



BRIEFING PAPER

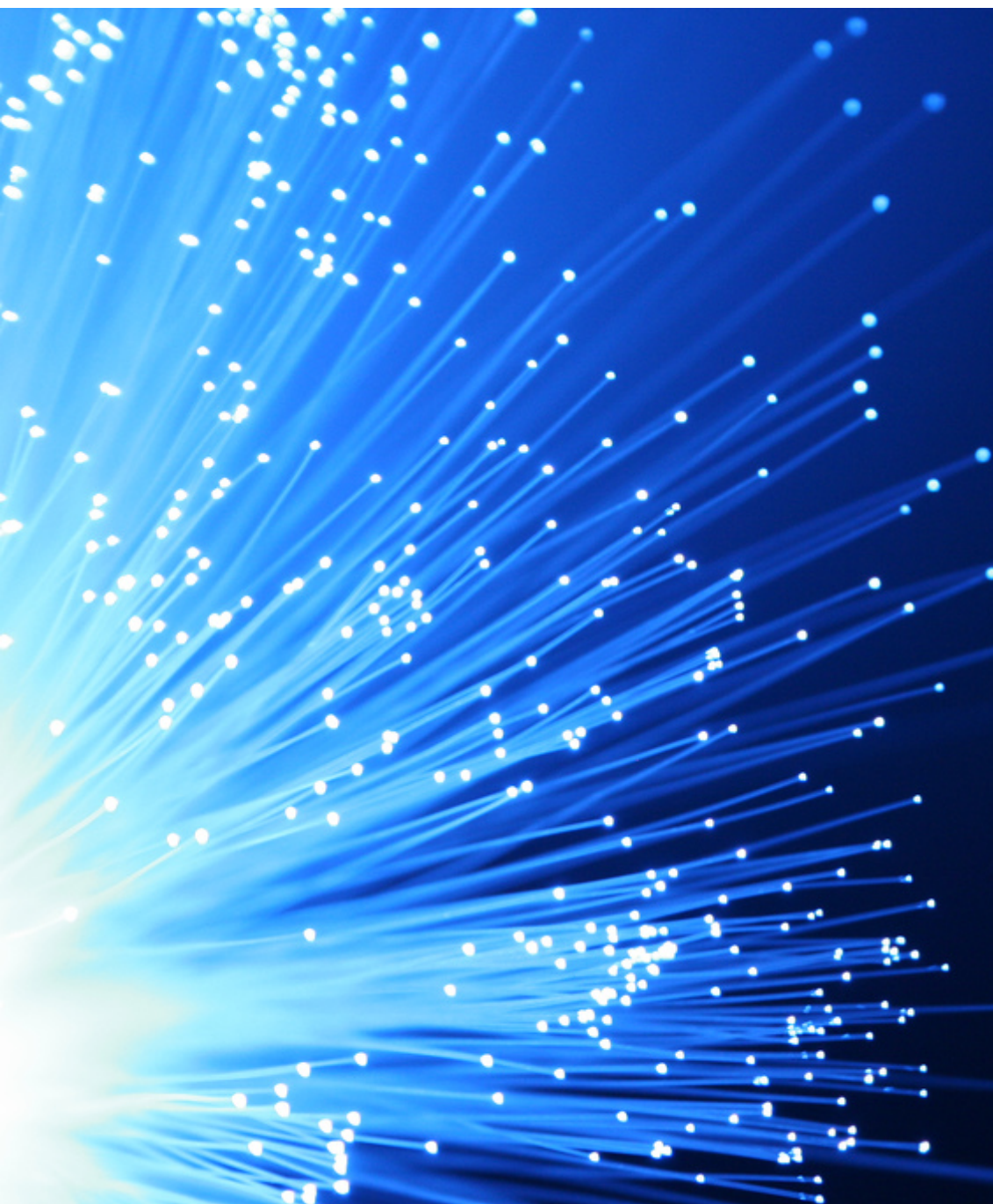
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Gigabit-broadband in the UK: Government targets and policy

By Georgina Hutton

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Summary

The Government's target is for [at least 85% of UK premises](#) to have access to gigabit-broadband by 2025. It said it will "seek to accelerate roll-out further to get as close to 100% as possible."

This paper covers the Government's targets and policy on gigabit-broadband roll-out by industry.

What is gigabit-capable broadband?

Gigabit-capable broadband means download speeds of at least 1 gigabit-per-second (1 Gbps or 1000 megabits per second, Mbps). A 1 Gbps download speed would allow a high-definition film to be downloaded in under 1 minute.

Gigabit-capable broadband can be delivered by a range of technologies, including: full-fibre connections, high-speed cable broadband and potentially 5G networks.

Does the UK need an infrastructure upgrade?

95% of UK premises have a superfast broadband connection available (download speed of at least 30 Mbps), provided mostly by part-fibre, part-copper networks.

Although superfast broadband is sufficient for most household needs, the demand for services that use a lot of data, such as online video streaming, is increasing. The coronavirus pandemic has further highlighted the need for widely available and reliable digital connectivity. Around 1.5 million premises do not have a superfast broadband connection available.

Where is gigabit- broadband available currently?

In September 2020, 27% of UK premises had a gigabit-broadband connection available, according to telecoms regulator, Ofcom. However, only 1.4% of postcodes were receiving gigabit speeds.

The Library's [broadband data dashboard](#) allows users to explore where gigabit-broadband is available by constituency.

The [Government has forecast](#) that gigabit-broadband will be available to 60% of the UK by the end of 2021.

The Government's target has reduced

The Government's 85% target, announced in November 2020, is a reduction from its original aim to deliver nationwide gigabit broadband coverage by 2025.

The Government told the Commons Digital Culture Media and Sport (DCMS) Committee that it expects the new target to be met by the [telecoms industry delivering 80% coverage](#) by 2025. It said the reduced target reflected how quickly it expected industry could build in areas requiring public funding alongside their commercial roll-out.

The reduced target has been described as a "[blow to rural communities](#)". The Public Accounts Committee [raised concerns](#) that rural areas could be "locked out of gigabit broadband for years to come".

How will gigabit-broadband be rolled out?

The Government's policy is that gigabit-broadband infrastructure will be mostly built using private investment. Private companies decide when and where to build infrastructure based on commercial factors.

4 Gigabit-broadband in the UK: Government targets and policy

The Government and Ofcom have committed to policy and regulatory reforms to lower the cost of building infrastructure and to promote a competitive market.

£5 billion in public funding has been pledged to deliver gigabit-broadband to properties not reached by the commercial market (around 20% of the UK). These properties are mostly in rural areas. Funding plans are covered in the Library briefing, [Gigabit-broadband in the UK: public funding](#).

Policy reforms required to meet the target

Telecoms industry stakeholders say that urgent policy reform is still required to meet the 85% target.

The Government has been working on reforms including to make it easier to access land to install infrastructure and to ensure that new homes are built with gigabit-broadband installed. Industry stakeholders are calling further tax relief on new gigabit investments and for the Government to address skilled labour shortages that could delay roll-out.

The Commons Public Accounts and DCMS Committees both said in December 2020 that the Government's progress on these reforms had been slow. The DCMS Committee said the Government [risked missing the new target](#) in the face of "considerable challenges" to infrastructure roll-out.

Is telecommunications a reserved power?

The UK Government has primary responsibility for broadband policy and coverage targets because telecommunications is a reserved power.

However, the delivery of broadband infrastructure projects often involves local authorities or devolved responsibilities, such as building regulations, planning and business rates.

The devolved administrations and local authorities in England had a formal role in delivering broadband infrastructure in their regions under the Government's previous public funding programme for broadband, the [superfast broadband programme](#).

1. Gigabit-capable broadband: what and why?

1.1 Background: superfast broadband

From 2010, Government policy focused on the roll-out of superfast broadband – usually defined as download speeds of 30 megabits per second (Mbps).¹

Superfast broadband was available to 95% of UK premises as of September 2020. It is fast enough for most current individual household needs.²

The roll-out of superfast broadband in the UK has primarily been led by private companies such as Openreach and Virgin Media. The Government's [superfast broadband programme](#) subsidised the delivery of broadband infrastructure to areas not reached by the private sector.³

Superfast broadband in the UK has been mostly delivered by Fibre-to-the-Cabinet (FTTC) technology. FTTC is a part-fibre part-copper technology: fibre optic cables run to a street cabinet, and then existing copper telephone wires are used to connect the cabinet to individual premises. The speed of connection decreases the further away from the cabinet the premises is based, because the signal loses strength as it travels along the copper wire.

FTTC relies on using the copper telephone network which (other than in Hull) is owned and operated by Openreach, the infrastructure division of the BT Group.⁴

Broadband retail providers, such as BT retail, Sky and TalkTalk, deliver broadband services to consumers using Openreach's network.

Other technologies are also capable of supporting superfast broadband, including cable broadband (delivered by Virgin Media) and fixed wireless connections (usually delivered by smaller regional providers).

A [glossary of technical terms](#) is provided at the end of this paper.

1.2 Do we need a digital infrastructure upgrade?

Superfast broadband is fast enough for most current individual and household needs. However, average fixed-line broadband data per month has been steadily increasing since 2013, reaching 315 gigabytes

95% of the UK a superfast broadband connection available, provided mostly by part-fibre, part-copper networks.

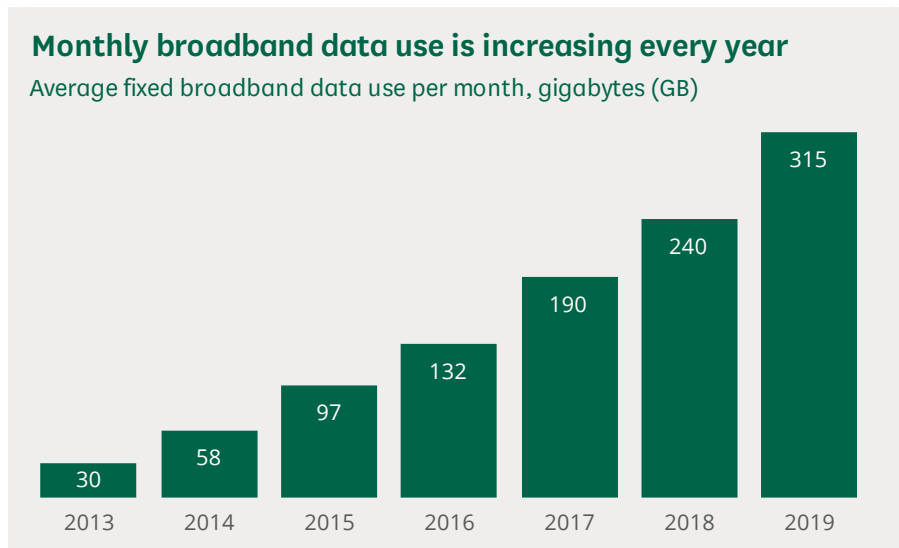
¹ There is no single definition of superfast broadband. The Government's superfast broadband targets were based on a superfast broadband definition of download speeds of at least 24 Mbps.

² Ofcom, [Connected Nations 2020](#), published 17 December 2020.

³ Briefly, under the superfast broadband programme the Government provided funding to the devolved Administrations and local authorities in England who led broadband delivery projects in their regions. Library briefing paper [Superfast broadband in the UK](#) (SN06643) provides for more information.

⁴ See the Library briefing paper on [BT and Openreach](#) (CBP 7888, 11 January 2019) for more information. KCOM owns and operates the copper telephone network in Hull.

(GB) per month in 2019, a 31% increase on 2018.⁵ This is largely driven by the availability and demand for online video streaming and video calls, which use a lot of data. These high data-demands can push the limits of a superfast broadband connection, especially if there are many users on the network at the same time.



Source: Ofcom, [Communications market report 2020](#).

In July 2018 the National Infrastructure Commission concluded that it was uncertain if and when the demand for data would outstrip existing networks. It described that a decision to invest in full-fibre networks, compared to upgrading the existing copper network, was a “risk worth taking” to avoid the potential consequences of not having digital infrastructure to support future needs.⁶

The coronavirus pandemic, which has forced large scale remote working and learning, has further highlighted the need for widely available and reliable digital infrastructure. Although the UK has high availability of superfast broadband, 1.5 million premises (5%) still do not have access to superfast speeds. These premises are generally the most expensive or difficult premises to reach with new infrastructure; 58% are in rural areas.⁷

Access to digital connectivity is not just about the availability of infrastructure (the focus of this paper), but also concerns the affordability of services and the digital skills to access them. For further discussion on these aspects, see the POST briefing [Covid-19 and the digital divide](#).

Research commissioned by Ofcom in 2018 showed that broadband investment has contributed significantly to the UK economy over the last 15 years.⁸ Most commentators agree that continuing investment in new networks such as full-fibre and 5G will continue to bring economic

⁵ Ofcom, [Communications Market Report 2020](#), accessed 20 April 2021.

⁶ National infrastructure Commission, [National Infrastructure Assessment](#), 10 July 2018, page 21-22.

⁷ Ofcom, [Connected Nations 2020](#).

⁸ Ofcom, [The economic impact of broadband](#), 27 April 2018; research carried out Dr Pantelis Koutroumpis, Oxford University.

and societal benefits, however the extent and scale of benefits is difficult to predict.⁹ Commonly cited benefits include enhanced productivity from home working, enhanced employment opportunities, new business opportunities, and efficiency benefits for public services through online access.

In the 2019 General Election all main political parties pledged major digital infrastructure upgrades in their manifestos.¹⁰ Delivering UK-wide gigabit-capable broadband is a major part of the Government's [National Infrastructure Strategy](#) and "levelling up" agenda.¹¹

1.3 What is gigabit-capable broadband?

Gigabit-capable broadband means any technology that can deliver speeds of at least 1 gigabit per second (Gbps). 1 Gbps is equal to 1000 Mbps.

A 1 Gbps download speed would allow a high-definition film to be downloaded in under 1 minute.

Gigabit-capable broadband can be delivered by different technologies including:

- **full-fibre broadband** (also called Fibre-to-the-Premises or Home FTTTP/FTTH). Full-fibre consists of fibre optic cables running from the local exchange directly to each premises. It is the most reliable broadband technology currently available and capable of the fastest speeds. Fibre infrastructure is also important for supporting high-capacity mobile networks such as 5G (Box 1)
- high-speed **cable broadband** (DOCSIS3.1) Cable broadband uses a combination of fibre-optic cables and co-axial cables (used for cable TV). Cable broadband is mostly delivered by Virgin Media in the UK. Virgin Media is upgrading its network to gigabit-capable DOCSIS 3.1.
- future [5G networks](#) (Box 1); although gigabit speeds may be challenging to deliver using 5G in rural areas.

See the glossary (section 6) for more information on broadband speeds and technologies.

⁹ See for example: Broadband Stakeholder Group, [Local Benefits for Full Fibre and 5G](#), report by economic consultancy Oxera, 13 September 2019; Openreach, [Full-fibre broadband: a platform for growth](#), report from the Centre for Economics and Business Research for Openreach, October 2019; City Fibre, [The Economic Impact of Full Fibre Infrastructure in 100 UK Towns and Cities](#), report by economic consultancy Regeneris for City Fibre, March 2018;

¹⁰ See for example: [Conservative and Unionist Party Manifesto](#) 2019; [Labour Party Manifesto](#) 2019; [Liberal Democrats Manifesto](#), 2019; [Scottish National Party Manifesto](#) 2019; [Plaid Cymru Manifesto](#), 2019; [Green Party Manifesto](#) 2019.

¹¹ HM Treasury, [National Infrastructure Strategy](#), 25 November 2020.

Box 1: 5G and full-fibre broadband

5G is the next generation of wireless communications technology, after 4G mobile broadband. 5G is expected to support very fast download speeds and near instant response times, allowing many devices to access large amounts of data at once. 5G is expected to deliver applications beyond mobile phone services, for example in health care, automated manufacturing, transport and traffic management.

Fibre infrastructure is important for mobile networks because the masts that transmit mobile signals must be connected to a core internet network. The connection between a mobile mast and the core network is called backhaul. Backhaul is usually provided by fibre cables due to the need to support large volumes of data traffic. This is particularly the case for 5G due to the large volumes of data that 5G networks will support.

Base stations for 5G networks will likely be close together. This is because some applications of 5G will use higher frequency spectrum that cannot travel long distances. These base stations will require a dense fibre infrastructure to support them or new solutions to provide backhaul.

The [Library briefing paper on 5G](#) provides more information about 5G technology and roll-out.

1.4 Is telecommunications a reserved power?

The power to legislate with respect to telecommunications is reserved to the UK Parliament.¹² The UK Government has primary responsibility for setting broadband policy and coverage targets.

However, the delivery of broadband infrastructure projects often involves local authorities or devolved responsibilities – for example, engagement with planning and highways authorities regarding street works. Devolved responsibilities relevant to digital infrastructure roll-out include economic development, building regulations, planning and business rates.

Broadband projects in the devolved administrations

The devolved administrations (and local authorities in England) have a history of leading broadband delivery projects in their area. This is due to the approach taken in the Government's previous funding programme for broadband – the [superfast broadband programme](#).

Under the superfast broadband programme, the UK Government provided funding to local authorities in England and the devolved administrations to deliver digital infrastructure projects in their regions.¹³ The devolved administrations and local bodies were required to contribute their own funding too.

These projects are ongoing in the devolved nations are now primarily delivering gigabit-capable (full-fibre) connections.

The Library briefing, [Gigabit-broadband in the UK: public funding](#), explains how these projects work alongside the Government's new funding programme for gigabit-broadband.

¹² [Section C10 of Schedule 5 of the Scotland Act 1998](#); [Section C9 of Schedule 7A of the Wales Act 2017](#); Northern Ireland Department for the Economy, [Broadband policy context in Northern Ireland](#) and Cabinet Office, [Devolution settlement: Northern Ireland](#), 20 February 2013 [accessed 5 June 2018].

¹³ The Library briefing paper on [Superfast broadband in the UK](#) (SN06643) provides for background information.

2. Gigabit-capable broadband in the UK

As of September 2020, 27% of UK premises had a gigabit-capable broadband connection available according to Ofcom. 18% had full-fibre broadband available.

The table below shows the percentage of residential premises in rural and urban areas in each nation able to receive full-fibre and gigabit-capable services as of September 2020.

In England and Wales, full fibre availability is similar in urban and rural areas, while gigabit-capable services are more likely to be available in urban areas. In Scotland and Northern Ireland, both full fibre and gigabit-capable services are more likely to be available in urban areas.

The Library [data dashboard on broadband speeds](#) allows users to explore broadband coverage by constituency.

Residential gigabit-capable and full fibre coverage

September 2020, % of premises

Nation	Full fibre			Gigabit-capable		
	Total	Urban	Rural	Total	Urban	Rural
England	16%	16%	17%	25%	26%	18%
Scotland	17%	18%	12%	42%	47%	13%
Wales	19%	19%	19%	19%	19%	19%
Northern Ireland	56%	71%	17%	56%	71%	17%
UK	18%	18%	17%	27%	29%	17%

Source: Ofcom, Connected Nations 2020, p16

At the time this data was collected, all gigabit-capable services in Wales and Northern Ireland were provided by full fibre technologies. In England and Scotland, by contrast, further gigabit-capable services are available in some areas – mostly urban areas – through other technologies. Ofcom states that since this data was gathered, Virgin Media has announced that gigabit-capable services will be available in Northern Ireland, and this will be reflected in future data.¹⁴

The population-based map overleaf shows the availability of gigabit-capable services across small areas in England and Wales. Several large cities and towns outside London have high availability, e.g. Leeds, Liverpool, Birmingham and surrounds, Hull, Milton Keynes, and Reading. Availability in London is less widespread. Other large cities and towns with lower availability include Nottingham, Leicester, Sheffield, Stoke-on-Trent, Middlesbrough, Brighton, and Plymouth.

¹⁴ Ofcom, [Connected Nations 2020](#), Main report page 16, December 2020.

Gigabit broadband availability

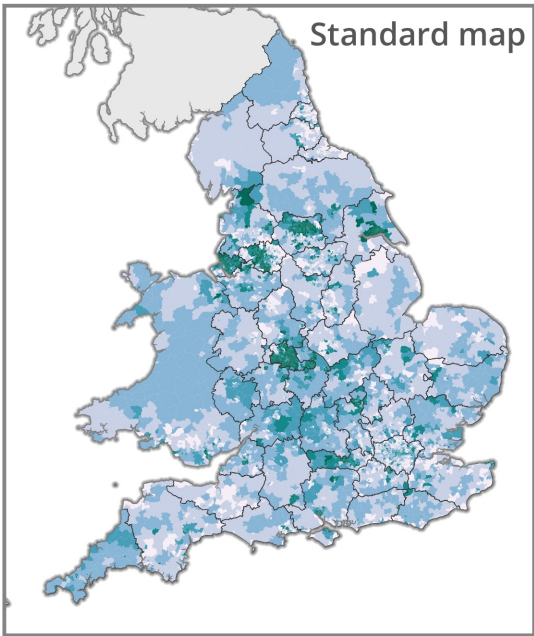
Population-based map of small areas (MSOAs) in England and Wales, Sep 2020

How to read this cartogram

On this map, areas are approximately scaled in size according to their populations. Each small hexagon represents a Middle-Layer Super Output Area (MSOA) with a population of around 7,000-10,000 people.

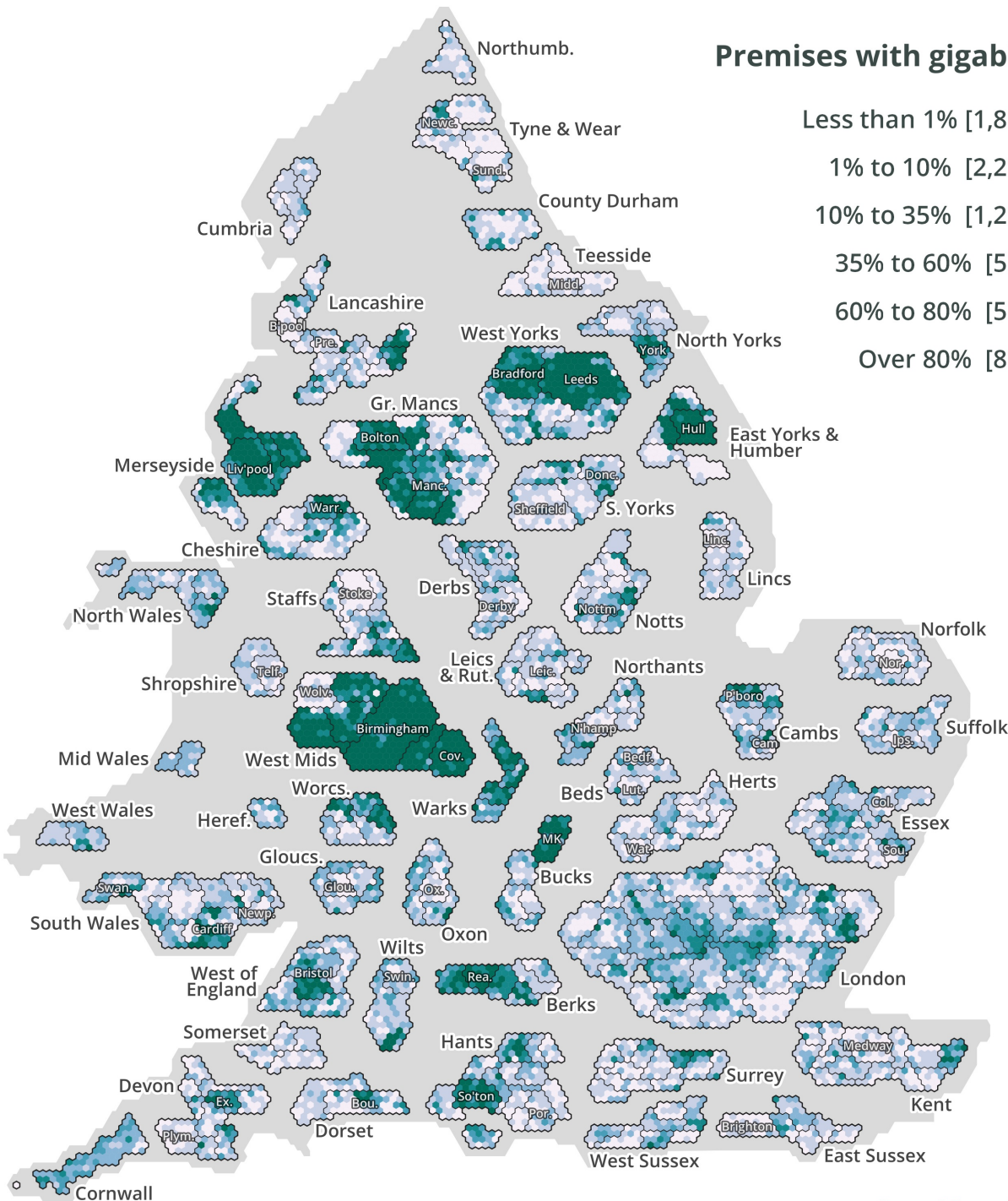
Areas are grouped by ceremonial counties, conurbations, and other recognisable sub-national areas. These groups include unitary authorities (e.g. Nottingham UA in the Notts group) and don't all reflect current local gov structures. The boundaries between groups are also marked in black on the standard map to the right.

Dark lines between hexagons represent local authority boundaries. Extra labels are provided for large towns & cities to help you locate particular cities and towns (e.g. 'Lut.' = Luton). The light grey shaded country outline area between county groups doesn't represent data and serves only as a background.



Premises with gigabit availability

- Less than 1% [1,801 areas]
- 1% to 10% [2,220 areas]
- 10% to 35% [1,235 areas]
- 35% to 60% [538 areas]
- 60% to 80% [525 areas]
- Over 80% [882 areas]



International comparisons

Full-fibre was available to 44% of households in France and 10.5% of households in Germany in mid-2019 according to the European Commission's [2019 Broadband Coverage report](#).

European countries with the highest levels of full-fibre coverage to households in 2018 were Latvia (88%), Spain (80%) and Iceland (80%).¹⁵ At the time of this report the UK had 10% full-fibre coverage. This was lower than all EU countries except for Greece, Belgium and Cyprus.¹⁶ The UK however ranked 9th highest for superfast broadband coverage.¹⁷

Many factors can affect how easy or difficult it is to build broadband infrastructure, so it's not always fair to make direct comparisons between countries.

Factors include: different geographies, population distributions, existing infrastructure and the history of telecoms regulation and ownership. For example, South Korea and Japan, which had 99% full-fibre coverage in 2017, have high population densities and large proportions of people living in urban areas, which reduces the cost-per-premises to build full-fibre.¹⁸ Some countries also prioritised full-fibre infrastructure from an early stage, rather than prioritising fibre-to-the-cabinet (FTTC) in the first instance like in the UK.

¹⁵ European Commission, [Broadband Coverage in Europe 2019](#), 16 October 2020.

¹⁶ For more comparisons see the NAO's report [Improving Broadband](#), 16 October 2020

¹⁷ Out of EU 28 Member States plus Norway, Iceland, and Switzerland.

¹⁸ Ofcom, [International Communications Market Report 2017](#), 18 December 2018, page 52.

3. Government targets

3.1 May Government target (2018)

Theresa May's Government set a target in 2018 to deliver a nationwide full-fibre broadband network by 2033, with 15 million premises connected to full-fibre by 2025 (around 48%).¹⁹ This target upgraded the Government's previous target set in 2017 to connect 10 million premises to full-fibre "over the next decade."²⁰

The May Government's strategy for meeting the 2033 target was set out in its [Future Telecoms Infrastructure Review](#) (FTIR), published on 23 July 2018. The FTIR acknowledged that gigabit-capable technologies other than full-fibre (such as hybrid fibre-wireless solutions) may be necessary for some of the hardest to reach premises.²¹

3.2 Johnson Government

The Johnson Government's 2019 General Election manifesto adopted an accelerated target to deliver "nationwide gigabit broadband" by 2025.²² In November 2020 this was revised, replaced with an aim of delivering a "minimum of 85% by 2025."²³

Gigabit-capable broadband or full-fibre?

Commentators have highlighted the Johnson Government's change in terminology, from originally promising nationwide "full-fibre" broadband by 2025 (adopted when Boris Johnson first became Prime Minister in July 2019),²⁴ to the now technology-neutral commitment to "gigabit broadband".

Telecom industry news website *ISPReview* [described the change in terminology](#) to "gigabit broadband" as a "watering down" of the target but that the change made the 2025 timescale more realistic.²⁵ In particular, Virgin Media's plans to upgrade its cable network (which covers around 55% of UK premises) to gigabit-capable DOCSIS3.1 technology means that there will be a significant up-tick in "gigabit capable coverage" in 2020–21.²⁶

The Government has a target to deliver at least 85% gigabit-capable broadband coverage by 2025.

¹⁹ This target was first announced in a speech by the Chancellor in May 2018: HM Treasury, [Chancellor speech: CBI Annual Dinner 2018](#), 22 May 2018, accessed 31 August 2018.

²⁰ [Conservative and Unionist Party Manifesto](#), 2017. HM Government, [Industrial Strategy](#), November 2017, page 154.

²¹ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018, para137, page 45-46.

²² [Conservative and Unionist Party Manifesto](#) 2019, December 2019; PM's Office, [Queens' Speech](#) and [background briefing notes](#), 19 December 2019.

²³ HM Treasury, [National Infrastructure Strategy](#), 25 November 2020, page 31.

²⁴ During Boris Johnson's campaign to become Prime Minister in July 2019: [Let's reboot 'left-behind' Britain with a turbo-charged broadband revolution](#), Boris Johnson, *The Telegraph*, 16 June 2019 and [HC Deb 663, 25 July 2019 c12486](#).

²⁵ [Government to Water Down 2025 Full Fibre for All UK Target – Become Gigabit](#), Mark Jackson, *ISPReview*, 14 September 2019; [Government dodges 'full fibre for all by 2025' pledge](#), *BBC News*, Leo Kelion, 14 October 2019. [accessed 2 January 2020]

²⁶ Gigabit Broadband ISP Coverage Jumps to 34% of UK Premises, *ISP Review*, Mark Jackson, 9 November 2020.

In a *Telegraph* article in January 2020, Matthew Hare, (founder of Gigaclear, a rural full-fibre broadband provider) argued that a commitment to nationwide full-fibre would be the most future-proof technology choice.²⁷

The House of Commons Digital Culture Media and Sport Committee, in its December 2020 report, [Broadband and the road to 5G](#), said the Government's technology-agnostic approach "makes sense in the context of delivering faster connections to as many premises as possible as quickly as possible," but must not "come with a trade-off in performance or longevity."²⁸

The Committee said it was "not convinced" that the technology-agnostic approach "extends much beyond ministerial pronouncements."²⁹ The Government's response to the Committee's report highlighted wireless broadband programmes, including gigabit-capable 5G trials, that were ongoing with Government funding and stated that the Department "reviews its policies frequently to ensure it delivers the best connectivity possible with the funding provided".³⁰

The nationwide-by-2025 target was questioned

Telecoms industry stakeholders welcomed the Government's "nationwide by 2025" target in 2019 but questioned its feasibility, stating that [urgent policy reform](#) would be required to tackle issues causing delays.³¹

The House of Commons Environment Food and Rural Affairs (EFRA) Committee, in its September 2019 report on rural broadband, welcomed the Government's 2025 target, but was "sceptical that this target will be achieved without substantial new, long-term, public investment and potentially controversial regulatory reform."³²

In October 2020, the NAO stated that the [2025 timeline was "very challenging"](#). It said that experience from the superfast programme and other major programmes demonstrated the importance of "setting and publishing a realistic timetable and continuing to test whether this is achievable". The NAO said that failing to "manage the tension between meeting a timeline and serving those in greatest need," risked widening the rural divide.

When pressed in oral evidence to the DCMS Committee on 22 October 2020, Digital Minister Matt Warman acknowledged that the target was

²⁷ [Boris must not water down pledges on UK full-fibre broadband](#), Matthew Hare, *The Telegraph*, 3 January 2020, accessed 3 January 2020.

²⁸ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 40.

²⁹ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 95.

³⁰ [Correspondence from the DCMS to Chair of the DCMS Select Committee dated 21 February 2021](#) in response to the Committee's December 2020 report, *Broadband and the Road to 5G* (HC 153).

³¹ techUK, [Connected Britain – Can reality meet the rhetoric on Fibre roll out?](#) Matthew Evans, 9 August 2019; [Broadband chiefs fire back at PM's full-fibre internet pledge](#), Leo Kelion, *BBC News*, 3 August 2019).

³² EFRA Committee, [An Update on Rural Connectivity](#) 17th Report of Session, HC 2223, 18 September 2019, para 67.

challenging but said he was “absolutely confident” the Government would “strain every sinew to get there”.³³

85% coverage by 2025

In the [National Infrastructure Strategy](#) (November 2020) the Government said it now aimed to work with the telecoms industry to deliver a “minimum of 85% gigabit broadband coverage by 2025”:

[The Government] will seek to accelerate roll-out further to get as close to 100% as possible. The government will continue to implement an ambitious programme of work to remove barriers to broadband deployment and maximise coverage in the hardest to reach areas of the country.³⁴

Press reports and rural stakeholders described the reduced target as a “kick in the teeth” for rural communities.³⁵

Labour spokesperson for Digital, Chi Onwurah has criticised the Government’s series of changes on its broadband policy as “either carelessness” or “deliberately misleading”.³⁶

The House of Commons DCMS Committee in its December 2020 report [Broadband and the road to 5G](#), said it was “inevitable” that the target would be revised, describing it as a “belated recognition that it was unrealistic.”³⁷ The Committee welcomed the revised target but criticised the delay in doing so:

the time it has taken to do so will have delayed industry, local bodies and consumers receiving the information they need to plan or build a robust investment case. Moreover, given that the previous target had been staunchly defended to us makes us question how much of a say DCMS had in the decision to scrap it, and the extent to which both the new target and its likely implications have been fully considered in consultation with industry.³⁸

The Committee called for the Government to outline how the revised target was calculated and for a “full assessment” of how it will be met.

The [Government’s response](#) in February 2021 stated that the target was based on “extensive engagement with industry over the past year, as well as current industry rates of deployment and how these may increase up to 2025.”³⁹

³³ DCMS Committee, Oral evidence: Broadband and the road to 5G, [HC153](#), 20 October 2020, Q76.

³⁴ HM Treasury, [National Infrastructure Strategy](#), 25 November 2020, page 31.

³⁵ [Gigabit broadband: Watered-down plans a ‘kick in the teeth’](#), *BBC News*, 26 November 2020; [Government’s softened broadband pledge is ‘kick in the teeth’](#), Matthew Field, *The Telegraph*, 25 November 2020.

³⁶ [HC Deb 2 December 2020, cWH240](#) [Rollout of broadband in Devon and Somerset]; [HC Deb 3 December, c535](#) [Digital infrastructure, connectivity and accessibility].

³⁷ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 27 and summary.

³⁸ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 27.

³⁹ [Correspondence from the DCMS to Chair of the DCMS Select Committee dated 21 February 2021](#) in response to the Committee’s December 2020 report, *Broadband and the Road to 5G* (HC 153).

In April 2021, the Government provided [further details to the Committee](#), explaining that it had always expected industry to deliver 80% gigabit-broadband coverage by 2025 subject to continued policy reforms. DCMS explained that the reduced 85% target was largely due to lack of certainty about how quickly industry could deliver to those areas requiring public funding at the same time as its commercial build:

Industry has always been clear that it is confident in covering the most commercial 80% with gigabit-capable broadband by 2025, subject to continuing work by the government's Barrier Busting Task Force to reduce the barriers to deployment. However, the industry's ability to deliver gigabit connectivity to all of the hardest to reach 20% at the same time that it is ramping up deployment in commercial areas is less clear, which is why the Government is targeting a minimum of 85% coverage by 2025, with an ambition to continue to work with industry to get as close to 100% as possible.⁴⁰

The House of Commons Public Accounts Committee January 2021 report, [Improving Broadband](#), said the 85% by 2025 target was still "challenging" and raised concerns over the DCMS's progress to meet it, particularly in relation to rural premises. It said it was concerned that DCMS had "yet to make any meaningful progress" on legislative changes "deemed essential by industry" to meet the target.⁴¹

The Committee made recommendations including that the Government set out a clear timeline and milestones for meeting the new target. The Government accepted all its recommendations.⁴²

Section 5 below discusses policy reforms that have been made or are on the agenda to help industry reach the target.

In March 2021 the Government published its first [Delivery Plan](#) setting out how the public funding programme for gigabit-broadband funding in hard to reach areas would work.⁴³ Further information is in the Library briefing, [Gigabit-broadband in the UK: public funding](#).

⁴⁰ [Correspondence from the Secretary of State for DCMS to Chair of the DCMS Select Committee, dated 1 April 2021](#), in response to the Committee's December 2020 report, *Broadband and the Road to 5G* (HC 153).

⁴¹ PAC, [Improving Broadband](#), HC 688, 2019-21, 8 January 2021, summary.

⁴² [Treasury Minutes: Government response to the Committee of Public Accounts on the Thirty fifth report from Session 2019-21](#), published 26 March 2021.

⁴³ DCMS, [Project Gigabit Phase One Delivery Plan](#), 19 March 2021.

4. Government policy: promoting a competitive market

4.1 Government policy approach

The Government's approach to gigabit-capable broadband roll-out is that the majority of infrastructure will be delivered by private investment. This means that private companies decide when and where to build infrastructure based on commercial considerations.

The Government has committed funding to support areas not reached by commercial investment. The Library briefing, [Gigabit-broadband in the UK: public funding](#) has more information.

The Government's strategy for gigabit-broadband roll-out is to promote private investment by encouraging a competitive market to deploy gigabit-capable infrastructure. This includes promoting a favourable regulatory environment and lowering "barriers" to infrastructure build (see section 5 below).

This policy approach was adopted by Theresa May's Government after a formal consideration of policy approaches through the [Future Telecoms Infrastructure Review](#) (FTIR) in July 2018. Both the National Infrastructure Commission and Ofcom also consider that market competition is the most appropriate way to encourage and deliver full-fibre build.⁴⁴ International comparisons, such as with Spain, France and Portugal, have shown coverage of full-fibre networks to be correlated with competitive market conditions.⁴⁵

The Labour Party's manifesto for the 2019 General Election adopted a different approach to digital infrastructure roll-out, proposing a nationwide [publicly owned full-fibre network](#), stating:

Labour will deliver free full-fibre broadband to all individuals and businesses by 2030. We will integrate the broadband-relevant parts of BT into a new public entity, British Broadband, with a mission to connect the country. Labour will aim to deliver free full-fibre broadband to at least 15-18 million premises within five years. [...]

Public ownership of the broadband network will help tackle the regional inequality in coverage caused by competition that has led to under-build in rural and remote communities, and over-build in profitable areas.⁴⁶

The Johnson Government has continued with the strategy outlined in the previous Government's FTIR, but with compressed targets and a shift to technology-neutral gigabit-broadband.⁴⁷ The Commons DCMS

⁴⁴ National Infrastructure Commission, [National Infrastructure Assessment](#), 10 July 2018. See also the House of Commons Scottish Affairs Committee, Digital Connectivity in Scotland, 18 July 2018, [HC 654](#), para 75.

⁴⁵ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018.

⁴⁶ [Labour Party Manifesto](#) 2019; Labour Party, [British Broadband: Labour sets out mission to connect communities across Britain by delivering free full-fibre broadband for all](#), 14 November 2019.

⁴⁷ See Section 3.2 on targets above. HM Treasury, [National Infrastructure Strategy](#), 25 November 2020.

Committee, in its December 2020 report, [Broadband and the Road to 5G](#), noted that the Johnson Government's accelerated timeline did not come with any renewed policy measures other than those outlined in the 2018 FTIR.⁴⁸ The [Government's response](#) to the Committee set out measures it is taking forward to support industry roll-out – these are discussed in section 5 of this briefing below.⁴⁹

Theresa May's Government committed in 2018 to monitor progress under the FTIR on an annual basis and undertake a "full review" of the strategy's impact after three years.⁵⁰ To date there has not been a formal review of the FTIR published.

4.2 How much will a nationwide gigabit-capable network cost?

The Government's [Future Telecoms Infrastructure Review](#) (FTIR, July 2018), estimated that the national roll-out of full-fibre broadband would require a total investment "in the region of £30 billion".⁵¹ The Government's National Infrastructure Strategy in November 2020 also quoted this figure for nationwide "gigabit-capable" broadband.⁵² Most of this investment will come from the private sector.⁵³

The National Infrastructure Commission came to a similar figure in 2018, estimating that the cost of building and maintaining a nationwide full-fibre network would be £33.4 billion (over a 30-year period).⁵⁴

4.3 What can a competitive market deliver?

Promoting a competitive market for gigabit-capable infrastructure means encouraging other companies to build infrastructure in competition to Openreach (the infrastructure part of BT Group).⁵⁵

This is quite different from the roll-out of superfast broadband by Fibre-to-the-Cabinet, where Openreach had dominance due to its ownership of the copper telephone network that covers all of the UK (other than the Hull area). Virgin Media's cable broadband network is the only major competitor to Openreach in terms of superfast broadband.

In contrast, there is a growing competitive market for the delivery of full-fibre infrastructure, with several smaller providers building in competition to Openreach and Virgin Media (see section 4.4 below).

The Government's target of 85% broadband coverage by 2025 is based on an expectation that commercial roll-out will reach 80% coverage by

⁴⁸ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 24.

⁴⁹ [Correspondence from the DCMS to Chair of the DCMS Select Committee dated 21 February 2021 \(page 2\)](#) in response to the Committee's December 2020 report, *Broadband and the Road to 5G* (HC 153).

⁵⁰ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018.

⁵¹ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018.

⁵² HM Treasury, [National Infrastructure Strategy](#), 25 November 2020.

⁵³ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018.

⁵⁴ NIC, [National Infrastructure Assessment](#), 10 July 2018, page 21.

⁵⁵ See Section 1.1 of this paper and the Library briefing paper on [BT and Openreach](#), CBP 7888, 11 January 2019.

2025.⁵⁶ The Government [told the DCMS Committee](#) that it had carried out “extensive engagement with the telecoms industry,” and was confident this could be met including with multiple networks existing in some areas.⁵⁷

In April 2021, the [Government forecast](#) that gigabit-broadband coverage would reach 60% by the end of 2021, stating this was “on track to be among the fastest build rates in Europe.”⁵⁸ It said the rates of building new fibre had increased due to the Government’s work on reducing barriers to build (section 5) and Ofcom’s new regulatory approach which encourages investment (section 5.4). The rapid increase in gigabit coverage between 2019 (9% coverage) and 2021 is also in part due to Virgin Media upgrading its existing cable network to support gigabit-capable DOCSIS3.1 technology.⁵⁹

4.4 Where are commercial providers building networks?

Telecoms operators decide where and when to build infrastructure based on commercial considerations. Detailed plans about future roll-out are generally not publicly available.

Some companies have issued press releases announcing broad details of their roll-out plans. For example:

- **Openreach** committed to build full-fibre broadband to 4.5 million homes by the end of March 2021, which it says has been met.⁶⁰ It has an ambition to reach 20 million premises by the “mid to late 2020s”. Openreach has a detailed list of where it intends to build its network [on its website](#).⁶¹
- **Virgin Media** said in July 2019 it aimed to reach “nearly 15 million” homes with gigabit-capable broadband by the end of 2021. This is through its Project Lightning network expansion that is delivering high-speed cable and full-fibre broadband.⁶²
- **City Fibre** aims to reach 8 million premises in over 100 towns and cities.⁶³ It expects the programme to be “substantially completed” by 2025.⁶⁴ It has published a list of all build locations and a map [on its website](#).⁶⁵ CityFibre has partnered with Vodafone, TalkTalk

⁵⁶ [Correspondence from the Secretary of State for DCMS to Chair of the DCMS Select Committee, dated 1 April 2021](#), in response to the Committee’s December 2020 report, *Broadband and the Road to 5G* (HC 153).

⁵⁷ [Correspondence from the Secretary of State for DCMS to Chair of the DCMS Select Committee, dated 1 April 2021](#), in response to the Committee’s December 2020 report, *Broadband and the Road to 5G* (HC 153).

⁵⁸ DCMS, [PM and Digital Secretary welcome broadband jobs boom](#), 1 April 2021.

⁵⁹ [Government Start £5bn UK Gigabit Broadband Plan for 85%+ by 2025](#), *ISPReview*, Mark Jackson, 25 October 2020, accessed 30 November 2020.

⁶⁰ Openreach, [Our transparency](#), accessed 20 April 2021.

⁶¹ Openreach, [Our transparency](#), accessed 20 April 2021.

⁶² Virgin Media, [Virgin Media to bring gigabit internet to millions of homes](#), 25 July 2019.

⁶³ City Fibre, [CityFibre completes its acquisition of FibreNation increasing its rollout plans to pass up to 8 million premises](#), 27 March 2020.

⁶⁴ City Fibre, [CityFibre to extend its world-class infrastructure to 216 additional towns and villages across Britain](#), 12 March 2021, accessed 20 April 2021.

⁶⁵ City Fibre, [Nationwide full-fibre roll-out programme](#), accessed 20 April 2021.

and Zen to offer services on their network, in addition to other regional and local providers.

- **Hyperoptic** aims to reach 5 million premises by 2024.⁶⁶ It largely partners with property developers to deliver connections to new and existing developments in urban areas.

Many more companies are building new networks and many operators focus on a particular geographical area. Telecoms industry news website *ISPReview* collates industry announcements on full-fibre plans and current coverage in its [summary of UK FTTP Build Progress Across Broadband ISPs](#).⁶⁷

From 31 December 2020 Ofcom has new powers to include non-confidential information about industry's future gigabit-broadband build plans in its annual broadband infrastructure reports.⁶⁸

⁶⁶ Hyperoptic, [KKR Acquires Majority Stake in Hyperoptic](#), 14 October 2019.

⁶⁷ [Summary of UK FTTP Build Progress Across Broadband ISPs](#), *ISPReview*, Mark Jackson, 14 April 2020, updated November 2020 [accessed 2 December 2020]

⁶⁸ Communications Act 2003 section 134B as amended. This follows reforms to implement the European Electronic Communications Code: The Electronic Communications and Wireless Telegraphy (Amendment) (European Electronic Communications Code and EU Exit) Regulations 2020.

5. Policy reforms to help build gigabit infrastructure

Despite a growing competitive market, the Government concluded in the 2018 Future Telecoms Infrastructure Review that, without further policy intervention, commercial markets would at best reach only 75% of the UK and take more than 20 years to do so.⁶⁹

The Government and Ofcom have committed to deliver a regulatory and policy framework that promotes infrastructure competition and gives providers confidence to invest. These include:

- Removing ‘barriers’ that are delaying infrastructure build (see below).
- Creating a stable regulatory environment that promotes investment. This is largely done by Ofcom through its approach to regulating Openreach (see section 5.4)
- Encouraging customers to switch to gigabit-capable services and supporting Openreach to ultimately stop using the copper network (see section 5.5–5.6).

Other policy reforms called for by the telecoms industry include further business rates relief (see section 5.3) and for telecoms engineers to be granted visa exemptions or be added to the ‘shortage occupation list’ to allow a sufficient supply of skilled labour.⁷⁰

5.1 “Barrier Busting Task Force”

Telecoms industry operators say there is a strong willingness to invest in new networks but barriers to building infrastructure are holding the market back.⁷¹ Four issues were highlighted by industry in 2019 that require policy reform as a priority. These were:⁷²

- Easier access to tenanted properties to allow properties to be connected if the landlord cannot be contacted
- Requirements for new-builds to have fibre-broadband (see section 4.6 below).
- Tax relief for fibre infrastructure providers (see section 4.7 below).
- Access to skilled labour.

Other issues cited by industry include ease of access to existing infrastructure to reduce building costs and coordinating with local authorities for street works.⁷³

⁶⁹ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018.

⁷⁰ For discussion, see DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 119-122.

⁷¹ Openreach, [The blueprint for a full-fibre future](#), October 2019 [accessed 10 January 2020].

⁷² [Broadband chiefs fire back at PM's full-fibre internet pledge](#), Leo Kelion, *BBC News*, 3 August 2019).

⁷³ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018, page 5-6.

In 2018, DCMS established a “Barrier Busting Task Force”, which is a cross-Government group working to address barriers to building digital infrastructure.⁷⁴ Since it was established, the Task Force has focused on the following four areas:

- access to land
- street works
- new build connectivity
- supporting mobile roll-out.⁷⁵

Progress on removing barriers to building infrastructure

The Task Force published a timetable for its future work in its March 2021 [progress update](#).⁷⁶ Efforts to remove “barriers” to date include:

- Developing a [Digital Connectivity Portal](#) that offers resources and advice to local authorities and commercial providers to help build digital infrastructure (full-fibre and mobile networks).
- Business rates relief in England on new full-fibre infrastructure until April 2022 (see section 5.3).
- Bringing in the [Telecommunications Infrastructure \(Leasehold Property\) Act 2021](#), which provides an expedited process for operators to gain access to connect blocks of flats if the landlord is unresponsive. The [Library briefing on the Act](#) has further information. A technical consultation will be held before regulations to bring the Act into force are made. The consultation is expected in Spring 2021 with secondary legislation to be made in Autumn 2021.
- New rules for gigabit-capable connections to new-build properties (following further consultation) – see section 5.2 below.
- A consultation on proposed reforms to the legislation that governs the rights of operators to access land (the Electronic Communications Code) opened in January 2021– the Library briefing, [Building telecommunications infrastructure](#) has further discussion.⁷⁷
- A review of the regulations that require utilities operators to share physical infrastructure (*Communications (Access to Infrastructure) Regulations 2016*) – see the Library briefing, [Building telecommunications infrastructure](#) for more information.
- Collaborating with the Department for Transport to facilitate street works, for example, launching a new digital tool and trialling a new permit system.

Separately, Ofcom has also made a series of reforms to make accessing Openreach’s network of underground ducts and poles easier, which can significantly reduce build costs for other operators – the

⁷⁴ The [FTIR](#) (July 2018) provided a summary of the work of the Task Force at pages 5-6.

⁷⁵ DCMS, [Barrier Busting Task Force: next steps](#), 19 March 2021.

⁷⁶ DCMS, [Barrier Busting Task Force: next steps](#), 19 March 2021.

⁷⁷ Commons Library, [Building telecommunications infrastructure](#), CBP 9156, 4 March 2021.

Library briefing, [Building telecommunications infrastructure](#) has more information.

The Commons DCMS Committee in its December 2020 report, [Broadband and the road to 5G](#), concluded that based on these measures to date, the Government's efforts to remove barriers had not yet "matched the scale of its ambition" for gigabit connectivity.⁷⁸ The Committee discussed calls from the industry for further action on labour shortages and business rates amongst other policy recommendations:

these long-standing policy recommendations demonstrate a gap between the Government's ambition and the action it has taken to date. Even getting to 85% gigabit-capable coverage by 2025 will require a rapid rise in build rates and for industry to roll-out just as fast as under previous targets. Urgent action to address these barriers that stand in the way of them doing so is therefore as important as ever.⁷⁹

The Government's response to the Committee's report in February 2021 said it had "demonstrated its willingness to legislate where necessary to tackle those barriers."⁸⁰ [Further details](#) provided by the Government in April 2021 elaborated on measures to ensure a skilled labour supply (see page 5).⁸¹

5.2 Fibre broadband to new builds

There is currently no obligation on housing developers or telecoms operators to connect new build properties with broadband infrastructure.

The Government stated that in 2019, 81% of new build premises had access to a full-fibre connection.⁸² The Government accepts that broadband connectivity in new build developments is "not as good as it should be" and that new builds "must be connected to fibre networks."⁸³

Prior reforms on new build connectivity

There were two reforms in 2016 that aimed to improve digital connectivity in new builds:

- [A voluntary agreement between BT Openreach and the Home Builders Federation \(HBF\)](#) was brokered by the Government in February 2016.⁸⁴ It does not place any legal requirement on developers but the aim of the agreement is that "fibre-based"

⁷⁸ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 118.

⁷⁹ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 126.

⁸⁰ [Correspondence from the DCMS to Chair of the DCMS Select Committee dated 21 February 2021](#) in response to the Committee's December 2020 report, *Broadband and the Road to 5G* (HC 153)

⁸¹ [Correspondence from the Secretary of State for DCMS to Chair of the DCMS Select Committee, dated 1 April 2021](#), in response to the Committee's December 2020 report, *Broadband and the Road to 5G* (HC 153).

⁸² DCMS, [Consultation on delivering gigabit capable connections: Government response](#), March 2020 para 1.8.

⁸³ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018, para 56-58.

⁸⁴ DCMS, [Superfast connectivity in new homes](#), 5 February 2016.

broadband is installed in new housing developments either at no cost to the developer or co-funded by the developer and Openreach. Virgin Media and GTC (another infrastructure provider) have since signed similar agreements with the HBF.⁸⁵ According to the HBF, its members deliver about 80% of the new homes built in England and Wales each year.⁸⁶

- Amendments were made in 2016 to building regulations in each UK nation to implement the EU *Broadband Cost Reduction Directive* 2014/61/EU.⁸⁷ The amended regulations require that all new buildings have the infrastructure required to support a superfast broadband connection (such as cable ducts) but do not go as far as to require provision of the connection itself. The amended regulations apply to any new building applications submitted after 31 December 2016. Local authorities have a duty to ensure that building regulations are complied with in their area.

Gigabit-broadband to new builds: Government proposals

In October 2018, the Government [consulted](#) on proposals to “ensure delivery of gigabit-capable connections to all new build homes.”⁸⁸ The Government’s response was published in March 2020.

The Government intends to amend the *Building Regulations 2010* to place obligations on housing developers to install gigabit broadband in new build properties, up to a commercial cost cap of £2,000 per connection.⁸⁹ This means that housing developers in England would be required to:

- Provide a gigabit-capable connection unless the cost to the housing developer exceeds £2,000 per connection, or the network operator declines to provide a connection;
- Install the next fastest broadband connection which can be installed below a cost of £2,000, where a gigabit-capable connection cannot be installed within the cost cap; and
- Install the physical infrastructure necessary for gigabit-capable connections (e.g. onsite ducts and termination points) even where a gigabit-capable connection exceeds the cost cap.⁹⁰

A further technical consultation is needed before the legislation is made. In March 2021 the Government said that consultation would be held in Spring 2021 with the secondary legislation laid in the winter 2021.⁹¹

⁸⁵ [PO HL6920, 30 April 2018 \[Housing: Broadband\]](#).

⁸⁶ Home Builders Federation, [About the HBF](#), accessed 23 August 2018.

⁸⁷ For England, see: [Approved Document R \(England\)](#); for Wales, see: [Approved Document R \(Wales\)](#); for Scotland, see: [Building Standards Technical Handbook \(Domestic\)](#), part 4.14; for Northern Ireland, see: [Technical Booklet M](#).

⁸⁸ DCMS, [New Build Developments: Delivering gigabit-capable connections](#), 29 October 2018.

⁸⁹ The policy will apply to all new build residential properties of all sizes. See the Government’s [Consultation response](#), March 2020, para 1.7 for definition.

⁹⁰ [PO104101, October 2020](#); DCMS, [Consultation on delivering gigabit capable connections: Government response](#), March 2020.

⁹¹ DCMS, [Barrier Busting Task Force: next steps](#), 19 March 2021. The Government had previously stated that secondary legislation was expected in Spring 2021 ([PO104101, October 2020](#)).

The Government decided not to impose a statutory “duty to connect” on telecoms operators.⁹² Instead the Government has secured voluntary commitments from major telecoms operators to contribute to the costs of connecting new builds. These include:

- Virgin Media has committed to contribute at least £500, rising to £1,000 for some larger sites;
- Openreach committed to a combined contribution with developers of £3,400, with a maximum developer contribution of £2,000.

The Government estimated that 99% of new total build developments could be connected within the cost cap:

These cost caps will guarantee almost all new premises will receive gigabit broadband. With an assumed operator contribution of between £500-£1400 this policy will ensure that, currently, gigabit-capable connections will be deployed in all new build developments in the UK, other than 4% of developments under 20 premises, that is 99% of total new build developments.⁹³

Building regulations are a devolved matter so amendments to the *Building Regulations 2010* as described above would apply to England only. The Government stated it would work with the devolved Administrations to “ensure this policy is implemented in a consistent manner across the UK”.⁹⁴

5.3 Tax relief

In 2017 the Government introduced 100% business rates relief to new fibre infrastructure built in England for five years from April 2017 to March 2022.⁹⁵ The aim is to encourage investment by industry through tax relief.

The Scottish Government has introduced non-domestic rates relief for new fibre broadband infrastructure in Scotland for 10-years from 1 April 2019.⁹⁶

Fibre infrastructure providers are calling for longer-term tax relief. Openreach argues that return on investment in digital infrastructure “takes decades” and that investors need a “clearer long-term commitment” from Government.⁹⁷ The Confederation of British Industry (CBI) has called for the Government to review the business rates system, stating it is currently limiting UK investment in deploying and adopting

⁹² DCMS, [Consultation on delivering gigabit capable connections: Government response](#), March 2020 para 3.45-3.46.

⁹³ DCMS, [Consultation on delivering gigabit capable connections: Government response](#), March 2020, para 3.57.

⁹⁴ DCMS, [Consultation on delivering gigabit capable connections: Government response](#), March 2020 para 1.20.

⁹⁵ [Telecommunications Infrastructure \(Relief from Non-Domestic Rates\) Act 2018](#); and [The Non-Domestic Rating \(Telecommunications Infrastructure Relief\) \(England\) Regulations 2018](#). The Library [briefing paper on the Bill](#) provides further information.

⁹⁶ Scottish Government, [Rates relief puts Scotland in fibre fast lane](#), 24 March 2019 [accessed 9 January 2020].

⁹⁷ Openreach, [The blueprint for a full-fibre future](#), October 2019 [accessed 10 January 2020].

digital infrastructure improvements.⁹⁸ techUK (trade body for tech industry) have called for business rates relief for full fibre for “at least the next 15 years”.⁹⁹

The Government says the industry’s calls are being considered as part of the Government’s wider review of the business rates system.¹⁰⁰

Otherwise, the Government says that telecommunications companies can also benefit from the “[super-deduction](#)” announced in the Budget 2021.¹⁰¹ This allows companies investing in qualifying new plant and machinery assets to benefit from a 130% first-year capital allowance from April 2021 to the end of March 2023. The Government says this allows companies to “cut their tax bill by up to 25p for every £1 they invest”.¹⁰² The Government has confirmed that fibre infrastructure would qualify for the 130% first-year capital allowance.¹⁰³

5.4 Ofcom’s work in promoting gigabit-broadband

Ofcom has a broad statutory duty to promote connectivity and access to gigabit-capable networks.¹⁰⁴ The regulator has an ongoing programme to promote investment in new gigabit-capable infrastructure by encouraging a competitive market, in line with the FTIR¹⁰⁵ and the Government’s [Statement of Strategic Priorities to Ofcom](#).¹⁰⁶

Ofcom has used two main approaches in the last few years to promote investment in full-fibre:

- Duct and pole access: opening up access to Openreach’s network of poles and underground tunnels (called ducts) to allow competitors to install fibre optic cables to homes and businesses at a lower up-front cost (see the Library briefing: [Building telecommunications infrastructure](#) for further discussion).
- Regulating the cost of some, but not all, of Openreach’s wholesale services. Ofcom’s approach aims to promote investment in building full-fibre networks by encouraging

⁹⁸ CBI, [Ready, Steady, Connect](#), December 2018.

⁹⁹ techUK, [Connected Britain – Can reality meet the rhetoric on Fibre roll out?](#), Matthew Evans, 9 August 2019.

¹⁰⁰ DCMS, [Barrier Busting Task Force: next steps](#), 19 March 2021; Information about the business rates review is in the Library briefing: [Reviewing and reforming local government finance](#) (CBP 7538, 20 August 2020)

¹⁰¹ DCMS, [Barrier Busting Task Force: next steps](#), 19 March 2021;

¹⁰² HM Treasury, [Super-deduction factsheet](#), 3 March 2021. HM Treasury, [Budget 2021](#); Budget report [HC 1226](#), p57, 3 March 2021.

¹⁰³ [PO 164465, 11 March 2021](#) [Broadband: Capital allowances]

¹⁰⁴ *Communications Act 2003* as amended, section 4. This is a new statutory duty from 31 December 2020 added to implement European Electronic Communications Code in UK law; see: DCMS, [New law changes to bring better connectivity to the UK](#), 22 July 2020 and *The Electronic Communications and Wireless Telegraphy (Amendment) (European Electronic Communications Code and EU Exit) Regulations 2020 (SI 2020 1419)*.

¹⁰⁵ Ofcom, [Regulatory certainty to support investment in full-fibre broadband](#): Ofcom’s approach to future regulation, 24 July 2018. Ofcom, [Strategic Review of Digital Communications](#), February 2016.

¹⁰⁶ DCMS, [Statement of Strategic Priorities](#) for telecommunications etc, 29 October 2019. Under the *Communications Act 2003* as amended, Ofcom must have regard to the SSP when carrying out its functions.

providers to build their own networks (rather than relying on wholesale access from Openreach), while also protecting consumers that rely on Openreach's copper network.

Ofcom's regulation of Openreach

In March 2021 Ofcom [confirmed its approach](#) to regulating access to Openreach's wholesale network for the next five years, from April 2021–2026, through its Fixed Wholesale Market Review (FTMR).¹⁰⁷ The FTMR is UK-wide in scope (except for Hull).

The key decisions from the review include:

- Ofcom will continue to be required to provide wholesale access to its network. Ofcom will fix the cost of access to Openreach's standard superfast broadband services (download speed up to 40 Mbps) in line with inflation, rather than lowering them as it has in previous reviews. It will allow pricing flexibility for Openreach's faster services.
- Openreach will not be able to charge geographic discounts for access to its FTTC or full-fibre networks, because this could make it difficult for alternative networks to compete if they had to match Openreach's prices.
- Ofcom will support Openreach to retire the copper network in areas where full-fibre has been built. Ofcom will transfer regulation from the copper network to the fibre network in a staged approach by area.
- Ofcom indicated that it did not intend to impose price regulation on full-fibre services in next review period (i.e. the period 2027–2031) and that it expects the same wholesale access prices to continue. This is to give investors confidence in the regulatory approach over the next 10 years from 2021.

The approach relied on a commitment from Openreach to deliver full-fibre to 3.2 million homes in hard-to-reach areas by 2026 (10% of UK).

Ofcom stated that it believed its approach would lead to around 70% of the UK having a choice of different networks and would support Openreach achieve a 'fair return' for their investment while protecting consumers and encouraging Openreach to build:

This approach improves the investment case for BT and its rivals by providing them with a margin to build the new networks. It also helps make sure people can still access affordable broadband.

We recognise that full fibre is a long-term investment, taking more than a decade – if not two – to pay back. So, we aim to allow all companies the opportunity to achieve a fair return over their whole investment period, and do not expect to introduce cost-based prices for fibre services for at least ten years.¹⁰⁸

¹⁰⁷ The Review is an assessment of the wholesale telecoms market for business and residential services. Openreach is the only provider that Ofcom found to have "significant market power" requiring regulation (except for in Hull which is treated separately). Ofcom, [Ramping up the rollout of full-fibre broadband](#), 18 March 2021. Full consultation documents and reports can be found on Ofcom's consultation page: [Statement: Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#), 18 March 2021.

¹⁰⁸ Ofcom, [Ramping up the rollout of full-fibre broadband](#), 18 March 2021.

Press articles have commented on the difficult task Ofcom had in balancing many competing interests in this market review.¹⁰⁹

The review gives Openreach certainty to expand its network. Companies building networks in competition to Openreach, such as Virgin Media and City Fibre, have also welcomed Ofcom's review, saying it gives them confidence to bring forward new investments.¹¹⁰

However, companies that rely on Openreach's copper network (such as TalkTalk, Sky and Vodafone) say that the deal was too generous on Openreach and could lead to consumer prices rising without consumers seeing the benefit of new full-fibre services for some years.¹¹¹

The [Independent Networks Cooperative Association \(INCA\)](#), trade body representing smaller independent network providers, said that smaller alternative network providers operating in rural areas had been overlooked by Ofcom.¹¹²

5.5 Consumer take-up

Customers switching to, and paying for, gigabit-capable services underpins the return on investment for private operators – telecoms companies need customers for the new networks and services they are investing in. Promoting consumer demand for gigabit-capable services is therefore an important factor in supporting gigabit-broadband roll-out.

Consumer take-up of gigabit-capable services is currently low. Ofcom estimated in December 2020 that around 25% of consumers with a full-fibre service available choose to take-up the service.¹¹³ Ofcom's data show that only 1.4% of UK postcodes had at least one line receiving gigabit speeds as of September 2020.

Take-up of superfast broadband services is higher. Ofcom estimated that 60% of premises that can take-up a superfast broadband connection or faster, do so. This is an increase from around 57% in 2019.

In its December 2020 report, the Commons DCMS Committee said the Government "had not given enough priority" to policy on promoting

Around 25% of customers with a full-fibre connection available subscribed to a full-fibre service in 2020.

¹⁰⁹ [Ofcom Unveils 2021 Changes to Boost UK Full Fibre Broadband](#), Mark Jackson, *ISPReview*, 18 March 2021; [BT's Openreach to build full-fibre internet 'like fury' after Ofcom move](#), Leo Kelion, BBC News, 18 March 2021.

¹¹⁰ [Ofcom Unveils 2021 Changes to Boost UK Full Fibre Broadband](#), Mark Jackson, *ISPReview*, 18 March 2021 [accessed 22 April 2021]; City Fibre, [CityFibre responds to the publication of Ofcom's Wholesale Fixed Telecoms Market Review](#), 18 March 2021, [accessed 22 April 2021].

¹¹¹ [Ofcom Unveils 2021 Changes to Boost UK Full Fibre Broadband](#), Mark Jackson, *ISPReview*, 18 March 2021; [Ofcom paves way for UK's rapid upgrade to fibre broadband](#), Nic Fields, *Financial Times*, 18 March 2021 [subs only]; [BT's Openreach to build full-fibre internet 'like fury' after Ofcom move](#), Leo Kelion, BBC News, 18 March 2021 [accessed 22 April 2021].

¹¹² [INCA, Ofcom's 'BT fixation' could delay gigabit broadband roll out](#), 18 March 2021 [accessed 22 April 2021].

¹¹³ Ofcom, [Connected Nations 2020](#), main report page 27, 17 December 2020

gigabit-broadband demand and “does not recognise the potential role that Government could play now.”¹¹⁴

The Government’s response pointed to its [Statement of Strategic Priorities \(SSP\) to Ofcom](#), which includes stimulating demand for gigabit services as a priority:

For example, the SSP set out Government’s expectation that Internet Service Providers will provide suitable ‘entry level’ products for consumers at prices similar to those provided on existing networks, including voice only services for those who want them, to aid the migration of consumers to these new networks. The SSP also set out the important role that Ofcom has to play, including in ensuring industry readiness for gigabit switchover. Ofcom will need to protect consumers, safeguard competition and ensure that switching processes are easy, reliable and transparent, including where consumers switch between different networks.¹¹⁵

Ofcom plans to introduce new rules to make switching between different broadband networks easier, by a [“one touch” process](#).¹¹⁶ Currently, for a customer to switch between networks that use different infrastructure or technologies, the customer must contact both their old provider and their new provider to coordinate the switch. Under the new rules, the customer will only need to contact their chosen new provider, who will then manage the switch. The new rules will come into force from December 2022. Ofcom says the delay is because providers need to make significant changes to their systems and processes.¹¹⁷

DCMS has also launched a Gigabit Take-Up Advisory Group (GigaTAG), led by consumer and business groups: Which?, the Federation of Small Business and the Confederation of British Industries. The group will lead a “strategic review into boosting take-up as gigabit connections among consumers and businesses become more widely available.”¹¹⁸ It published an [Interim Report](#) in December 2020 that looked at why people don’t take up gigabit services (such as lack of awareness or skills) and made initial suggestions on steps needed to boost take-up (such as clear and consistent labelling).¹¹⁹

5.6 Retiring the copper network

The UK’s copper telephone and broadband network is owned by Openreach. Openreach’s copper network supports the traditional

¹¹⁴ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 78.

¹¹⁵ [Correspondence from the DCMS to Chair of the DCMS Select Committee dated 21 February 2021](#) in response to the Committee’s December 2020 report, *Broadband and the Road to 5G* (HC 153).

¹¹⁶ Ofcom, [New plans for seamless broadband switching](#), 3 February 2021.; Ofcom has already introduced rules through revisions to the General Conditions of Entitlement that will require broadband switching to be gaining-provider led from December 2022. It is now consulting on the technical details: Ofcom, [Consultation: Quick, easy and reliable switching](#), 14 April 2021.

¹¹⁷ Ofcom, [New plans for seamless broadband switching](#), 3 February 2021.

¹¹⁸ DCMS, [Gigabit broadband rollout milestone reached](#), 8 August 2020.

¹¹⁹ Gigabit Take-up Advisory Group, [Interim Report](#), December 2020 [accessed 29 March 2021].

landline telephone network, copper-based broadband connections (including FTTC) as well as other devices such as house alarms.

A commitment to retire the old copper network generates certainty for telecoms companies by guaranteeing a future customer base for their new networks. Running a fibre network and copper network in parallel has high costs, which is an incentive for Openreach to retire the copper network once its new networks are available.¹²⁰

In the 2018 Future Telecoms Infrastructure Review, the Government supported an industry-led copper “switch over”.¹²¹

Will there be an impact on consumers?

Switching off the copper network would require all premises and devices to have access to a non-copper based connection and to have switched to services on those new networks. This could include a full-fibre connection, a cable connection or a wireless connection.

Consumers would benefit from improved services on faster and more-reliable gigabit-capable broadband networks. However, some customers rely solely on the copper network for landline calls. The Government and Ofcom have said that the switchover process must be managed carefully to protect these customers.¹²²

Moving away from the copper network would require a phone adapter to transmit phone calls via the internet (called “Voice over Internet Protocol” or VoIP). Openreach is already working on plans to move towards VoIP-only phone services, with an intention to withdraw the traditional Public Switched Telephone Network (PSTN) by 2025.¹²³ Other providers that offer traditional landline services (e.g. Virgin Media and KCOM) are also moving to VoIP only services.

The Broadband Stakeholder Group (a group of broadband industry stakeholders that meet with the Government) have established a website for consumers and businesses about the change called [Future of Voice](#).

[Ofcom set out expectations](#) for industry regarding protections for consumers during the transition to VoIP services in February 2019.¹²⁴ Ofcom’s expectations for industry include having strategies in place to identify and support migrating customers and engaging with relevant service providers.

¹²⁰ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018, para 140-142

¹²¹ The Government distinguished between a copper “switch-off” (retiring the copper network) and “switchover” (moving customers over to new non-copper based networks). DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018, para 138.

¹²² DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018, para 142; National infrastructure Commission, [National Infrastructure Assessment](#), 10 July 2018, page 27-28. Ofcom, [The future of fixed telephone services](#), 22 February 2019

¹²³ [Openreach Consult UK ISPs on WLR Telephone Network Closure, ISP Review](#); Mark Jackson, 19 April 2018; Openreach, [Openreach to consult Communication Provider customers on switch to digital phone services by 2025](#), 15 May 2018, accessed 17 August 2018.

¹²⁴ Ofcom, [The future of fixed telephone services](#), 22 February 2019 [accessed 15 March 2019].

How and when will the copper network be switched-off?

There is no date for switching off the copper network. The timing depends on the pace of new gigabit-capable network roll-out. In 2018, the Government said it would expect switchover to start when a “significant proportion” of the population has taken-up new fibre services.¹²⁵

Ofcom has said that where Openreach has built a full-fibre and copper-based network, it intends to help encourage customers to switch to full-fibre, by removing wholesale regulation on the copper network and transferring it to the fibre network (see section 5.4 above). This means that Openreach could increase charges for access to its copper network, which would incentivise retail service providers to move customers to full-fibre networks instead. Ofcom will take a “staged approach” depending on the amount of fibre coverage in an area.¹²⁶

Openreach is conducting a trial in Salisbury where it aims to move customers to full-fibre services and then withdraw copper services at the end of 2022.¹²⁷

City Fibre, a fibre-broadband competitor to Openreach, has argued that the Government and Ofcom’s strategy does not seem to consider how to support customer migration away from copper services in areas where competitors have rolled out new fibre networks but Openreach has not.¹²⁸

¹²⁵ DCMS, [Future Telecoms Infrastructure Review](#), 23 July 2018, para 144.

¹²⁶ Ofcom, [Ramping up the rollout of full-fibre broadband](#), 18 March 2021.

¹²⁷ Openreach, [Binge-ready broadband is available in Salisbury](#) [accessed 28 April 2021]; Ofcom, [Consultation: Promoting competition and investment in fibre networks – Measures to support Openreach's trial in Salisbury – migrating customers to full fibre and withdrawing copper services](#), 24 July 2019.

¹²⁸ DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020, para 108.

Glossary

Broadband speeds

Megabits and megabytes

Megabits (Mb) and megabytes (MB) are both units for expressing a quantity or amount of data. 8 megabits (Mb) is equal to 1 megabyte (MB); 8 gigabits is equal to 1 gigabyte (GB). Bits tend to be used as the unit for broadband speeds, bytes tend to be used as the units for data storage capacity.

Upload and download speeds

Broadband speeds are expressed as the amount of data downloaded or uploaded per second, usually in megabits per second (Mbps). Upload and download speeds are also called the bandwidth.

Download speeds refer to how long it takes for data to transfer from the internet to your computer or device. Upload speeds refer to how long it takes for data to transfer from your device to the internet.

Most typical internet activities, such as browsing websites and checking emails require higher download speeds than upload speeds. Therefore, most internet connections have higher download speeds than upload speeds. Reasonable upload speeds are necessary for applications such as video calling and uploading large files to social media. A “symmetric” connection is one that delivers the same upload and download speed.

More information about typical broadband speeds and what you can do with them is provided in the Library briefing paper: [Superfast broadband coverage in the UK](#) (SN06643).

Upload and download speeds available are determined by the technology used to provide the connection (see below) as well as other factors in the property, such as how devices are set up. See Ofcom’s webpage: [Practical tips for improving your broadband speed](#).

Decent broadband

Ofcom and the UK Government define “decent” broadband as a connection capable of delivering a download speed of at least 10 Mbps and an upload speed of at least 1 Mbps.¹²⁹

This is the specification for the Universal Service Obligation (USO) for broadband. For more information, see the [Library briefing paper on the USO](#) (CBP8146).

Superfast broadband

Superfast broadband does not have a single definition. Ofcom defines superfast broadband as download speeds greater than 30 Mbps.

The UK Government’s targets for superfast broadband coverage were based on a definition of download speeds above 24 Mbps.

¹²⁹ Ofcom, [Connected Nations 2017](#), December 2017.

For more information about superfast broadband in the UK, see the Library briefing paper: [Superfast broadband coverage in the UK](#) (SN06643).

Ultrafast broadband

Ultrafast broadband does not have a single definition. The UK Government define it as download speeds of 100 Mbps and higher, whereas Ofcom define it as download speeds greater than 300 Mbps.

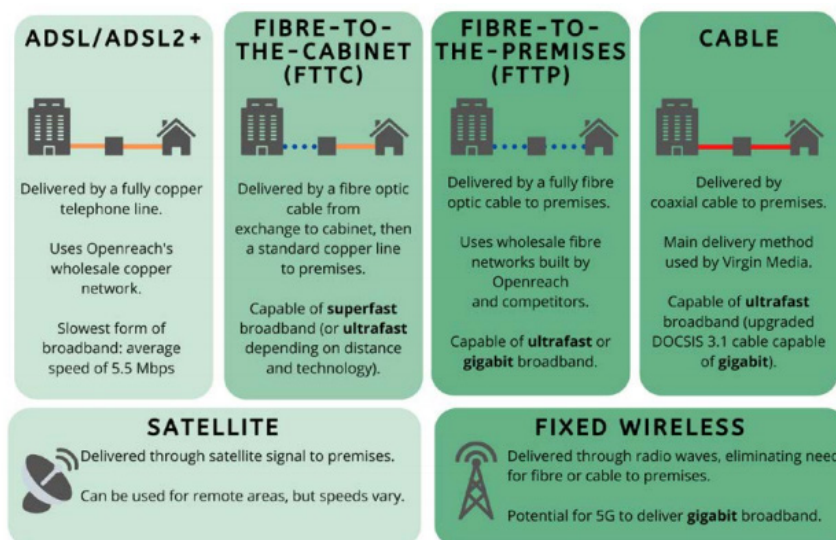
Ultrafast broadband can be delivered by technologies such as cable broadband, G-fast and full-fibre.

Ofcom reported that ultrafast broadband (300 Mbps) was available to 59% of UK premises as of September 2020.¹³⁰

Gigabit-capable connection

The UK Government defines a gigabit capable connection as one that can support speeds of 1 gigabit per second (Gbps). 1 Gbps is equal to 1000 Mbps.

Broadband technologies



Source: DCMS Committee, [Broadband and the Road to 5G](#), HC153, 2019-21, 22 December 2020.

ADSL

ADSL (asymmetric digital subscriber line) technology delivers broadband using copper telephone lines. The connection speed will depend on which type of ADSL is being used; and the quality and length of the line from the telephone exchange to the premises. The further away from the telephone exchange, the slower the connection.

Fibre optic cable

Fibre optic cables are made of glass or plastic. They transmit data using light. Fibre optic cables can transmit more data with faster speeds and significantly less signal loss with distance compared to copper wires.

¹³⁰ Ofcom, [Connected Nations 2020](#), 17 December 2020.

Fibre to the Cabinet (FTTC)

Fibre to the Cabinet (FTTC) is the main technology used for superfast broadband roll-out in the UK. FTTC connections use fibre optic cables to carry the signal from the exchange to street cabinets and then existing copper telephone lines are used from the cabinet to premises.

FTTC technology can provide download speeds of up to around 80 Mbps. However, the maximum speed that a premises can receive reduces the further away it is from a cabinet. Superfast speeds (above 24 Mbps) available up to approximately 1000 metres from the cabinet.

For more information, see the POST briefing on [Telecommunications Infrastructure](#) (24 March 2017).

G-fast

[G-fast](#) is a broadband technology being deployed by Openreach.¹³¹ G-fast is a variant of FTTC technology that allows ultrafast download speeds (up to 300 Mbps) to be delivered using the same copper telephone lines that are used in FTTC technology.¹³² G-fast is installed by fitting an 'extension pod' onto existing cabinets, and therefore can be installed quickly at low cost. It works by expanding the frequency range over which signals are transmitted, allowing for higher speeds.¹³³ Higher frequencies lose strength sharply with distance however so only premises within 350 meters of the cabinet are likely to benefit.

Cable Broadband (Hybrid Fibre Coaxial (HFC))

Most cable broadband in the UK is provided by Virgin Media. Cable networks use a combination of fibre optic cables to street cabinets and high-grade co-axial cables (which are also used for cable TV) from the cabinets to premises.

Co-axial cables experience less signal loss over distance compared to copper wires. The latest standard DOCSIS3.1 is capable of download speeds of around 1 Gbps (1000 Mbps).

Full-fibre (Fibre to the Premises/Home, FTTP/FTTH)

In a full-fibre connection, a fibre optic cable runs from the exchange directly to the premises or home. Full-fibre connections can provide download and upload speeds in excess of 1 Gbps (1000 Mbps). Full-fibre is also called Fibre-to-the-Premises (FTTP) or Fibre-to-the-Home (FTTH).

Fixed-wireless, WiFi and mobile broadband are all ways of connecting wirelessly to the internet. They use radio waves to transmit signals rather than cables as described for the technologies above. Fixed-wireless, WiFi and mobile broadband differ by the radio wave frequencies, signalling and receiver technology and infrastructure used. They are suited to different purposes and areas and are operated by different providers.

¹³¹ Openreach, [Ultrafast fibre – G-fast](#), accessed 7 September 2017.

¹³² Openreach, [Ultrafast fibre – G-fast](#), accessed 7 September 2017.

¹³³ [Is G.fast the answer to the UK's fibre vs copper debate?](#), *Computer Weekly*, 22 October 2015; [Openreach Extend 330Mbps G.fast Broadband Pilot to 1 Million UK Premises](#), *ISP Review*, 17 August 2017.

Wi-Fi is short-range wireless broadband used in a home or localised setting. A Wi-Fi router converts a fixed/wired broadband connection into a wireless signal that Wi-Fi enabled devices (laptops, tablets, mobiles) can connect to. It uses specific frequency bands with short ranges that do not require a licence for use.

Fixed wireless broadband networks can be used as a solution for rural broadband in areas where cables are difficult to build. There are a few different technologies available for delivering fixed wireless access, including mobile broadband technology.¹³⁴ Fixed wireless networks are usually operated by a specific network provider in a localised area, such as a rural village or town centre. Depending on the number of users, wireless networks may be capable of delivering superfast broadband speeds.

Mobile broadband: usually means internet access provided wirelessly through a mobile network (2G, 3G, 4G and 5G). Mobile base stations are arranged in a 'cellular' format so that a user can move between different base stations and remain connected to a single network. Users must subscribe to a mobile network to gain access.

5G

5G is the next generation of wireless networks. 5G is expected to support fast download speeds and near instant response times, with the capacity to support many devices operating at the same time. 5G is expected to offer advantages beyond mobile broadband, supporting a wide array of internet connected devices and services, for example, from healthcare to manufacturing.

For more information, see the Library briefing paper on [5G](#) (CBP7883).

Satellite broadband

Satellite broadband is an option for those who live in rural areas where traditional fixed-line broadband services aren't available. It uses a satellite dish to provide access to broadband services. The main advantage of satellite broadband is that it can be provided virtually anywhere in the world, as long as there is a clear line of sight to the satellite (south for the UK). Limitations of satellites include longer response time (latency) and lower data capacity (bandwidth), although technologies are improving.

Next-Generation Access (NGA) Broadband

The EU uses the terminology "next-generation access" (NGA) broadband. The EU defines NGA broadband to be networks that consist wholly or in part of optical fibre cables that are capable of delivering broadband with enhanced characteristics compared to already existing copper networks.

¹³⁴ Ofcom, [Mobile and wireless broadband](#), accessed 20 February 2019.

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