

Ofcom Consultation – Enabling mmWave Spectrum for new uses

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Executive Summary

As a critical system operator which depend on access to spectrum, Western Power Distribution (WPD) an Electricity Distribution Network operator welcome the opportunity to respond to this consultation as it is proposing the displacement of fixed links from the 26GHz band on which WPD depend for operational integrity to ensure energy supply to consumers across its licensed areas as per its regulatory responsibilities. With regard to the core elements of the consultation our high level responses are summarised below;

- In light of Ofcom’s approach to clear fixed links from the High Density Areas (HDA) whilst allowing them to remain in the non-High Density Areas and the intention to establish a technical co-existence regime to afford appropriate protection of fixed links in non-HDAs then we encourage Ofcom to revisit its decision to block changes to existing links and the deployment of new fixed links in non-HDAs;
- The Costing Model does not fully reflect the actual costs for the systems deployed by WPD and we provide additional detail to assist with Ofcom’s approach and understanding;
- We look forward to assisting Ofcom with establishing the technical coexistence arrangements to ensure appropriate protection of fixed links in both HDA and non-HDA areas.

To put the impact of these proposed changes in context, we encourage Ofcom to recognise the long term spectrum access needs of other platforms / systems, e.g. Energy Network Operators, PMSE, etc.. To this end the actions planned will compromise the ongoing security and useability of one of the existing fixed link allocations on which the Energy Networks’ operational integrity depends.

Background

WPD is a Distribution Network Operator (DNO), operating in four regulated licence areas serving 7.8 million electricity connected customers in the Midlands, the South West of England and South Wales. However, as energy generation is becoming more distributed, our network is becoming smarter and more active, and, as a result, we are stepping towards being a Distribution System Operator (DSO) – transforming our operations for an increasingly low carbon, digital future.

For DNOs to maintain a reliable and secure electricity supply as they transition to DSOs, reliable, resilient and complete coverage communications need to be maintained and expanded upon for critical functions.

WPD’s primary focus will remain unchanged, distributing and proactively managing reliable electricity to its 8.0 million customers – not just through day to day normal operation, but also during events such as severe weather, flu-pandemics, Blackstart and acts of terrorism. To do this, and adapt to a low carbon future, DSOs will require more sensors, and hence more data and a mix of resilient data infrastructures.

WPD is in a unique position among the DNOs of having our own in-house telecoms expertise in our own telecommunications department. WPD has a network using fibre and fixed wireless links to provide a backhaul / trunk network to its office sites and communication sites which are then used to communicate to substation sites and field staff. In the future, these sites will need to communicate to the thousands of additional users of the smart grid and all its components.

Increasingly WPD's data infrastructure is required to be extended to provide private connectivity to substations, distributed generation and active management systems because existing commercial networks are unable to provide the coverage, the resilience and the connectivity that is required and can be technically unsuitable.

Ultimately, WPD has major concerns for the future of spectrum access. In the move towards 5G, the pressure on spectrum allocation will impact on our current spectrum use without any alternative at present. Indeed, we currently use spectrum in the following ways:

- 26GHz and other fixed wireless link frequencies is used for microwave communications for substation comms including electricity circuit protection.
- 450-470 MHz is used for scanning telemetry frequencies, which will see increased volumes of data traffic communicating with our Control Centres from our operational assets with no additional allocation presently for utilities.
- WPD currently relies upon spectrum for our private systems to support us not only for day to day operation but also for high impact low probability events e.g. Blackstart.
- The evolution towards operating a more active system as a DSO will require an increase in the numbers of communications devices connected, and therefore an increase in data and secure, resilient data infrastructure.
- It is our perspective that the Internet of Things or public networks or even proposed 5G will not address our cyber security, connectivity and resilience concerns.

WPD depends on access to radio spectrum to facilitate the critical Operational Monitoring & Control of its remote assets and with the anticipated transition to 'Smart Grid' capability the enabler for this will be additional access to radio spectrum **NOT** a reduction as is being contemplated with Ofcom's proposals for the 26 GHz band.

WPD's Detailed Response to Questions

Q 1. Do you have any comments on our assessment of potential use cases, demand and deployment strategies for new uses of mmWave spectrum?

WPD Response

Confidential? No.

Western Power Distribution (WPD) depend on fixed links in the 26GHz band that are integral to the operational integrity of their networks and fundamental to the safe and secure supply of Electricity to UK consumers. Ofcom in seeking to enable access to the band for 5G services has sterilised the band for fixed links and is proposing to displace fixed links in and adjacent to High Density Areas. We encourage Ofcom to reconsider the importance of continued access to the band for fixed links, subject to establishing an appropriate co-existence regime to address the 'mission critical' operational needs of the Energy Network Operators, particularly in those non-HDA areas where demand for 5G service deployment is likely to be low and fixed links will be a relevant alternative use. Furthermore, the approach advised in the consultation is to enable co-existence between fixed links and 5G services in non-HDA areas if this is the intention then to maximise value Ofcom should seek to enable further fixed link access to the band in non HDA areas and modifications to links in non-HDA subject to confirmation of the co-existence regime which in the case of Energy Network Operators will need to ensure the critical function that these links undertake. The above approach would support the policy objective of achieving efficient allocation of spectrum whilst also ensuring timely availability of spectrum. Independent of this change to Ofcom's proposals there is a likelihood of regulatory failure as a consequence of the sterilisation of the band for the fixed link service in areas of the UK where Ofcom acknowledge that demand for 5G service deployment is likely to be easily served and relatively low.

Q 2. Do you have any comments on our proposed overall approach to mmWave spectrum (including our aim to make the 26 GHz and 40 GHz bands available for new uses on the same or similar timeframe)?

Q 2. WPD Response

Confidential? No.

With so much uncertainty relating to the potential use cases and demand for service deployment in the 26GHz band it would appear to be disproportionate to block further fixed links deployments and changes to existing licensed links particularly for the non-HDA areas. WPD has no opinion on the timing of enabling availability of the 26GHz and 40 GHz spectrum for 5G on similar timeframes, but we encourage Ofcom to move quickly to develop the co-existence regime that has been outlined to ensure that appropriate protection is afforded to existing fixed links operated by WPD for both the HDA and non-HDA areas in order to ensure the operational integrity of critical national infrastructure.

Q 3. Do you agree with our approach of specifying high and low density areas in the UK, and authorising new uses differently in those areas?

Q 3. WPD Response

Confidential? No.

Yes, in principle but as has been noted in response to Q1 and Q2 above there appears a risk of regulatory failure with the whole of the country being sterilised to new fixed links and changes to existing fixed links. Ofcom's approach to designate HDA and non-HDA areas is predicated on their

expectation that it will be practical to continue to operate fixed links in the non-HDA areas. Furthermore, with the expectation that there will be relatively limited demand for 5G services in rural locations we would encourage Ofcom to revisit its decision to block new links and modifications to existing links in low density areas and open these areas for further fixed links. Such a modification is consistent with the approach being considered in Question 11 where Ofcom are contemplating enabling future satellite earth stations access to low density areas.

Q 4. Do you agree with our overall authorisation approach in high density areas for the 26 GHz band (i.e. to grant Shared Access licences on a first come, first served basis for the bottom 850 MHz of the 26 GHz band, (24.25-25.1 GHz), and to auction citywide licences for the rest of the 26 GHz band (25.1-27.5 GHz))?

Q 4. WPD Response

Confidential? No.

No Comment.

Q 5. Do you agree with our overall authorisation approach in low density areas for the 26 GHz band (i.e. to grant Shared Access licences on a first come, first served basis)?

Q 5. WPD Response

Confidential? No.

No comment.

Q 6. Do you agree with adopting a similar approach to authorising the 40 GHz band as our proposals for the 26 GHz band, if we were to decide to re-allocate the 40 GHz band?

Q 6. WPD Response

Confidential? No.

No Comment.

Q 7. Do you agree with our proposed methodology for identifying and defining high density areas?

Q 7. WPD Response

Confidential? No.

No, as it has the potential to overlook discrete locations, Campus type locations e.g. YORK University Campus, Sporting Venues that fall outside the HDAs (Cheltenham Racecourse, etc.). In addition, there will be locations that are subject to temporary deployments, e.g. Glastonbury, Malvern Showground, etc. in low density areas that may be actively deployed from a 5G perspective on a time limited basis. For these examples we are keen to work with Ofcom to ensure that the incumbent fixed links which are critical to the operational integrity of the Energy Networks will be afforded appropriate protection.

Q 8. Do you agree with our proposed cut-off point of 40 high density areas?

Q 8. WPD Response

Confidential? No.

No, we believe that the relevant number of HDAs should be informed by the Mobile Network Operators' expectations for spectrum demand. However, independent of appropriate guidance from the market, i.e. the MNOs, and in recognition of the potential uncertainty of ongoing reliability with the potential risk of harm and cost of disruption to UK Energy Consumers we propose that the level be set at 80. In addition, we encourage Ofcom to advise its approach to addressing links that are close to the HDA but not designated as impacted by the HDA which are subsequently compromised.

Q 9. Do you agree with our proposal to clear the fixed links in and around high density areas from the 26 GHz band?

Q 9. WPD Response

Confidential? No.

No Comment.

Q 10. Do you agree with our estimates of the cost of migrating fixed links into alternative spectrum bands?

Q 10. WPD Response

Confidential? Yes.

[redacted]

Q 11. Do you agree with the proposed approaches we have outlined to manage coexistence between new 5G users and the different existing users in the 26 GHz band? In particular, do you have any views on our proposals to limit future satellite earth stations in this band to low density areas only, and to end access to this band for PMSE users with five years' notice?

Q 11. WPD Response

Confidential? No.

The approach to manage co-existence at a high level has been advised but the detail that is critical to the actual co-existence is still to be defined and we are keen to work with Ofcom to ensure that the regime is appropriate to afford adequate protection to WPD's fixed links which facilitate the operational integrity of critical infrastructure, i.e. its Distribution Network. In light of the Ofcom's proposal to limit future satellite earth stations to low density areas whilst we have no view on this proposal we encourage Ofcom to also reconsider permitting the future deployment or modification of fixed links in the low density areas in order to optimise spectrum utilisation – provided that appropriate co-existence arrangements can be defined.

Q 12. Do you agree with the proposed approaches we have outlined to manage coexistence between new 5G users and the different existing users in the 26 GHz band? In particular, do you have any views on our proposals to limit future satellite earth stations in this band to low density areas only, and to end access to this band for PMSE users with five years' notice?

Q 12. WPD Response

Confidential? No.

No Comment.

Q 13. Do you agree with our analysis of the impact on existing 40 GHz licensees, including our estimates of the cost of moving fixed links under the options involving revocation (options 2, 3 and 4)?

Q 13. WPD Response

Confidential? No.

No Comment.

Q 14. Do you have any comments on our high-level Shared Access proposals (including technical and non-technical licence conditions and proposed approach to setting fees)?

Q 14. WPD Response

Confidential? No.

No specific comments other than noting the importance of the technical licence conditions being designed to afford appropriate protection to existing and potentially new fixed links in non-HDA areas subject to Ofcom changing its approach to fixed links to avoid a regulatory failure.

Q 15. Do you agree with the overall approach we have set out to coordination and coexistence between new Shared Access users in the 26 GHz band and existing users?

Q 15. WPD Response

Confidential? No.

Based on the limited information provided it is difficult to respond and we look forward to the follow-on consultations in which Ofcom will set-out greater detail on the license conditions and we encourage Ofcom to ensure that they take into account the potential for the licensing of fixed links to be re-established in non-HDA areas whilst ensuring that appropriate protection is afforded to existing fixed links in both HDA and non-HDA areas.

Q 16. Do you have any comments on our initial thinking in relation to auction design?

Q 16. WPD Response

Confidential? No.

No Comment.

Q 17. Do you have any comments on the licence duration options we have considered in this section for new licences for the 26 GHz and 40 GHz bands that we would auction?

Q 17. WPD Response

Confidential? No.

No Comment.

Q 18. Do you agree with our assessment of potential competition concerns and that it may be appropriate to impose a competition measure such as a 'precautionary cap'?

Q 18. WPD Response

Confidential? No.

No Comment.