



DCMS FUTURE TELECOMMUNICATIONS INFRASTRUCTURE REVIEW

RESPONSE OF METHERA GLOBAL COMMUNICATIONS LIMITED

Preamble

Methera Global Communications Limited (“Methera”) is an innovative UK satellite communications and technology company. Our vision is to enable the delivery of digital applications to rural and underserved communities. We aim to deliver affordable broadband services and applications via a constellation of Medium Earth Orbit (MEO) smart satellites and associated ground segment to targeted communities and governments worldwide.

In the UK, current broadband infrastructure plans are to extend the terrestrial fibre network by end-2020 to connect 98% of premises via Fibre to the Premise (FTTP) or Fibre to the Cabinet (FTTC) with superfast (24 Mbps+) broadband service¹. The recent Department of Digital, Culture, Media and Sport (DCMS) Broadband Universal Service Obligation (USO) Consultation requested inputs on how best to provide high-speed (10 Mbps+ download / 1 Mbps+ upload) broadband service to 100% of UK premises².

Current satellite technology uses so called High Throughput Satellite (HTS) technology which enables reliable superfast broadband speeds coupled with low costs of Customer Premises Equipment (CPE) / connection of customers. The emergence of non-geostationary satellite orbit (NGSO) broadband satellite networks and so called ultra HTS technology also promises to deliver much higher capacities and to provide an extremely cost-effective means of superfast and even ultrafast broadband connectivity to 100% of the UK’s premises. In addition, OECD’s new report³, which “investigates how innovation is changing the role of satellites in extending broadband services to underserved areas in relation to other terrestrial broadband options, including evaluating the role of government subsidy programmes, and considering how to address regulatory hurdles to enable development and deployment of competitive new technologies”. It does also conclude that satellite has a critical role to play in providing the “middle mile solution” for fixed or fixed wireless terrestrial services.

The Methera MEO satellite constellation is an HTS system which will be deployed in 2021. Methera uniquely uses multiple satellites to serve each target area (enhanced by beam placement capability), providing sufficient capacity density to bring un(der)connected areas online in their entirety. The marginal cost of connecting premises to the Methera network is essentially the cost of the user terminal, and substantially less than the £3,400 “reasonable cost threshold” envisaged in DCMS’ Broadband USO Consultation document. In addition, the planned Methera monthly subscription costs will be extremely competitive and comparable to terrestrial system prices.

¹ DCMS Press Release, 9 September 2017 <https://www.gov.uk/government/news/the-great-british-broadband-boost>

² A new broadband Universal Service Obligation: consultation on design, DCMS, 30 July 2017 <https://www.gov.uk/government/consultations/broadband-universal-service-obligation-consultation-on-design>

³ The Evolving Role of Satellite Networks in Rural and Remote Broadband Access, OECD Digital Economy Papers, December 2017.



RESPONSES TO QUESTIONS

Question 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?

Current plans announced by fixed network operators suggest that approximately 22 million (around 83%)⁴ of UK premises will have FTTP connectivity by 2025, this indicates that the UK is still a very long way away from a "full-fibre" future. DCMS' Broadband Universal Service Obligation (USO) Consultation⁵ expressed an aim to provide "decent" broadband (10 Mbps download and 1 Mbps upload) for all, subject to a £3,400 reasonable cost threshold and that connectivity would be provided using a variety of terrestrial technologies, leaving around 60,000 (or 0.2%) premises to be served by satellite connections.

Setting such a low data rate requirement for the Broadband USO will encourage further substantial investment in FTTC technology which will prove problematic and (possibly prohibitively) costly to upgrade to superfast (24Mbps and beyond) broadband speeds in future.

Rural areas would be significantly disadvantaged by over-reliance on terrestrial technologies for broadband infrastructure roll-out as these are costly and time-consuming to deploy and tend to be deployed in rural areas last; if they are reached at all!.

Current satellite technology is capable of delivering superfast broadband connectivity to rural areas at a fraction of the cost per premise envisaged by the Broadband USO. Unfortunately the quantity of suitable satellite capacity available over the UK has not kept pace with demand and users have been restricted through unpopular monthly caps. A recent significant development is the announcement of a number of non-geostationary orbit (NGSO) broadband satellite constellations which are to be deployed in the 2019-2021 timeframe, including the UK's Methera, which will provide superfast broadband service and much higher capacity with multiple satellites providing a resilient service to a coverage area at any given time, overcoming the capacity "bottleneck" handicap of geostationary satellites. Furthermore, additional capacity can be provided by deploying additional satellites in the constellation, providing an upgrade path for future increases in delivered bandwidth.

⁴ Ofcom Connected Nations Report 2017 <https://www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research/connected-nations-2017>

⁵ DCMS A new broadband Universal Service Obligation: consultation on design



Question 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?

The current levels of subsidy being paid by BDUK to terrestrial broadband infrastructure providers such as Openreach and the £3,400 reasonable cost threshold envisaged by the Broadband USO will continue to distort the marketplace against providers using alternative, competing technologies. Taking a cost of £3,400 per premise passed and coupling that with a take-up rate of between 31% and 38% (average take-up of broadband service⁶.) equates to an effective subsidy of £10,000 per connected premise.

Current deployment models produce a de facto monopoly of wholesale infrastructure. Introducing competition in that wholesale infrastructure would improve service (and cost) to retailers. Consumers currently can wait a very long time to connect to an enabled cabinet.

Assuming that there will be alternative technologies that can deliver or surpass the USO requirements, such solutions should also receive a subsidy, although we believe that for satellite delivered solutions, for example, the subsidy level and hence the cost to government of each connected premise will be significantly lower, thereby reducing government's costs and increasing the willingness and ability of the operators of these systems to provide services in the UK.

Without predictability of returns, the infrastructure providers will find it more difficult to raise the necessary investment and as a consequence, government needs to make certain commitments in order to enjoy the benefits of as near to 100% connectivity as possible. There are affordable, complementary technological solutions to full fibre that will become available in the time frame of the USO that will enable 100% connectivity with service speeds over 100Mbps.

Current infrastructure is focused on FTTC with a local copper connection from Virgin Media or Openreach networks. Openreach is regulated to provide services from the telephone exchanges over the "last mile" to premises. This is problematic, especially in the case where there are technical problems which can cause unnecessary "blame wars" between the service providers sharing Openreach's network and Openreach

⁶ Ofcom Connected Nations 2017



Question 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?

With only 3% of households having access to Full Fibre Broadband⁷, the UK is currently ranked very poorly in terms of FTTP penetration. Countries such as Sweden, Spain and Portugal achieve connectivity rates approaching 70% (due principally to very high-density housing, with much greater numbers of Multiple Dwelling Units, MDUs). The UK's relatively low density of housing compared to these countries requires a different approach to broadband roll-out. Major cities in the UK are likely to be well-served with the FTTP roll-out plans of Openreach, Virgin Media, CityFibre and Hyperoptic, amongst others, but city suburbs, small towns and rural areas will continue to be unserved or underserved unless there is a change in strategy.

Australia's National Broadband Network (NBN) is an example of a major state-run initiative to roll-out country-wide broadband infrastructure. However, the costs of terrestrial roll-out have proven to be excessive and the project is over budget and behind schedule.⁸

In France, President Macron announced in July 2017 at the Conférence des Territoires an acceleration of the deployment of superfast broadband, advancing the target date for 100% superfast connectivity from 2022 to 2020 as private sector deployment was not progressing according to plan. He stated:

*"It is impossible to keep the promise of fibre in to all households in France. This promise is untenable technologically and financially."*⁹

Nearly 30 million French homes have fibre broadband, the remaining two million households which cannot be connected economically to the fibre network will have broadband delivered through a combination of satellite, optical fibre and mobile internet. President Macron added:

"the government will allocate a share of the large investment plan (Grand Plan d'Investissement) to this priority, where necessary, wherever deficiencies are found, to replace the defaulting operators".

Broadband satellites deployed recently over North America are demonstrating that the capabilities of satellite technology are rapidly improving the broadband service offering and customer experience. Over two million households now subscribe to satellite broadband service.

The entry into service of the Jupiter-2 satellite earlier this year has enabled Hughes Network Systems of the United States to surpass 1 million satellite broadband subscribers and to improve its data plans, with packages offering 24 Mbps download, 3 Mbps upload.¹⁰

⁷ Ofcom Connected Nations Report 2017, Clause 1.8

⁸<https://www.theguardian.com/technology/2017/oct/23/nbn-a-mistake-says-turnbull-blaming-labor-for-calamitous-train-wreck>

⁹ <https://markets.ft.com/data/announce/detail?dockey=1323-13318009-3S97PGKE99760DQTT721ICDD29>

¹⁰ <http://internet.hughesnet.com/plans-and-pricing.html>



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Viasat, the second largest US satellite broadband provider recently launched its Viasat-2 satellite and has two Viasat-3 satellites under construction, each of which will have a capacity of 1 Terabit per second (Tbps). Viasat currently offers high-speed broad packages in the United States with monthly data usage caps of up to 150GB.¹¹

Australia and France are two examples where terrestrial planned broadband roll-outs have exceeded budgets and not progressed according to schedule. The US has shown that its satellites are capable of delivering a competitive and reliable superfast broadband service. The UK should learn from these experiences and not be over reliant on terrestrial technologies for delivering broadband connectivity. Satellite technology can help deliver higher penetration rates for superfast broadband more rapidly and at less cost, as well as providing connectivity in remote areas from the outset.

The UK has seen lower investment in HTS satellite technology than most other nations. This may well be due to the low current uptake and perceived UK market preference to focus national investment on easy to reach (by FTTC) premises. Hylas 4 has no planned UK service area. Viasat 3 and Oneweb are the next major satellite investments that could together provide around 13Gbps total capacity. If we believe that average downloads of over 250GB per month are required on average then 13Gbps will serve approximately 50000 premises, short of what is required.

If the UK wants to connect close to 100% of 'hard to reach' premises then inevitably satellite needs to be part of the solution. Therefore consideration must be given to the steps necessary to attract the investment by satellite operators in suitable satellite capacity directed to the UK. Some guarantee of minimum demand would be a step in the right direction - perhaps 300,000 premises with superfast speeds and 'unlimited downloads'.

A recent report from OECD¹² reviews the broadband rollout in its member nations and comes to different conclusion to the UK (DCMS/Ofcom), in that satellite has a significant role to play, recognising the performance improvements that will accrue from satellite network development. This report covers case studies in many of the member states.

¹¹ <http://www.exede.com/plan-results/freedom/>

¹² The Evolving Role of Satellite Networks in Rural and Remote Broadband Access, OECD Digital Economy Papers, December 2017.



Question 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

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?

It is strongly believed that a model which provides financial assistance to service providers based on the number of households they serve, and is technology agnostic is the best way to energise UK industry to provide cost effective and long term solutions to the provision of broadband.

Satellite can assist with the transition to full fibre to the premises by 2025. Methera's planned satellites can backhaul from UK remote cabinet sites supplying FTTH and make use of national or international fibre to connect back to the UK.

Current line rental charges provide a revenue stream which distorts broadband costs. This could be reversed by a move to VOIP for telephony with the line rental absorbed in the broadband monthly cost. This would encourage greater take up of broadband.



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

We believe that consumers are willing to pay an up-front cost and a reasonable monthly fee for advanced digital connectivity, and this is borne out by the current pricing for broadband services in the UK¹³. The initial or set up fees are between £10 and £60 with monthly fees from £25 to £47 depending on speed and contract terms. We believe that consumers in currently unserved areas will be willing to pay similar fees for a reliable and superfast broadband service.

The incentives for investors and shareholders would be a firm commitment from government for a defined service for a minimum number of years. Financial assistance could also be provided in the form of grants, access to low cost debt, public private partnerships etc. These guarantees will help in obtaining the private investments required to deliver such complex programmes.

We believe that there are numerous government roles which include: regulation to establish service levels (Universal Service for example); requiring the service providers to deliver performance and service statistics for every connected premise on a permanent basis and make them available to the regulator; empowering the regulator with measures to enforce the service levels, punish (fine) offending operators accordingly; a commitment and an open mind to re-evaluate the technology that will be available in the 2020 to 2025 time frame to provide the Universal Service; a commitment to create a level playing field amongst competing technologies; and financial assistance that is not dependent on the technology used for service delivery.

¹³ Prices for broadband and line rental, 28th January 2018. Virgin Media: <http://www.virginmedia.com/shop/broadband/>
BT: <https://www.productsandservices.bt.com/broadband/> Sky: <http://www.sky.com/shop/broadband-talk>