wildanet

From anywhere to everywhere

Mobile Markets and Spectrum: Meeting future demand for mobile data

Wildanet's Response to Ofcom's Discussion Paper

Introduction

Wildanet welcomes the opportunity to provide their comments to this important discussion paper.

Wildanet is an independent Cornish-based Alternative Network (Altnet) provider, delivering hyper-fast, reliable broadband services to homes, businesses and communities throughout the South West.

Connectivity is an essential utility for modern life and is vital for business growth. Communities without fast, reliable broadband or mobile connection are at a distinct disadvantage. While there are urban conurbations where the quality of connectivity is below the national standard, rural and remote areas typically suffer most as a result of the complications of providing coverage and capacity. For example, 12% of over 65s in Cornwall suffer poor quality internet and approximately 31,000 people in Cornwall have never turned on a PC.

As an Alternative Network (Altnet) provider to traditional nation-wide companies like Openreach, Wildanet better understands and knows its community and customers. The solutions needed to connect rural communities are not often straightforward and require local knowledge, specialist technical skills supported by great customer service. Furthermore, Altnets provide a vital role in the development of the UK's digital infrastructure by connecting those areas that larger telecoms providers have been unable or unwilling to reach.

In addition to funding provided through the UK Government's Project Gigabit, Wildanet is investing £50 million to build a new high-speed fibre network, delivering speeds of 1Gbps and above, which is 40 times faster than the average connection in the UK, and 50 times faster than the Cornish average. To ensure the best outcome for each premises, Wildanet employs a hybrid connection strategy, making use of a range of technological solutions including full Fibre To The Premises (FTTP), as well as Fixed Wireless Access (FWA) connections.

Wildanet is concerned that Ofcom's approach to spectrum and mobile markets will inadvertently stymy competition, to the detriment of the quality of service for customers. Wildanet believes further understanding of the role of Altnets in the delivery of infrastructure both for mobile networks and broadband will increase the coverage and quality of connection across the UK.

Governmental Context

The Government is, of course, committed to improving mobile and broadband connections for all communities across the UK, and has recently published renewed connectivity targets in the Levelling Up White Paper. Indeed, it has provided £5bn for Project Gigabit to bring gigabit-capable broadband to 85% of the UK by 2025, and £1bn by way of the Shared Rural Network deal with mobile operators to deliver 4G coverage to 95% of the UK by the end of 2025. To achieve these targets, the Government will need smaller operators with an in-depth understanding of local infrastructure

requirements to provide connectivity, where it is not commercially attractive for the larger operators to do so.

It is worth remaining aware that the Government is also committed to increasing competition, and ensuring smaller and medium sized companies are provided with greater opportunities in public procurement. Indeed, it is currently formulating a new Procurement Bill, positioning fair competition and small businesses at the heart of public service delivery. In January 2022, the Government also published its *Small to medium sized enterprise (SME) action plan*, with the objective of promoting the expertise of small businesses in the UK and abroad.

The Government also appointed a dedicated Small Business Crown Representative, Martin Traynor OBE, to improve SMEs' access to Government contracts. demonstrating their commitment to increasing access to the market for smaller companies. As an SME, Wildanet, with Government assistance, is positioned to fill the gaps where more connectivity for digitally neglected areas is more complex to deliver.

As Ofcom acknowledges in its discussion paper, competition between providers will drive quality and coverage of service, and provide better outcomes for consumers. However, Wildanet is concerned that current approaches will instead perpetuate the quadropoly of the four large Mobile Network Operators (MNOs).

Indeed, the Minister, Julia Lopez, has also explicitly stated that it is 'the government's policy to increase competition and investment in the telecoms market whist lowering the barriers to entry'. Such an approach by Ofcom in this discussion paper is therefore directly in conflict with the Government's priorities, both for the telecoms industry and more widely. Such a disparity in approaches could have vast detrimental impacts across the sector, and is not in the interests of the Government, the regulator, the industry, and individual customers.

Wildanet's Key Asks

As such, there are a number of key areas in this discussion paper where Wildanet would recommend further consideration is needed to ensure the very best outcome of mobile connectivity for consumers. These are outlined in brief below.

- **Ofcom should reduce its reliance on the four large Mobile Network Operators (MNOs) to deliver connectivity.** Should Ofcom continue to pursue the current approach of relying on the larger MNOs to deploy additional spectrum, they will perpetuate the existing quadropoly and reduce competition and innovation. This is not in the interests of the consumer, who will see a slower improvement in connection quality.
- **Alternative Networks (Altnets) are best placed to provide connectivity solutions for rural and remote areas.** There are fewer financial incentives for MNOs to provide coverage alongside capacity for poorly connected areas. Altnets are better placed to provide solutions in areas where connectivity delivery will be more complex, as they have an understanding of localised infrastructure requirements.
- **Ofcom should consider the costs of installing Backhaul infrastructure in their approach to increasing capacity and coverage in disconnected areas.** Ofcom need to appreciate the cost of installing the Backhaul infrastructure alongside the deployment of small cells. As it currently stands, MNOs are not incentivised to finance the high cost of this infrastructure, and it would similarly not be commercially viable for Altnets to build.

- **Ofcom should give greater consideration as to how to cultivate competition which includes smaller providers, as opposed to the existing quadropoly of MNOs.** As such, regulatory approaches in mobile networks should align with developments in fixed network roll-outs, with fair competition between MNOs as well as smaller providers.
- **Ofcom should allow Altnets to access new spectrum bands.** Altnets do not have the resources to negotiate new bands with MNOs. Ofcom should consider altering the auctioning mechanism for spectrum, and allow Altnets to access new bands, rather than deployment directly to MNOs.

Detailed Comments

Wildanet have provided their comments on specific points raised in the discussion paper. Please find below the relevant excepts from the paper, and Wildanet's more detailed comments highlighted in italics on each specific area.

Growth in UK demand for mobile data

3.7 Another technology that drives data demand is Fixed Wireless Access (FWA). FWA can be provided via mobile networks to support the delivery of broadband connections, with services sharing the network capacity with mobile users. Of the four MNOs, only Virgin Media O2 does not offer FWA services. The vast majority of UK premises have potential access to an MNO FWA service.9 FWA is also offered by other providers.

- *It is interesting that Ofcom would use Fixed Wireless Access (FWA) as an example of technology which has driven the demand for mobile networks. Mobile Network Operators (MNOs) are not as equipped to provide FWA infrastructure, as this is not an area in which they have operated historically. Wildanet would again recommend that Ofcom considers other smaller providers who offer FWA services to install this infrastructure and complement measures to expand capacity in the wider mobile network.*

3.15 Current network deployments reflect the uneven geographic spread of mobile data traffic. For example, the MNOs have not deployed all their spectrum holdings in all areas. In less densely populated areas MNOs have often been able to meet local demand without needing to deploy all of their spectrum holdings.

- *Wildanet would highlight that in less densely populated areas, MNOs have only provided coverage, rather than capacity for the increased demand.*
- *Wildanet would emphasise to Ofcom is that it is not just the MNOs that have the challenge of providing coverage and capacity to more remote areas, and therefore require these frequency allocations. A Rural Internet Provider such as Wildanet would need a fully hybrid model to provide Gigabit Capable services to the hard-to-reach parts of the country. These are areas where fibre roll out is not feasible even with government support. Ofcom's apparent 'MNOs first' policy fails large parts of the country's population, who need to rely on smaller providers who have the expertise and the inclination to provide these complex connections.*
- *Perpetuation of the quadropoly will further undermine competition and reduce the ability for further capacity to be provided in areas which are less commercially viable for major players.*
- *It is Ofcom's remit to provide the best use of the spectrum to the UK. In the industry, we have seen evidence of some operators 'banking' frequencies. Reserving these frequencies for such providers would not be a valued use of spectrum, and will not deliver on Ofcom's objectives or provide the best service for consumers.*

3.33 The emergence of non-Geostationary satellites (NGSO) has enabled satellite to offer lower latency broadband services to customers operating in remote locations. These can either be used for backhaul to extend the reach of mobile and fibre networks or direct-to-home broadband services for consumers. There is also work under way to establish whether satellites could connect directly to non-modified mobile handsets, thus providing emergency connectivity and/or extending the coverage of mobile networks.

- *This technology should be deployed by allowing open competition, such that Ofcom avoids establishing a closed shop of larger players. However, it will also be essential to consider security implications of inadvertently creating another monopoly in satellites. There must be transparency in the companies bidding for spectrum and satellites.*
- *There must also be transparency in the frequencies being allocated to internationally operating companies. Due consideration should be given to what these companies are able to deliver in the context of the specificities of the UK's network. What is a good use of a frequency in the USA or EU may not be best suited in the UK. As such, there should be clear process for companies looking to access these frequencies, to ensure they are not misallocated.*

Mobile data traffic is expected to keep growing, but the pace is uncertain

4.11 Improved coverage and greater capacity will result in access to higher quality mobile internet in more places, where people live, work and travel. This is likely to lead to consumers going about their lives and businesses and other organisations planning and designing services based on an expectation of higher quality connectivity.

- *Wildanet would emphasise that you cannot rely on MNOs to improve capacity in areas where the connection is already poor. As such, Altnets, with initiatives from Government and with the correct regulation can fill a gap, and use innovative solutions with awareness of specific opportunities in a given area. This is in line with Governmental trends, which are favouring small business and fair competition for smaller players in procurement reforms.*
- *Shared Access Licences are a good use of a scarce resource, but from our previous experience, allocation is slow and an arduous process. Wildanet's experience of Shared Access Licences has been over ninety days for allocation. Additionally, in ten out of eleven applications, alterations were required which took a further ninety days. Six months from application to allocation is too long for any commercial enterprise.*
- *When consulting on provision of millimetre wave spectrum, Ofcom should consider the manner in which it is auctioned dependent on the connection in a local area, and ensure it can be deployed where it is not as obviously commercially attractive. Providers must be supported with the costs of the build associated with spectrum deployed.*

4.14 In the longer term, we expect MNOs to deploy standalone (SA) 5G, with some already trialling this technology. SA 5G can enable additional features, such as ultra-low latency, that may enable applications that are not possible over today's networks. 5G will also continue to evolve, for example '5G-Advanced', which we expect to arrive in the next few years, 27 will offer a range of new features.

- *Wildanet would argue that this cannot be completed without due upgrades to the Backhaul infrastructure, to which little attention has been given in this document. One cannot look at increased capacity of mobile networks without reciprocal arrangements for fibre and the connecting small cells to the main network.*

- *Ofcom appears to be basing its work on quantity of coverage, without due consideration of the quality of coverage. Under the current regulation and future proposals, MNOs are permitted to claim that an area has 5G coverage, without Ofcom undertaking to confirm that the coverage provided fulfils the high speeds and low latency expected of 5G. Rural areas need high speed, low latency, reliable access to the internet. 5G without the relevant backhaul to support it fails to provide this to customers.*

4.22 We have analysed three scenarios for total mobile data traffic up to 2035: a) Low growth: 25% increase per year to 2030, 20% increase per year from 2030 - 2035 b) Medium growth: 40% sustained increase per year to 2035 c) High growth: 55% increase per year to 2030, 60% increase per year from 2030 – 2035.

- *Wildanet agrees that MNOs will see medium growth, yet would emphasise that far higher growth is both achievable and required in rural areas. Currently the poor levels of 4G and high levels of not-spots are precluding many communities from accessing reliable connectivity.*
- *Rural connectivity requirements should also inform how Ofcom allocates frequencies in the future, as the rural areas need a different mix of frequencies than an urban area. Wildanet would like to see a Rural Strategy for frequency allocation, which focusses on niche operators in hard-to-reach areas, and gives precedence in frequency allocation to operators which can demonstrate that they are providing gigabit capable services to the areas that they cover.*

Substantial growth in network capacity will be needed to meet future demand

5.1 Mobile networks will need to continue to expand their capacity to meet future demand for good quality mobile services for people and businesses. The mobile industry has called for further spectrum (beyond that already in the pipeline) to be made available to support this. However, new spectrum is not the only way for network operators to increase capacity. It can also be delivered through: a) upgrading to the newest (more spectrally efficient) technologies; b) deploying current spectrum holdings more widely on the current network grids (and making use of planned spectrum releases); and c) deploying spectrum on more sites (densification).

- *In rural areas, the coverage remains a primary issue. While there is a desperate need to provide capacity upgrades, coverage similarly needs to be considered for communities which are more complicated to connect.*
- *Altnets remain better positioned to provide localised solutions, as they understand the relevant infrastructure availability and requirements, and their business models to provide connections for previously forgotten communities lends itself to establishing these more complex connections.*
- *Niche operators such as Wildanet, which have particular expertise in rural hard-to-reach areas, can support future demand much more efficiently than operators which look to large conurbations and high densities to fulfil their revenue targets.*

5.3 New technologies can enable better spectral efficiency, so more data can be carried over a given quantity of spectrum. Two key opportunities for mobile networks are upgrades in technology and antenna systems.

- *Wildanet would agree that the technology upgrades listed here would provide more capacity, but would recommend further consideration is be given to small scale 5G deployment.*

5.17 Separately, operators may choose to trade spectrum holdings if they believe this will enable them to realise benefits e.g. in spectral efficiency. This could help remove some fragmentation and allow

wider contiguous blocks in certain bands. However, the spectral efficiency and hence capacity gains would likely be relatively small overall, compared with making full use of mmWave, for example.

- *Spectrum trading will only be fruitful if there is a truly open market. Instead, Ofcom risks larger providers hoarding, yet not deploying, frequencies, which is counter to Ofcom's interests of high-quality service across all areas of the country.*

5.18 With demand for mobile services continuing to grow we have already identified a large amount of additional spectrum for mobile in the mmWave frequencies. The 26 GHz band (24.25-27.5 GHz) was globally identified for mobile services in 2019 and is a pioneer 5G band in Europe with harmonised technical conditions. 39 In addition, the 40 GHz band (40.5- 43.5 GHz) was also identified for mobile and as a future 5G band in Europe, with work ongoing to develop harmonised technical standards for 5G.

5.20 We also plan to award the 1.4 GHz band (1492-1517 MHz), which is internationally-harmonised for downlink-only wireless broadband (supplemental downlink). This spectrum can supplement sub-1 GHz for coverage and deep indoor services.

- *Wildanet would again highlight the need for consideration of coverage alongside capacity for rural communities.*
- *A central and accessible database of spectrum licenses would help to identify local provision and areas of increased need.*
- *Wildanet has particular concerns regarding the allocation of the millimetric bands, especially N258 (26-28Ghz). Wildanet would like to see a similar system to Shared Access Licences, yet with instant allocation based upon location and power levels, which should be high enough to be able to provide gigabit capable services. This should be minimum of 100Mhz bandwidth with power levels permitted up to 47dBm. Stations should be permitted at 5km apart with the same channel in use.*

5.27 We are also interested in exploring whether there may be options for mobile to share bands with other users for example through geographic sharing (where an incumbent or incumbents operate in only one part of the country, enabling mobile use elsewhere) or by using dynamic spectrum management systems. Different solutions may be feasible for lower power small cells compared with higher power macro site mobile deployments.

- *These are two topics in which Wildanet are particularly interested. Geographic sharing and dynamic spectrum management will enable the UK to fulfil its goal of gigabit connectivity to the UK population, and Ofcom should conduct further work to explore how smaller providers can advise as to its feasibility.*

5.28 Capacity can be expanded by adding additional sites to a network, using macro sites or small cells. To date UK networks have largely relied on macro site deployments, but network planning considerations and access to new locations for macro sites can be challenging, particularly in dense urban and urban areas.

- *Wildanet would be interested in how Ofcom's roll-out strategy. MmWave is one example of a technology Wildanet considers will bridge the gap in providing high quality internet connections, via FWA, to hard-to-reach areas. Ofcom should also remain cognisant of the backhaul requirements of all these systems. A gigabit connection which cannot be aggregated onto a sufficiently robust backhaul connection will present a 'bottleneck' elsewhere and provides no improvement in services to the public.*

5.42 More extensive deployment of existing spectrum holdings and upgrading sites to the latest technology are options available to MNOs to accommodate growth in demand for data traffic.

5.43 While this would enable some capacity growth, without some other action MNOs would nevertheless likely run out of capacity in some areas at some point between 2025 and 2035. This is because in all three growth scenarios demand would outpace the improvement in capacity that is likely to be achievable through upgrading sites to improve spectral efficiency and more extensive use of existing spectrum holdings.

- *This is true of high-density areas, however in rural areas, these bands are needed to enable high speed low latency internet.*

5.52 In practice, operators might wish to use a combination of mmWave spectrum deployed on small cells in dense urban and suburban locations, accompanied by macro site densification in suburban and rural locations. This strategy would reflect the greater challenges of finding locations for new macro sites in dense urban and urban areas relative to suburban and rural areas, and the lower population density in suburban and rural areas.

- *Small Scale 5G deployment is more realistic for niche operators like Wildanet, which do not have a national business model but are focused on the left behind part of the UK population.*

5.62 Small cell deployments involve the same practical deployment considerations that apply to new macro sites, such as backhaul and acquiring and setting up multiple sites, but in greater numbers. These include:

• *Network planning and securing suitable sites* - deploying small cells may require new sites to be deployed within relatively small areas to optimise the delivery of capacity against demand and lift traffic off the macro layer. Commercial negotiations will then be required to secure each site.

• *Planning and permissions* - de minimis rules generally apply to small cells, which exempt them from requiring specific approval, but there are a range of permissions involved in delivering new sites. Effective collaboration with a number of partners including landlords, building/site owners and local authorities is needed to manage these processes and site installation.

- *The Product Security and Telecommunications Infrastructure Bill has taken valuable steps forward to support operators when it comes to wayleave negotiations. Wildanet hopes that this is not the end of the UK Government's support in this area, as wayleaves continue to be one of the largest challenges to further broadband roll-out.*

• *Backhaul (or fronthaul) and power supply* - greater availability of fibre across the UK alongside the development of Integrated Access and Backhaul technologies should facilitate deployment of small cells. Individual small cells require low power and can typically be powered by an existing local supply. In some cases, operators may have to consider alternative solutions, like remote line power, which are already being used in the US, where power is consolidated at centralised locations and delivered to small cells via copper or fibre cables.

- *Tier 1 operators have been relied upon to provide nationwide coverage for backhaul, a look at the UKs backhaul network would show that infrastructure coverage in the southwest of Bristol is*

incredibly sparce. There is almost no infrastructure beyond Plymouth. Despite there being multiple transatlantic cable landings, none have Points of Presence in Cornwall.

5.65 Deploying small cells at scale has a different cost profile to macro site deployments. The upfront capital expenditure for deploying new spectrum on a new small cell is cheaper than deploying new spectrum on an existing macro cell. In cases where it is not feasible to deploy additional antennas on an existing macro site, for example owing to EMF requirements, the upfront cost for deploying a new macro site will be considerably higher than that of deploying a number of small cells.

- *Wildanet would disagree in rural areas – the spectrum being auctioned would only be available to much larger providers, for whom it is not commercially viable to build. This would intensify the digital divide and create deserts of unused frequencies in rural areas.*

5.68 MNOs also have options to reduce costs which could alleviate these potential impacts. For example, while it is important that any sharing arrangements preserve competition between networks, there are a number of potential sharing models which could be adopted, including infrastructure sharing or working with a third party such as a neutral host, who would build and operate part of the network for one or more operators. This could use mobile operator spectrum, spectrum accessed by the neutral host directly or under licence exemption. Some form of sharing offers the potential to increase the capacity of MNO networks and offer seamless connectivity to consumers at a lower cost, with fewer additional sites at street level and potentially more flexibility compared to traditional models of macro cell infrastructure sharing.

- *Altnets may be better positioned to serve local communities, with better understanding of infrastructure requirements. MNOs are less inclined to provide more complex connections, as they can pursue more commercially attractive builds. If auctioned incorrectly, the mmWave could be prohibitively expensive for Altnets to build. As such consumers will remain poorly connected, with the MNOs reluctant to facilitate the more complex infrastructure requirements, and Altnets excluded from procurement.*

Summary

This discussion paper considers a number of vital approaches to provision of spectrum, and Wildanet agrees that strategic mobilisation of spectrum will be essential to improve both capacity and coverage of mobile networks across the UK.

However, there are a number of areas where Ofcom should give further consideration to how approaches to mobile networks must be informed by the provision of fixed infrastructure, and the role smaller providers can play to achieve long-term objectives.

For example, Wildanet believes Ofcom has not fully considered the fixed strategy in the roll-out of 5G. It will be essential that new networks are supported by Backhaul infrastructure, where providers such as Wildanet have a key stake.

As such, Wildanet would recommend that Ofcom should look at its licencing regime, and establish a central register whereby local providers are able to understand local frequencies by geographical area. This would highlight where provision needs to be improved, and encourage a targeted approach with due understanding of the local infrastructure requirements.

Ofcom has also assumed that only MNOs require the new bands for mmWave and increased capacity, rather than giving due consideration to smaller providers. Many Altnets would also wish to bid for additional spectrum, which would have the impact of driving competition and improving outcomes. Currently, Altnets do not have the resources to negotiate new bands with MNOs, so would recommend Ofcom regulates such that they have the capacity to access bands in their own right.

The digital switchover and the sunsetting of the PSTN, outlines the interplay between mobile and broadband networks. It will be essential that roll-out of improved capacity in mobile networks and broadband is symbiotic. As such, approaches to improving the provision of connectivity through Project Gigabit, including access for SMEs to public procurement and voucher schemes, should be considered in conjunction with improvements to mobile networks.

It is important to acknowledge the increased competition in broadband networks, owing to Government interventions. This will impact mobile networks, as it provides indications of potential Government interventions in areas of poor mobile coverage, where it is not commercially viable for MNOs to invest. MNOs have already indicated the market is not favourable for further network investment, so it may be that the Government must look to the broadband model to emulate.

Wildanet agrees with Ofcom and the Government that competition is essential to deliver quality improvements and good outcomes, but it is crucial that this is not confined to the MNOs, and future approaches to mobile markets and the provision of spectrum should encourage further competition between smaller providers to ensure quality connections are delivered in areas which are less commercially viable.

Wildanet is keen to work with Ofcom to deliver quality outcomes for individuals, businesses, and communities both in broadband connections and supporting mobile network roll-out, and would welcome the opportunity to comment further on future regulatory strategies.