Department for
Science, Innovation
& Technology

Digital Connectivity: Consultation on Improving Broadband for Very Hard to Reach

Closing date: 27th November 2023

October 2023

Any enquiries regarding this publication should be sent to us at: alt.formats@dsit.gov.uk

Ministerial Foreword

The government is committed to making the UK a global leader in digital connectivity. Our Levelling-up agenda means ensuring that communities across the UK have access to the world-class, reliable and long-lasting digital infrastructure they need to prosper in an increasingly connected world.

Thanks to the work done so far by the telecoms industry, supported by the government and Ofcom, gigabit-capable broadband has already been delivered to over 77% of premises in the UK, including hundreds of thousands of homes and businesses in hard to reach areas. However, the government recognises there is more still to be done.

We know that good digital connectivity will play an important part in ensuring the most rural and remote communities in the UK, which have typically not been able to benefit from improvements to their broadband services, are not left behind.

By definition, it is going to be much more difficult to deliver gigabit connectivity to the hardest to reach parts of the UK – around 20% of UK premises – and that is why we have committed a record £5 billion of capital funding to support deployment in these areas through Project Gigabit.

However, due to a number of factors, a small minority of premises in rural and remote areas of the UK are unlikely to benefit directly from the substantial activity across the telecoms industry to deliver gigabit-capable broadband services.

To better understand the challenges of the premises in the very hardest to reach locations, the government launched a call for evidence. Following our response in February 2022, we are now setting out further information on how we intend to help to improve the broadband services to these premises.

The responses to this consultation will help us to shape our policy direction in the future, inform the government’s approach and bring forward further initiatives that we recently announced. I would like to thank everyone in advance for taking the time to respond to this consultation and helping to ensure premises in very hard to reach locations are not left behind.

Sir John Whittingdale

Minister of State for Data, and Digital Infrastructure

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Executive Summary

The UK Government's ambition is to deliver nationwide gigabit-capable broadband as soon as possible. In the period to 2025, we are targeting a minimum of 85% gigabit-capable coverage and are working with the industry to accelerate delivery to get as close to 100% coverage as soon as possible.

To support private sector deployment in the parts of the UK where it is most commercially viable to build networks, the government will continue to implement an ambitious programme of work to incentivise investment in gigabit-capable broadband and remove barriers to rollout. However, delivering gigabit-capable broadband in the hardest to reach areas of the UK is more challenging, which is why the government has set out detailed plans to support the delivery of gigabit-capable connectivity to these areas through Project Gigabit.

Project Gigabit is a significant part of the government's commitment to level up communities with the future-proofed gigabit-capable connectivity they will need. Alongside this, the government is also aiming to ensure that 95% of the UK's geographic landmass has 4G coverage from at least one mobile network operator by 2025 through the Shared Rural Network (SRN) programme and that all populated areas should have standalone 5G by 2030.

Building Digital UK's (BDUK's) legacy and current programmes have already upgraded over 741,000[1] premises to gigabit speeds, primarily in hard-to-reach areas, and we are continuing to move at pace. We currently have over £2 billion pounds in Project Gigabit contracts available for broadband companies to bid for, which will connect up to 1.1 million premises, and more procurements will be launched in the coming months. We have also completed public review across the whole of England (published), Wales (published) and Scotland (yet to publish), and many consultations with suppliers on upcoming procurements in a number of locations, including in Scotland and Wales. A public review in Northern Ireland has also now concluded.

Most of the gigabit-capable connections will be delivered through full fibre broadband cables. This provides the speed and reliability needed for several people to work from home, stream ultra high definition video content and play next-generation online games all at the same time. The increase in speed will help accelerate the country's recovery from COVID-19, fire up high-growth sectors such as tech and the creative industries and enable people to start and run businesses online from anywhere in the UK. However, we are also beginning to see the deployment of gigabit-capable wireless networks in our market surveys. These networks have deployment speeds of at least 1000 Mbps and often deploy a last mile wireless network rather than simply a full fibre network to the premises.

As of May 2023, only 0.2% of homes and businesses in the UK were unable to access a decent broadband service, of at least 10 Mbps download speed and 1 Mbps upload speed.[2]

[1] As of 2021/22: BDUK Performance Report 2021/2022
[2] Connected Nations Update: Summer 2023, 07 September 2023

This low number is due to a number of government initiatives including both the Superfast Broadband programme and Project Gigabit bringing decent broadband to many more homes and businesses. Also, significant improvements in 4G network coverage and wider availability of Fixed Wireless Access (FWA) services have impacted this. Project Gigabit prioritises premises without access to superfast broadband speeds, wherever possible, through appropriate sequencing of procurements brought to market and through minimum requirements for sub-superfast premise delivery set in the gigabit procurements.

In March 2023, BT stated that they had already built broadband Universal Service Obligation (USO) connections that covered over 7,000 homes and were in the process of building over 800 more across the UK.[3] The vast majority of these premises are being upgraded to a gigabit-capable full fibre connection compared to the minimum download speed of 10 Mbps under the USO.

However, the government is aware that the costs of deploying improved broadband infrastructure rise exponentially for premises in the very hardest to reach locations. Based on our analysis, we believe a small proportion of premises – potentially less than 100,000 – are likely to be too costly to connect to a gigabit-capable connection **and** require government intervention to provide them with an ultrafast broadband connection. These are the premises which we consider to be "very hard to reach (VHTR)". We explain our basis for this assessment within this document, and uncertainties relating to it.

While some very hard to reach premises are already being connected by UK Government initiatives and commercial activity, there remains a small number that are unlikely to be connected via existing schemes, some of which will be eligible for our satellite grant programme. This is often due to factors such as their isolated geographics, sparse density, and limited existing telecoms infrastructure which can make them challenging to connect.

The government remains determined to explore all possible options for improving connectivity for the very hardest to reach premises. That is why in March 2021 we published our initial *Call for evidence on Improving Broadband for Very Hard to Reach Premises* and why, following our response in February 2022, we are now launching this consultation.

The purpose of this consultation, which will be open for 8 weeks, is to set out further detail on our policy positions, provide further details on the analysis carried out as a result of the call for evidence responses and give respondents the opportunity to provide further evidence on any progress they have made or further barriers they have encountered since the call for evidence closed. This consultation specifically covers the following areas:

- The government's policy position
- Our evaluation criteria for determining policy options and the potential options available to us
- The service parameters that very hard to reach premises may require

[3] BT Report on progress against the Broadband Universal Service Obligation, 27 April 2023

- Barriers to delivery that remain for very hard to reach premises.

The consultation will look at each of these areas in turn, setting out our proposals where applicable but also providing a range of potential options the government is considering. We welcome stakeholders' views on any, and all, issues addressed as part of this document.

Chapter 2: Policy Position

We believe it is crucial to set out our current policy position regarding very hard to reach premises and the imperative need for improving their broadband provision now.

Good digital connectivity plays an important role in levelling up our rural communities, it increases productivity and helps to expand opportunities for flexible working, online education, and leisure activities.

However, we have recognised that the delivery of public and private services to rural and remote areas is challenging, often due to the poorer standard of digital infrastructure in these areas. Therefore, providing better digital infrastructure is an important mechanism to help remedy economic and social exclusion.

This is based on the feedback received from our Call for Evidence on Improving Broadband for Very Hard to Reach Premises and the analysis carried out as a result of the responses. In addition, the government is also setting out why we think these premises will require a different approach and when connectivity for very hard to reach premises should be delivered.

Chapter 3: Policy Groupings and Evaluation Criteria

Although the government has not set out specific policy proposals to tackle the connectivity challenges for very hard to reach premises, we believe there are 3 distinct policy areas which will require consideration. These are:

- Changes to existing broadband improvement delivery programmes.
- Creating a new broadband improvement delivery programme(s).
- Market-driven and regulatory policies with no, or limited, fiscal implications or government intervention.

In addition to considering the potential policy areas where any interventions may come from, the government has also set out the evaluation criteria it will use to ensure that any proposal meets the needs of those it is aimed at. While these 11 criteria will help to test the viability of individual policy options, no one criterion will be used to either include or exclude a potential option.

Chapter 4: Service Parameters

Responses to the Call for Evidence on Improving Broadband for Very Hard to Reach Premises highlighted the various service parameters that respondents required to make the best use of their broadband connectivity. The government has therefore set out 6 individual service

parameters which we believe reflect these responses and are required to deliver improvements in the broadband service for very hard to reach premises.

The government is not, at this point, indicating that these 6 parameters will be mandated within any one particular policy option. Instead, it is inviting comments and feedback from respondents on our proposals for each one found below:

- Speed of service
- Reliability and resilience of service
- Latency of service
- Contention ratio
- Service data caps
- Price and affordability

Chapter 5: Barriers to Delivery

Barriers to the delivery of improved connectivity for very hard to reach areas remains an ongoing challenge. While the government has carried out a number of barrier-busting measures over several years to help increase both commercial and government-funded deployments, we recognise that there may be room to go further.

We, therefore, welcome feedback from respondents on the known barriers to delivery market participants face, the measures that the government has already put in place to address them and what more could be done to help overcome them. This includes highlighting novel or new ways that providers have been able to meet these challenges through previous infrastructure delivery both at home or abroad.

General information

Consultation details

Issued: 2nd October 2023

Respond by: 11:55pm 27th November 2023

Enquiries to:

General Enquiries

Department for Science, Innovation and Technology

100 Parliament Street

London

SW1A 2BQ

Email: correspondence@dsit.gov.uk

Consultation reference: Improving Broadband for Very Hard to Reach Premises Consultation

Audiences: This is a public consultation. We particularly seek views from broadband and digital infrastructure suppliers involved in the deployment of digital infrastructure in the UK, devolved administrations, local authorities and network delivery bodies, businesses, residential consumers, and representative organisations with an interest in connecting Very Hard to Reach premises.

Territorial extent: The geographical scope of this consultation is the UK.

How to respond

Email to: vhtr@dsit.gov.uk

Write to:

Improving Broadband for Very Hard to Reach Premises Consultation

Digital Infrastructure Directorate

Department for Science, Innovation and Technology

100 Parliament Street

London

SW1A 2BQ

When responding, please state whether you are responding as an individual or representing the views of an organisation.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our privacy policy.

We will summarise all responses and publish this summary on GOV.UK. The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's consultation principles.

If you have any complaints about the way this consultation has been conducted, please email: beis.bru@beis.gov.uk.

1 Introduction

Overview

1.1 Although the government has the ambition to deliver nationwide gigabit-capable connections as soon as possible, the cost of deploying gigabit-capable broadband for premises in the most remote and rural parts of the UK is likely to be very challenging. This is because the cost of deployment rises exponentially in areas with geography and terrain that are difficult to navigate.

1.2 The government currently estimates that potentially fewer than 100,000 premises are likely to fall into this category, known as premises which are “very hard to reach”. The circumstances of these premises are influenced by several factors including:

- Geography
- Topography
- Distance from other properties

1.3 These factors, and more, are discussed in more detail below. Premises expected to be very hard to reach are likely to have a delivery cost that is significantly above the limits of commercial investment cases, of our gap funding approach to Project Gigabit procurements, and of the broadband Universal Service Obligation’s reasonable cost threshold.

1.4 To better understand how to address these premises, in March 2021, the government published a call for evidence seeking more information on the demand, benefits, barriers and approaches to delivering improved connectivity to these areas. Following the government’s response in February 2022, we are now using this consultation to provide further detail on our overall policy position as well as the service parameters these premises can expect. We are also asking for any further information on the current barriers that exist to delivering broadband to very hard to reach areas.

1.5 In this chapter, we outline:

- What we mean by very hard to reach premises;
- Current government broadband policies and how they relate to very hard to reach premises;
- Current investment programmes and how they relate to very hard to reach premises;
- How this consultation relates to our previous work on very hard to reach premises, and what further steps we expect to undertake.

What is a Very Hard to Reach Premises?

1.6 In our previous call for evidence, we outlined a set of factors that we consider may potentially make a premises very hard to reach for the rollout of a new or upgraded broadband telecommunications service. These factors fell into 3 broad categories: geographic isolation, limited 'network synergy' despite a lack of geographic isolation, and the emergence of new premises that were not considered in prior plans.

1.7 We remain of the view that geographic factors are the biggest cause of a premises being classified as very hard to reach. Our rationale is that:

- In our engagement discussions with communities and industry, remote rural locations remain the most challenging to deliver improved broadband services to, around all 4 nations of the UK.
- Our modelling shows the more rural the premises are, the higher the projected cost of building a full fibre gigabit network to them becomes. Mainly this is because the primary cost of delivering a full fibre network is the distance between the relevant exchange and the premises, or 'line length'. Line length is typically far longer in rural areas than in urban ones due to the lower spatial density of premises. This increases the cost of network deployment.
- Our modelling also shows where a small number of premises in a suburban fringe have a potentially longer line length, gigabit upgrade network plans often appear to accommodate these premises, as long as any barriers to deployment (such as wayleaves) are removed. Where upgrade plans do not accommodate such premises, they are often able to access improved connectivity through increasingly widespread commercial 4G and 5G Fixed Wireless Access networks.
- We are currently in the procurement release and build phase of Project Gigabit, which will address the vast majority of 'uncommercial' premises in rural and suburban areas. With appropriate intervention and network design, the proportion of premises lacking network synergies due to their rurality should and can be minimised.

1.8 We also considered if a premises should be considered very hard to reach if it was not remote, but at risk of later delivery in deployment plans (for example close to the end of Project Gigabit). However, it is not, at this stage in the live procurement process, possible to predict the final sequencing of later procurements or consequent supplier build plans. In any case, such premises are not very hard to reach based on the nature and location of the premises alone.

1.9 In the call for evidence, we outlined factors which influenced our primary consideration of geographic isolation. We have further explored these with more detailed data and find them to remain valid. This is explained below, and several of these factors are also referenced in this consultation's 'Barriers to Delivery' chapter (**Chapter 5**).

Figure 1: Factors Contributing to a Premises Potentially Being Considered "very hard to reach".

Factor	Explanation	View after call for evidence
Physical isolation	The premises is located at a substantial distance from any neighbouring premises.	We consider these factors to be the primary factor in whether premises are very hard to reach from a policy perspective and may require a specific intervention design.
Sparse distribution	The premises has neighbours, but these neighbours are a considerable distance from each other.	
Distance to interconnection or 'backhaul'	The distance from the premises to other accessible points of interconnection for telecommunications is substantial.	Feedback from the broader supplier community amplified this concern as an issue, and we address it further in this document and via discussions.
Island locations	As mentioned above, a particularly challenging example is if there is no submarine cable capacity to the island. Even small towns on islands can prove very hard to reach in this instance.	We have undertaken, and continue to undertake, substantial work on this topic. Current and planned submarine connectivity is substantial, but some less populated islands are still beyond the scope of known plans.
Occluded by terrain or other barriers	The presence of mountain ranges, valleys, marshlands/bogs or excessive foliage prevents shorter routes or the use of certain technologies.	This factor is hard to model, but substantially duplicative of the first 2 above, and can otherwise be mitigated through careful design or technology choice in many cases.
Access related issues	Regulatory or climatic hurdles that are linked to the geographic location of the premises. These can be related to weather conditions (building in certain locations cannot occur year-round), or due to regulations in National	We recognise these challenges, referenced later in this document. They are particularly, but not exclusively, linked to the initial construction phase (for long-life assets), and may be

	Parks/Areas of Outstanding Natural Beauty (AONBs), or other access or wayleave restrictions.	mitigatable within existing intervention designs, albeit with funding adjustments.

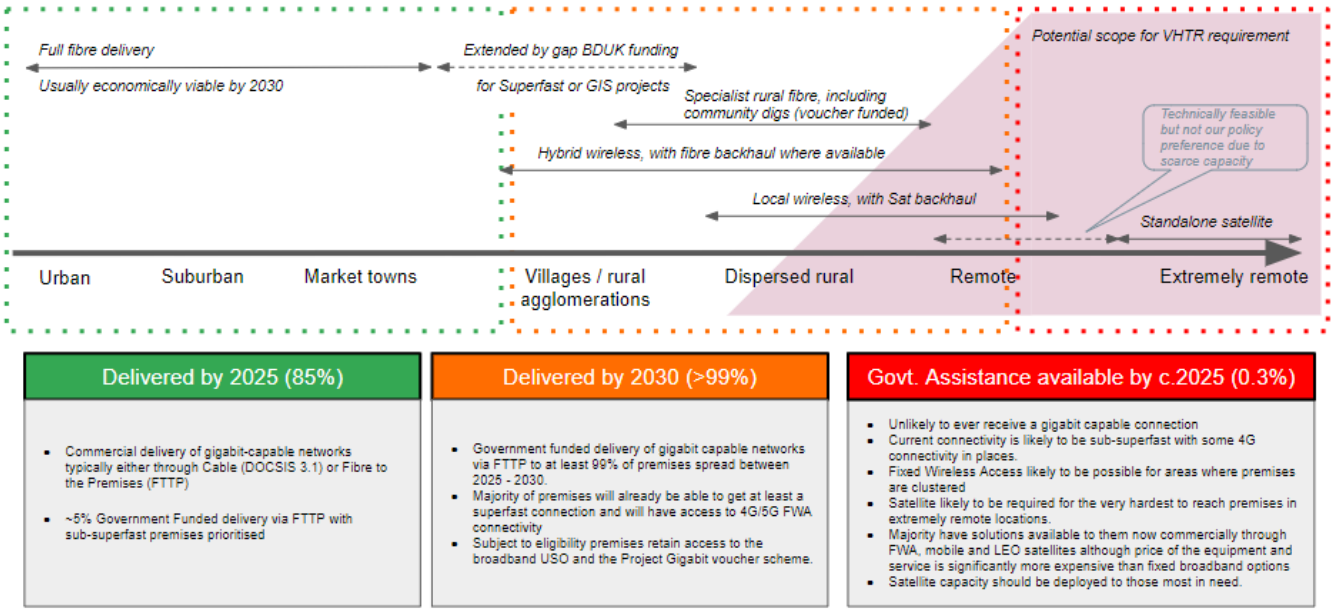
Government Policy for Very Hard to Reach Premises

1.10 Previous government policy has not treated very hard to reach premises explicitly differently from other, larger classes of premises (in particular rural premises). However, the circumstances of these premises and the specific cost economics of telecommunications technologies have led to substantially different outcomes for these premises (typically poorly performing and less reliable services).

1.11 In some cases, such premises have proved effectively beyond the reach of other interventions based on justifiable funding limits (in the context of value for money). However, given the substantially higher funding available through Project Gigabit or via UK Gigabit vouchers, with top-ups, these outcomes are unlikely to be replicated in as many cases under Project Gigabit.

1.12 The area of requirements for VHTR premises is therefore summarised as in **Figure 2**, below, which shows the groups of premises that we see as being beyond the potential reach of current interventions.

Figure 2: Requirements for VHTR Premises



1.13 We outline in the Policy Position chapter (**Chapter 2**), some of our proposed challenges to our policy for Very Hard to Reach premises that we are consulting upon.

Current investment programmes and their relation to Very Hard to Reach premises

1.14 There are a range of national and local initiatives currently available to help deliver upgraded broadband in the UK, the largest of which outside of commercial build is delivery via Project Gigabit. The government has committed up to £5 billion of funding for this programme and it is already levelling-up gigabit-capable broadband connectivity for communities across the UK. It is expected to be complete by 2030.

Project Gigabit interventions

Superfast Broadband Programme

1.15 Since 2012, the government has invested over £2 billion in superfast broadband upgrade programmes to deliver better connectivity to premises across the country. Initially, these made cabinet-level upgrades to Fibre to the Cabinet (FTTC) services, still relying on some legacy copper and delivering lower speeds. However, more recent contracts are predominantly offering full fibre solutions which provide gigabit-capable services.

1.16 The Superfast Broadband Programme has been split into a number of phases since its initial inception. These have been called Phase 1 (est. 2014 to 2018), Phase 2 (est. 2017 to2019) and Phase 3 (est. 2018 to present). In addition throughout this time, the government has run several voucher programmes, offering a demand-led offer alongside the supply-side interventions of the main programme.

Phase 1 (2014 to 2018)

1.17 This phase consisted of 46 contracts and connected over 4.4 million premises to Superfast Broadband. BDUK funded over £487 million into these contracts out of a total contractual value of £1.65 billion.

Phase 2 (2017 to 2019)

1.18 This phase consisted of 47 contracts and connected 820,000 premises to Superfast Broadband. BDUK funded over £157 million into these contracts out of a total value of £706 million.

Phase 3 (2018 to present)

1.19 The final phase has 67 contracts included which have connected 330,000 premises to date, and are expected to connect another 197,000 premises before the phase is completed. The majority of these connections will be gigabit-capable. BDUK has funded £90 million into these contracts out of a total contractual value of £1.4 billion.

1.20 As of 2023, the majority of the Superfast Programme is now in the final stages of delivery and/or has delivered superfast broadband to the necessary premises. 33

contracts remain in delivery and are now primarily focusing on delivering gigabit-capable connections alongside Project Gigabit. In addition, providers are now also focused on delivering their own full fibre networks across commercial areas of the country.

Reaching 100% (Scotland)

1.21 Reaching 100% (R100)[4] is the Scottish Government's commitment to provide superfast broadband to every home and business in Scotland by 2021. This was to be delivered via 3 strands:

- R100 Contracts
- R100 Scottish Broadband Voucher Scheme
- Ongoing commercial coverage

1.22 R100 procurement process[5] commenced in 2017, and contracts were subsequently awarded to BT in 3 geographical areas (South, North and Central). The majority of the planned build of ~110,000 premises remains ongoing but will be gigabit-capable with all contracts now expected to be delivered by 2028.

1.23 The Scottish Broadband Voucher Scheme is a subsidy worth up to £5,000 if the premises is not able to receive a superfast broadband connection and is not within the R100 contracts. Up until March 2022, an interim voucher scheme was also offered. This provided a £400 interim voucher to premises unable to access superfast speeds but within the R100 contracts to provide a temporary solution. Around 3,000 premises have been connected by June 2023 using R100 vouchers, using a variety of technologies[6]. Many of these will have been in remote rural areas.

Superfast Cymru (Wales)

1.24 Superfast Cymru[7] was the Welsh Government's programme for connecting the remaining 3% of premises in Wales to superfast connectivity. The last rollout was to address 39,000 properties across Wales using £56 million of public funding. As of Q1 2023, a total of 36,869 extra premises had now gained access to Openreach's gigabit-capable FTTP broadband network, with much of the remainder of Wales being built by commercial providers.

1.25 In addition to the contracts, the Welsh Government also provides grants to fund or part-fund the equipment and installation costs of new broadband connections for homes and businesses in Wales[8]. The amount of funding that can be received depends on the speed of the new connection:

[4] Reaching 100%: superfast broadband for all - gov.scot
[5] View Notice - Public Contracts Scotland
[6] R100 Broadband scheme progress: FOI release - gov.scot
[7] Rolling out fibre broadband | GOV.WALES
[8] Access Broadband Cymru grant scheme | GOV.WALES

- £400 for 10 Mbps and above
- £800 for 30 Mbps and above

1.26 New connections delivered through this scheme must deliver a significant change in speed as well as doubling the current download speeds received by the premises.

Project Stratum (Northern Ireland)

1.27 Project Stratum[9] is the ongoing broadband delivery project in Northern Ireland, contracted to Fibrus, and with a total scope of approximately 85,000 premises. Fibrus has built at pace and remains ahead of target with 61,000 premises passed to the end of March 2023, with a very high proportion of rural premises in this contract.

1.28 Across all 3 phases of the programme, a total of £1.9 billion was spent with a total of 5.5 million premises passed nationwide. This equated to a gross cost of £342 per premises passed.

Gigabit Broadband Voucher Scheme

1.29 As part of Project Gigabit, in March 2021 it was announced that the government has made up to £210 million available for the Gigabit Broadband Voucher Scheme (GBVS).[10] The scheme is accessible through more than 200 broadband service providers that have registered to provide connections through the scheme.

1.30 The GBVS offers government-funded vouchers worth up to £4,500 for homes and businesses to help them cover the costs of installing gigabit-capable broadband to their premises.

1.31 Vouchers have been an effective way of supporting the deployment of gigabit-capable broadband to some of the more remote rural parts of the country. Whilst Openreach (the largest user of these vouchers by volume) paused Fibre Community Partnerships in 2022 to 2023, they have subsequently reopened for community applications. Many other suppliers are also active as part of the scheme.

1.32 There is substantial evidence that smaller suppliers have been able to use novel technology and community-based approaches to deliver voucher projects to largely remote premises, typically not suited to either wide scale procurements or commercial delivery.

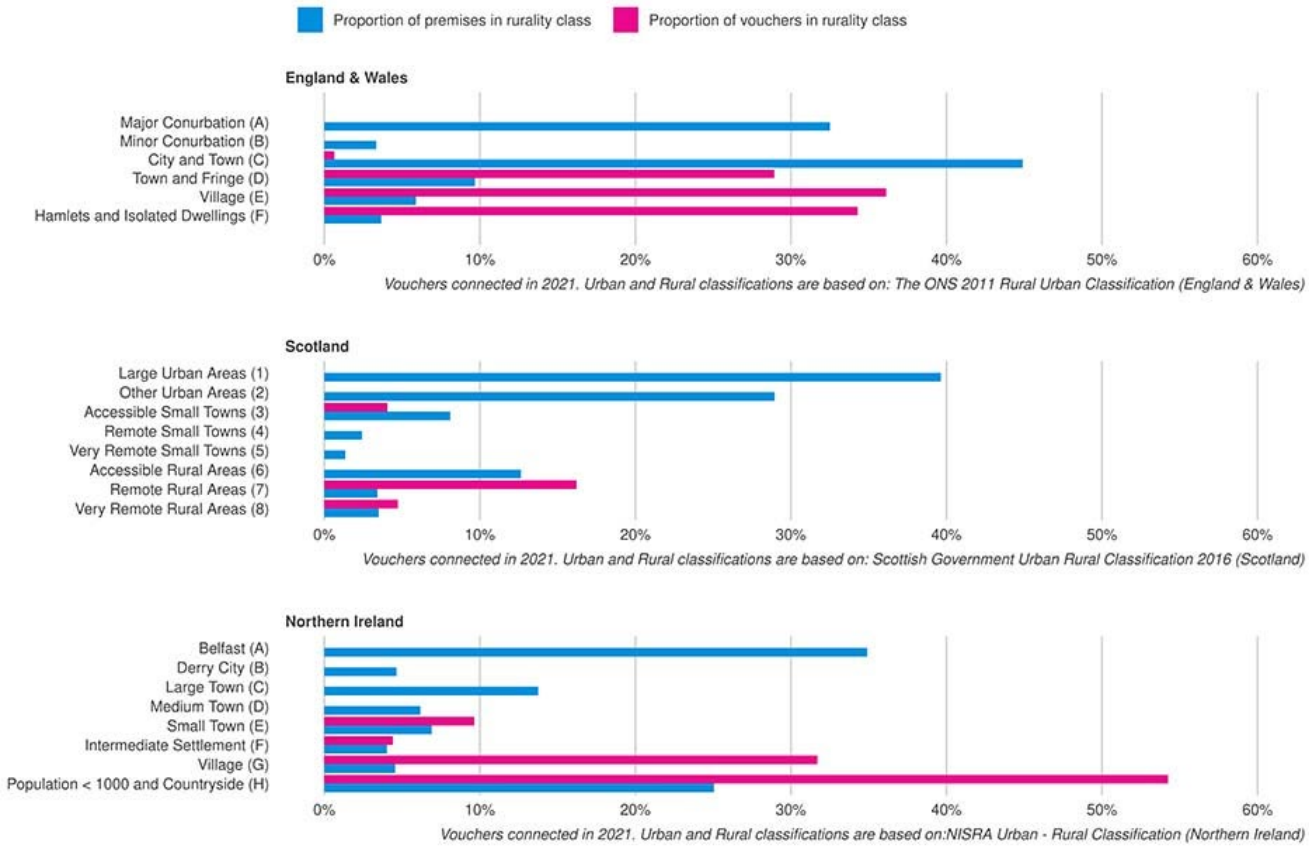
1.33 This voucher scheme, and other non-BDUK grant schemes like it, are demand-led, require a willing supplier, can be organisationally costly, and sometimes depend on the extent that a community can mobilise interest and has access to skills. Voucher-led delivery also often results in different service outcomes, regarding choice, for consumers.

[9] Project Stratum | Department for the Economy
[10] Gigabit Broadband Voucher Scheme

1.34 As such, whilst we believe such schemes will help substantially in some areas, and could be further optimised, they alone will not solve the very hard to reach challenge nationwide, primarily because they are demand-led.

1.35 In September 2023, BDUK announced that it had reached the milestone of over 120,000 broadband vouchers issued, with 100,000 already claimed to date to support households and businesses with the additional costs of securing gigabit-capable connections[11].

Figure 3: Rurality of vouchers issued across the nations over the previous 12 months[12]



GigaHubs

1.36 Over the next 3 years BDUK is investing up to £30 million to help connect up to 820 rural public sector buildings such as GP surgeries, libraries, schools and other public buildings, with gigabit connectivity in hard to reach parts of the UK.

1.37 GigaHubs aim to help enhance public services and bring new fibre right into the heart of communities for the first time, providing ‘hubs’ from which industry can connect surrounding homes and businesses.

[11] Project Gigabit progress update, September 2023 - GOV.UK
[12] Project Gigabit progress update, June 2023 - GOV.UK, 30 June 2023

1.38 Since launching in June 2021, the £30 million GigaHubs public sector upgrades projects have been established with local authorities in Leicestershire, Oxfordshire and Dorset and through a partnership with NHS Scotland. To date, 50 sites have been connected in total and procurements to provide gigabit-capable broadband to up to 850 schools (of which 504 are BDUK funded) launched in February 2023.

Project Gigabit Infrastructure Subsidy (GIS) procurements

1.39 Project Gigabit Infrastructure Subsidy (GIS) procurements are phased contracts to connect hard to reach parts of the UK with gigabit-capable infrastructure. These areas have been deemed to be not commercially viable and therefore require government support to improve connectivity. There are 3 types of procurements:

- **Local:** Typically smaller areas (estimated 1,000 to 10,000 uncommercial premises) suitable for smaller localised suppliers
- **Regional:** Typically large areas (estimated 30,000 to 150,000 uncommercial premises) suitable for larger suppliers with substantial operational capacity and financial backing.
- **Cross-regional:** a single supplier framework, to be awarded under a restricted procedure with a life of 4 years. Expected to cover up to 500,000 premises, with the initial call-offs of c.120,000 premises.

1.40 To deliver procurements most efficiently, BDUK has divided England into a total of 38 Lots made up of both local and regional procurement types. Lot boundaries in Scotland, Wales, and Northern Ireland are yet to be finalised.

1.41 As of September 2023, BDUK has already made over £2 billion of funding available through live contracts and procurements, to connect up to 1.1 million premises. We have now awarded 12 Project Gigabit contracts worth over £590 million, and we continue to make good progress, having launched a further 27 live procurements across the country.[13]

1.42 We have also completed initial surveys of the commercial digital infrastructure market in every region of the UK, including in the devolved administrations.

1.43 Substantially all of the premises within an area released for procurement under Project Gigabit are included as eligible for bids from suppliers, unless BDUK has identified a well-proven commercial intent to build, or allocated the premises to a 'Voucher Priority Area', based on market and/or local authority feedback. BDUK periodically reviews these allocations, where voucher projects have not subsequently been submitted or approved, or where other build at improved value for money is expected to occur.

1.44 The evaluation process published by BDUK explains how bids will be assessed, with the most substantial factor being the extent of coverage achieved. Whilst this should maximise the reach of Project Gigabit into areas containing very hard to reach

[13] Project Gigabit progress update, September 2023 - GOV.UK

premises, we still anticipate that some will be beyond the current financial envelope of the programme.

1.45 A full pipeline of Project Gigabit procurements can be found in BDUK's latest quarterly update, the 2023 Autumn Update[14].

Broadband Universal Service Obligation

1.46 The broadband Universal Service Obligation (USO) is the legal right to request a decent broadband service of at least 10 Mbps download and 1 Mbps upload from one of the 2 Universal Service Providers (USPs) designated by Ofcom. The broadband USO acts as a 'digital safety net' to ensure all consumers and businesses across the UK can legally request a broadband connection that enables them full economic and social participation in society.

1.47 Quotations significantly above the Reasonable Cost Threshold (RCT) requiring consumers to contribute have meant the broadband USO has not been able to ensure connectivity for premises likely to be very hard to reach. The government is currently running a parallel consultation to review the broadband USO and understand how we may be able to address some of these issues.

How this consultation fits with our overall work on Very Hard to Reach premises

1.48 The policy choices that we make for very hard to reach premises will have a longstanding impact on the nature of both the services available to them in the short term and potentially the market outcomes in the medium-long term. It is important that the government has detailed information before it begins to implement potential policy proposals. Whilst we are acutely aware that connectivity in remote areas is often poorer than in urban areas, we consider it is right that those affected have the chance to comment on our proposed policy position, service specification and approach to selecting final options before final decisions are made.

1.49 This consultation will give those living and delivering in rural and remote areas the opportunity to raise any concerns they may have regarding this proposal. We expect to publish our response in the first half of 2024, which will provide an update on the government's support for very hard to reach premises. Further information on potential policy interventions are set out in further detail in **Chapter 3**.

[14] Project Gigabit progress update, September 2023 - GOV.UK

2 Policy Position

Introduction

2.1 This chapter outlines the government's policy position regarding very hard to reach premises and the policy imperative underpinning the need for intervention to deliver an improvement in the broadband service received by households and businesses in very hard to reach areas.

2.2 This chapter is based upon feedback and analysis received from the Call for Evidence on Improving Broadband for Very Hard to Reach Premises and developments in the market which have subsequently occurred.

2.3 In this chapter, we set out the policy position for:

a. Why we believe that intervention for very hard to reach premises is required;

b. Why we think that these premises require a different approach;

c. When we think connectivity for very hard to reach premises should be delivered;

d. How very hard to reach policy interacts with the broadband Universal Service Obligation.

Policy imperative

Why we believe intervention for Very Hard to Reach premises is required

2.4 Good digital connectivity will play an essential role in levelling up our rural communities. Improved broadband helps businesses and households unlock their ambition, increase productivity, and expand opportunities for flexible working, online education, and leisure activities.

2.5 The delivery of public and private services to rural and remote areas is challenging. This challenge increases with the sparsity of population and degree of geographic isolation. These challenges can apply to both the initial cost of infrastructure and the economic models that ensure ongoing delivery such as maintenance and ensuring continued connectivity.

2.6 There has been an increased trend for both public and private services to migrate to digital models. In many areas of the public sector, from GP practices and hospital consultations to HM Courts and Tribunals Service, digital technology is being used more to help deliver more efficient and cost-effective public services.

2.7 In other sectors, such as high street banking and retail shopping, this trend has been long standing, with transactions and customer support moving from shops and bank

branches to online platforms. This presents a particular challenge in rural communities, where there are fewer alternative physical locations to access such services, and greater distances required to reach them. These issues are further compounded when local public transport options are infrequent or unavailable.

2.8 Therefore, as the typical delivery of these services moves further towards wholly digital models, there is a substantial risk that communities which are very hard to reach may be left behind. These communities are in part characterised by typically poorer quality broadband connections, or even no connection at all, and are likely to require additional consideration to avoid social and economic exclusion.

2.9 We heard in response to the call for evidence on Improving Broadband for Very Hard to Reach Premises that the COVID-19 pandemic had exacerbated the issues faced by those with poor connectivity. This was primarily due to the increased reliance on digital delivery of services by both government and commercial providers, and changes in working practices by employers.

2.10 Due to the poorer standard of digital infrastructure in very hard to reach areas, households and businesses are unable to access and take advantage of opportunities in education, skills, training and employment.

2.11 Furthermore, as access to online learning opportunities and flexible working expands, many businesses and residents in very hard to reach areas are unable to keep pace.

2.12 Statistical evidence from Defra's latest Rural Statistics Digest underscores the importance of a fast and reliable broadband service in the daily lives of rural workers. Data collated by Defra shows that rural residents in England are more likely to work from home than their urban counterparts, with home working in these areas consistently higher in rural areas since 2006.[15] The data shows that, overall in 2021, 32% of workers in a rural area worked from home, compared to 28% of workers in urban areas. Defra's statistics further showed that the highest percentage of home workers were those who lived in 'rural hamlets and isolated dwellings', with 40% of all those employed working from home.[16]

2.13 Those whose broadband connection impedes their ability to take full advantage of this trend face further exclusion from a society where increased connectivity has supported a more dynamic economy and labour market. Young people from lower-income households are particularly vulnerable to the long-term impact this could present, but older generations who also face mobility challenges and are more dependent on community-level service provision are also affected.

2.14 Businesses located in remote areas also face similar challenges directly related to their lack of access to high-quality broadband service. As outlined in subsequent chapters, poor digital connectivity has a negative impact on the productivity of some rural

[15] Statistical Digest of Rural England, August 2023
[16] Statistical Digest of Rural England, August 2023

businesses and is a barrier to diversification and increasing revenue. It also precludes access to opportunities for business leaders in these areas to cultivate and expand the networks which are often an important factor in success, as well as the management training initiatives established by the government to help small and medium enterprises to grow.

2.15 However, the cost of providing broadband coverage rises exponentially as deployment continues into the most remote premises. As such, many of these premises will likely remain outside the funding justification limits for both public procurement programmes and commercial rollouts. As a consequence, these premises are likely to be left unserved by either government or market-driven rollouts.

2.16 Consumers in rural areas informed us that build plans published by market participants are often unreliable or, in some instances, not available. This means residents often cannot plan for the future and make an informed decision regarding their broadband connections and lengths of contracts.

2.17 In addition, all respondents noted a desire for complete transparency between government and communities before and while plans are actioned. Representative organisations made it clear that continuous two-way communication and regular updates, even over a long period, helps them build trust with the government and market participants.

2.18 At its core, the rationale behind intervention to improve the broadband services available to very hard to reach premises is to ensure those who reside in this group of premises have the same standard of living and life opportunities that those living and working in other areas of the UK enjoy as a result of their digital connectivity.

2.19 Providing better digital infrastructure is an important mechanism to help remedy the economic and social exclusion that some may already face and to help ensure that it does not become more severe as gigabit-capable connections are rolled out nationwide.

Why we think that these premises require a different approach

2.20 Delivering improved broadband services for very hard to reach premises, which are typically located in much more sparsely populated areas, is challenging for market-based delivery models. In general, the investment costs per premises rise whilst revenue potential per premises declines.

2.21 Consequently, areas with lower population density and premises which are remotely located face greater challenges associated with building digital infrastructure to these areas. With decreased economies of scale it is not commercially viable for the providers to provide connectivity to such areas. This results in fewer suppliers competing to build new infrastructure and fewer internet service providers using that infrastructure to provide broadband services.

2.22 Although this can mean that a smaller number of providers can assume a higher market share (or in the case of a regulated single provider, an effectively guaranteed market share, albeit with some regulatory controls on price or returns), the rapid escalation of costs relative to density means that even in such cases the delivery economics are beyond typical market-based models.

2.23 As is later outlined in this consultation's discussion on price and affordability in **Chapter 4**, we believe that this delivers less value for money today for customers in very hard to reach areas.

2.24 This is also true, though to a lesser degree, even for most areas where Project Gigabit is providing support in the form of grants or subsidies to 'close the gap' in commercial providers' financial models for gigabit-capable infrastructure deployment.

2.25 However, in the case of very hard to reach premises, the investment requirement is potentially beyond the value for money case the government has set out for the expenditure of public funds under that programme. Supplier interest in these areas is also substantially lower, though there are exceptions.

2.26 These economic challenges can be partly addressed by considering approaches that lower the cost of delivery to very hard to reach premises. The most obvious route to achieve this is to consider whether alternative delivery and technology options to those employed in current Project Gigabit or previous Superfast procurements might be appropriate. Many technologies may still offer a substantial improvement compared to a customer's current level of service, but for lower overall relative expenditure.

2.27 However, such an approach would represent a compromise in the service offered and in the future longevity of the infrastructure compared to infrastructure delivered under Project Gigabit. Therefore, we consider it appropriate to limit this compromise solely to the anticipated very hard to reach areas, where it is necessary.

2.28 It is also possible that such an approach would be able to take advantage of different supplier ecosystems, or expand on those used to deliver public procurement programmes, such as Project Gigabit.

2.29 There are a large number of alternative network suppliers who use a broad range of technologies to deliver broadband coverage to specific rural locations. These services often provide households and businesses in these areas with a service superior to their pre-existing fixed-line network, where that network is reliant on legacy copper and ADSL (asymmetric digital subscriber line)-based technology.

2.30 Beyond the extent of the economic challenge set out above, other factors suggest these premises may require a specific approach to ensure an improvement in their broadband services.

2.31 Very hard to reach premises are substantially more likely to be agricultural businesses and, in particular, small scale farming establishments. We heard from the call for

evidence and our engagement with relevant stakeholders that many farms in these areas are likely to experience a slow and unreliable broadband service.

2.32 These specific connectivity challenges they currently face have an impact on the business administration integral to their survival. In particular, the systems underpinning existing and new farming grants and subsidies from the UK Government require the use of new online administrative platforms.

2.33 We heard from the call for evidence that at present, businesses, including agricultural businesses, without a suitable connection for their needs often had to travel to alternative locations to find a connection that allowed them to complete basic tasks. This could be as simple as accessing emails, completing online banking transactions, and transferring documents. Mobile signals have also been described by those living in rural areas as ‘patchy’ and ‘intermittent’.

2.34 Furthermore, with rural areas having a reputation for slower connectivity, many businesses with high digital connectivity requirements are deterred from operating or starting up in these areas and is evidenced by lower levels of business creation from ICT intensive sectors. This may also include agricultural businesses who may be disincentivised from diversifying their current business to include hospitality or more productive agri-tech products.

2.35 Where businesses do operate, we have received evidence that to have a decent connection would come at a significant cost to the business, due to the lack of infrastructure. Examples of this include small businesses in a small village in Dorset which incurred great expense in using a microwave dish system, and hospitality businesses that have had to pay very substantial sums to have fibre laid directly to their premises

2.36 Based on the department’s current understanding, using information provided by Defra, agricultural businesses require access to a wide portfolio of services that they may need to use as part of their business activities. While not all of these are required for all farmers (depending on their business type), the number of services, operated by both UK Government and others, shows the breadth of requirements that farmers may have.

2.37 Given the large number of providers, and the varying requirements that they have, many require the uploading of documents and/or high resolution pictures as well as the use of interactive maps – both of which are likely to require speeds in excess of the one stipulated in the current broadband Universal Service Obligation.

2.38 Furthermore, the department is aware that some systems are due to be upgraded within the next 12 months where either connectivity requirements may increase or more farmers will be required to use the service.

2.39 Agricultural businesses also offer more possibilities for specific delivery solutions, given their need for digital solutions across the farm and the greater potential for

productivity gains as a result. Furthermore, the presence of land, building and power assets could potentially facilitate more novel technology and delivery options, with appropriate co-ordination with the business.

2.40 **Figure 4** below uses internal analysis conducted by DSIT in 2022 using agricultural business data from Defra. From this data, we have estimated the proportion of agricultural businesses in England which fitted into the following speed categories.

Figure 4: Distribution of agricultural businesses in England only by speed category, (using 2022 speed data)[17]

Speed Category	Mbps	Percentage of agricultural business
Sub10	<10	24%
Sub30	10 to 30	22%
Super30	30 to 100	29%
Ultra100	100 to 999	1%
Gigabit	>1000	24%
Unclassified	-	1%

2.41 As **Figure 4** shows, we believe that in 2022 over half (54%) of English agricultural businesses received download speeds in excess of 30 Mbps, although one-in-four are sub-broadband USO (below 10 Mbps) on a fixed-line connection, significantly higher than the UK and England average[18]. Including speeds between 10 Mbps and 29 Mbps, three-quarters of agricultural businesses in England are receiving speeds above the 10 Mbps decent broadband threshold.

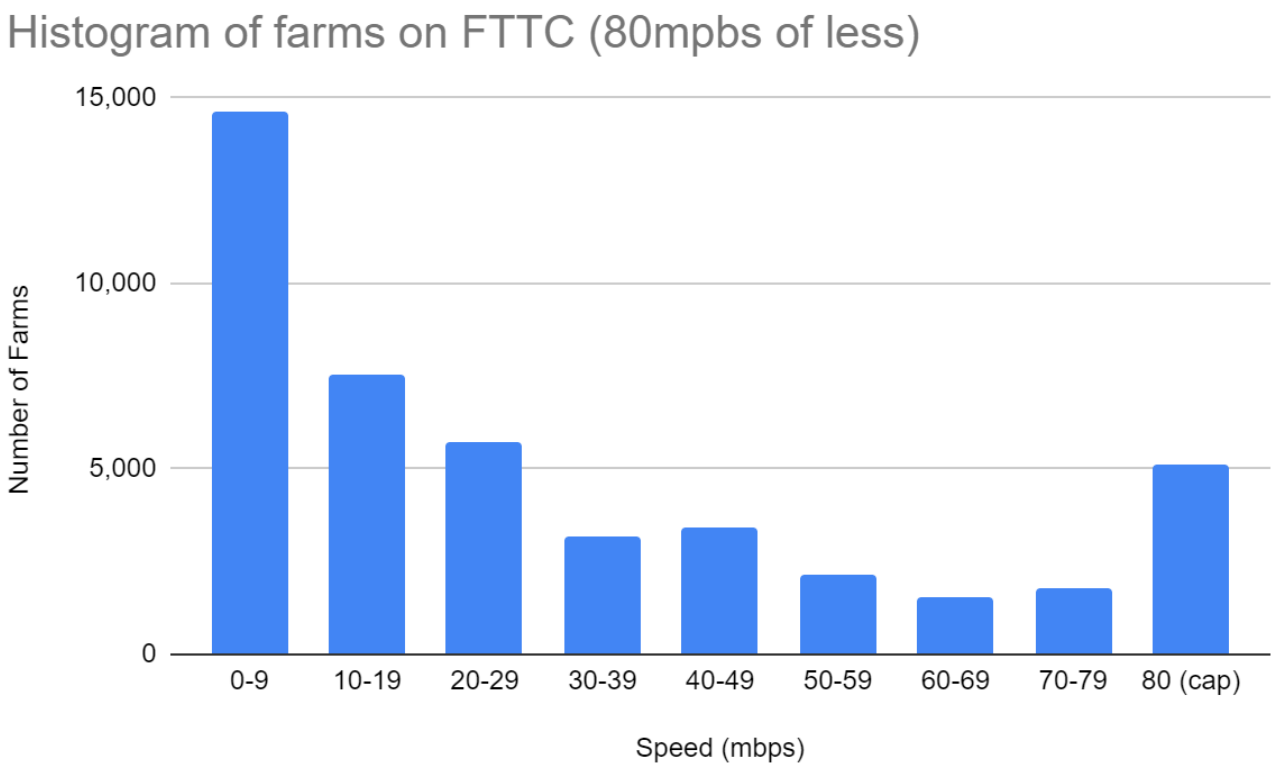
2.42 **Figure 5** below is a histogram utilising the same RPA data to plot the distribution of the speeds of agricultural businesses with an FTTC connection. We estimate approximately 69% of agricultural businesses are connected via FTTC (compared to 10% through ADSL and 21% FTTP).

2.43 Analysis of the data shows the average speed of an agricultural business on FTTC was 29.5 Mbps. The graph shows a concentration of this particular class receiving speeds below 10 Mbps, with a trend of a declining number of agricultural businesses receiving higher speeds before peaking at FTTC's speed cap, 80 Mbps. This peak at 80 Mbps is down to a large number of premises being situated within a few hundred

[17] Data only accounts for connections via fixed-line connectivity. In this paper, agricultural businesses are defined as those which claimed a farm subsidy payment under the Basic Payment Scheme in 2021.
[18] Note that Figure 4 does not account for Fixed Wireless Access connectivity and therefore the actual number of USO eligible premises is likely to be much less once FWA connectivity is accounted for. On a nationwide basis, and not considering agricultural businesses specifically, the availability of these technologies reduces the number without decent broadband (based only on fixed wired networks) by approximately 80%.

metres of their exchange (these are likely to be agriculturally related businesses, located in market towns or villages, rather than actual farms).

Figure 5: Histogram of agricultural businesses on Fibre to the Cabinet connections (<80 Mbps), 2022 DEFRA data



2.44 **Figure 6** outlines the percentage of agricultural businesses that are served by either one, two, three or all four of the number of Mobile Network Operators (MNOs)[19]. It shows that only 2% of agricultural businesses are not served by any of the MNOs, with the vast majority (84%) receiving coverage from all 4.

Figure 6: Percentage of agricultural businesses in England by Mobile Network Operator coverage, 2022 data

MNO Operators	Percentage of agricultural businesses
0	2%
1	2%
2	4%
3	9%
4	84%

[19] There are 4 designated MNOs in the UK: Vodafone, Three, O2 and EE.

2.45 We are, however, acutely aware that for those premises without any coverage safety is an important concern as they are unable to call emergency services and the lack of coverage further impedes potential connectivity solutions (through alternatives such as 4G or 5G Fixed Wireless Access (FWA)).

2.46 Nevertheless, whilst premises with coverage from more than one MNO may be able to access the mobile network, this does not necessarily mean that a 4G/5G FWA option is a viable alternative for them if their fixed-line connection does not meet their needs. This is particularly true in more rural areas where there may not be capacity to provide a wireless broadband connection.

2.47 We are also aware that the remote nature of very hard to reach premises also means the infrastructure that serves them is often more exposed. Lines typically have to cover much longer distances than in urban and suburban areas and are more vulnerable to damage from extreme weather events. The location of infrastructure can also make it more time-consuming to repair.

2.48 As a result of this, the future resilience of networks in very hard to reach areas is an even greater consideration than in other areas. But, equally, the benefits of addressing current shortfalls in network resilience are substantially higher overall.

2.49 The distances and access issues involved in improving infrastructure in some very hard to reach locations translate to issues of time as well as money. In some locations, deployment is near impossible in winter or dependent on the timing of tidal ranges, and although access issues also occur in urban areas, the nature of the challenge is not generally comparable. The presence of some of these premises on islands offshore is a particular challenge, for example.

2.50 These challenges also often mean that community involvement can support the delivery of better connectivity to these locations. This is not currently an aspect of Project Gigabit and can also make the delivery of improved infrastructure to these areas more attractive to smaller rural market-focused suppliers.

2.51 There are several islands in the UK where the isolated and almost entirely disconnected nature of some premises creates a potential class of households and businesses with acute connectivity issues.

2.52 **Figure 7** below shows information on the UK islands by UK nation, their current connectivity and the number of inhabitants. Each island is categorised by whether or not it has a submarine cable running to it, or one planned, a bridge or causeway (where a fibre cable could feasibly run) to mainland UK or Northern Ireland, a bridge or causeway to a larger island, or whether a link is required.

Figure 7: Tables showing UK Islands sorted by nation and ranked by population according to their current means of connectivity (submarine cable/causeway/bridge) (2022)[20]

England

	Number of Islands	Percentage of Total	Number of Inhabitants	Percentage of Total
Number of permanently inhabited islands	17	100%	427,799	100%
Islands Which…				
Have a submarine cable or bridge direct to mainland	15	88%	427,742	100%
Have a submarine cable, bridge or causeway to a larger island	0	0%	0	0%
Have a submarine cable planned	0	0%	0	0%
Potentially require a link	2	12%	57	<1%

Wales

	Number of Islands	Percentage of Total	Number of Inhabitants	Percentage of Total
Number of permanently inhabited islands	5	100%	135,652	100%
Islands Which…				
Have a submarine cable or bridge direct to the mainland	2	40%	121,942	90%
Have a submarine cable, bridge or causeway to a larger island	1	20%	13,659	10%
Have a submarine cable planned	0	0%	0	0%
Potentially require a link	2	40%	51	<1%

[20] Inhabitant data taken from ONS 2011 census

Scotland

	Number of Islands	Percentage of Total	Number of Inhabitants	Percentage of Total
Number of permanently inhabited islands	92	100%	99,340	100%
Islands Which…				
Have a submarine cable or bridge direct to the mainland	5	5%	10,594	11%
Have a submarine cable or bridge/causeway to a larger island	17	18%	5,120	5%
Have a submarine cable only	15	16%	78,772	79%
Planned submarine cable	13	14%	3,141	3%
Potentially require a link	42	46%	1,713	2%

Northern Ireland

	Number of Islands	Percentage of Total	Number of Inhabitants	Percentage of Total
Number of permanently inhabited islands	1	100%	154	100%
Islands Which…				
Potentially require a link	1	100%	154	100%

2.53 The data collected shows that fewer than 2,000 island inhabitants across the UK are without any connection to the mainland or a larger island which digital infrastructure might be able to use, or have a submarine cable in place or planned. This means that the effective isolation of those premises and inhabitants located there present an almost unique connectivity challenge in the broader context of very hard to reach premises.

2.54 The vast majority of these islands are located in Scotland and have not been included in current plans under the Scottish Government's Reaching 100 (R100) rollout of submarine cables, which accounts for the 13 islands with a planned submarine cable link.

When should connectivity to Very Hard to Reach Premises be delivered?

2.55 The government recognises that connectivity in remote and rural areas is often significantly slower than in more urban and suburban areas of the country. This is a particular challenge for those premises likely to be 'Very Hard to Reach' and premises are likely to need to be addressed as quickly as possible.

2.56 However, in delivering to these premises, it is important that this is done in a way that does not substantially conflict with commercial delivery or other government programmes, including Project Gigabit.

2.57 While it might make logical sense to deliver to the very hardest to reach premises once Project Gigabit has completed its rollout and we can identify VHTR premises with absolute certainty, this is unlikely to be acceptable for those in the greatest need of levelled up digital infrastructure today.

2.58 Those with the worst performing and least reliable digital connectivity require a better connection before 2030, and therefore, we believe there is a balance to be struck and why this policy must run alongside the delivery of Project Gigabit.

2.59 We believe that this approach would allow us to:

a. Ensure communities with the worst services experience a step-change in their digital connectivity as soon as possible rather than waiting until all the procurements have been delivered.

b. Secure any scarce resource capacity that will likely be required for the technical delivery of very hard to reach policy proposals before it is consumed by others, either in this country or abroad.

c. Provide clarity to the affected communities and to the market as a whole, on the costs and opportunities that are available beyond the delivery of Project Gigabit. This could create a more competitive market to deliver a variety of approaches to these premises.

d. Commence projects with long build durations, given that they are likely to be harder to complete than typical Project Gigabit deployments. This will allow for any delivery risks to be mitigated or overcome while still delivering to these premises on time.

2.60 While delivering to these premises as quickly as possible is the desired outcome, it is important to also note that this needs to be co-ordinated with other government policy commitments.

2.61 As is previously noted in this document, the government is committed to delivering gigabit-capable broadband to 85% of premises by 2025 with nationwide coverage to be delivered as soon as possible thereafter. We want to ensure that our policy for very

hard to reach premises does not interfere with ensuring that as many premises as possible can access a gigabit-capable network.

2.62 By considering too many premises as very hard to reach before we have fully understood the final likely reach of delivery within Project Gigabit intervention areas, we risk creating a 'shortfall' of premises. These are premises that would be within the scope of an upgrade from a Project Gigabit procurement but would be unlikely to receive one if another provider has delivered a sub-gigabit solution that is initially acceptable to the consumer (limiting both uptake and justifiable gap funding).

2.63 Delivering temporarily acceptable sub-gigabit solutions to consumers risks reducing the economies of scale for Project Gigabit, deploying less future-proof infrastructure and failing to maximise the outcome for consumers and businesses. We therefore want to ensure that interventions take place through a phased sequencing that can build upon the evidence of which premises are very hard to reach based on at least the initial Project Gigabit procurement outcomes from all Gigabit Infrastructure Subsidy procurement types.

2.64 However, as we now have more information available to us than at the time of our Call for Evidence, we have been able to secure funding for an initial grant programme for some of these premises, which we describe further later in this document in **Chapter 3**.

How does very hard to reach premises policy interact with the broadband Universal Service Obligation?

Broadband USO policy considerations

2.65 The broadband Universal Service Obligation (USO) is the legal right to request a decent broadband connection. The minimum criteria are set at 10 Mbps download and 1 Mbps upload.

2.66 The policy has been designed to act as a 'digital safety net' for premises that would otherwise not be able to access a decent broadband connection through either a commercial or government-funded rollout. Providing the legal right to request enables households and businesses the ability to access a connection that allows them full participation in both society and the economy.

2.67 The broadband USO is a demand-led policy. This means that a connection is provided on request by premises rather than being implemented pre-emptively by the Universal Service Providers (USPs). It also ensures that premises are not left behind by either a commercial or government-funded build when they are deploying improved connectivity due to a lack of commercial viability.

2.68 The implementation of the broadband USO has also given rise to an increased deployment of alternative technologies such as Fixed Wireless Access which can meet

the service specifications set out by Ofcom. As of January 2023, approximately 220,000 premises can receive a 'decent broadband' connection via a Fixed Wireless Access connection only.

2.69 Furthermore the Communications Act 2003 provides the funding mechanisms through which the Universal Service Providers are able to claim back any costs of delivery that amount to an 'undue economic burden'. No claim has been made against this fund to date, but these costs could potentially be claimed through the Universal Service Fund, which is administered by Ofcom and contributed to by the telecommunications market.

2.70 As of May 2023, Ofcom estimates[21] that there are approximately 62,000 premises which are unable to receive a 'decent broadband connection' via either a fixed or fixed wireless access service. A further 12,000 are due to receive a government-funded connection within 12 months and are therefore not eligible for the broadband USO.

2.71 Whilst there is potential overlap between premises classified as eligible for the broadband USO (c.50,000) and premises potentially classified as very hard to reach premises (c.100,000) we do not expect them to be identical class of premises.

2.72 This is largely because a significant proportion of the premises still eligible for a broadband USO connection are below the Reasonable Cost Threshold of £3,400 (excluding VAT) per premises. Therefore, these premises are likely to either be commercially viable or funded as part of a government-funded procurement in the future.

2.73 Based on our current understanding of very hard to reach premises, a large number of the 100,000 may not currently be eligible for the broadband USO as they can access the required service specification via a Fixed Wireless Access connection.

Policy Differences

2.74 We believe that the broadband USO and very hard to reach premises require different policy approaches to guarantee that everyone has access to the right tools to improve their connectivity.

2.75 The broadband USO provides a policy tool that ensures that all infrastructure providers are aware that if they fail to build to all premises in a particular area (regardless of where that premises is located geographically) then a USP may be required to build to the premises and potentially overbuild to other, non-USO premises, in the future. This is unless they are substantially uneconomic to deliver.

2.76 Furthermore, the right to request a connection is set out in legislation and requires that the USPs deliver that connection within 12 months for the majority of premises. This means that where these premises are commercially viable or are likely to be requested

[21] Connected Nations 2023, Summer Update 07 September 2023

as part of a USO build in the future, the USPs are encouraged to consider them within their build plans.

2.77 We have seen this specifically with both KCOM and BT as the 2 Universal Service Providers. In Hull, KCOM delivered near-ubiquitous full fibre broadband before March 2020 as they were aware of the incoming implementation of the USO. For BT, they increased the availability of their FWA offering to ensure more premises met the requisite service specifications.

2.78 By doing this, both BT and KCOM provided connections to premises that would otherwise have likely have been eligible for a USO connection, at no additional cost to the consumer.

2.79 We, therefore, believe that policy requirements for premises likely to be very hard to reach are substantially different than those set out in the broadband Universal Service Obligation. Specifically, this is because:

a. The broadband USO guarantees a minimum service specification rather than the best connectivity that can be justified for a particular premises.

b. The broadband USO requires delivery within a set period of time, delivered in a way that is most cost-effective to the industry in question.

c. The broadband USO is a demand-led programme set out in legislation enabling consumers to force build even when costs are high – if they are willing to pay the excess costs.

d. There is likely to remain a gap for consumers who cannot afford the additional costs as part of the broadband USO.

2.80 We remain committed to maintaining the broadband USO and are currently consulting on potential updates to reflect any changes that may need to be made. We are doing this at the same time as the consultation on very hard to reach premises to reflect the role that they both have to play in improving connectivity for premises in many remote and rural areas – while maintaining the differences in the premises base.

Consultation questions

Question 2.1

Do you agree with our reasoning for why we believe interventions are required for very hard to reach premises?

Question 2.2

Do you agree that very hard to reach premises are likely to require an alternative approach to premises able to receive a gigabit-capable connection?

Question 2.3

Do you agree with the government's position that very hard to reach premises should be delivered alongside Project Gigabit procurements?

Question 2.4

Do you agree that the broadband Universal Service Obligation should remain a ‘digital safety net’ (nationwide scope) while the very hard to reach policy focuses on delivering the ‘best available’ connection for a given premise (specific scope)?

Question 2.5

Do you foresee any specific issues with the government’s approach and rationale for delivering improved connectivity for Very Hard to Reach premises that are not addressed in this chapter?

All consultation questions are collated in Annex A.

3 Policy groupings, evaluation criteria and ongoing initiatives

Introduction

3.1 In this chapter, we first explain the broad policy groupings with which we propose to categorise any potential policy options.

3.2 In addition, we also outline the evaluation criteria we are proposing to assess and test the viability of individual policy options against.

3.3 We will also set out our view on timelines for the formulation of specific policy proposals following this consultation.

3.4 At this stage, we are not setting out costed policy options. Our engagement with the industry on technical solutions is ongoing, and we are awaiting both modelling results and cost benchmark information from the initial procurements under Project Gigabit and from supplier engagement that will be used to further quantify any delivery cost requirements.

3.5 As part of this consultation, we are also inviting respondents to comment on the proposed evaluation criteria.

Policy option groupings

3.6 To support the formulation of policy options to deliver an improved broadband connection for premises in very hard to reach locations, we have drawn up 3 broad policy groupings under which potential policy solutions can be categorised. They are:

- Changes to existing broadband improvement delivery programmes to address premises that would otherwise become very hard to reach premises;
- Market-driven and regulatory policies with no, or limited, fiscal implications or government intervention;
- Creating a new broadband improvement delivery programme(s) specifically targeted at very hard to reach premises.

Changes to existing broadband improvement delivery programmes to target very hard to reach premises:

- We expect policy options in this grouping to primarily require changes or amendments to existing publicly-funded broadband rollouts, such as Project Gigabit or the Gigabit Broadband Voucher Scheme (GBVS).

- Such changes could, for example, include alterations to the contracts, regulations or funding arrangements of publicly-funded procurement programmes to include a greater number of very hard to reach premises in an intervention area.
- Equally, potential policy options could make use of demand-led schemes – such as vouchers – to increase product values or ease existing regulations around technical specifications to allow the deployment of a greater number of solutions.
- However, we are mindful that such changes require a cautious approach, to ensure that they do not reduce delivery commitments or final infrastructure and consumer choice outcomes for the vast majority of premises in the UK that may require subsidy (to achieve Gigabit connectivity), but are not VHTR.

Market-driven and regulatory or legislative policies:

- It is expected that policy options in this grouping will primarily be implemented through market-led activity. This activity might be stimulated by regulatory or legislative changes from regulators or the UK Government, such as the sharing of information on the locations of VHTR premises to support commercial rollout to them. We do not anticipate the use of substantial amounts of public money to be required for the delivery and implementation of a potential policy in this grouping.

Creating a new broadband improvement delivery programme(s) specifically targeted at Very Hard to Reach premises:

- Policy options in this grouping are anticipated to primarily require a new delivery programme to support their implementation. Interventions in this area will have fiscal consequences and will therefore necessitate modelling of intervention areas and the development of robust individual business cases to justify any required public funding.
- A policy option may require a delivery programme predicated on those already in existence – such as Project Gigabit or the GBVS – or may mean that the government needs to create a new delivery model and mechanism.

3.7 The government fully recognises the varied nature of the challenge in improving the connectivity of very hard to reach premises and that, as a result, several complementary policy options may be required by the government and the market to sufficiently meet our objectives.

Proposed evaluation criteria

3.8 The government proposes a set of criteria which will frame our assessment of a potential policy option's viability to deliver an improved broadband connection to very hard to reach premises. These 10 criteria are outlined below with a brief description of what is being assessed, and the potential method of assessment.

Figure 8: Proposed evaluation criteria

1	Ability to deliver to very hard to reach premises
2	Coverage guarantee
3	Willingness to deliver
4	Capability to deliver
5	Cost-effectiveness
6	Time to implement
7	Legislative requirement
8	Significant concerns or risk
9	Potential unintended consequences
10	Level of oversight
11	Technology and supplier neutrality

3.9 **Criteria 1.** Ability to deliver to very hard to reach premises

- We propose to assess policies based upon how far they can address the problems posed by very hard to reach premises or a specific cluster of such premises within the service parameters we have established.

3.10 **Criteria 2.** Coverage guarantee

- We propose to assess policies based upon the extent to which they can provide certainty of their coverage/reach.

3.11 **Criteria 3**. Willingness to deliver

- We propose to assess policies based on our anticipated willingness for the relevant delivery partner or body to implement the policy. Who the relevant delivery partner(s) is will depend on the policy option and could be one or a mixture of bodies (such as DSIT, Ofcom or suppliers in the market).

3.12 **Criteria 4**. Capability to deliver

- We propose to assess policies based upon the capability of the relevant delivery partner(s) to deliver the policy to our service parameters. As with willingness to deliver, who the relevant partner(s) will be will vary according to the policy option.

3.13 **Criteria 5.** Cost-effectiveness

- We propose to assess policies based on our assessment of whether a policy is likely to offer a cost-effective solution for very hard to reach premises. This will be a judgement based on the cost of delivery versus the benefits offered by improved broadband service and the timing and duration of that improvement

3.14 **Criteria 6.** Time to implement

- We propose to assess policies based on the length of time we anticipate it will take to implement a policy from its point of conception to its delivery. We will also consider the impact that this anticipated timeframe could have on Very Hard to Reach premises (i.e. time waiting for a solution to become available).

3.15 **Criteria 7.** Legislative requirement

- We propose to assess policies based upon whether primary or secondary legislation may be needed to secure its successful implementation, and where possible, any challenges that this might present.

3.16 **Criteria 8.** Significant concerns and risks

- We propose to assess policies based on whether the policy carries any specific risks or concerns that we might be able to identify. For example, some of our discussions to date have highlighted risks relating to emerging technologies with uncertain long term capabilities or costs.

3.17 **Criteria 9.** Potential unintended consequences

- We propose to consider policies based on whether we can foresee any unintended consequences or negative repercussions. For example, this may include impacting other delivery programmes through diversion of resources or the creation of 'overspill' coverage.

3.18 **Criteria 10.** Level of oversight

- We propose to assess policies based upon the level of oversight that is maintained by DSIT both during and after its implementation. While ensuring that we have sufficient scope to guide implementation, we recognise that the implementation of some policies may be better placed under the control of other bodies (such as Ofcom or consumer groups, for example).

3.19 **Criteria 11.** Technology and supplier neutrality

- We propose to assess policy options based on the extent to which they align with our principle of technology and supplier neutrality. Our priority is to focus on the best mechanism to deliver a solution to very hard to reach premises and we recognise there are a number of routes to achieve this.

Anticipated policy implementation timeframe

3.20 This consultation will last for 8 weeks and close on 27th November 2023. Once responses have been received we will endeavour to release our response within 8 weeks.

3.21 Based on the responses received the government will then introduce its final policy proposals for the remaining VHTR premises and set out how it intends to implement them.

3.22 BDUK (and/or the Devolved Administrations where relevant) are expected to soon complete the remaining Public Reviews (PRs) necessary to understand where Project Gigabit interventions will be required. Early stage procurements allow us to model the reach of Project Gigabit based on actual market build, which looks promising today, and understand the implications for other areas still undergoing PRs prior to procurement launched in those areas.

3.23 Nevertheless, we do not anticipate needing to conclude the award of Project Gigabit procurements prior to implementing VHTR policy or launching new programmes, further details of which are described below.

Potential VHTR policy implementation

3.24 While the government is not consulting on specific policy proposals, implementation or eligibility criteria for future programmes beyond what has already been announced at this point, we believe it is likely to be of interest and benefit to all stakeholders to present more detail on proposals that we believe may help to tackle very hard to reach premises in the future, as well as providing additional detail on the programmes we have already announced.

3.25 Furthermore, these are not the final solutions and may therefore not be viable once they are considered further based on the outcome of the initial programmes. Instead these proposals are intended to provide additional information as to the variety of solutions that we are considering which could help to address VHTR premises in the future.

VHTR Alpha Trial Programme

3.26 In December 2022, DSIT launched its first 4 VHTR Alpha Trials as part of the Very Hard to Reach Pilot Programme. The Trials will connect between 12 to 15 sites with Low Earth Orbit (LEO) satellite broadband using a mixture of Starlink and OneWeb constellations depending on the nature of the site.

3.27 The sites, which are primarily operated by either Arms Length Bodies (ALBs) or stakeholders with an existing relationship with DSIT, have been chosen based on their remote nature, and the extent to which we could maximise our learning from the trials.

3.28 As of publication, the government has announced a total of 7 sites, including England, Scotland and Wales. The government is working to deploy further sites, including Northern Ireland. The current sites are:

- Wasdale Head, Lake District National Park.
- Rievaulx Abbey, located in North Yorkshire National Park.
- Grimes Graves, located in Thetford Forest, Norfolk.

- Two separate sites in Eryri (Snowdonia) National Park: Ogwen Valley Mountain Rescue Organisation, and Ty Cornel, an outdoor activity centre in Crafnant Valley managed by Scouts Cymru.
- Papa Stour, one of the smallest of the Shetland Islands, and situated above the 60th parallel north circle of latitude.
- Lundy Island, located 18km off the coast of North Devon.

3.29 The trials are testing the viability and capability of LEO satellites as a potential alternative solution to delivering improvements in broadband connectivity for some very hard to reach premises. In addition, we will also test the mechanisms for supplying these connectivity solutions to consumers and integrating them with existing hardware.

3.30 While the department is aware of the current speeds which these systems have produced during beta phases of their respective rollouts, we want to ensure that these technologies can deliver the required performance in the most rural and remote parts of the UK where the potential for varied (and extreme) weather conditions is high, and power supplies can be affected.

3.31 Many of these technologies have only recently begun to fully operate, or are still in development. Furthermore, the number of ground stations available to each provider and the amount of spectrum is constantly evolving.[22]

3.32 The Alpha Trials will be based on the government's proposals for VHTR interventions that have been laid out in **Chapter 4**. We therefore expect that all of the proposed sites will be able to technically access a connection with at least 100 Mbps download speed with other quality parameters in line with those discussed. However, the actual speed of service delivery may also be limited by commercial terms and packages.

3.33 While we do not foresee any issues with the technology that is being deployed, given the nature of the programme some premises may experience some speeds below this as we work to understand more about what the technology is capable of.

3.34 These trials are also testing the ability of suppliers to transport, install and commission this equipment in genuine VHTR locations, as well as the ability for stakeholders at some of the smaller sites to self-install.

3.35 Further details of the ongoing Alpha Trials can be found on the relevant pages of the GOV.UK website.

Increased transparency measures

3.36 As it stands, commercial broadband providers are not presently able to ascertain which premises are likely to be classified as very hard to reach unless they themselves have

[22] Ofcom Statement: Starlink Internet Services Limited – applications for six non-geostationary orbit earth station (gateway) licences, 10 November 2022

either considered, and then descoped them, as part of their commercial build or considered them as part of a government funded rollout.

3.37 Alternative providers who may be able to connect these premises within their investment case limits, either because they are using an alternative sub-gigabit technology or have already deployed infrastructure in an area, may be unaware that these premises remain unconnected to an improved broadband network and are unviable for other providers.

3.38 We therefore believe it is worth looking at the benefits of providing providers with a list of premises, or postcodes containing high concentrations of premises that we believe are likely to be classified as very hard to reach to see whether they may actually be commercially viable for them.

3.39 While it remains unlikely that any provider would be able to supply a gigabit-capable connection, alternative network providers, such as those providing Fixed Wireless Access services, may be able to deliver other connectivity within their value for money cost thresholds.

3.40 Additional consideration will also need to be given on the method for sharing this data and its method of collection to ensure it accurately reflects very hard to reach premises and does not infringe on other providers' commercial build, reveal commercially sensitive data, or infringe on any government funded rollouts that are taking place.

3.41 One possible solution would be to wait until Project Gigabit procurements have concluded and contracts awarded in an area, before releasing a list of premises that do not have a solution attached to them. This would mean that neither government funded, nor commercial rollouts, had indicated they are able to complete a gigabit-capable build to the premise. However, this would delay the release of VHTR interventions to premises most likely to require them, and as such we would prefer to act more quickly to increase transparency.

Adjustment of Existing UK Government Contracts or Schemes

3.42 Project Gigabit procurements are currently being run by BDUK to ensure the effective deployment of gigabit-capable networks as part of the government’s £5 billion commitment to delivering gigabit-capable networks to 85% of the UK by 2025 through Project Gigabit, and nationwide as soon as possible after that.

3.43 As previously discussed in this document, very hard to reach premises are described as those premises which are unlikely to receive a gigabit-capable connection via either a commercial or government funded intervention.

3.44 As part of the procurement process, each of the local or regional supplier procurement areas is given an indicative contract value (subject to change) which represents the cost of delivering to the estimated number of premises in the procurement area.

3.45 Therefore, subject to the necessary cost-benefit analysis, adjustment to existing UK Government schemes could include variations to, or top up of these contracts to deliver gigabit-capable connectivity to otherwise 'very hard to reach' premises. This would have the effect of reducing the VHTR cohort.

3.46 Similarly, BDUK's current Gigabit Broadband Voucher Scheme, could be amended to further encourage the use of alternative connectivity solutions to ensure that premises within very hard to reach areas are able to access improved connectivity. However, such changes may require changes to funding agreements, and may not meet all of our policy objectives to ensure improved broadband is delivered to VHTR premises.

Initial Satellite Interventions - Grant Scheme

3.47 While we expect a range of technology solutions to be able to be deployed to improve connectivity for very hard to reach premises, it is likely that for a significant proportion a satellite solution may be the best, or only way, to deliver this.

3.48 The commercial launch of Low Earth Orbit satellites by OneWeb and SpaceX have enabled premises to access significantly faster speeds than was previously possible through Geostationary satellite systems with much lower latency allowing a smoother experience online. It is already clear from the launch of SpaceX's Starlink platform[23] that there is demand from households and businesses in both rural and urban areas to take advantage of the benefits that these systems can offer, especially where they can deliver faster and more reliable speeds to consumers. This is despite these systems often having an upfront cost as well as monthly service fees which are typically higher than both fixed-line and fixed wireless access services.

3.49 However, the services popularity could limit the effectiveness of such solutions for very hard to reach premises in the long term due to the limited capacity that these systems can offer (unless further constellations are deployed). Even with an increase in the number of commercial providers and distributors offering LEO satellite solutions, the capacity to deliver broadband services to a large number of premises in a concentrated area without diminishing the service quality is limited.

3.50 Therefore, consideration may need to be given to how we ensure there is adequate capacity on these systems, networks and/or constellations to ensure delivery to VHTR customers who are most in need.

3.51 In April 2023, we announced[24] that we will commit £8 million to delivering high-speed broadband for up to 35,000 of the UK's most remote properties. These are likely to be premises from within the cohort described in this consultation and are typically the most remote or isolated in nature, and not covered by existing ultrafast networks.

[23] Starlink hits 1.5m customers, Accessed 30 June 2023
[24] VHTR Initial Satellite Grant Fund announcement, 11 April 2023

3.52 It should be noted that while we currently anticipate that up to 35,000 of the most remote premises will be eligible for the scheme, it will not cover all very hard to reach premises. Some premises will require further solutions, such as fixed wireless access, which are discussed below.

3.53 Furthermore, the cost of low earth orbit satellite services is relatively high and therefore may also be a barrier for some premises at this stage of market maturity. However, the difference between terrestrial and satellite service costs has narrowed substantially in the last 2 years, as terrestrial providers raised prices above the current elevated rate of inflation.

Rural Connectivity Accelerator

3.54 In June 2023, alongside the publication of the 'Unleashing Rural Opportunity' policy paper[25], we announced a new £7 million trial fund which will, in part, support the deployment of a small number of hybrid network trials combining satellite and fixed wireless services.

3.55 The expected focus of these deployments will be to communications supporting agri-tech productivity, hill-farming safety, and remote rural tourism applications.

3.56 This fund will also support project research demonstrating and assessing suitability of and potential commercial models for the deployment of 5G and other wireless technologies in rural areas, in particular agri-tech applications.

3.57 This scheme is now in the stakeholder alignment and approval phase, and further details will be provided to potential participant organisations in due course.

Further VHTR Solutions

3.58 Finally, alongside the initiatives and solutions noted above, the government is also considering other policy solutions which could deliver better connectivity to very hard to reach premises. These are focused on areas of VHTR premises that we believe are in concentrations great enough to potentially support terrestrial delivery.

3.59 Most clusters in those areas may be within range of terrestrial backhaul solutions, which means that hybrid (satellite-wireless) networks will not be required in all cases to ensure their prompt delivery.

3.60 It remains uncertain whether these areas will be delivered commercially without recourse to government intervention, given recent market developments including further deployment of ultrafast FWA by independent providers, and the proposed

[25] Unleashing Rural Opportunity, Policy Paper, 11 June 2023

expansion of 5G FWA services by Vodafone and Three as part of their proposed merger[26].

Discussion

3.61 This chapter has outlined our framework for categorising and testing the potential viability of any policy solutions we may introduce.

3.62 Cumulatively, these criteria were chosen as a fair and robust means of objectively evaluating potential policy options against the government's objective of delivering improved connectivity to very hard to reach premises across the UK.

3.63 They have been formulated to ensure that the potential efficacy of any intervention for very hard to reach premises is not simply assessed in isolation, but in the broader context of a market which is increasingly busy with commercial and public activity.

3.64 The criteria also enable the government to measure how a policy intervention might impact the broad number of stakeholders and supplier ecosystems on which improvements to the connectivity of very hard to reach premises will depend.

3.65 No single criterion listed above will take precedence over another and no single criterion will rule out a potential policy option in the first phase of its assessment.

3.66 Through this consultation, we are therefore inviting comments from stakeholders on their views on whether our evaluation criteria as outlined above are sufficient and provide an objective basis to frame the assessment of potential policy options.

Consultation questions

Question 3.1

Do you agree with the policy evaluation criteria as set out in paragraphs 3.9 to 3.19 of **Chapter 3**?

If not:

Question 3.1(a)

What amendments or alternatives would you suggest to the evaluation criteria as set out in paragraphs 3.9 to 3.19?

All consultation questions are collated in Annex A

[26] https://www.vodafone.com/news/corporate-and-financial/merger-vodafone-uk-three-uk-europe-leading-5g-networks

4 Service parameters

Introduction

4.1 Currently, broadband users in remote rural areas receive broadband services which are typically slower and less reliable than their urban counterparts. [27]

4.2 This is the result of factors, such as the greater reliance on older copper-based fixed network infrastructure with lines extended over long distances as well as being more exposed to inclement weather.

4.3 The Call for Evidence on Improving Broadband for Very Hard to Reach Premises released in 2021 collected evidence on households' internet usage, their current and desired broadband connection speeds, reliability, resilience and price. The results indicated that, for some customers, their current broadband service precluded full participation in the digital economy and society and was a barrier to accessing the range of internet-based services they wished to.

4.4 Subsequent analysis conducted on the feedback has provided the basis of service parameters for the overall quality of their broadband service that we think a potential future policy intervention for very hard to reach premises should deliver.

4.5 Survey responses from businesses and households as part of the call for evidence also made it clear that satisfaction with broadband services in rural areas was below those in urban areas.

4.6 In this chapter, we present the relevant analysis from the call for evidence before outlining how it has framed our approach to establishing service parameters for any intervention.

4.7 The government's priority is to deliver an improvement to the broadband service to very hard to reach premises. We reiterate that our focus is on delivering this improvement using the best available mechanism, and we, therefore, recognise there may be a number of policy and technology options to achieve this.

4.8 We are also conscious that to ensure that consumers in very hard to reach areas have a tangible improvement to their broadband connections several technical and service features will need to be addressed. Whilst broadband services are often characterised in both policy discussions and industry marketing based upon speeds, other parameters affect service adoption by users, and their subsequent user experience.

[27] On the difference of speeds between rural and urban consumers, see: Ofcom Connected Nations 2022. Ofcom's UK Home Broadband Report, October 2022, also shows that peak download speeds in rural areas are on average one-third lower than in urban areas. Evidence on lower levels of reliability in rural areas came from analysis of the call for evidence's survey, but is also derived from Ofcom broadband performance data.

4.9 As such, we have defined 6 individual service parameters which we believe reflect a range of components integral to delivering an improvement in the broadband service of very hard to reach premises. These are outlined in the table below (**Figure 9**).

Figure 9: Potential individual service parameters

Parameter		**Typical measure**
Parameter 1	Speed of service	Bits per second (upload/download)
Parameter 2	Reliability and resilience of service	Uptime
Parameter 3	Latency of service	Milliseconds
Parameter 4	Contention ratio of service	Ratio
Parameter 5	Service data caps	Gigabyte per period
Parameter 6	Price and affordability	£ per period (or Megabyte/Gigabyte)

4.10 We have not, at this stage, made a final decision on the extent to which the government might mandate, provide guidance, or leave open to implementing bodies or suppliers the specifics of these parameters. This will depend on the policy options selected and the legislative and/or implementation route used to affect the options.

4.11 We invite comments on these parameters, their viability to implement, the benefit and extent to which they will address the needs of consumers in very hard to reach areas, and whether any alternative parameters should be considered.

Parameter 1. Speed of Service

The current position

4.12 The call for evidence makes it clear that, currently, broadband users who are located in very hard to reach areas are typically receiving broadband services that are both slower than they expect and that they believe they require.

4.13 The call for evidence showed that the majority of respondents who lived in remote areas received broadband download speeds below 10 Mbps.[28] Around a third of rural respondents received download speeds below 10 Mbps.

[28] Based on the self-declared maximum speed of a respondent's service, as advertised by their supplier.

4.14 Data collected from the call for evidence's consumer survey of households indicated that the median speed for rural households was only marginally above the definition of 'decent'. This may also have been overstated, given that some responding households whilst rural were not as 'remote' as we anticipate a very hard to reach premises to be.

4.15 Evidence provided by the Independent Networks Cooperative Association (INCA) suggested that 16% of rural premises had a broadband download speed under 10 Mbps, with a further 15% stating they had an '*immediate need to improve broadband to meet current expectations*', and 50% requiring a network upgrade by 2025 '*to keep up with changing requirements*' – although they did not specify what this meant.

4.16 The latest data from Ofcom's Connected Nation 2022 Report (**Figure 10**) demonstrates the disparity in the coverage of superfast, ultrafast and full fixed-line broadband between rural (marked as solid line) and urban (marked as dotted line) commercial and residential premises.

4.17 As of September 2022, 7% of rural premises were unable to access a decent broadband connection from a fixed-line only. This is compared to just 1% of urban premises. Whilst the percentage of urban premises unable to access a decent connection has not changed from its low starting point, the number of rural premises below 10 Mbps has reduced by nearly 92,000 since September 2020 (where 12% of rural premises in the UK were unable to receive a decent connection). Furthermore, it should be noted that this figure does not account for the availability of wireless alternatives.

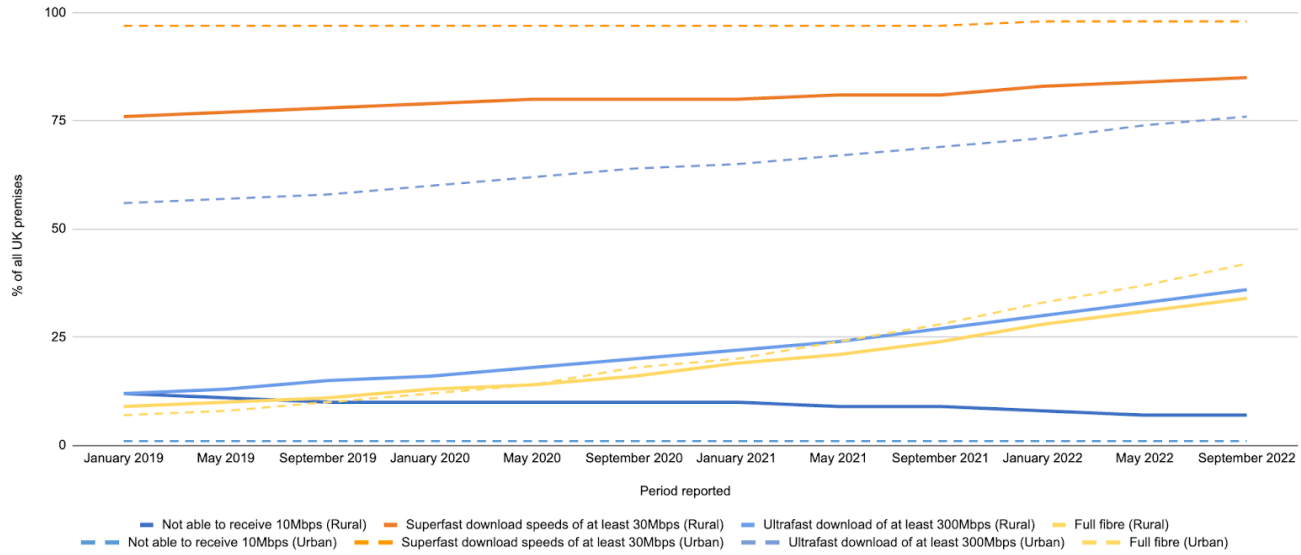
4.18 After accounting for any wireless solutions, Ofcom estimates that 50,000 premises in the UK remain potentially USO eligible (less than 0.2% of the UK). This figure accounts for Ofcom's estimate that an additional 12,000 premises currently receiving a connection below 10 Mbps download and 1 Mbps upload are expected to be connected by a publicly funded rollout in the next 12 months.[29]

4.19 **Figure 10** also displays that the number of rural premises able to receive a superfast connection has grown at a relatively slow rate when compared to the growth in Ultrafast and full fibre coverage over the same period.

4.20 This is most likely to be as a result of the increase in commercial delivery over this time period – with an emphasis on areas that are commercially viable rather than those which are harder to reach. There has also been a gap between the government's Superfast programme (bar a few delivery programmes which remain live) winding down and the launch of Project Gigabit procurements aimed at delivering gigabit-capable broadband to hard to reach premises.

[29] Ofcom, Connected Nations 2022, 15 December 2022

Figure 10: Ofcom reported rural versus urban fixed-line broadband coverage in the UK as of September 2022[30]

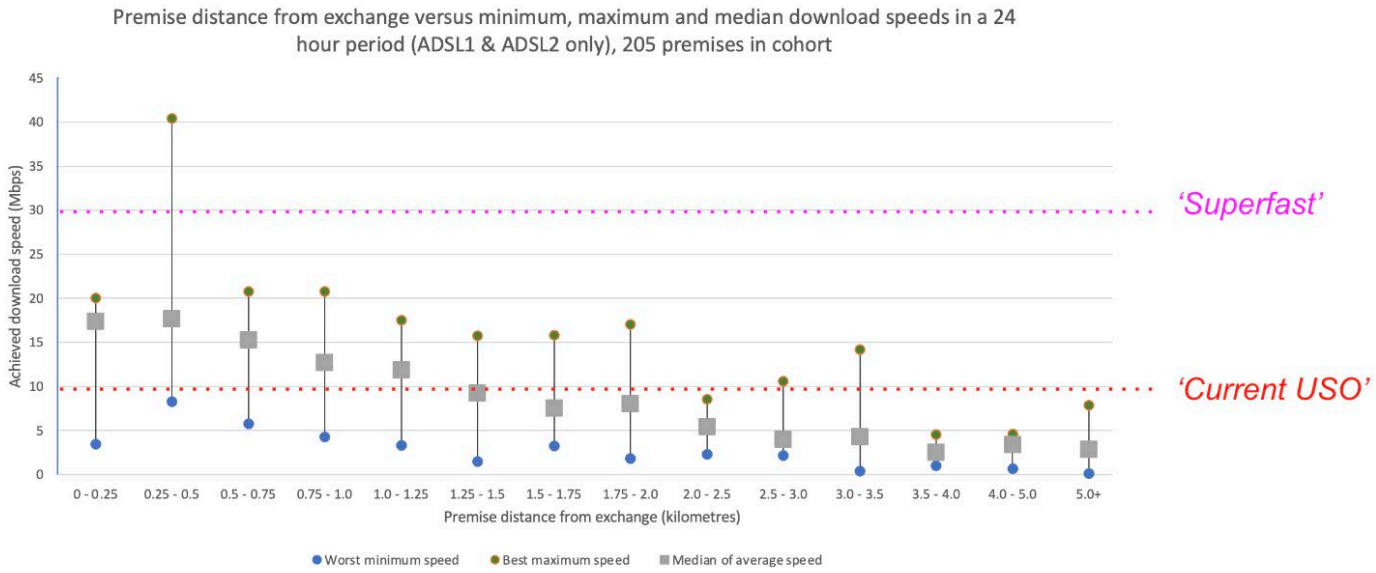


4.21 Ofcom Connected Nations 2021 also showed similar speed discrepancies between urban and rural small and medium-sized enterprises (SMEs) across the UK. The data showed that rural SMEs were nearly 5 times less likely to receive a decent broadband connection from a fixed-line than a business located in an urban area.[31]

4.22 In line with our view that distance and geography are important determinants of the extent to which a premises is very hard to reach and typically served by underperforming legacy technologies, we reviewed available data on the real world performance of legacy wired broadband connections (ADSL) against distance from the parent exchange. Whilst this data set is neither perfect nor normalised, as it is drawn from a larger monitoring study created for other purposes, it clearly illustrates that ungraded copper-based lines above 1 km from an exchange using this technology are most likely to lack decent service.

[30] Information from Connected Nations 2022 Interactive report. Includes residential and commercial premises.
[31] Connected Nations Report 2021, December 2021. The report shows that an average of 2.6% urban SMEs (businesses with between one and 249 employees were unable to receive a decent connection above 10 Mbps, compared to an average of 13% of rural businesses.

Figure 11: Premises distance from exchange versus minimum, maximum and median download speeds in a 24-hour period (ADSL1 and ADSL2 only), 205 premises in sample[32]



4.23 A survey by the Federation of Small Businesses (FSB) from 2019 showed that 17.8% of what they referred to as 'deep rural' businesses had a connection below 10 Mbps, with 69.2% of these 'deep rural' businesses benefiting from speeds more than 30 Mbps. We also heard from the FSB that 39% of small businesses '*still consider their broadband speeds insufficient for their needs*'.

4.24 Overall, based on evidence received from the call for evidence, the government found that 56% of customers were dissatisfied with their service, compared to only 18% satisfied and 25% neutral.

4.25 Evidence submitted to the call for evidence from the consumer group Which? pointed to research undertaken by the think tank Demos which similarly showed that rural customers in Great Britain were more likely to consider their broadband service to be 'bad' or 'very bad' compared to those in other ruralities.[33]

4.26 However, it should be noted that, in contrast with our satisfaction results, Ofcom's satisfaction tracker estimated that 80% of customers were satisfied with their broadband service, with 79% satisfied with the speed of their service.[34]

4.27 In keeping with the overall trend in consumer satisfaction, we also found that, amongst respondents, rural and remote customers tend to be less satisfied than urban or suburban consumers with the speed of their service specifically. Overall, we found that 56% of customers were dissatisfied with their service speed, compared to only 18% satisfied and 25% neutral.

[32] Information collected from Ofcom Home Broadband Performance March 2021
[33] Report cited by Which?: Demos, Everyday Places: Creating Strong Locations to Support Daily Life in Britain, April 2021
[34] Ofcom Customer Satisfaction Tracker 2021, 7 May 2021

4.28 A report published by rural infrastructure and internet services provider Gigaclear, in conjunction with the Countryside Alliance following a survey of rural businesses[35] found that 85% of respondents reported their internet as being either poor but manageable (47%) or unmanageably poor (38%). Approximately 46% of businesses reported that if their internet connection never improved they would '*struggle to keep up with the competition*' and around one-in-ten (8%) estimated that it would lead to the closure of their business altogether.

4.29 Responses to the call for evidence made it clear that, for many consumers in rural and remote areas, there was strong demand for better connectivity. In particular, it was noted that demand for a faster and more reliable broadband service was strong amongst consumers with the slowest connectivity.

4.30 The department has also received a lot of correspondence from households and businesses who express concerns over the speed of their connection and outline its inadequacy for their needs. It is evident from this correspondence that many individuals, businesses, and communities are actively engaging with solutions to improve their internet speeds.

4.31 Despite similar service requirements, rural and remote broadband users reported using such services with less frequency and intensity, possibly as a result of poorer speeds.

4.32 Some businesses reported needing to travel to alternative locations to access certain online platforms (such as government websites) or download documents. This point was also highlighted with anecdotal evidence from The Farmers' Union of Wales (FUW), who said that it was not '*uncommon for FUW members to have to walk or drive to a certain hot spot in order to obtain phone signal and/ or internet coverage*'. DEFRA have affirmed similar examples in their stakeholder management discussions, and correspondents have noted the need to retain agents 'in town'.

4.33 The Countryside Alliance noted similar frustrations from rural customers in its evidence to the department. They also highlighted research that they had collected from their members which showed that '*70% of respondents were concerned that slow speeds are a barrier to growth, [and] the lack of connectivity was leading to increased isolation and social exclusion*'.

4.34 The Communications Consumer Panel (CCP) noted feedback it had received from deaf and blind consumers in rural areas that poor internet speeds prevented them from utilising the real-time text relay and speech-to-text services which form an important part of their participation in both professional and personal virtual activities.

4.35 Most representative organisations, local authorities and consumer groups similarly expressed the overarching concern that the slow speeds many rural business and

[35] Gigaclear and the Countryside Alliance Rural Business Report 2021, July 2021

residential consumers are receiving preclude full access to society, particularly as many services are increasingly moving online.

4.36 Accessing government reporting and payments services (particularly for agricultural businesses), local authority-provided services, virtual GP appointments and virtual higher education classes are some of the examples provided to illustrate the point that poor broadband speeds are increasingly leading to a risk of exclusion from full participation in society and the digital economy.

Evidence on necessary speed parameters

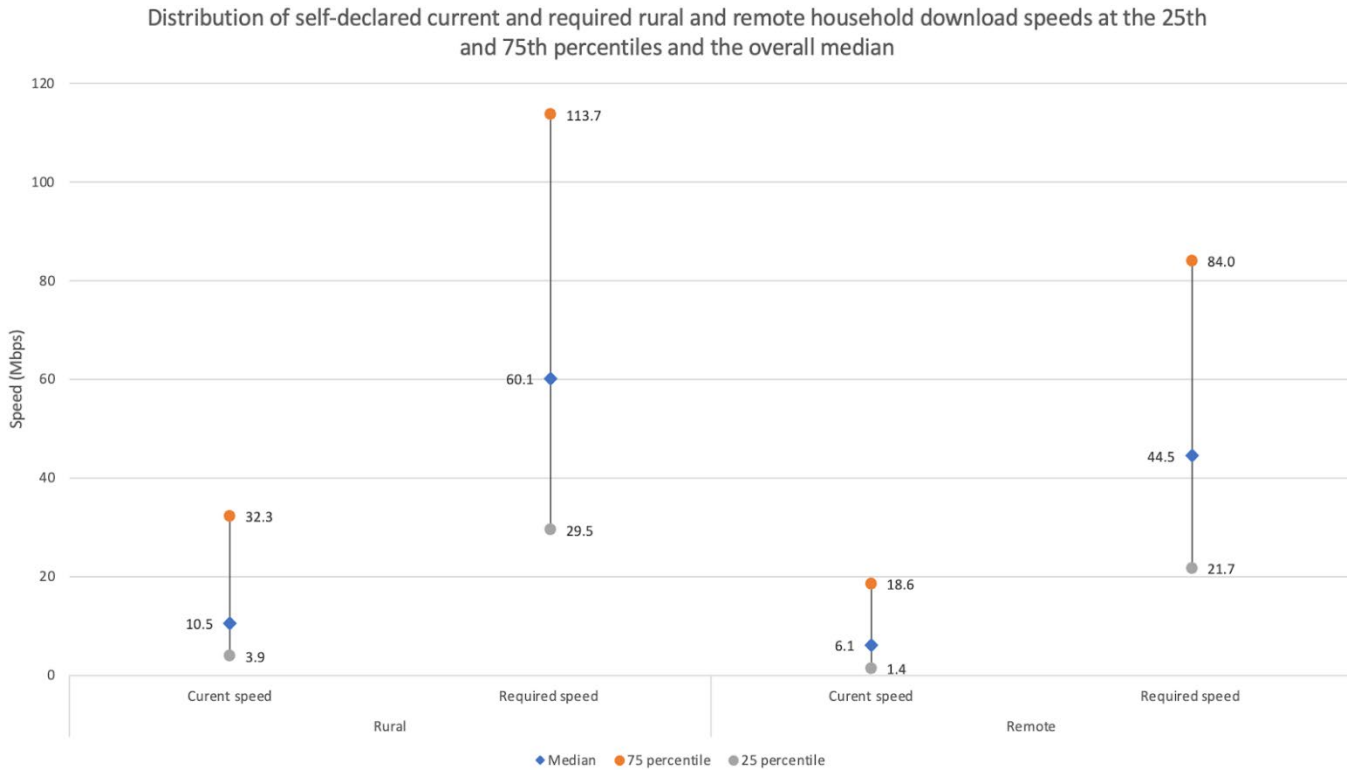
4.37 As outlined above, the call for evidence highlighted that many households and businesses in rural and remote areas are currently receiving broadband speeds that are below the speeds they believe are required to undertake their daily activities.

4.38 Across all ruralities, household respondents most commonly reported requiring speeds between 25 Mbps and 100 Mbps. Rural and remote households specifically stated that they required median speeds of 60.1 Mbps and 44.5 Mbps respectively.[36] This is against current median self-reported speeds of 10.5 Mbps for rural households and just 6.1 Mbps for remote households.

4.39 **Figure 12** below shows the distribution of households' self-declared current speeds alongside their self-declared required speeds at the 25th and 75th percentiles, alongside the median of all responses.

[36] Following further analysis of the data on median speeds required by households, we have updated the figures that were previously reported in the Improving Broadband for Very Hard to Reach Premises Government Response to more accurately represent the information reported by respondents.

Figure 12: Distribution of self-reported median current speeds versus median speeds required by households[37]



4.40 Our analysis showed that a considerable majority of households in rural and remote areas say that they currently require speeds less than 100 Mbps. Twenty-eight percent of rural households and 13% of remote households stated that their required speed would be greater than 100 Mbps, with only 2.5% of rural respondents saying they required 1 Gbps or more – with less than 0.5% of remote households concurring.

4.41 It was, however, unclear whether households in remote areas really required 'lower' speeds than those in rural areas, or if they just had somewhat lower future expectations based on substantially lower service speeds today.

4.42 Evidence from the National Association of Local Councils (NALC), which surveyed parish and town councils, reflected the estimated required speed range from the consumer survey stating that '*typically councils stated that their residents' needed speeds of between 40 Mbps and ultra-fast 100 Mbps*'.

4.43 Almost all households reported that better broadband would improve their ability to take advantage of internet-based services, benefitting their ability to work from home, keep in touch with family and friends, improve their wellbeing as well as their ability to find support and access online entertainment.

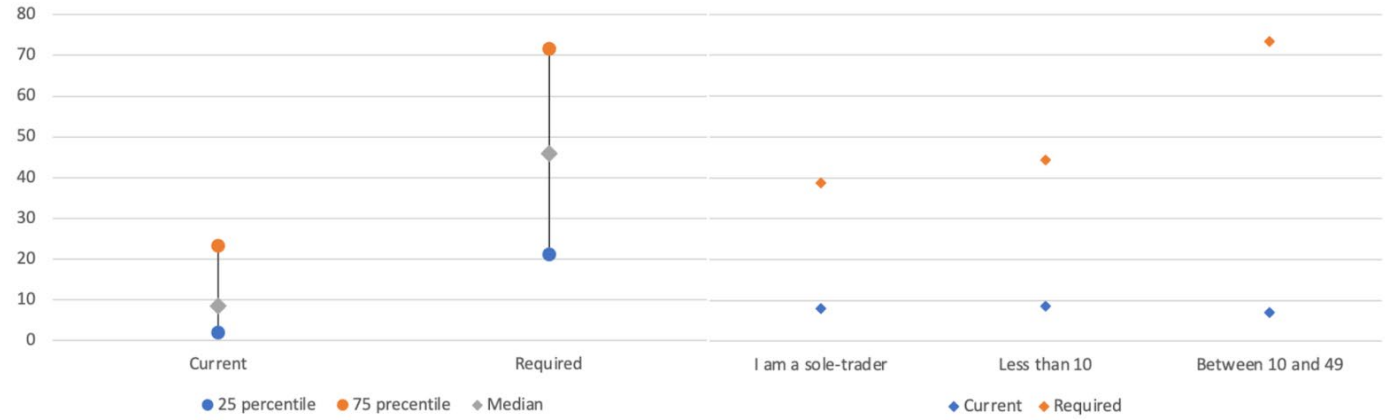
4.44 Analysis of business survey responses showed that the median required speeds reported were 49 Mbps. Our analysis also identified that rural and remote businesses reported a wide disparity between the speeds they state they need and are currently

[37] Using data received as part of the call for evidence on *Improving broadband for Very Hard to Reach Premises*

receiving. As expected, it was further noted that larger businesses typically reported requiring a faster speed compared to smaller SMEs, though the small sample size of the businesses with over 50 employees means that this is not displayed in **Figure 13** below.

4.45 It should be noted that our analysis of business speeds – and therefore any related graphic – does not separate businesses by rurality as we have done with households. This is because the sample size of urban and suburban business respondents overall was small, with rural and remote businesses accounting for 95% of all businesses sampled.

Figure 13: Distribution of self-reported median current speeds versus median speeds required by businesses (left) and current versus required speeds by business number of employees (right)[38],[39]



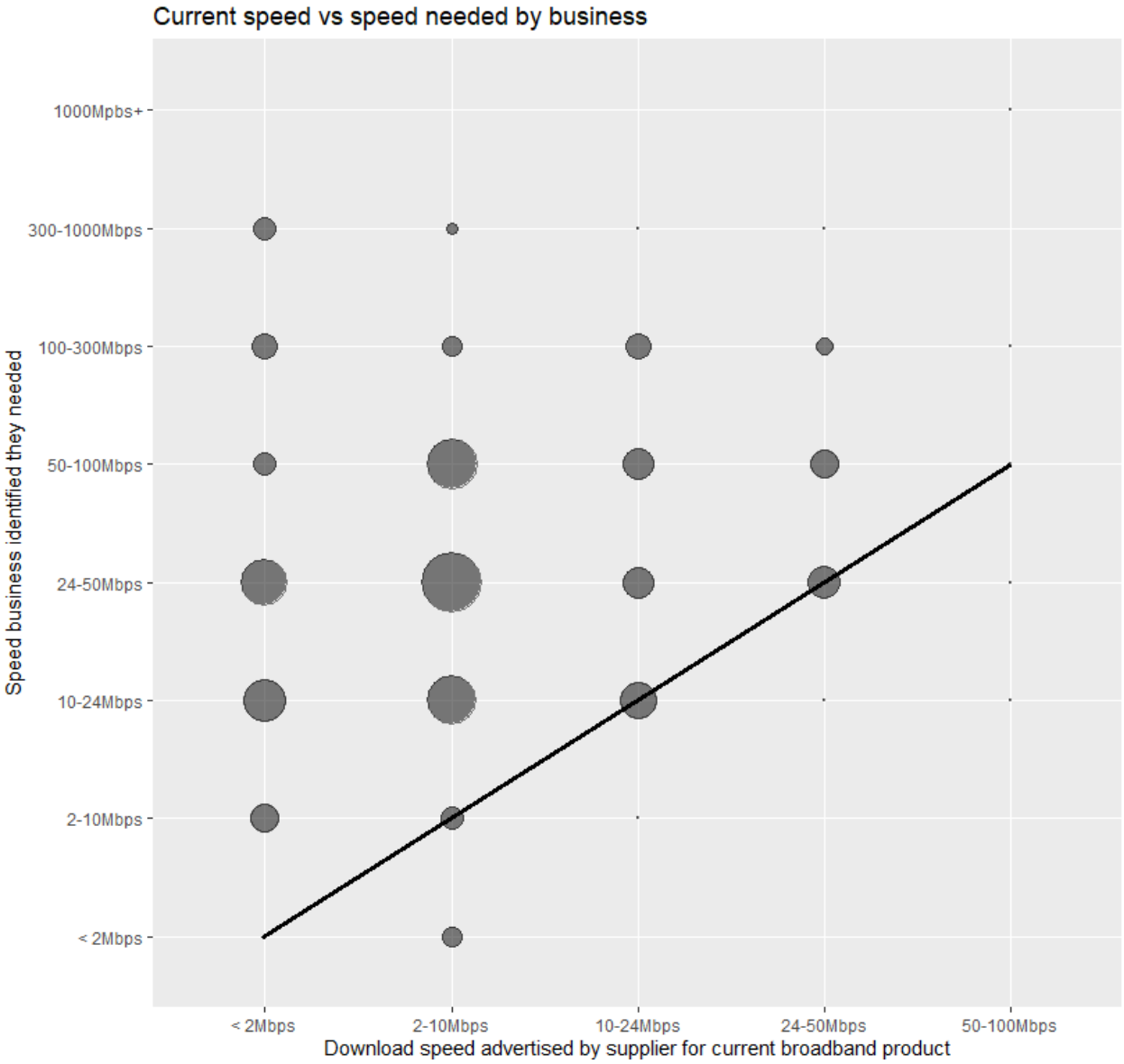
4.46 Overall, 73% of businesses stated a required speed below 100 Mbps, with 11% of this class stating that they needed speeds higher than 300 Mbps, and 4% indicating they needed speeds in excess of 1 Gbps.

4.47 **Figure 14** below illustrates the distribution of businesses which stated their required speeds against the download speed advertised by their supplier for their current broadband package. The size of each circle on an axis corresponds to the number of respondents who stated they required a speed in that category.[40]

4.48 **As Figure 14** shows, the vast majority of businesses responding to the call for evidence (82%) stated that the speed that they required was above the advertised speed of the service that they were receiving. It further shows that the majority of businesses stated that they did not require broadband speeds above 100 Mbps.

[38] For current vs required speeds by business number of employees (right), businesses with 50 and 249 employees and 249+ employees have been excluded due to their small sample size.
[39] Using data received as part of the call for evidence on Improving broadband for Very Hard to Reach Premises
[40] For context, the class size represented by the circle corresponding to businesses currently receiving 2-10 Mbps but requiring 24-50 Mbps is 25.

Figure 14: Distribution of businesses' stated required speeds by self-declared current speeds, amongst respondents to VHTR call for evidence[41]



4.49 Around half of the business respondents to the call for evidence identified their poor connectivity as a barrier to diversification, expanding their presence on e-commerce platforms and accessing new markets.

4.50 Further evidence provided by representative organisations such as the Countryside Alliance and the FSB, as well as Gigaclear demonstrated the central importance of digital connectivity to businesses. Eighty percent of business respondents to Gigaclear's report said that '*better internet access would have the single biggest positive impact on their business recovery post pandemic*'.[42]

[41] Using data received as part of the call for evidence on Improving broadband for Very Hard to Reach Premises
[42] Gigaclear and the Countryside Alliance Rural Business Report July 2021.

4.51 The feedback in the call for evidence, from both businesses and households, also indicated that a service which offered consumers a range of potential speeds would be desirable.

4.52 Quickline presented evidence that the exponential increase in data consumption over recent years was expected to continue, with the bandwidth requirement increasing by around 30% each year.

4.53 The call for evidence also heard from a range of market participants. These market respondents largely provided services to rural areas (either exclusively or as a broader part of their business model) and used a range of technologies, from fixed-line to mobile and FWA. There was also substantial variation in the size of participants, in terms of the number of customers, employees and revenue.

4.54 Quickline noted that many of its customers seemed content with the service they were receiving at 50 Mbps. However, they posited that 'basic broadband' speeds should be increased from 10 Mbps (the current speed under the broadband USO) to 60 Mbps.

4.55 Evidence received from market participants who provide FWA services also suggested a general consensus that very hard to reach premises would not need gigabit speeds to deliver a step-change improvement to their service, instead stating that speeds between 100 Mbps and 200 Mbps would likely meet consumer requirements.

4.56 The Broadband Stakeholder Group (BSG), in collaboration with Analysys Mason, tested the capability of a range of technology options to deliver 30 Mbps speeds from 2021 and then rising up to 300 Mbps through to 2027.[43]

4.57 In the report they stated that '*the rationale for choosing the download speeds [of 30 Mbps and 300 Mbps] is to provide sensible reference points to compare with the government aspiration of delivering gigabit-capable broadband and the minimum speed requirements under the Universal Service Obligation [which is currently 10 Mbps].*'

4.58 The BSG report also assessed potential technology choices against their current typically achievable download speeds and their future potential. Their analysis is shown in **Figure 15** below.

[43] The Broadband Stakeholder Group and Analysys Mason, Research on the Very Hard to Reach Premises: technical and commercial analysis, 12 August 2021

Figure 15: Current achievable and potential future broadband download speeds by technology – as indicated by the BSG.

Current achievable (2021) and potential future broadband download speeds by technology, according to BSG[44]		
Technology	**Typical current download speed (Mbps)**	**Potential future download speed (Mbps)**
FTTP	1,000	10,000
Macrocell FWA (4G and 5G)	50	500
LOS FWA	100	1,000
GEO satellites	100	200
LEO satellites	100	300
HAPS[45]	50	300

4.59 The technological analysis in the BSG report indicates that, typically, each of the assessed technology solutions would be capable of delivering markedly improved speeds for very hard to reach premises (assuming they were deployed in the most effective way).

4.60 It should be noted, however, that these were the views of one respondent group to the call for evidence, and some vendors/platform providers subsequently advised DSIT (formerly as DCMS) that this report may not reflect the current or expected future capabilities of their technologies.

4.61 Furthermore, the BSG indicated that each of the technology options would be capable of delivering a step-change increase of at least double their current achievable download speed (although all technologies other than GEO satellite were thought by the BSG to be capable of a far higher increase relative to the current achievable speed).

4.62 Actual experienced speeds on networks as measured by consumers are dependent on many factors including some limitations imposed by the choice (or affordability) of packages by consumers, and by internal network setup and WiFi coverage.

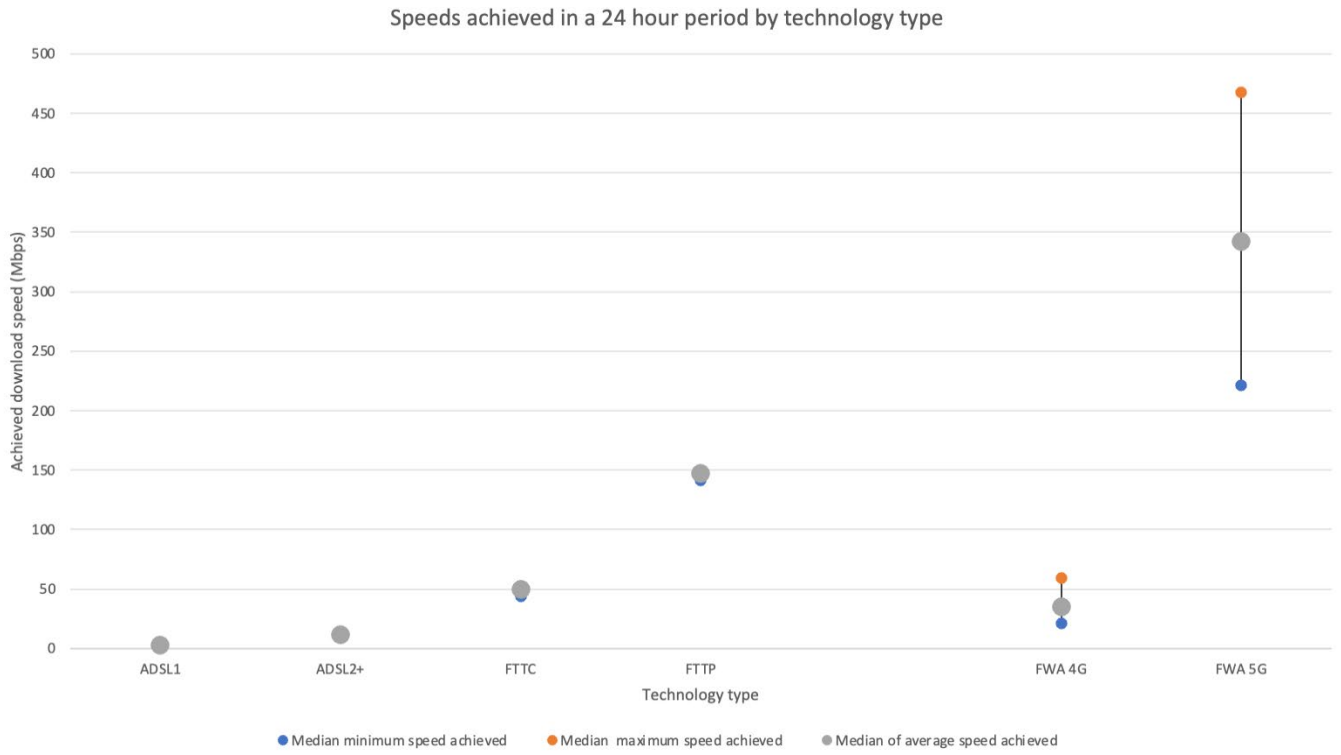
4.63 Nevertheless, the speeds measured by technology in Ofcom's 2021 home broadband performance report are presented below (**Figure 16**) for comparison purposes. These

[44] The Broadband Stakeholder Group and Analysys Mason, Research on the Very Hard to Reach Premises: technical and commercial analysis

[45] Not currently commercially available in the UK.

are not normalised for location/rurality, and in the case of some technologies, based on a small sample of test results.[46]

Figure 16: Household download speeds achieved in a 24-hour period by technology type[47]



4.64 **Figure 16** above shows the median minimum and maximum speeds achieved, and the median of the average speed achieved by a given technology type in a 24-hour period.

4.65 The data shows that median minimum and maximum speeds achieved for fixed-line technology types are clustered around the median of each technology type. Ofcom's data shows that sample households connected through an ADSL1 line typically received just 3 Mbps, well below the current definition of 'decent' broadband, with households using ADSL2+ only marginally above this threshold, at between 10 Mbps and 12 Mbps in a 24-hour period. Households whose connection was FTTC typically benefited from above superfast download speeds, ranging from between 44 Mbps to 50 Mbps in a 24-hour period. These are national results, based on the technology type, and rural performance is likely to be lower.

4.66 As expected, FTTP delivers the fastest speeds of all the fixed-line technologies, at between 141 Mbps and 148 Mbps. The lack of variation between the minimum and maximum achieved download speeds most likely indicates that FTTP customers are generally selecting products which more closely reflect their needs or price points rather than FTTP's current typical maximum of 1,000 Mbps.

[46] Ofcom UK Home Broadband Performance report 2021
[47] Information collected from Ofcom Home Broadband Performance report 2021

4.67 Fixed Wireless Access (FWA) 4G and 5G technologies showed a greater spread between the median maximum and minimum actual speeds in a 24-hour period, with a significant variation in performance between the two. Ofcom's data showed that a 4G connection delivered actual speeds between 21 Mbps and 59 Mbps in a 24-hour period. Whilst this places 4G FWA in the range of the BSG and Analysys Mason's modelling estimate for current download speed capability (50 Mbps), its median speed of 35 Mbps falls some way below this.

4.68 5G connections delivered much higher actual speeds, between 221 Mbps and 467 Mbps, in the same period. It should be noted that the class of 5G customers was small, reflecting the nascency of the technology availability at the point that Ofcom took this sample. Coverage has subsequently grown substantially. However, despite its small class size, Ofcom's data does demonstrate 5G's capacity to deliver near or greater than ultrafast download speeds, far in excess of the BSG's modelling estimate of current capability (also 50 Mbps).

4.69 The government has also considered international comparisons for proposed speed parameters. **Figure 17** below compares a selection of other nations' speed targets against the UK's current targets.

Figure 17: Comparison of international speed and coverage targets (as of 2022)

Comparison of international speed and coverage targets	
Country	**Minimum speed and coverage targets**
UK	(Universal Service Obligation) 10 Mbps download 1 Mbps upload 85% gigabit-capable by 2025 As close to 100% gigabit-capable coverage as possible by 2030
European Union (EU)/ European Community	30 Mbps 100% coverage by 2020 100% 100 Mbps coverage by 2025 (scalable to 1GB)
Ireland	100% coverage of 'high-speed' broadband by 2026
Spain	Same as the EU
Germany	100% gigabit-capable by 2025 The German Government states a preference for FTTP where possible which allows flexibility with the deployment of technology.
Norway	100 Mbps 90% coverage
Sweden	98% coverage 1 Gbps 1.9% coverage 100 Mbps 0.1% coverage 30 Mbps
Iceland	99.9% coverage 100 Mbps 0.1% coverage 30 Mbps

Canada	50 Mbps download 10 Mbps upload 100% coverage for both targets by 2030
Australia	100% coverage 25 Mbps

Proposed speed parameters

4.70 To deliver an improvement in the speeds received by customers, we are proposing to explore policy options based on a speed parameter which reflects the consumer responses we received to our *Call for Evidence on Improving Broadband for Very Hard to Reach Premises*. Potential policy options (and the possible technologies which could be deployed to implement these) will be assessed against these parameters to test their viability as a potential solution.

4.71 Responses from households, businesses, and other stakeholders, such as suppliers, stated that, whilst there was a need to improve the speeds available to rural premises, they did not anticipate these connections would need to be gigabit-capable. It was also argued that a range of technology options should be considered to deliver the improved broadband connection very hard to reach premises needed at pace.

4.72 First, we are proposing that any potential policy option should guarantee a minimum speed floor of 100 Mbps for consumers in very hard to reach locations, under normal operating conditions for the majority of the time.

4.73 Setting a speed threshold at this level will represent a considerable improvement for consumers in rural and remote areas where postcode averages of the remote and rural respondents' median speeds were approximately one-tenth of this.

4.74 We also believe that it fairly reflects self-reported feedback on required speeds from both consumers and businesses.

4.75 Furthermore, we saw from the call for evidence that there was a range of speeds reported as being required by both households and businesses. This minimum speed floor would potentially provide consumers with a choice of products that better reflected their speed requirement and price point.

4.76 In making this assessment we primarily looked at the median download speeds that businesses said they required. We took the median primarily because our analysis showed that businesses whose service already provides superfast speeds or above were much more likely to say that they required speeds in excess of 100 Mbps. Upload speeds have also been considered.

4.77 However, we remain conscious that most business respondents, largely drawn from rural areas, operated in sectors which had a low (or proportionately lower) digital or information technology (IT) intensity. We are also aware of the potential revenue and

productivity benefits to businesses when they are given greater flexibility with their digital connectivity.

4.78 As such, whilst we are at this time only proposing a single-tier speed for all consumers, we are asking respondents to provide their views on whether a different download speed for residential and business consumers should be considered.

4.79 We are also proposing that, alongside the minimum speed floor of 100 Mbps for download speeds, we establish a parallel parameter for a minimum upload to download speed ratio of 5:1. This will mean that, against a minimum speed floor of 100 Mbps download speed, we would seek a service level floor of 20 Mbps upload speed.

4.80 While most internet usage today still relies heavily on downloading content, we noted in the consultation for the broadband USO in 2018 that many welcomed a minimum upload speed requirement. Interest in upload performance has also increased as consumption patterns have changed during the pandemic.

4.81 The upload speed parameter was particularly welcomed by and on behalf of small businesses and we believe that setting this parameter at a ratio of 5:1 will enable both households and businesses to confidently undertake the activities they specified in the call for evidence, such as video conferencing, email, uploading files to cloud storage and sending them to others.

4.82 Many respondents noted that their requirements would increase over time. Therefore, in addition to a speed floor of 100 Mbps download and an upload speed ratio of 5:1, we are also consulting on whether the government should introduce an ‘escalator’ on our proposed speed parameters. An escalator would see broadband speeds increase at a given download to upload speed ratio over time, according to pre-defined terms established by the government.

4.83 Any escalator would ensure that premises continue to receive a broadband service in line with that received by other areas of the UK. We have outlined 3 possible proposals for such an escalator below and welcome feedback from both industry and consumers as to their preferred approach.

Option 1: A flat service speed floor of 100 Mbps download and 20 Mbps upload (with no higher requirement or escalator).

- This approach would not include an escalator and would simply require providers to install a broadband service that met the current minimum service requirements. Any additional increase in speed would come as a result of market improvements and/or future government intervention.

Option 2: An initial speed requirement of 100 Mbps download and 20 Mbps upload and a requirement that the technology installed is capable of supporting higher download speeds, as set out by the government, in line with the average service taken up by a UK household.

- This approach would require providers to initially install a broadband service meeting the minimum service requirements set. The service would then be required to be able to reach a higher requirement, as set out by the government, in line with any increase in the average service taken up by a UK household.

Option 3: A speed floor of 100 Mbps download and 20 Mbps upload, with a speed escalator requiring both the technology and any deployment of it to be capable of delivering a set faster download speed, with a 5:1 upload ratio, by a pre-defined date as set out by the government.

- This approach would require providers to initially install a broadband service meeting the minimum service requirements set. The service would then need to be capable of delivering a set faster download speed at a later date as set out by the government with a continued ratio of at least 5:1.

4.84 It is our current assessment that establishing a service speed parameter with an escalator for a step-change increase in the future would fully align with our technology-agnostic approach to delivering any potential solution(s). There is the technological capability to offer some degree of a step-change increase in download speed.

4.85 Furthermore, we believe that such a parameter would support a more ‘future-proofed’ provision of broadband to households and businesses, responding more nimbly to changes in consumer demand and ultimately reducing the risks of social and economic exclusion from the digital world as demands connectivity increase.

4.86 We welcome stakeholder views on the viability and potential design of these proposals.

Consultation Questions

Question 4.1

Should the government set a different minimum speed threshold for residential and business consumers reliant on very hard to reach interventions?

If so:

Question 4.1(a)

Do you believe that this is a viable option with market capability to deliver?

Question 4.1(b)

Do you believe there is a sufficient benefit to requiring providers to supply different minimum speeds to consumer and business premises?

Question 4.1(c)

Do you consider that such a variation in the speed floor between households and businesses would have a material risk of distorting the broadband market?

Question 4.2

Do you think that the suggested minimum ratio between upload and download speeds is set at a suitable level?

Question 4.3

Do you agree with the government's view that including a 'escalator' within any minimum speed requirements would have merit?

If so:

Question 4.3(a)

Do you have a preferred option based on the information provided in this chapter?

All consultation questions are collated in Annex A

Parameter 2. Service reliability and resilience

The current position

4.87 The evidence we received as part of the call for evidence illustrated how central the reliability and resilience of a connection are for both business and residential consumers.

4.88 Survey responses to the call for evidence showed that more than half of residential respondents in rural and remote areas reported that they experienced disruption to their service at least weekly.

4.89 Some responses to the *Call for Evidence on Improving Broadband for Very Hard to Reach Premises* suggested that the resilience of fixed-line networks was stressed due to the increased demand for internet seen during the COVID-19 pandemic, causing an increased number of faults on fixed-line networks for consumers.

4.90 Ofcom's Connected Nations 2022 report shows that the trend of increasing traffic on the network continued between September 2021 and September 2022, with peak download traffic increasing by 7% (compared to 13% the year previous). Over the 2020 lockdown period, the volume of traffic had increased substantially (by approximately 30%).[48]

4.91 Storm Arwen at the end of 2021 meant that the number of faults reported on lines increased substantially, highlighting issues with the resilience of broadband connections reliant on legacy networks such as copper. Most faults were resolved within 2 weeks of the outage, but some repairs were reported to have taken up to 2 months.[49]

4.92 Similarly, during 2022 there have been notable periods of network outages affecting local communities, particularly in the Scottish Islands. This includes partial submarine cable break damage in Shetland, an outage lasting 4 weeks in the Isle of Lewis and another lasting up to 3 weeks on the Isle of Coll.

4.93 The number of fixed network incidents increased in the 12 months from September 2020 to August 2021, compared to the corresponding year before.[50] However, its data on faults from communications providers (who are obliged to report faults to Ofcom under the Communications Act 2003) do not suggest that the increase in faults in this period corresponded to the dramatic increase in internet traffic and demand.

4.94 It should, however, be noted that older fixed-line technologies which are more commonly deployed in rural areas such as copper ADSL are more susceptible to faults, particularly in poor weather conditions, than full fibre and coaxial alternatives.

[48] Ofcom Connected Nations 2022, 18 December 2022
[49] Ofcom Connected Nations 2022, 18 December 2022
[50] Ofcom Connected Nations 2022, 18 December 2022

Copper lines also provide considerably slower speeds than full fibre or coaxial alternatives and speeds are lower as the distance of the line increases (see **Figure 11**). This presents a particular barrier to faster speeds for rural areas where the density of premises is often lower than in urban areas meaning lines are typically longer.

4.95 In May 2022, BT also reported a substantial increase in the fault rate for lines which had been installed as part of the broadband USO between October 2021 and March 2022. [51]

4.96 They reported that the average fault rate was 2%, compared to 0.22% in the previous reporting period. This increase was largely attributed to the storms and adverse weather events experienced across the UK in November and December 2021 and January and February 2022.

4.97 While in the following report (October 2022) the fault rate fell back dramatically to between 0% to 0.004% between April 2022 and September 2022, the fault rate did raise back up to between 0.01% to 0.03% during October to March 2023 with fault repair times for broadband USO services totalling 324.6 hours compared to the previous reports 107 hours.

4.98 Many premises that have received a network upgrade under the broadband USO are located in rural areas, further underscoring the potential vulnerability of infrastructure in these areas.

4.99 Analysis from the call for evidence found that ADSL was still the main technology used to provide digital connectivity amongst both our business and residential consumers. The FSB's 2019[52] report into business connectivity also suggested that 47% of rural businesses are connected via ADSL, with Gigaclear's 2021 report into rural businesses suggesting a slightly higher figure of approximately 55%.

4.100 As with the speed of the broadband service, rural and remote consumers were less likely to be satisfied with their resilience than urban consumers. In turn, remote consumers were more likely to be less satisfied than rural consumers. We found in the call for evidence that 70% of business respondents were either 'very dissatisfied' or 'dissatisfied', with rural households having lower levels of satisfaction than their urban counterparts.

4.101 We also noted from the survey data received from the call for evidence that similar to work undertaken by Which?, reliability was one of the most important factors for customers (alongside price). [53]

[51] BT Report on Progress Against the Broadband USO Fourth Report, 13 May 2022
[52] Lost Connection, FSB, October 2019
[53] Which? Complaints Survey, 18 July 2019

4.102 Research conducted by the consultancy EY in June 2021 from a survey of 2,500 UK households also found that the majority (52%) of households they surveyed prioritised a reliable and consistent broadband service over speed.[54]

4.103 Amongst businesses, analysis from the call for evidence indicated that reliability was a stronger predictor for satisfaction than speed amongst business respondents, potentially indicating that they would favour a slower but more reliable service over a faster more intermittent one.

4.104 Longform evidence from the Federation of Small Business echoed this point, stating that '*Lack of reliability is a key issue for small businesses and often more important than speed itself.*'

4.105 Anecdotal evidence received by the department through correspondence has also indicated that some consumers are utilising mobile services and products as a secondary service in case their primary fixed connection experiences a fault or outage.

4.106 Ofcom has noted that there are at least 2 providers[55] who are offering backup solutions for fixed-line products. Other residential and business consumers reported purchasing an entirely separate secondary mobile broadband product.

4.107 However, it should be noted that this is not a ubiquitous solution for all very hard to reach premises, both because 4G or 5G signals might not have sufficient capacity to support several households in a community. Additionally, it adds considerable expense for consumers to meet.

Evidence on necessary quality parameters

4.108 The call for evidence underscored how the reliability of service is central to improving broadband provision in very hard to reach areas. Reliability also remains a central concern for consumers and is likely to be integral to bridge the digital divide between rural and urban areas – supporting greater participation in society and the digital economy.

4.109 We heard that a more reliable broadband connection with fewer incidences of disruption would enable residential and business consumers to participate more actively in society and the digital economy than their current service does.

4.110 It was also noted from the call for evidence that reliability was one of the factors (alongside price and speed) deterring consumers from adopting alternative products, particularly Fixed Wireless Access or satellite services. The same was true of options to improve the overall quality of their service which did not require changing technology, such as changing supplier.

[54] EY Decoding the Digital Home, 24 June 2021
[55] BT through their Halo product and Vodafone through their Pro Broadband product

4.111 When asked about their hesitation in switching to a new technology type, consumers reported that, given the central importance of the reliability, the satisfaction of their service, as well as speed and price, they often felt that retaining their service was the least bad option. This underpins that the reliability of the service is an integral component in consumer decision making around their broadband service.

4.112 To deliver a tangible improvement to the reliability and resilience of broadband services to very hard to reach areas, we are also conscious that there should be necessary consideration given to a number of additional aspects, not previously raised in the call for evidence. These are based on categories measured by Ofcom in their customer service comparison report[56] and other industry KPIs; and are:

- Number of faults per month per 1,000 customers;
- First available appointment;
- The time to repair a total loss in service to this service;
- Proportion of faults fixed on time;
- Proportions of customer re-contact within this class;
- Proportion of appointments missed.

4.113 As well as providing a possible framework to measure the quality of service against, Ofcom's customer service comparison report also provides a useful benchmark and metrics for a standard customer service it would be reasonable for consumers in very hard to reach areas to expect, in line with UK-wide averages.

4.114 However, there is a lack of specific data on how suppliers perform against these specific reliability criteria in rural or very hard to reach areas. As such, we will look to consult consumers on their satisfaction with these criteria as part of this consultation.

Proposed service quality parameters

4.115 Both residential and business consumers told us they wanted a more reliable service, with fewer line incidents and less frequent disruption.

4.116 The evidence demonstrated that to successfully deliver an improvement to broadband provision for very hard to reach premises, parameters for reliability and resilience of a solution must be considered.

4.117 Overall, we are proposing that, across the broadband service aspects listed below, consumers in very hard to reach areas should be receiving a service which is of a reasonably comparable level of service reliability and resilience to consumers in less challenging areas to deliver to.

4.118 In proposing these parameters, we appreciate that the sometimes unique and complex circumstances of very hard to reach areas may lead to an additional burden for

[56] Ofcom, Comparing customer service: mobile, home broadband and landline, 7 May 2021

providers delivering a quality of service directly comparable with less hard to reach consumers. The nature of these challenges has been discussed in the 'Barriers to Delivery' chapter below (**Chapter 5**).

4.119 However, we are cautious not to overstate the extent to which reaching a reasonable standard of reliability or resilience is an onerous requirement for providers.

4.120 Moreover, these parameters have been formulated so as not to preclude any potentially viable technology, in keeping with our technology-neutral approach to improving broadband connectivity for very hard to reach premises.

4.121 We, therefore, recognise the need to provide a parameter which balances both the proposed consumer provision and the capability of suppliers to deliver within the timeframe.

4.122 To reflect our belief that this targeted class should be able to reasonably expect a service quality comparable to urban, suburban and less challenging rural counterparts, we are proposing the following service quality, reliability and resilience parameters.

Figure 18: Proposed reliability parameters

Aspect of service	Objective	Proposed Parameter
Line Faults	To record the number of faults to very hard to reach premises	The fault rate per access line for all very hard to reach premises
Time for Delivery	To record the time taken from the date of the Confirm Order to a premises categorised as very hard to reach.	Delivery to a premises should be within a set time as determined by the final policy solutions.
Time to Repair	To ensure the time to repair a total loss of service is comparable to premises in urban/suburban areas.	90% of premises in very hard to reach areas should be reconnected within 7 days.
Proportion of faults fixed by the agreed date	To record the percentage of connection faults to a very hard to reach premises fixed by the date agreed with the customer.	In-line with Ofcom's UK average.
Proportion of recurring enquiries made	To record the number of times a customer in a very hard to reach premises had to recontact their provider due to continuing faults with their service after the provider said it was resolved	In-line with the Ofcom UK average. In 2022 the average was 4%[57].
Proportion of appointments missed	To record the percentage of appointments with customers in very hard to reach premises missed.	In line with the Ofcom UK average. In 2022 this average was 3%[58].

[57] Comparing customer service: mobile, landline and home broadband, Ofcom, 18 May 2023
[58] Comparing customer service: mobile, landline and home broadband, Ofcom, 18 May 2023

Consultation questions

Question 4.4

Should the government set different quality parameters for residential and business consumers reliant on very hard to reach interventions?

Question 4.5

Do you think that the suggested quality parameters are set at a suitable level?

Question 4.6

Do you think that the suggested quality parameter output measurements are appropriate to capture the necessary performance data?

Question 4.7

Do you have any additional quality parameters that you believe should be included for connections that are determined to be very hard to reach interventions?

All consultation questions are collated in Annex A

Parameter 3: Latency

The current position

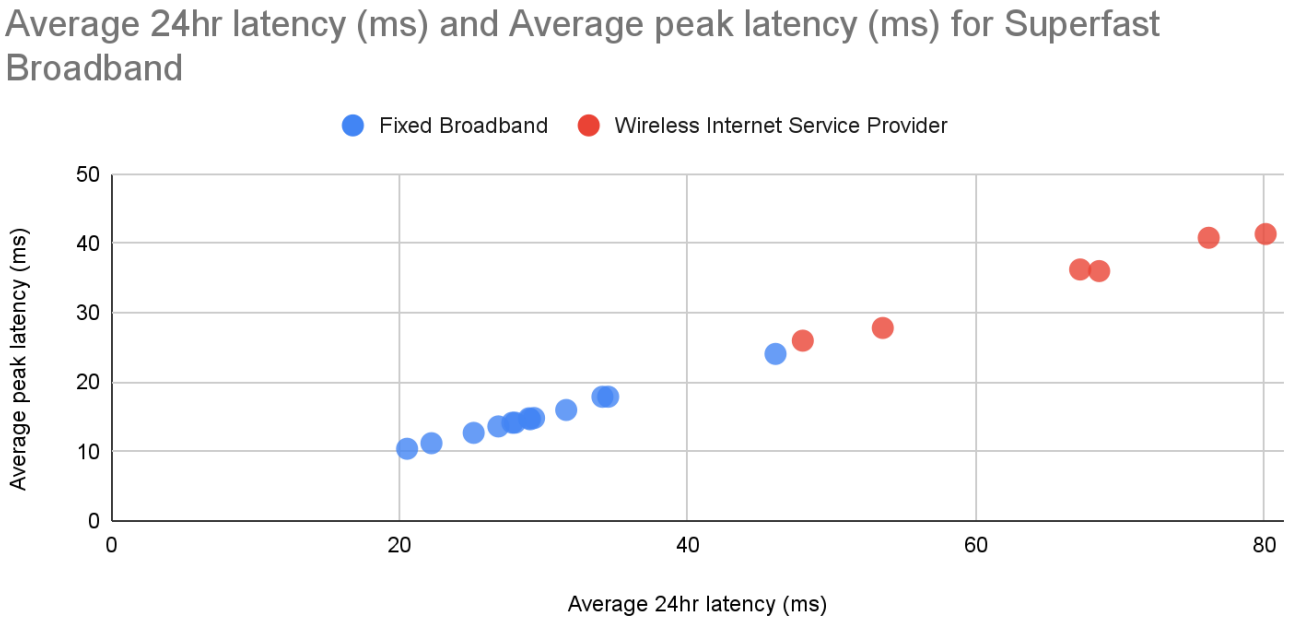
4.123 The call for evidence gauged residential and business consumers' response to a number of other aspects of their broadband services to assess the need for any further parameters.

4.124 Some consumers stated that high latency was a barrier and deterrent for them when looking at switching their fixed-line broadband connection to an alternative Fixed Wireless Access or satellite service.

4.125 Currently, the broadband Universal Service Obligation specifies a technical service requirement of '*latency which is capable of allowing the end-user to make and receive voice calls over the connection effectively.*'

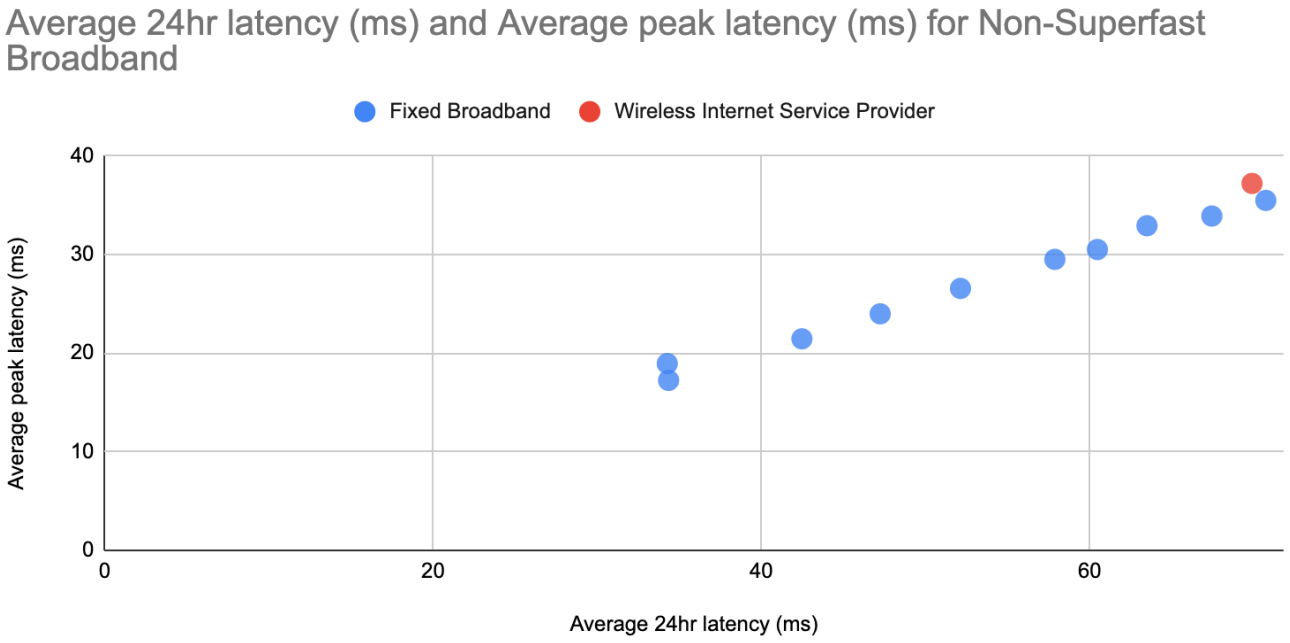
4.126 Ofcom publishes information on delivered network latency as part of its Connected Nations Interactive Report. This illustrates some variability by service type and technology, but is not subdivided based on rurality of premises.

Figure 19: Average 24 hour latency (ms) and Average peak latency (ms) for Superfast Broadband[59]



[59] Ofcom Connected Nations 2022: Spring Update, Interactive Report

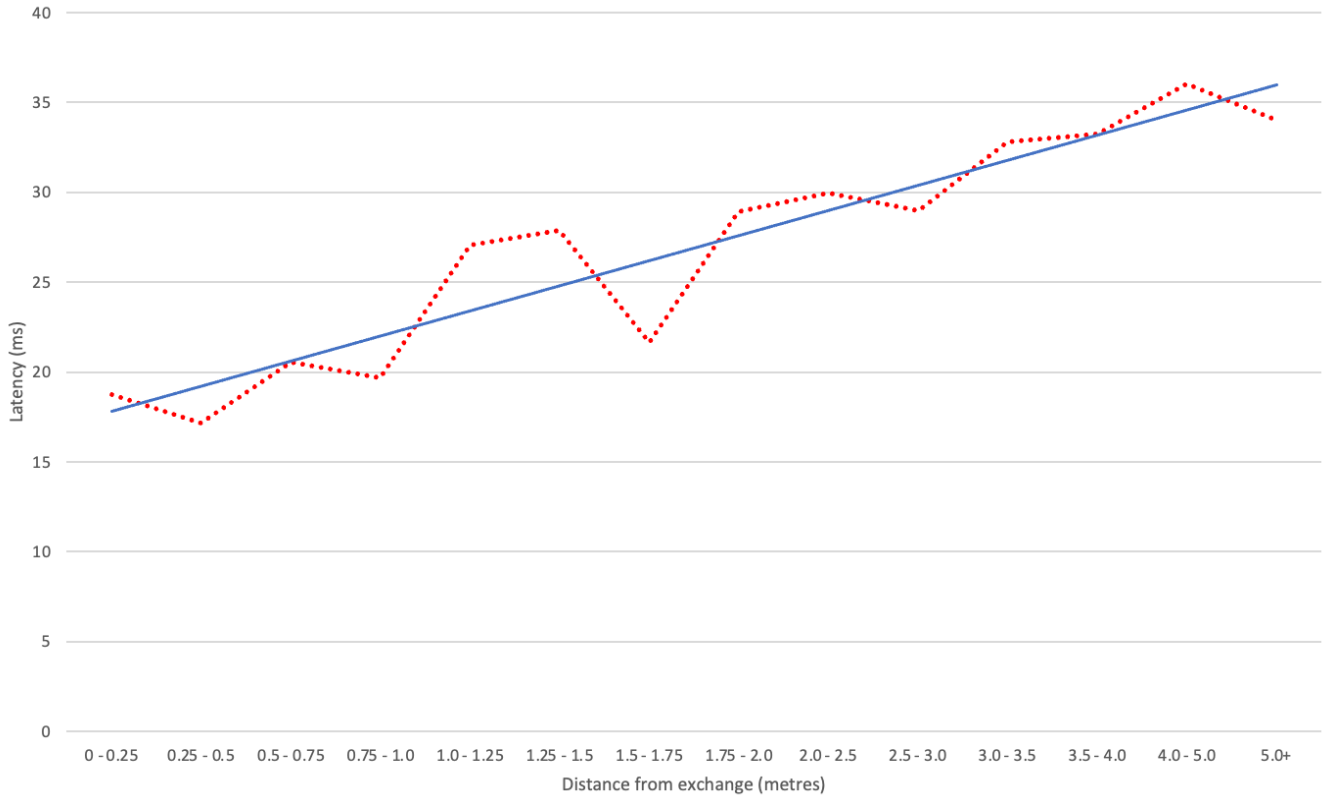
Figure 20: Average 24 hour latency (ms) and Average peak latency (ms) for Non-Superfast Broadband[60]



4.127 The relative latency measured over legacy copper-based networks using ADSL can also be derived from Ofcom reporting and correlated to distance from exchanges, as a measure of apparent rurality. This clearly indicates a substantially worse latency for users in the small but relevant sample of premises who only have access to these services today at some distance from an exchange.

[60] Ofcom Connected Nations 2022: Spring Update, Interactive Report

Figure 21: ADSL1 and ADSL2+ median latency (at peak hour) against premises distance from exchange[61]



Evidence on required latency parameter

4.128 We found that of the businesses who said that latency had a material impact on their business, they could tolerate, on average, 17.9 ms of latency in their broadband service.

4.129 However, it should be noted that two-thirds of business respondents said either latency was not a factor or were unaware of the impact it had on their business.

4.130 No comparable figure was collected for household respondents.

4.131 Ofcom's UK Home Broadband Performance report on fixed-line broadband provides a baseline requirement of latency of 100 ms or less to 'provide a good experience' for most online activities, such as video calls and internet browsing, with online gaming requiring 50 ms or less.[62]

4.132 The same report also showed the average latency in a 24-hour period home broadband customers received by the fixed-line technology type. Unsurprisingly, full fibre broadband was the lowest at less than 10 ms of latency, with ADSL2+ recording

[61] Data taken from Ofcom Home Broadband Performance Report 2021, 9 September 2021
[62] Ofcom Home Broadband Performance Report 2021, 9 September 2021

the most latency between 21-22 ms.[63] Nevertheless, both averages remain well below their indicative baseline of 100 ms or 50 ms depending on activity.

4.133 Given the government's technology-agnostic approach, we also took into consideration the BSG and Analysys Mason analysis on the average latency performance of each technology type, which is outlined below in **Figure 22**.

Figure 22: Latency performance of different technology types[64]

Technology	Latency performance
FTTP	<1 ms
Macrocell FWA	20-30 ms for 4G <10 ms for 5G
LOS FWA	<20 ms
GEO satellites	500-600 ms
LEO satellites	20-100 ms
HAPS	10-30 ms

4.134 Ookla independently publishes assessments of the latency performance of mobile data services by provider. Their latest data suggests median latency for wireless services similar to those put forward by the BSG, with MNO mobile data network latency ranging from 28 ms to 35 ms.[65]

Proposed latency performance parameter

4.135 As with the design of the broadband USO, we maintain that a parameter on latency would support fuller and more confident participation in society and the digital economy for very hard to reach businesses and households.

4.136 We are therefore proposing a latency performance parameter of a maximum of 100 ms, in line with Ofcom's guidance on providing a 'good experience' for users.

4.137 While we recognise that the latency performance parameter we have proposed precludes Geostationary Orbit satellites as a technological solution, we believe that it

[63] Ofcom Home Broadband Performance Report 2021, 9 September 2021
[64] Broadband Stakeholder Group and Analysys Mason, Research on Very Hard to Reach Premises: Technical and Commercial Analysis, 12 August 2021
[65] Ookla Speedtest United Kingdom's Mobile and Fixed Broadband Internet Speeds, May 2022

remains consistent with our technology-agnostic approach to improving the broadband services to very hard to reach premises.

4.138 Furthermore, we believe that this latency performance parameter will balance the need to provide very hard to reach premises a broadband service which realistically reflects their typical everyday needs, now and in the future, proportionately with the industry's capability to deliver without distorting the competitive market.

Consultation questions

Question 4.8

Do you agree with the level that the government has proposed setting as the maximum latency requirement?

If not:

Question 4.8(a)

Can you explain your reasoning for proposing a different cap to the one put forward in this document?

All consultation questions are collated in Annex A

Parameter 4: Contention ratio of service

The current position

4.139 The contention ratio (the number of customers sharing a specific broadband line) of a broadband service can have a considerable impact on the quality of service received by customers.

4.140 A lower contention ratio will mean that fewer end users are sharing a network node. This means that network capacity is shared between fewer end-users, lowering congestion on the network and therefore theoretically increasing speeds. However, it may also mean that the cost of the network is shared between fewer premises.

4.141 The broadband Universal Service Obligation currently determines a maximum contention ratio of 50:1 as part of broader technical specifications for decent broadband.

Evidence on necessary contention ration parameter

4.142 The decision to require a contention ratio of 50:1 for the broadband USO took into account technical advice provided by Ofcom.[66] It noted the obvious advantages of a lower contention ratio to end-users, but also the potential cost impact for providers.

4.143 As internet-enabled devices (from computers, smartphones and tablets, to gaming devices, televisions and fridges) become increasingly prevalent in households, there is also more need to ensure a broadband service can support rising in-house contention (the number of devices connected to a single network). We saw from the call for evidence that households in rural and remote areas generally used the same devices as their urban counterparts, and there is little evidence to suggest that, with an improved broadband service, their use of internet-enabled technology would decrease.

4.144 Businesses are also continuing to use online platforms to undertake daily operational tasks, expand their business and diversify their revenue streams and market base. We can therefore expect in-house contention to be similarly demanding.

4.145 Therefore, when looking to determine a service parameter for the contention ratio we considered the likely increase of in-house contention.

Proposed parameter

4.146 We maintain that the contention ratio is an important aspect of the overall quality of service received by customers. As such, we are proposing a specific service parameter which we believe will maintain the balance between delivering a good service now, with the potential to continue to support household and business

[66] Ofcom, Achieving Decent Broadband Connectivity for Everyone Technical Advice to UK Government on Broadband Universal Service, 16 December 2016

requirements in very hard to reach areas, whilst not creating too onerous a requirement on suppliers.

4.147 We initially propose that the contention ratio considered for very hard to reach policy interventions should be in line with that assumed for the current broadband USO at 50:1.

4.148 We are aware that a contention ratio may affect the technologies used to deliver a solution to these premises. As part of this consultation we are seeking to gauge stakeholder views on their thoughts on how, if at all, this contention ratio alters the viability for certain technologies to potentially form part of any policy option the government may propose.

Consultation questions

Question 4.9

Do you agree with the level that the government has proposed setting the contention ratio at?

If not:

Question 4.9(a)

Can you explain your reasoning for proposing a different contention ratio to the one put forward in this document?

All consultation questions are collated in Annex A

Parameter 5. Service data caps

The current position

4.149 The government is also considering what data consumption a very hard to reach premises might reasonably require, and whether data caps need to be set as part of any VHTR policy. As it stands, many data caps are applied for broadband services which use technologies where there is a higher degree of use of shared resources, such as mobile, Fixed Wireless Access or satellite. They are, however, also used on some fixed-line broadband tariffs.

4.150 During the call for evidence, it was noted that consumers said that they were deterred from switching to a Fixed Wireless Access or satellite service to improve their service due to data caps imposing data usage limits below their anticipated usage. Customers may therefore end up having to pay an expensive premium for data throughput which more closely reflects their usage.

4.151 Whilst many fixed-line providers removed data caps during the pandemic, many Fixed Wireless Access and satellite products still include data caps, offering a range of products at different price points with varied data caps.

4.152 Some data cap options – such as a cap applied during peak hours, with unlimited downloads outside of this – might offer a sufficient degree of flexibility for consumers.

4.153 With fixed-line internet service providers still providing broadband services with no data cap, we identified broadband services providing various data caps at different price points from a range of Fixed Wireless Access, mobile, wireless and satellite service providers.

4.154 As shown in **Figures 23 and 24** below, (a non-exhaustive list of sample Fixed Wireless Access and mobile data products)[67] typically, where a service does offer unlimited data usage per month, the price point of the product is higher.

4.155 From the sample providers listed below, customers can opt for an unlimited data-use option from any of the providers. Apart from Three, or a rate limited service on BT 4G, Fixed Wireless Access and mobile broadband customers can expect to pay between £5 and £20 more per month for the ability to do so.

4.156 This table also illustrates that packages combining both fast speeds and unlimited data allowances are most likely to be available only in 5G areas (unless on the Three network).

4.157 The 2 listed satellite providers, Starlink (who use Low Earth Orbit (LEO) satellites) and BigBlu (who use Geostationary Orbit (GEO) satellite) also offer unlimited data

[67] This list does not include ISPs or network providers who are regionally based or only supply to specific communities.

consumption for consumers. However, BigBlu does throttle traffic above its priority allowance which will affect customer performance.

Figure 23: Data caps from FWA and mobile internet packages (MNOs)[68]

Provider	Type	Name of service	Data cap (per month)	Service price per month	Upfront cost
BT	FWA	BT 4G Home Hub @15Mbps	Unlimited	£51.86	£0
BT	FWA	BT 4G Home Hub @30Mbps	Unlimited	£70.32	£0
EE/ BT	FWA	5GEE WiFi	500 GB	£45	£60
EE/ BT	FWA	5GEE WiFi	Unlimited	£50	£60
Vodafone	FWA	GigaCube	200 GB	£40	£50/Nil
Vodafone	FWA	GigaCube	300 GB	£50	£50/Nil
Three	FWA	4G Huawei 4G Plus MiFi	Unlimited	£20	£Nil on contract
Three	FWA	5G Hub	Unlimited	£20	£Nil on contract
O2/ Virgin Media	Mobile Data	Alcatel 4G Dongle, with mobile data	5 GB	£10	£0
O2/ Virgin Media	Mobile Data	Alcatel 4G Dongle, with mobile data	40 GB	£16	£0
O2/ Virgin Media	Mobile Data	Alcatel 4G Dongle, with mobile data	150 GB	£22	£0
O2/ Virgin Media	Mobile Data	Netgear Mobile Router, with mobile data	5 GB	£15	£0
O2/ Virgin Media	Mobile Data	Netgear Mobile Router, with mobile data	40 GB	£21	£0
O2/ Virgin Media	Mobile Data	Netgear Mobile Router, with mobile data	150 GB	£27	£0

[68] Illustrative suppliers only. Price and package details are correct as of June 2023. Excludes initial promotional discounts.

Figure 24: Data caps from wireless internet service providers

Provider	Name of service	Service DL speed	Data cap (per month)	Service price (per month)	Upfront cost
Airband	Broadband Unlimited	Average DL Speed : 40Mbps	Unlimited	£25	Free on promotion.
Quickline	airLite	10 Mbps	Unlimited	£29.99	Free
Quickline	airHoliday 12	30 Mbps	Unlimited	£24.99	Free
Quickline	airGo	50 Mbps	Unlimited	£28.00	Free
Quickline	airUltra	200 Mbps	Unlimited	£40.00	Free
Voneus	Wireless Superfast	30 to 50 Mbps	Unlimited	£34.99	Free installation and router.
Voneus	Wireless 250	250 Mbps	Unlimited	£34.99	Free
Voneus	Wireless 500	500 Mbps	Unlimited	£44.99	Free
Voneus	Wireless 900	900 Mbps	Unlimited	£59.99	Free

Figure 25: Data caps from satellite internet service providers[69]

Provider	Type	Name of service	Data cap (per month)	Service price per month	Upfront cost
BigBlu	GEO Satellite	Bronze	Unlimited (10GB priority)	£26.90 + £2.50 modem	£134.97 (installation, activation and shipping)
BigBlu	GEO Satellite	Silver	Unlimited (50GB priority)	£41.90 + £5 modem	£134.97 (installation, activation and shipping)
BigBlu	GEO Satellite	Gold	Unlimited (100GB priority)	£74.90 +	£134.97

[69] BigBlu price and package details are correct as of May 22, but no longer on sale after acquisition by Eutelsat. Starlink prices are correct as of June 23 This list only includes the minimum and maximum data cap for any single product. Starlink packages and hardware variants can be selected independently but referenced here for comparison with high performance equipment alongside priority tariffs for simplicity.

				£5 modem	(installation, activation and shipping)
Starlink	LEO Satellite	Starlink	Unlimited 'standard' data	£75	£449 (hardware, self-installation and shipping)
Starlink	LEO Satellite	Starlink	1TB Priority data, then 'standard'	£180	£2,430 (hardware, self-installation and shipping)

Evidence on required data cap parameter

4.158 Figures collected by Ofcom Connected Nations 2022 shows that, across Great Britain, the average data usage for a fixed-line connection was 482 GB a month in September 2022, 29 GB a month higher than in September 2021. However, there was a significant degree of variation between different line speed connections. This is shown in **Figure 26** below.

4.159 We recognise that the lockdown periods partly explain the marked rise in data usage over the last few years. However, longer term trends – such as the increase in the number of internet-enabled devices and changing usage of the internet – suggest that patterns of data consumption will remain high.

4.160 These consumption trends are primarily determined by the greater prevalence of internet-enabled devices within premises which, by their very nature, require a sufficiently fast and reliable broadband connection. This trend is directly correlated with the increasing propensity to use these devices to more frequently and intensely access a range of online services, such as online shopping and streaming.

4.161 Ofcom's Online Nations' reports have charted the growth of data consuming devices, such as smartphones, tablets, games consoles, smart TVs and smart speakers.[70] Households also reported using online services such as online shopping more, citing its convenience and suggesting a more established and permanent shift in behaviours (rather than just a temporary adjustment caused by an underlying hesitancy of public spaces during the COVID-19 pandemic).[71]

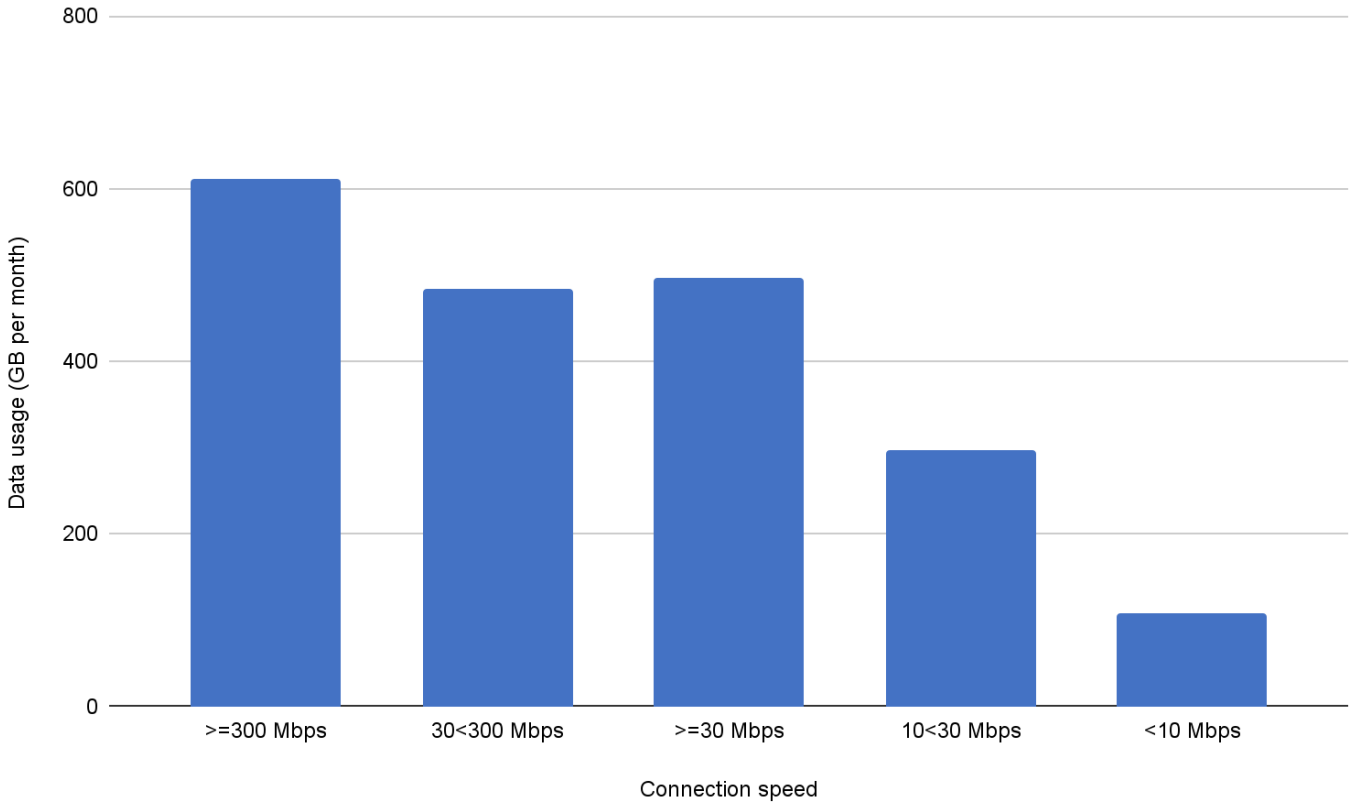
4.162 We heard from rural and remote users that their poor internet speeds (which were typically below 10 Mbps) and service reliability precluded their access to such services and devices with the level of frequency and intensity they would wish, comparable with urban and suburban counterparts.

[70] Ofcom Online Nation Report 2022, Online Nation report 2021 and Online Nation report 2020
[71] Ofcom Online Nation Report 2022 and Online Nation report 2021

4.163 As such, we remain conscious that the data consumption of users in very hard to reach areas (and users with slower broadband speeds more generally) is being severely restricted by the speed and quality of their broadband service.

4.164 These premises should not be unreasonably restricted compared to consumers in less challenging areas, particularly if there are technological limitations in delivering a service improvement, as is currently the case.

Figure 26: Average monthly data consumed in the UK by download speed[72]



4.165 Market participants who responded to the call for evidence noted a broad range in the average monthly data used by rural households. The majority of households were reported to be requiring a minimum of over 100 GB of data per month, with nearly a third of market providers saying rural households' average data consumption was greater than 300 GB per month. This is shown in **Figure 27** below.

4.166 Given the steady increase in UK data consumption, and the increased penetration of internet-enabled devices, we anticipate that the data needs of households and businesses are likely to be higher.

4.167 Quickline and other large providers also noted in their evidence that the greater use of video streaming and working from home was increasing data consumption and they anticipated this trajectory to continue for 'the foreseeable future'.

[72] Data from Ofcom Connected Nations 2022 interactive report.

Figure 27: Rural household average monthly data usage, as reported by market participants[73]

	<50 GB	50-100 GB	100-300 GB	300-500 GB	>500 GB	Unsure/ depends on the area	
No. of responses	4	6	6	4	3	2	25
% of total	16	24	24	16	12	8	100

4.168 Similarly, market participants reported a range in the average monthly data usage of micro and small and medium-sized business (SME) customers. This is shown in **Figure 28** below.

Figure 28: Rural micro, small and medium-sized businesses' average monthly data usage, as reported by market participants[74]

	<50 GB	50-100 GB	100-300 GB	300-500 GB	>500 GB	Unsure/ depends on the area	
No. of responses	2	9	8	2	6	1	28
% of total	7	32	29	7	21	4	100

4.169 It should be noted that whilst the number of respondents for **Figures 27 and 28** are low, respondents were market providers and their feedback covers an average across a much larger customer base.

4.170 The majority of market participants who responded to the call for evidence expected the data consumption from their customers would increase over the next 2 and 5 years respectively. The majority of market participants also said that they expected their customers' data usage to at least double in the next 2 years, which was true across all technology types surveyed. [75]

[73] Using data received as part of the call for evidence on Improving broadband for Very Hard to Reach Premises
[74] Using data received as part of the call for evidence on Improving broadband for Very Hard to Reach Premises
[75] We asked for forecasted usage data over 2 and 5 years for the following technology types: FTTP, FTTC/DSL, FWA, Hybrid Fibre Coaxial Cable, Mobile, Satellite.

4.171 We saw the propensity reported by market participants for the majority of their rural customers (both households and SMEs) to have an average monthly data usage of under 300 GB was consistent across all technology types suppliers used.[76]

Proposed data cap parameter

4.172 We are aware of the continued trend towards increased online activity, and we heard from the call for evidence that rural and remote consumers wish to use their connections for the same purposes as their urban counterparts.

4.173 It is not, therefore, unreasonable to expect comparable levels of data usage between very hard to reach premises and those outside this class should they receive an improved broadband connection allowing them to do so.

4.174 To support continued usage for customers, we are proposing a data cap parameter for very hard to reach policy options of at least 300 GB per month to be uplifted in line with average data consumptions. This is likely to be linked to Ofcom's annual reporting but we remain open to other suggestions from stakeholders.

4.175 We would also welcome views on whether to consider capped data to only be applicable during peak hours, with an unlimited cap during hours which are determined to be 'non-peak'.

Consultation questions

Question 4.10

Do you agree that there should be a minimum data cap set for premises receiving a connection under a 'very hard to reach' policy?

If so

Question 4.10(a)

Do you agree with our proposed minimum data cap parameters as set out above?

Question 4.11

Should data caps only be set for certain technologies where capacity constraints are a concern such as satellite and Fixed Wireless Access?

[76] We asked for forecasted usage data over 2 and 5 years for the following technology types: FTTP, FTTC/DSL, FWA, Hybrid Fibre Coaxial Cable, Mobile, Satellite.

Question 4.12

Do you agree with differentiating between ‘peak’ and ‘non-peak’ hours for data caps?

All consultation questions are collated in Annex A

Parameter 6. Price and Affordability

The current position

4.176 Responses to the call for evidence underscore that the price and affordability of broadband services are a significant concern for consumers. As with speed and reliability, rural and remote consumers were less likely to be satisfied than urban consumers with the cost of their service.

4.177 The call for evidence collected customer feedback in June 2021. We are aware that since then cost of living and inflationary pressures have likely become more prominent concerns for both households and businesses. As such, we appreciate that the evidence collected in this chapter, related to willingness to pay more for an improved service, might not reflect customers' current position.

4.178 As mentioned previously in the discussion on reliability (**Chapter 4**), we observed that the survey data on satisfaction mirrored results reported by Which?, which found that price was one of the most important factors for customers (alongside reliability).[77]

4.179 A survey from EY conducted between December 2020 and January 2021 also found that before recent pressures on household and business budgets, controlling costs was a dominant concern for households, who indicated that they wanted to pay as little as possible for their service and see value for money.[78]

4.180 The typically poorer standards of digital infrastructure in very hard to reach areas often means that consumers have little choice in the broadband package they receive. Whilst some premises will be able to benefit from a Fixed Wireless Access solution, providing at least decent internet speeds, many will have little alternative than to take a provider's basic fixed-line broadband package. The minimum speed guarantees associated with some of these service offerings are often below 5 Mbps for many of the genuinely very hard to reach premises.

4.181 The result of this is that often consumers receive a service which offers lower value for money (measured in GBP (£) per Mbps) when compared to consumers able to benefit from technology types which enable faster speeds.

4.182 The evidence received in the call for evidence showed that there was concern amongst representative organisations that lower levels of competition in rural and remote areas, where market activity is concentrated in a small number of – or sometimes only a single – supplier(s). Therefore, whilst many consumers in the UK have been able to benefit from falling prices per Mbps as faster speed-enabling technology is rolled out and the broadband market has become increasingly competitive, very hard to reach premises have typically not felt this benefit.

[77] Which? Complaints Survey, 18 July 2019
[78] EY Decoding the Digital Home, 24 June 2021

4.183 The impact of lower levels of competition on the price of services received by residential and business consumers was also seen in the analysis undertaken by the department. The call for evidence showed that respondents were generally price takers in the market, paying comparable rates for packages regardless of the speed or quality of the service they received.

4.184 Despite this, we found from consumer survey responses to the call for evidence that household consumers were willing to pay for a faster and better quality broadband service. The average willingness to pay was, across both increased speeds and service quality, correlated to the rurality of the respondent.

4.185 Rural household respondents indicated that they would be willing to pay an additional £5.55 per month to double their speeds and £4.57 per month for half the number of faults.

4.186 Remote household respondents said they would pay on average £4.97 per month for the doubling of their speeds and £3.83 per month for halving the number of faults on their connection.

4.187 The willingness of rural and remote consumers to pay more for a better service was echoed by long-form evidence provided by suppliers Quickline, Openreach and Wessex Internet. Their evidence stated that customers in rural areas were less price-sensitive and had a higher willingness to pay more for an improved service than customers in urban areas, noting that an increased willingness to pay was tied to poorer infrastructure in rural areas.

Proposed price parameter

4.188 Before proposing any specific price parameters, we are therefore consulting on whether price and affordability should be considered. This includes looking at what level any ‘price caps’ should be set at and if it should relate to a particular service offering.

4.189 Whilst the call for evidence demonstrated that all customers were willing to pay more for a faster and more reliable service, the department does recognise that the current cost of living pressures facing many households across the country is likely to materially alter this.

4.190 We are also aware that the majority of large suppliers have increased the price of their monthly broadband products in-line with, or above, inflation. **Figure 29** below shows the announced annual price rise from a sample of providers in 2002 and 2023.

4.191 Variation in Satellite and FWA prices is less clear cut. Starlink reduced prices in the UK by 16% in 2022-2023, and Airband and Three also made some reductions. BT, EE and Vodafone increased prices and/or changed packages.

4.192 While many providers offer low-cost social tariffs to customers on Universal Credit as well as other means-tested benefits, these are often only provided by relatively large providers. Many alt-nets or alternative providers (such as FWA or satellite operators) do not offer social tariffs. We are therefore also asking whether providers connecting very hard to reach premises should be required to provide a social tariff option.

Figure 29: 2022 and 2023 Price increases by broadband provider[79]

Provider	**Announced/stated annual price rise**	
	2022	**2023**
BT	+9.3%	+14.4%
EE Broadband	+9.3%	+14.4%
Plusnet	+9.3%	+14.4%
Vodafone	+9.3%	+14.4%
TalkTalk	+9.1%	+14.2%
Sky	+9 - 10% (depending on the package)	+8.1% (average for customers)
Virgin	+8.3% (average for customers)	+13.8%
Hyperoptic	0% (within contracts)	
Starlink	-16% (i.e. a reduction) in monthly residential tariff	
Gigaclear	0%[80]	

4.193 Furthermore, we are looking to further understand from stakeholders what price point would be achievable relative to the parameters and service offering we have outlined above, across different technology options.

[79] Collated from providers stated annual price rises in 2022 and 2023.
[80] Committed to a price freeze in 2022 for 18 months (simultaneously discounted products), but from October 2023 they will adopt CPI (inflation) + 3.5% measure.

Consultation questions

Question 4.13

Do you believe that price and affordability should be taken into account when considering policy options for very hard to reach premises?

If so:

Question 4.13(a)

Should any ‘price caps’ be set at a specific level or should they be relative to another measure?

Question 4.13(b)

How often should any ‘price cap’ be reviewed?

Question 4.14

Should ‘price cap’ only be set at specific broadband speeds and/or data caps?

If so:

Question 4.14(a)

What speed and/or data caps should the ‘price cap’ be set at?

Question 4.15

Should providers to very hard to reach premises be required to offer social tariffs?

All consultation questions are collated in Annex A

5 Barriers to delivery

Introduction

5.1 This chapter will further explore the known barriers to delivery that market participants face and their views on how these barriers can potentially be better understood, with the intention to enable greater commercial delivery while not reducing existing environmental regulations. This is achieved either with help through direct government intervention and/or by removing the barriers to enable greater commercial delivery alongside maintaining environmental protections.

5.2 The Call for Evidence on Improving broadband for Very Hard to Reach Premises asked market participants about the demand for broadband services in rural areas, the social and economic benefits they have seen from an improved broadband connection in rural areas, the current barriers to deployment, and future approaches.

5.3 We know that most market participants do not regularly invest in areas that they deem to be uncommercial such as those categorised as ‘very hard to reach’. If the government could support the removal of, or mitigate the challenges associated with, these barriers, very hard to reach areas may become more attractive for investment by market participants.

5.4 This chapter sets out further information on steps the government has taken since the initial call for evidence to remove potential barriers raised by market participants and seeks further information where necessary on these specific barriers.

The current issues

5.5 Based on internal research and analysis, plus meetings with stakeholders, we believe there to be a number of significant barriers facing market participants. The primary barriers that have been raised to the department are:

- Distance
- Topography
- Wayleaves and the Electronic Communications Code
- Spectrum

5.6 The barriers we have found thus far have many implications and mean that market participants are not able to deliver improved broadband services to premises located in very hard to reach areas of the UK.

5.7 Given the large amount of information received through the original call for evidence, we are not consulting on barriers pertaining to distance and topography at this time.

However, the government will consider these barriers as part of any future policy proposals that it brings forward.

5.8 A number of the barriers raised within the original call for evidence are already being addressed through other government interventions. These are noted where that is the case. However, we recognise that very hard to reach premises may need additional interventions beyond those currently in progress and therefore welcome further comments on what additional measures may be needed.

Wayleaves and the Electronic Communications Code

The current position

5.9 Market participants noted that there are several legislative barriers to deployment in rural areas, such as planning legislation, applying the Electronic Communications Code, and Ofcom's licensing requirements.

5.10 They stated that they still experience issues securing wayleave agreements and face local planning issues that present potential complications, blockages, and additional costs to civil deployment.

5.11 One market participant told us in response to the call for evidence that the high legal costs and volume of work required in gaining access to very hard to reach premises make it challenging to invest. Others reported that deploying infrastructure in rural areas (including protected areas) requires a sensitive approach with good local knowledge.

5.12 Regarding difficulties negotiating wayleaves, some market participants reported that this could also include challenges with contacting and negotiating with landlords to gain access to private and public land. It is often found that the restrictions are complex given the protected nature of some areas and the significance of the landscape.

5.13 One market participant told us in response to the call for evidence that one of the biggest barriers is *"... negotiating the land access required. Private landowners are often found to be amenable however other larger public landowners have been less co-operative."*

5.14 Rights to install and keep electronic communications apparatus on public and private land are regulated by the Electronic Communications Code ("the Code"), and at all times, government policy in this area works to keep a proportionate balance between public benefits and the rights of individual landowners.

5.15 The Code is discussed further below, however it should be noted that a large-scale consultation on reforms to the Code was run recently, with responses informing the

Product Security and Telecommunications Infrastructure Act 2022[81] ("the PSTI Act 2022"). We are therefore particularly interested in issues that were not raised as part of this consultation and which directly affect very hard to reach areas.

5.16 The PSTI Act 2022, which amended the Code and received Royal Assent in December 2022, contains several measures that are of particular interest regarding the issue of negotiating wayleaves, including in hard to reach places. The PSTI Act 2022 encourages greater use of Alternative Dispute Resolution (ADR) to support more collaborative relationships between telecoms operators and landowners, and therefore faster negotiations. Where it is not possible to reach a consensual agreement, measures in the act ensure that court disputes can be determined quickly and cost-effectively. If a landowner is repeatedly unresponsive to requests for Code rights by operators, as is sometimes the case, the act sets out a fast-track process through which operators can secure Code rights on land which is not covered by buildings and is neither a park, garden nor recreational area, subject to the power conferred on the Secretary of State to specify any such land that, in the future, could be in scope. Such a right could often be of assistance in very hard to reach areas, where a landowner is unresponsive. The act also contains measures which increase operators' ability to share certain types of apparatus which are already installed, for example existing ducts to allow fibre installations.

5.17 Suppliers commented on the Electronic Communications Code and the reforms the UK Government is making. One market participant said that a reform of the Code that improves the ability to secure wayleaves and access land will be essential for the delivery of non-satellite technology. Openreach stated in their response that "*Access to land and property remains an important barrier to our deployment across all geographies. This includes rural and very rural locations where land access is especially important. Reform of the ECC to improve operator's ability to secure wayleaves and access land will be critical for any non-satellite models of delivery.*"

5.18 The government believes that the Code gives operators the ability to obtain the rights they need to install apparatus on private land, whilst adequately balancing this with the interests of landowners. We accept that the process of negotiating the terms of a wayleave can sometimes be a lengthy process. However, the Code already gives operators the ability to apply to the court for a wayleave agreement to be imposed, if the parties cannot agree one consensually.

5.19 The government has listened to stakeholders on these issues and the measures in the PSTI Act 2022 referred to above address some of these concerns. Although the PSTI Act 2022 received Royal Assent last December, not all of the measures in the act took effect immediately. For many provisions, additional work is necessary for effective implementation. Some parts of this implementation work will be completed more

[81] Product Security and Telecommunications Infrastructure Act

quickly than others, so the government plans to implement the provisions in the Act in stages, rather than all at once.

5.20 The provisions in the PSTI Act 2022 described above which are related to upgrading and sharing of equipment, sections 57 to 60, have now taken effect. The majority of the remaining telecoms-related parts of the act have not yet taken effect. The government will keep stakeholders up to date, and let them know as soon as dates for the commencement of different parts of the act are confirmed.

5.21 As well as these legislative steps, the stakeholder-led 'Access to Land Workshops' meets monthly and is led by the National Connectivity Alliance following its establishment by DSIT (formerly as DCMS). These workshops are attended by a variety of stakeholders, including operators, landowner representatives, local authorities and surveyors. This has resulted in stakeholders discussing how processes can be improved; for example, one subgroup is currently working on a standard wayleave template.

5.22 Premises may also experience access-related issues including a reluctance of landowners to grant the necessary wayleaves and the designation of certain areas linked to the geographic location of the premises. This may include being near historical sites, Sites of Special Scientific Interest (SSSIs), National Parks, or Areas of Outstanding Natural Beauty (AONBs).

5.23 In the case of Protected Landscapes (e.g. National Parks and AONB), market participants find that the negotiations to build infrastructure are lengthy, costly and add complexity to projects. However, we were informed by one market participant that assessments are made as to whether alternative technologies may be better suited to these areas so as not to have a material impact.

Impact of this barrier on VHTR premises

5.24 The difficulties in obtaining wayleaves means that sometimes market participants have to slow down the rate of deployment while trying to obtain them and/or it can make a commercially viable area unviable if market participants have to find alternative routes, thereby not connecting some communities.

5.25 Difficulties accessing land will be addressed through improvements to securing wayleaves. DSIT is aware of this issue and is working on policies to address this. As stated above, the PSTI Act 2022, and the Code more widely, is designed to give operators a quicker process to gain rights to land, while maintaining an appropriate balance between the public interest in greater connectivity and the rights of individual landowners.

5.26 Digital Connectivity for communities within AONBs and National Parks is important and every effort should be made to reconcile this with protections in place. These designated landscapes are protected by legislation. National Planning policy requires that 'Great weight should be given to conserving and enhancing landscape and scenic

beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty which have the highest status of protection in relation to these issues' (NPPF 2021 para. 176). DSIT (formerly as DCMS) received a submission of evidence to the call for evidence from the Campaign for National Parks which said: "*it is essential that any measures to increase provision for very hard to reach premises in protected landscapes take full account of the need to ensure that every effort is made to reduce the visual and landscape impacts of new infrastructure in such areas.*"

5.27 DSIT and BDUK are already working to uphold high environmental standards and have produced the BDUK Environmental Resource Guide[82] alongside the National Parks Accord[83] as agreed between BDUK, National Parks England and broadband suppliers. The BDUK Environmental resource guide sets out environmental regulations and requirements regarding delivering digital infrastructure including hybrid and satellite solutions which is particularly relevant to VHTR and supporting the rollout of the gigabit broadband voucher scheme. The National Parks accord supports the delivery of high-speed broadband to rural areas whilst protecting the special qualities of national parks and their settings.

5.28 Where particular difficulties in obtaining wayleaves do arise, communities may be better to use alternative technologies, such as satellites, that do not require the deployment of infrastructure on a large scale.

Consultation questions

Question 5.1

Have you, as a market participant, identified difficulties in how the Electronic Communications Code operates when planning and deploying infrastructure in very hard to reach areas?

Question 5.2

Will the policies put in place by the government through the PSTI Act 2022 make it easier to deploy digital infrastructure in rural and remote areas?

If not:

Question 5.2(a)

Please explain why you feel that these policies will not make it easier to deploy digital infrastructure in rural and remote areas

Question 5.3

[82] Building Digital UK - environmental resource guide August 2023 - GOV.UK
[83] The National Parks Accord - GOV.UK

Have you, as a market participant, used an alternative technology that did not require planning permissions or wayleaves?

Question 5.4

Have you, as a resident or community, used an alternative technology that did not require planning permissions or wayleaves?

Question 5.5

Have you, as a market participant, not built infrastructure in a remote rural area due to high costs/increased time taken to deploy due to difficulties obtaining a wayleave or due to another legislative obstacle?

Question 5.6

What further measures, if any, could the government introduce to help reduce the barriers to delivery caused by wayleaves or other planning issues in very hard to reach areas?

All consultation questions are collated in Annex A

Spectrum

The current position

5.29 Ofcom is the independent regulator responsible for day-to-day spectrum management in the UK. DSIT continues to work with Ofcom and other stakeholders to ensure spectrum access is supporting our connectivity ambitions.

5.30 Ofcom is responsible for authorising access to spectrum and setting and enforcing the rules by which people can transmit radio waves. This includes decisions on spectrum licensing and managing interference. Ofcom also represents the UK in international forums on spectrum use under a Direction of the Secretary of State.

5.31 The government's overarching ambition for spectrum is to maximise its economic and social value to the UK. We work closely with Ofcom to ensure spectrum use supports wider government priorities. This has been recognised in Ofcom's recent review of the Non-Geostationary Satellites (NGSO) licensing framework[84], and in their consultation on the Space Spectrum Strategy[85]. We will continue to engage with Ofcom on spectrum access and licensing issues raised in this consultation.

5.32 Spectrum affects market participants who provide mobile, FWA, and satellite solutions. A variety of spectrum bands are available for FWA technologies. In 2019, Ofcom introduced a new framework for shared, localised access to spectrum to support innovation. This framework, which provides local access to spectrum in several bands including the 3.8-4.2 GHz, as well as local access to unused nationally licensed mobile spectrum, is applicable for FWA applications. Some market participants noted that n77 5G (often referred to as 5G NR 'mid band') which includes the above band may be the most applicable to ensure cost-effective deployment within hard to reach areas in a timely manner.

5.33 In response to the call for evidence, market participants noted that Ofcom licence conditions limit the coverage of Fixed Wireless Access (FWA), therefore making it less available as a solution for rural locations. One market participant noted that Ofcom licence conditions on maximum power levels and antenna gains limit the coverage achievable from a single tower, and therefore they are restricted from economically serving a larger area. Ofcom's motivation for these limits is to protect other licensed users and/or conserve the availability of spectrum in the same localities for future applicants.

5.34 Increasing the power levels and antenna gain thresholds in rural areas could improve the scope for FWA to be an economically viable solution to provide broadband coverage but potentially reduce the availability of channels to later licence applicants over a larger area.

[84] Statement: Non-geostationary satellite systems – licensing updates, December 2021
[85] Consultation: Space spectrum strategy, May 2022

5.35 On satellite applications, several frequency bands are also available for such services. In December 2021, Ofcom issued a statement, following a public consultation earlier in the year, on its plans to update its NGSO licencing framework, to best enable multiple NGSO satellite operators to provide services in the UK; within the constraints of minimising interference between such systems and within the International Telecommunications Union framework as well as to explore the limitations for this.

5.36 Satellite and FWA providers noted that equipment costs and access to spectrum remained the biggest barriers they faced. One satellite provider said that regulatory issues relating to the deployment of Low Earth Orbit (LEO) satellite services in the UK pose a barrier as currently in the UK, licence exemption and free circulation for satellite earth stations were not, at the time, provided for in the 14.25 – 14.5 GHz band.

5.37 OneWeb highlighted that as a result, "*satellite earth stations operating in this band can only be deployed following co-ordination with the fixed service links, which places a significant constraint on the provision of satellite services in the UK (something that isn't the case in most other European countries)*." They went on to state that the UK should allow licence exemption and free circulation for satellite earth stations for the whole 14.0 – 14.5 GHz band.

5.38 In November 2022, following consultation, Ofcom announced their decision to extend earth station licensing into 14.25 - 14.50 GHz, thereby opening up the full 14 - 14.50 GHz for satellite services (with geographic exemptions and protections for radio astronomy).

5.39 Viasat stated that "*The only challenge we face from a regulatory perspective is access to adequate spectrum—the same that affects many terrestrial wireless networks. The UK's 28 GHz consideration band plan was adopted long before the advent of today's satellite broadband systems.*"

5.40 Suppliers who do not use full fibre solutions told us that relaxing the performance specifications for government subsidies below the current gigabit requirement will make FWA solutions more economically feasible. A market participant responded to the call for evidence saying that the relaxation of speed and performance specifications would increase speeds in rural areas significantly. In part, this would be due to lower spectral requirements.

5.41 Furthermore some market participants said that the lack of subsidies at 100 Mbps depresses the attractiveness of investment in very hard to reach locations. The market participant, that provides FWA technology, noted that as the current government subsidies target 1 Gbps, and therefore providers who do not offer a full fibre solution are excluded from the subsidies as currently, the only way of providing gigabit speeds is through full fibre technology.

5.42 Whilst government policy for Project Gigabit is actually technology neutral, it is true that the performance (and future-proofing) requirements for the broader programme are challenging and require substantial investment in new generations of technology.

This however, is also reflected in the scale and duration of the benefits derived, as part of the business for the project.

Impact of this barrier on VHTR premises

5.43 The restrictions on spectrum currently in place may limit the extent to which full fibre alternatives, such as FWA and satellites, can be used as a solution to providing VHTR premises with fast and reliable broadband.

5.44 We know that satellite broadband is a potential alternative for those living in very remote areas of the UK where difficult terrain and isolation mean that fixed solutions are expensive to both the supplier and the end user. Eutelsat highlighted in its response to the call for evidence that: "*Technology-wise and cost-wise, satellite broadband is agnostic between remote rural communities and more densely populated areas. The service provided is based on the same infrastructure, the same terminals and delivers the same user experience regardless of location.*"

5.45 Satellite technology also only requires power from the end user's premises, therefore, as long as the premises is connected to the power network or has a suitable way of powering the terminal from independent generation, it should be an acceptable solution.

5.46 Eutelsat went on to say that: "*The challenge is ensuring that satellite broadband is recognised as a solution able to significantly reduce the investment costs in certain areas, to ensure that actual broadband penetration increases to allow UK citizens and businesses to reap the benefits of reliable broadband.*"

5.47 As previously noted within the consultation, at present there is not one technology or single approach that would be able to deliver to all very hard to reach premises. It is therefore likely that a combination of policy solutions may be required to address current barriers to deployment.

5.48 Suppliers have agreed with this sentiment and several have objectively noted in their responses that the government should remain technologically agnostic.

Consultation questions

Question 5.7

Have you, as a market participant, experienced barriers as a result of current spectrum policy?

If so:

Question 5.7(a)

Please explain which spectrum policies or issues have affected your ability to deliver to premises in very hard to reach areas.

Question 5.8

What further measures, if any, should policy makers consider to help reduce the barriers to delivery caused by spectrum availability in very hard to reach areas?

All consultation questions are collated in Annex A

Annex A: Consultation questions

The following questions seek views on the issues raised in this document and on the changes we are considering. The questions are set out in order of the chapters and topics covered.

Responses should be provided in writing and submitted to: vhtr@dsit.gov.uk

It would be helpful, if throughout your replies, respondents indicate which question(s) you are answering and provide reasons for your responses.

Evidence or data that supports or explains impacts should be provided wherever possible.

Chapter 2: Policy position

Question 2.1

Do you agree with our reasoning for why we believe interventions are required for very hard to reach premises?

Question 2.2

Do you agree that very hard to reach premises are likely to require an alternative approach to premises able to receive a gigabit-capable connection?

Question 2.3

Do you agree with the government's position that very hard to reach premises should be delivered alongside Project Gigabit procurements?

Question 2.4

Do you agree that the broadband Universal Service Obligation should remain a ‘digital safety net’ (nationwide scope) while the very hard to reach policy focuses on delivering the ‘best available’ connection for a given premise (specific scope)?

Question 2.5

Do you foresee any specific issues with the government’s approach and rationale for delivering improved connectivity for Very Hard to Reach premises that are not addressed in this chapter?

Chapter 3: Policy groupings and evaluation criteria

Question 3.1

Do you agree with the policy evaluation criteria as set out in paragraphs 3.9 to 3.19 of Chapter 3?

If not:

Question 3.1(a)

What amendments or alternatives would you suggest to the evaluation criteria as set out in paragraphs 3.9 to 3.19?

Chapter 4: Service parameters

Question 4.1

Should the government set a different minimum speed threshold for residential and business consumers reliant on very hard to reach interventions?

If so:

Question 4.1(a)

Do you believe that this is a viable option with market capability to deliver?

Question 4.1(b)

Do you believe there is a sufficient benefit to requiring providers to supply different minimum speeds to consumer and business premises?

Question 4.1(c)

Do you consider that such a variation in the speed floor between households and businesses would have a material risk of distorting the broadband market?

Question 4.2

Do you think that the suggested minimum ratio between upload and download speeds is set at a suitable level?

Question 4.3

Do you agree with the government's view that including a 'escalator' within any minimum speed requirements would have merit?

If so:

Question 4.3(a)

Do you have a preferred option based on the information provided in this chapter?

Question 4.4

Should the government set different quality parameters for residential and business consumers reliant on very hard to reach interventions?

Question 4.5

Do you think that the suggested quality parameters are set at a suitable level?

Question 4.6

Do you think that the suggested quality parameter output measurements are appropriate to capture the necessary performance data?

Question 4.7

Do you have any additional quality parameters that you believe should be included for connections that are determined to be very hard to reach interventions?

Question 4.8

Do you agree with the level that the government has proposed setting as the maximum latency requirement?

If not:

Question 4.8(a)

Can you explain your reasoning for proposing a different cap to the one put forward in this document?

Question 4.9

Do you agree with the level that the government has proposed setting the contention ratio at?

If not:

Question 4.9(a)

Can you explain your reasoning for proposing a different contention ratio to the one put forward in this document?

Question 4.10

Do you agree that there should be a minimum data cap set for premises receiving a connection under a ‘very hard to reach’ policy?

If so

Question 4.10(a)

Do you agree with our proposed minimum data cap parameters as set out above?

Question 4.11

Should data caps only be set for certain technologies where capacity constraints are a concern such as satellite and Fixed Wireless Access?

Question 4.12

Do you agree with differentiating between ‘peak’ and ‘non-peak’ hours for data caps?

Question 4.13

Do you believe that price and affordability should be taken into account when considering policy options for very hard to reach premises?

If so:

Question 4.13(a)

Should any ‘price caps’ be set at a specific level or should they be relative to another measure?

Question 4.13(b)

How often should any ‘price cap’ be reviewed?

Question 4.14

Should ‘price cap’ only be set at specific broadband speeds and/or data caps?

If so:

Question 4.14(a)

What speed and/or data caps should the ‘price cap’ be set at?

Question 4.15

Should providers to very hard to reach premises be required to offer social tariffs?

Chapter 5: Barriers to delivery

Question 5.1

Have you, as a market participant, identified difficulties in how the Electronic Communications Code operates when planning and deploying infrastructure in very hard to reach areas?

Question 5.2

Will the policies put in place by the government through the PSTI Act 2022 make it easier to deploy digital infrastructure in rural and remote areas?

If not:

Question 5.2(a)

Please explain why you feel that these policies will not make it easier to deploy digital infrastructure in rural and remote areas.

Question 5.3

Have you, as a market participant, used an alternative technology that did not require planning permissions or wayleaves?

Question 5.4

Have you, as a resident or community, used an alternative technology that did not require planning permissions or wayleaves?

Question 5.5

Have you, as a market participant, not built infrastructure in a remote rural area due to high costs/increased time taken to deploy due to difficulties obtaining a wayleave or due to another legislative obstacle?

Question 5.6

What further measures, if any, could the government introduce to help reduce the barriers to delivery caused by wayleaves or other planning issues in very hard to reach areas?

Question 5.7

Have you, as a market participant, experienced barriers as a result of current spectrum policy?

If so:

Question 5.7(a)

Please explain which spectrum policies or issues have affected your ability to deliver to premises in very hard to reach areas.

Question 5.8

What further measures, if any, should policy makers consider to help reduce the barriers to delivery caused by spectrum availability in very hard to reach areas?

Annex B: Glossary/key terms

Category	Term/acronym	Meaning
Broadband technology	FTTP/FTTH	Fibre to the Premises/Fibre to the Home - This refers to an access network structure in which the optical fibre runs from the local exchange to the end user's living or office space. Also known as ‘full fibre’.
	FTTC	Fibre to the Cabinet - An access network structure in which the optical fibre extends from the exchange to the cabinet. The street cabinet is usually located only a few hundred metres from the subscriber’s premises. The remaining part of the access network from the cabinet to the customer is usually copper wire
	Cable	Telecommunications infrastructure which uses cable networks, such as Data Over Cable Service Interface Specification (DOCSIS-3) networks.
	Superfast Broadband (SFBB)	Download speeds from 30 Mbps up to 100 Mbps.
	Ultrafast Broadband (UFBB)	Able to deliver download speeds equal to or greater than 100 Mbps.
	ADSL	Asymmetric Digital Subscriber Line - A technology used for sending data quickly over a conventional copper telephone line. It is used in current internet services with download speeds up to 24 Mbps
	Gigabit	A unit measurement of data. One gigabit is the equivalent of 1,000 Megabits. Gigabit-capable broadband provides a broadband connection of at least 1 Gigabit per second (Gbps) data download speeds.
	Gigabyte	A unit measurement of data. The equivalent of 8 gigabits (or 8,589,934,592 bits of information). Each byte is eight bits.
	Terabit	A unit measurement of data. The equivalent of 1,000 Gigabits. In test environments, FTTP connections have achieved speeds of more than 1 terabit per second.
	Terabyte	A unit measurement of data. There are 1000 gigabytes in a terabyte (or 1,024 in a Tebibyte, if using binary prefixes).

Wireless technology	Wireless	High-speed internet access where connections to the premises use radio signals rather than cables.
	4G	Fourth-generation mobile phone standards and technology. Provides faster mobile data speeds than the 3G standards that it succeeds.
	4G LTE	A type of 4G technology. Short for "Long Term Evolution", it's slower than "true" 4G but significantly faster than 3G.
	5G	The term used to describe the next-generation of wireless networks beyond 4G mobile networks. 5G is expected to deliver faster data rates and a better user experience.
	GEO	Geosynchronous Orbit satellites, operating c.35,800km from Earth. Typically, communication, TV, and weather satellites, they stay over the same point of the equator by matching the direction and speed of the Earth's rotation.
	HEO	High Elliptical Orbit satellites. HEO satellites increase speed around the bottom of their path, and slow towards the top, allowing them to spend more time in sight of a certain area. They were used for previous Sirius (satellite radio) satellites.
	MEO	Medium Earth Orbit satellites, operating c.20,000km from Earth. These are mainly GPS and other positioning satellites, often networked together to create a 'constellation', allowing broader coverage.
	LEO	Low Earth Orbit satellites, operating between 180 and 800 km from Earth. Currently, they are typically Earth observation satellites, whose close orbits enable better visibility of the Earth's surface. LEO satellites are increasingly used to provide digital connectivity through companies like Starlink and OneWeb.
	FWA	Fixed Wireless Access. Internet access provided over the airwaves using wireless network technology, rather than a physical connection through traditional fibre or copper wiring.
	GHz	Gigahertz. A unit of measurement for alternating current or electromagnetic wave frequencies equal to one billion Hz (hertz). Radio frequencies are typically measured in GHz.
	HAPS	High altitude platforms. Non-terrestrial but also non-space-based technologies used to support communications networks (and sometimes other

		applications, such as near-earth imaging). International Telecommunication Union (ITU) radio specifications consider HAPS as being deployed within the stratosphere, normally between 20km and 50km about the earth.
	HTS	High Throughput Satellite. HTS satellites offer many times the throughput of the traditional Fixed Satellite Service (FSS) using the same amount of allocated orbit space. This is done by taking advantage of frequency reuse and spot beams. By doing so, the cost per bit delivered is reduced, regardless of spectrum choice.
	ITU	International Telecommunication Union. A specialised agency of the United Nations responsible for all matters related to information and communication technologies.
	Ka-band	Satellite services using the 26.5-40GHz segment of the electromagnetic spectrum. In satellite communications, the Ka-band allows higher bandwidth communication. It was first used in the experimental ACTS Gigabit Satellite Network and is currently used in the Inmarsat I-5 system and the SpaceX Starlink system
	Ku-band	Satellite services using the 12-18GHz segment of the electromagnetic spectrum. The Ku band is most notably used by direct broadcast satellites to broadcast satellite television, and for specific applications such as NASA's Tracking Data Relay Satellite used for International Space Station (ISS) communications.
Broadband/ connectivity Terminology/ regulation	Backhaul	The connection from a mobile mast (or fixed network access node) back to a data centre (or other point of interconnection). While a backhaul can be done via a wireless or satellite connection, typically it is conducted via fibre networks wherever possible.
	Connected Nations	A report published or updated by Ofcom 3 times a year, reporting on statistics for broadband and mobile coverage in the UK.
	Latency	The time it takes for data to travel from an end-user to a data centre server and back. High latency means broadband connections feel slow to end-users and cause issues for certain activities, like online gaming.

	VHTR	Very Hard to Reach premises - as defined in this document, see Chapter 4.
Government market interventions and other relevant programmes	GBVS	Gigabit Broadband Voucher Scheme - Since April 2021, eligible homes and businesses in rural areas that are part of a group project have been able to access a voucher to help fund an improved connection.
	Superfast Broadband Programme	A BDUK-led programme committed to subsidising the roll-out of broadband infrastructure in harder-to-reach areas. The programme launched in 2010 and has predominantly focused on providing superfast (30 Mbps) broadband speeds.
	Project Gigabit	A new £5 billion programme to support the rollout of gigabit-capable broadband in hard to reach parts of the United Kingdom. Project Gigabit will be managed by Building Digital UK.
	USO	Broadband Universal Service Obligation - a digital 'safety net' for premises currently unable to access a decent broadband connection of at least 10 Mbps download and 1 Mbps upload. The USO was launched in March 2020 and gives every premises the legal right to request a decent, affordable broadband connection subject to meeting the necessary eligibility criteria, up to a reasonable cost limit. It is overseen by Ofcom and funded by the telecoms industry.
Type of telecoms provider	ISP	Internet Service Provider – An organisation which provides households/businesses access to the internet. ISPs do not always own the infrastructure used to provide services, and can use the infrastructure owned by network providers to provide services.
	WISP	Wireless Internet Service Provider - As 'ISP' above, but specifically using a wireless network for services
	Network provider	Telecommunications providers which own infrastructure which is used to deliver internet services.
	Alt-nets	Alternative network – Smaller network providers that are typically not reliant on the Openreach network (though they may make some use of Openreach's passive infrastructure).
	MNO	Mobile Network Operator - a provider of wireless communications services. The UK's 4

		largest mobile networks are EE (BT), O2, Three and Vodafone.
Public sector organisations involved in policy, regulation or delivery	BDUK	Building Digital UK, an Executive Agency of DSIT.
	DSIT	Department for Science, Innovation and Technology created in February 2023. Prior to its creation, responsibility for digital policy was held by the Department for Digital, Culture, Media and Sport (DCMS).
	DEFRA	Department for Environment, Food and Rural Affairs.
	Local Bodies	Local Authorities and Devolved Governments responsible for delivering local Superfast Broadband Programme projects. Some also deliver other digital infrastructure projects or have provided ‘top-ups’ to the Gigabit Broadband Voucher Scheme.
	Ofcom	Office for Communications. Ofcom is the independent regulatory body responsible for telecoms and digital infrastructure issues, amongst other topics.

This consultation is available from: www.gov.uk/government/organisations/department-for-science-innovation-and-technology

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