Arqiva submission to DCMS's Future Telecoms Infrastructure Review: Call for Evidence

Summary

By some measures the UK mobile industry is highly successful, consumers can choose from a range of providers, mobile subscription prices are relatively low and coverage is relatively good (compared to some markets around the world). However this does not tell the entire story and the positive aspects mask real costs to consumers:

- While prices are low it is not clear that this leading to good value for money with the performance of networks falling behind other developed countries[1].
- The structure of the UK market means that the returns of the mobile operators in the UK are lower than in many other countries which means that the operators prioritise spend in more profitable markets elsewhere in the world

In light of this, unless changes are made the UK will not be able to fulfil the ambition that the Government has rightly articulated of being a world leader in 5G. In order to address those issues structural changes need to made. These include:

- Allowing appropriate consolidation in order to ensure returns that create the ability to invest in current and new networks to match international standards;
- Unlocking private sector investment through the work of the DCMS Barrier Busting Team to allow small cells to be rolled out at scale;
- Ensuring that the mobile industry can access the dark fibre that it needs for backhaul/fronthaul of services, in particular ensuring that BT ducts are available to BT's competitors without restrictions on their use;
- Providing access to public buildings/infrastructure on a "shared use" basis to make network deployment cheaper & easier; and
- Streamlining planning for network assets such as cabinets and masts to support new 5G architectures such as C-RAN and local caching.

[1] https://opensignal.com/reports/2017/11/state-of-lte

About Arqiva

Arqiva is a communications infrastructure and media services company operating at the heart of the mobile and broadcast communications industry. Arqiva provides infrastructure for television, radio, mobile and other wireless communication in the UK.

Arqiva operates shared radio site assets throughout the UK working with the mobile industry for over two decades and with a significant presence in suburban and rural areas. Our portfolio includes over 8,000 active mobile, radio and television sites.

Arqiva worked with DCMS to build new shared sites in 'not-spots' as part of the Mobile Infrastructure Programme (MIP). We also extend the Mobile Network Operators' (MNOs) coverage and capacity into challenging environments such as Canary Wharf and the ExCel Centre.

Arqiva's smart metering service, connecting 10 million homes using long-range radio technology, will be one of the UK's largest machine-to-machine deployments.

Arqiva is a founder member and shareholder of Freeview. We broadcast all eight Freeview multiplexes, are the licensed operator of four of them. Arqiva is the licensed operator of both national commercial DAB digital radio multiplexes.

Arqiva is a major player in the UK's satellite industry, and is a major provider of permanent satellite services to both Freesat and Sky customers. Arqiva also provides global satellite based services to the security, oil & gas and exploration sectors.

Arqiva is owned by a consortium of long-term investors and has its headquarters in Hampshire, with major UK offices in London, Buckinghamshire and Yorkshire.

Response to specific consultation questions

1: What is the existing UK telecoms market structure and policy framework able to deliver?

- **When will it deliver, and how certain can we be that it will fulfil the Government's ambitions for full fibre networks and 5G deployment?**
- **What will this mean for roll-out of these technologies and for competitive models in different geographic locations?**

Underpinning the need for greater mobile infrastructure is the forecasted high growth in mobile data (driven predominantly by increased video consumption)[2]. However it is not clear that, in the UK, the data growth will drive additional revenues for mobile operators. While it is possible that new revenue streams will emerge for the mobile operators, historically ARPU has been falling and it is not clear in light of the level of competition in the UK that operators will be able to increase consumer pricing. This issue is discussed in more detail in response to Q5.

Flat revenues mean MNOs face constrained capex and opex budgets i.e. no new funding is available to deliver additional capacity and therefore the MNOs will need to look for transformational new ways of delivering cost effective networks. We are seeing this already through their increased desire for consolidation, mast sharing, availability of fibre, open standards and network virtualisation, however despite this it is not clear if this will allow the levels of investment needed to make the UK internationally competitive.

Against this background, as the government notes, and as is the case today, the majority of investment in 5G will come from the private sector and within the current structures. The competitive nature of the UK market means that the parents of mobile operators are less inclined to invest in the UK market than other markets around the world. This is evidenced by the desire of 3 and O2 to merge in order to create a three operator market in the way that is the case elsewhere in the world.

What is clear is that there are already a number of market failures in the UK as it is still not possible for UK mobile users to receive high quality mobile services wherever they live, work and travel. Notably, some rural areas and some transport routes do not have mobile coverage more than 30 years after the launch of the first mobile services in the UK. In some cases, such as rail routes, this is despite there being a strong demand from consumers for services and also a desire from the mobile industry to meet that demand. In addition users often experience poor mobile data performance in London and other major cities compared to international benchmarks.

Here, and elsewhere, government has a role in enabling the mobile industry to invest. Therefore we welcome the government initiative to seek to address some of these market failures as these are the priorities for intervention. However, any intervention will need to be considered carefully to ensure that it does not disrupt either the investment that the private

[2] Cisco forecasts circa 5x mobile data growth from 2016-21 (Cisco – VNI forecasts 2016-2021)

sector will make or the competitive market for mobile infrastructure that already exists in the UK.

The question of the timing of roll out of 5G is not something that is solely, or even primarily, in the hands of UK operators. Before the UK industry can finalise its plans a number of other global actions need to take place from the finalisation of 5G standards, to the development of equipment by the manufacturers and the development of handsets. In addition to this spectrum needs to be made available for new 5G services to use. This is all in the context of the mobile industry focussing on the delivery of the current live projects including 4G rollout, the Emergency Services Network and Smart Metering.

2: What barriers exist to *long term* investment in the UK telecoms market (beyond work underway by the Local Full Fibre Networks programme to stimulate demand, and by the Barrier Busting Taskforce to reduce build costs)?

- **What effect do existing revenue streams have on investment plans?**
- **What effect do visibility and predictability of returns have on investment plans?**
- **What is the effect of current infrastructure deployment models?**
- **What impact do current infrastructure sharing arrangements have on investment?**
- **What is the impact of the existing relationship between wholesale and retail markets?**
- **What changes to spectrum licensing and sharing could foster greater innovation and investment in 5G?**

With four operators the mobile market in the UK is acknowledged to be one of the most competitive in the world[3]. This has led to a general focus on reducing costs and so, for example, we have seen the mobile operators creating entities such as MBNL and CTIL in order to reduce their networks costs via sharing.

However the overall consequence of this is that mobile operators in the UK on average have a lower return on capital employed (ROCE) when compared to other operators around the world. This means that there are limited incentives for the operators global parent organisations (e.g. Telefonica, Vodafone Group etc.) to invest in the UK beyond the minimum required to sustain their networks and meeting their regulatory obligations; instead they will prioritise spend where they will make their highest returns.

If the UK is to unlock the investment from operators that is needed to make the UK's current and new networks to match international standards it will need to allow appropriate consolidation. To be clear vibrant competition does not require multiple active networks. As has been seen elsewhere in the world (such as in Sweden) with the right

[3] Ofcom's 2017 ICMR shows that the UK ranks sixth for the lowest level of concentration in the mobile market amongst their comparator countries and that that the UK is the lowest among the EU5 countries.

policy/regulatory framework, the number of active networks can be reduced in such a way that the return on capital can be improved, along with the quality the consumer experience, and without excessive pricing.

The focus on costs also mean that the benefits of independent operators in the UK are magnified. Independent operators such as Arqiva exist to build and maintain shareable telecoms infrastructure that is available to anyone that wishes to use it. We operate in a competitive market where the majority of the masts are operated by the mobile operators themselves and so will only use an independent operators mast when they can offer better value for money. A report by EY[4] for the European Wireless Infrastructure Association notes that independent operators drive cost efficiencies through:

- "**Efficient tower operation**: TowerCos can reduce operating expenditure for towers through their greater expertise in managing infrastructure.

- **Reduced cost of capital:** TowerCos can finance investments at a lower cost of capital than MNOs.

- **Increased co-location:** TowerCos can more effectively ensure that infrastructure is shared by multiple networks, which EY estimate can reduce the need for over 100,000 additional new towers to be constructed over the next decade."

In addition they note the benefits from the independent model to improving the service quality for consumers, competition, supporting other network operators and the environment.

This has a particular implication for investment in infrastructure for the next generation of mobile services. For 5G services the expectation is that there will need to be a significant number of small cells that will need to be rolled out across the country. In addition, the various policy objectives that have been set by the government on mobile coverage in rural areas and on transport routes are going to require additional mobile masts and the associated infrastructure. The cost of doing this compared to the expected potential returns is likely to be a barrier to making the required investments. The "neutral host" model of independent operators is one way of making those costs manageable.

Another pre-requisite for long-term investment is the need for a stable and predictable regulatory environment. Companies need to be confident that if they make the significant long term outlays required for infrastructure the returns required to justify those long-term investments are not going to be undermined by a government intervention. It is particularly important that companies can be certain that Government will not intervene on pricing where the capital investment to roll out long-term infrastructure is then paid back over many years. This issue is discussed further in our response to Q4.

Fibre and 5G are interlinked. 5G networks will require dark fibre to backhaul/fronthaul higher levels of data traffic cost effectively and allow use of new 4G+ and 5G architectures

[4] http://ewia.org/wp-content/uploads/2017/10/EU-Tower-Sector_EY-White-Paper.pdf

like C-RAN, edge computing and CoMP. In addition, there is the growing potential for 5G fixed wireless access (FWA) technology to provide viable alternatives to copper and full fibre delivery of ultra-fast broadband services. The scale of the challenge in deploying fibre to small cells will be significant, given the high numbers of sites that will be required. As a result, policies to enable this to be achieved in a cost-effective way using shared infrastructure will be a key factor for successful roll-out of 5G services to consumers.

Given the monopoly position of BT, when it comes to telecoms infrastructure the Government and Ofcom have a role to play in addressing the associated market failures. The particular ongoing barrier here is the monopoly position that BT holds over its ducts and poles. For providers other than BT to be able to effectively provide fibre services to operators and to create increased competition there should not be any constraints on the services that those providers can offer to customers should they use those ducts for fibre.

The consultation notes the role of the DCMS Barrier Busting Taskforce to address the challenges associated with infrastructure deployment. In order for future mobile infrastructure to be rolled out, in particular small cells, the Government has a role to play reduce cost, reform planning legislation to increase deployment certainty, remove bureaucracy and streamline administration and so we welcome the creation and ambition of the Barrier Busting Taskforce.

3: What can the UK learn from the widespread deployment of fibre networks in other countries?

- **What factors have led to higher full fibre investment in other countries and how applicable are these to the UK?**
- **What have been the impacts of fibre roll-out models in other countries on competition dynamics, consumer bills, and risk allocation?**
- **To what extent can the fibre that has been rolled out internationally be used for mobile backhaul, and what lessons can the UK learn?**

As discussed in more detail in response to Q4b 5G, and in particular, 5G FWA services, can provide broadband that is comparable to fibre services. If this is to become part of the fibre ecosystem then more infrastructure will need to be rolled out. The EY report referred to in Q2 shows the benefits that can come from independent infrastructure and it also shows the proportion of infrastructure in the independent sector in the UK is less than half of that in the US. This shows the potential for the UK to increase the productivity of mobile infrastructure in the UK though increasing the proportion of independent infrastructure.

4: The Government wants to consider all market models that will facilitate the next generation of technologies.

a. What different market models* might work in the UK in the longer term, and what risks and opportunities do they present?

- **What consequences could different market structures, including ones which support longer pay-back periods, have on the investment environment, competition and outcomes for consumers?**
- **How might these vary in different geographic areas of the UK, including urban and rural areas?**
- **Over what timescale could market models be changed, and what policy conditions would be necessary to enable this?**
- **Are the current arrangements for BT legal separation working effectively?**

**** Market models which you may wish to consider in responding could include:***

- **Infrastructure competition between different network providers wherever possible**
- **Collaborative models at an infrastructure level**
- **Regulatory asset bases, franchise models, cap and floor regimes, a diversified model to account for geographic variation, and/or gainshare models for infrastructure provision**
- **Risk sharing models between infrastructure providers and retail providers**

The consultation notes a number of market models and it is possible that the industry will choose to move to any, or none, of these, or to entirely different models. However as noted in response to Question 2, the infrastructure market has already adapted to changing needs and has successfully delivered the roll out of successive generations of mobile technology without Government intervention. For example, the development of CTIL and MBNL show how the industry has changed to move to more collaborative and efficient sharing without the need for any intervention. One particular consequence of this is the increasing spilt of the retail and marketing layer from the infrastructure layer. The benefit of this is that it avoids the issues that has been seen with BT where regulation is needed to deal with the competition issues where there is vertical integration.

The market is preparing to change again as we move from a world of tens of thousands of macro masts to hundreds of thousands of small cells. In this the government is currently taking the right actions through initiatives such as the Barrier Busting Task Force to remove the regulatory barriers to market development rather than trying to force the market down any particular path.

It is key that the market is allowed to decide what the best structures are, and that as those evolve over time the Government focusses its activity on seeking to remove the barriers to infrastructure investment and deployment. It would not lead to optimal outcomes for mobile users if the Government intervened to try to create one particular market model. As always, before any intervention in the market there should be a proper investigation by the relevant competition authorities to identify the market failure and the most appropriate response within the established legal framework.

The dynamic nature of the telecoms market means that market models will need to emerge and adapt as technologies are developed and rolled out. An intervention, in the absence of a market failure, is likely to damage or stifle the adoption of technologies. Given the

challenges that operators need to meet from the changing needs of consumers, competitors and technology an extra challenge of an unpredictable UK regulatory environment would exacerbate the trend of investment going elsewhere in the world.

Whatever the shape of the market it is key that there continues to be a strong independent sector. Some of the benefits of the independent sector that EY identified are noted in response to Q2 however, in the context of market structures, the competitive and speed to market elements are particularly important. As a case study, when 3, as a new entrant, sought to rapidly launch 3G services in the UK it heavily drew on the infrastructure of independent operators in order to achieve that.

b. What should Government consider when assessing the potential for migration from copper to full fibre networks?

- **Over what time period could migration occur?**
- **What phases might migration be required to go through?**
- **What would be the pros and cons for markets and competition?**
- **What would the implications be for different groups of consumers?**

The Government should look at the ability that 5G has to provide the same, or better service, than fibre to the premise. In particular it should consider the role that FWA technology will play in this and the need for passive infrastructure such as mobile masts and street level assets to support that. Verizon has announced that it will launch 5G residential broadband services in 2018[5]. While they have not announced the product specifications our trials using the same technology show that it is capable of providing more than 1 Gbps. Therefore FWA could have a significant effect on the ability to migrate from copper and the speed at which it can be achieved.

While there will need to be universal availability of dark fibre on an economic basis in order to backhaul the data, the nature of wireless technology means that once in place wireless services can be rolled out and launched more rapidly than fixed. Even if the ultimate goal is to deliver full fibre to every household, a migration plan that includes in 5G FWA technology across the phases will allow consumers to access services that are equivalent or superior to fibre in the early stages and beyond.

5: The Government wants to achieve its digital infrastructure goals at the least additional cost. How should new digital infrastructure be paid for?

- **Are consumers (residential and business) willing and able to pay for new digital infrastructure, given its expected benefits?**
- **What could incentivise investors and shareholders to make long-term investment decisions in telecoms infrastructure?**

[5] http://www.verizon.com/about/news/verizon-launch-5g-residential-broadband-services-5-markets-2018

- **What is the potential role of government in stimulating demand or otherwise de-risking new infrastructure investment?**

It is clear that consumers are now consuming significant amounts of mobile data and that their demand is increasing[6]. The data is being used for both work and entertainment and, with the rise in cloud services, demand for mobile data to enable productivity improvements will increase. At this point and particularly given the level of competition in the market is it not possible to say whether consumers will pay more for mobile contracts. As noted in Q1 it is possible that consumers may not be willing to pay higher charges for 5G services. However 5G technology may be a more cost effective solution for deploying mobile networks and service improvements could drive revenue in new use cases, such as M2M, creating a viable commercial business case for 5G deployment. This will be particularly true when mobile operators roll out mobile services in the new spectrum bands that are being made available over the coming years. As it stands, if the 5G standards and equipment are available and hand set manufacturers have built 5G into handsets, it is likely that mobile operators will roll out some 5G infrastructure rather than 4G although timing of rollout may be delayed as the wider 5G ecosystem develops.

In addition, 5G services will meet consumer needs that have not historically been met by the mobile industry. So, for example, the 5G FWA service can be thought of as 'wireless fibre'. This could pick up the revenue that consumers are already spending on fibre – or pick up the revenue from the overwhelming majority of consumers that would like to have access to fixed fibre today but don't have that option. The justification to invest in the 5G infrastructure is not predicated on consumers spending more, or buying new services, but on them spending differently as well as wider business opportunities.

However, to be clear, these potential revenue streams are not certain and even if they eventuate they will not on their own solve the challenges previously highlighted in this response that the UK faces in getting the required levels of investment in mobile infrastructure.

The Government rightly notes that investment in 5G networks will be led by the private sector. The private sector will make that investment in response to a number of stimuli. There are a large number of these, but we will focus on:

- Demand; and
- Regulatory obligations.

The Government has a role to play in both of these in the future as it does today. So, for example, the procurement of the Emergency Services Network puts the public sector in the role of customer and, as such it has set the requirements on technology, coverage and contract duration that enable long term investment in mobile infrastructure. Similarly the government can introduce obligations (on both coverage and performance) to rail operators to make sure that rail passengers receive an adequate mobile service and this will equally

[6] See footnote 2

stimulate demand without the need for direct government funding. Building on the point above about new revenue streams potentially justifying infrastructure investment these are both new areas for the deployment of mobile infrastructure

Government also has a role in setting and influencing the regulatory obligations that will lead to investment. France announced in January 2018 that each major operator will install 5,000 masts and antennas and jointly ensure network coverage along 30,000 km of rail tracks. This will not require any direct government funding, instead the government will extend the telecoms companies' spectrum licenses rather than holding a new auction[7].

In the UK, the responsibility for setting coverage obligations in spectrum licences lies with Ofcom. However, as the Government showed in December 2014 with its agreement with the mobile operators on partial not-spots, it can play a decisive role in what those obligations should be[8]. Similarly, the government sets the customer connectivity requirement for rail operators and these can also be used to stimulate investment.

Steve Unger, an Ofcom Executive Board member, stated in a recent interview[9] that Ofcom is looking at introducing targeted obligations in upcoming spectrum award to improve coverage in rural areas and on transport routes. Crucially Ofcom is looking at setting these at a level that ensures that the value of the obligations do not exceed the net cost of the licences. Government has a role to play here to seek to minimise the costs of infrastructure roll out. In areas like rail the Government can ensure that trackside land, suitable existing masts (or other physical infrastructure) and existing fibre are made available to help to manage costs and so allow coverage obligations to extend further and we welcome the parallel DCMS consultation that is looked to progress this.

In addition to regulatory obligations the Government has a role in unlocking the private sector investment that will minimise the need for public investment. One key element of this is to ensure that the planning regime is fit for purpose. This has two immediate strands:

- Firstly the need to ensure that the permitted development right regime allows the quick roll out of all of the infrastructure needed to support small cells roll out including the need to ensure that the regime for cabinets for fixed and wireless infrastructure are harmonised.

- Secondly to ensure that the rights that have been allowed by the legislation are implemented consistently by local planning authorities.

[7] https://www.reuters.com/article/us-france-telecoms/french-telcos-to-spend-3-7-billion-to-plug-network-gaps-idUSKBN1F20XQ
[8] https://www.gov.uk/government/news/government-secures-landmark-deal-for-uk-mobile-phone-users
[9] https://www.policytracker.com/uk-regulator-eyes-spectrum-sharing-in-3-8-4-2-ghz-band/