstations to an alternative scanner. Discussions with the link operator would be required to establish the suitability of such a solution.

Costs are not known for such a solution, however these are likely to be of the order of £5,000 per link.

5.2.4 Replacement of the UHF Link with a Microwave Link

In cases where reflection issues are the only concern, replacement of the UHF link with a microwave link. This is because microwave links are not prone to reflection issues in the way that UHF telemetry links are.

However, microwave links do require radio line of sight to operate, which UHF telemetry links do not. Therefore, detailed assessment of the technical feasibility of such a solution would be required. This would include assessment of radio line of sight between the link ends and establishment of whether the intervening terrain would obstruct the appropriate Fresnel zone.

If the solution is feasible costs are expected to be of the order of £15,000 per link.

6 CONCLUSIONS

6.1 Overall Results

The site is partially constrained by telecommunications link paths. The constraints are due to the wireless Re-Broadcast link (RBL) operated by Arqiva from Llandrindod Wells to Erwood, and one Mobile Broadband Network Limited (MBNL) link and mast⁹.

Cellnex has provided details of a mast with no link details. The mast¹⁰ is approximately 413m from the site boundary. Based on past project experience, it is understood that all link operators that operate with Cellnex will have already been contacted through this consultation process and therefore has not been taken forward for technical assessment.

No new link infrastructure has been provided as a result of re-consultation with the revised layout. Pager Power is awaiting responses to the consultation process from some consultees.

6.2 Revised Turbine Layout Results

The assessment results for the revised turbine layout are stated below. These conclusions are for the link details that have been provided to Pager Power through the consultation process or obtained following a review of the Ofcom database.

6.2.1 Revised Turbine Layout Results – Ofcom-Recommended Methodology

For the initial layout of 18 turbines, no mitigation is required based on the consultation responses and information obtained thus far. The closest turbines to a link path, turbines 16 to 18, are clear of the link path exclusion zone for an MBNL link¹¹ by a lateral distance of at least 158.6m.

6.2.2 Revised Turbine Layout Results – Specific Stakeholder Requests

Arqiva and MBNL have requested a 100-metre clearance to the direct link path from the blade tip. Furthermore, MBNL also requested a 250-metre exclusion zone to the link ends (Pager Power's also applies a 250-metre exclusion zone to microwave link ends).

The closest turbines to a link path, turbines 16 to 18, are clear of the link path exclusion zone for 'MBNL 1671600' by a lateral distance of at least 117.7m.

6.3 Mitigation

For the revised layout of 18 turbines, no mitigation is required based on the consultation responses and information obtained thus far. An overview of possible mitigation strategies has been provided for reference (see Section 5).

⁹ MBNL 1671600 link path, MBNL 770389 mast – See section 4.2 for link details.

¹⁰ Easting: 307260, Northing: 252330

¹¹ MBNL 1671600

APPENDIX A – COORDINATE DATA

Initial Layout

The proposed wind development layout is yet to be finalised. An initial layout for the proposed development consists of 18 wind turbine locations. A further 32 notional wind turbine locations and the site boundary were shared with link operators to represent the extent of the site and to determine potential constraints should turbine locations change. The turbine coordinates are shown in the table below.

Turbine	Easting (British National Grid)	Northing (British National Grid)	Longitude	Latitude
1	308846	250156	-3.33343	52.14216
2	308401	250401	-3.34000	52.14429
3	308150	250783	-3.34377	52.14768
4	308814	251167	-3.33417	52.15124
5	308325	251350	-3.34137	52.15280
6	308430	251852	-3.33997	52.15733
7	310065	250097	-3.31561	52.14183
8	310130	250630	-3.31480	52.14663
9	310053	251093	-3.31605	52.15078
10	310100	251608	-3.31550	52.15541
11	309624	251831	-3.32252	52.15734
12	309090	252195	-3.33042	52.16052
13	309749	252329	-3.32082	52.16184
14	310439	252304	-3.31073	52.16172
15	310766	251987	-3.30587	52.15893
16	311099	252672	-3.30118	52.16514
17	311488	252407	-3.29543	52.16282

Turbine	Easting (British National Grid)	Northing (British National Grid)	Longitude	Latitude
18	311519	251935	-3.29485	52.15858
19	312101	252347	-3.28644	52.16238
20	311391	251468	-3.29660	52.15436
21	311103	253287	-3.30127	52.17066
22	310282	252844	-3.31316	52.16655
23	309263	253021	-3.32811	52.16797
24	308578	253442	-3.33822	52.17164
25	308071	253182	-3.34557	52.16922
26	307921	252429	-3.34755	52.16243
27	307314	251793	-3.35626	52.15661
28	307619	251109	-3.35161	52.15051
29	307325	250249	-3.35567	52.14274
30	306969	249583	-3.36070	52.13669
31	306963	248880	-3.36059	52.13037
32	307098	248192	-3.35842	52.12421
33	307690	248868	-3.34996	52.13038
34	307994	249515	-3.34569	52.13625
35	308845	249317	-3.33321	52.13461
36	309907	249388	-3.31772	52.13543
37	310862	249807	-3.30389	52.13935
38	311745	250520	-3.29117	52.14590
39	310824	250461	-3.30461	52.14522
40	311161	251205	-3.29988	52.15196

Turbine	Easting (British National Grid)	Northing (British National Grid)	Longitude	Latitude
41	312045	251779	-3.28712	52.15727
42	310631	250990	-3.30757	52.14995
43	309433	252633	-3.32552	52.16451
44	308581	252587	-3.33795	52.16396
45	307893	251840	-3.34781	52.15713
46	309518	250728	-3.32376	52.14741
47	309539	249865	-3.32323	52.13965
48	308935	250600	-3.33224	52.14616
49	307819	250089	-3.34841	52.14138
50	307400	249299	-3.35432	52.13421

Turbine coordinates – initial layout

Revised Layout

The revised wind development layout consists of 18 wind turbine locations. The turbine coordinates are shown in the table below.

Turbine	Easting (British National Grid)	Northing (British National Grid)	Longitude	Latitude
1	308846	250156	-3.33343	52.14215
2	308501	250450	-3.33855	52.14474
3	308220	250783	-3.34274	52.14769
4	308814	251167	-3.33417	52.15124
5	308325	251350	-3.34136	52.15280
6	308491	251930	-3.33909	52.15804
7	310120	250040	-3.31479	52.14132
8	310411	250677	-3.31070	52.14709

Turbine	Easting (British National Grid)	Northing (British National Grid)	Longitude	Latitude
9	310159	251095	-3.31449	52.15081
10	310100	251608	-3.31549	52.15541
11	309624	251861	-3.32252	52.15761
12	309120	252122	-3.32995	52.15987
13	309749	252329	-3.32081	52.16183
14	310439	252304	-3.31072	52.16172
15	310791	252015	-3.30550	52.15918
16	311040	252796	-3.30207	52.16624
17	311417	252520	-3.29649	52.16382
18	311496	251990	-3.29519	52.15907

Turbine coordinates – revised layout



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