Gigabit broadband in the UK: Government targets, policy, and funding

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House of Commons Library

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Summary

The Government's target is for gigabit broadband to be available to 85% of the UK by 2025 and nationwide by 2030. This paper discusses the background to these targets and the Government's policies on the rollout of gigabit broadband.

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.

What is gigabit-capable broadband?

Gigabit-capable broadband means download speeds of at least 1 gigabit-per-second (1 Gbps or 1,000 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, high-speed cable broadband, and potentially wireless technologies.

New gigabit-capable networks are primarily being built using full fibre technology. The cable broadband network is owned by Virgin Media O2, which has finished upgrading its network to gigabit speeds. Wireless networks may be the most economically viable option in very hard to reach areas.

Where is gigabit-broadband available currently?

In January 2023, 72% of UK premises had a gigabit-broadband connection available, according to telecoms regulator, Ofcom.

Broadband data website Thinkbroadband reported that 76% of premises had gigabit-broadband available in June 2023. Thinkbroadband uses a different methodology to Ofcom and its data is published weekly. Its coverage figures tend to be a few percentage points higher than Ofcom estimates that follow later. Ofcom's next release, showing data up to May 2023, is due to be published in September.

The Library's broadband data dashboard allows users to explore where gigabit-broadband is available by constituency.

Government targets

The Government's 2019 manifesto commitment was to deliver nationwide gigabit-broadband by 2025. That target was revised in November 2020 to a minimum of 85% of premises by 2025.

The Levelling Up White Paper published in February 2022 set a new target: for gigabit-broadband to be available nationwide by 2030. Nationwide coverage means "at least 99%" of premises.

The Government says it remains committed to meet 85% of premises by 2025. The 'nationwide-by-2030' target therefore puts a timeline for connecting the remaining 15% of premises, most of which will require public funding support.

The 2030 target is considered more realistic by industry stakeholders but the delay from 2025 has been described as a "blow to rural communities". The Public Accounts Committee argued in January 2022 that the Government's approach to the gigabit broadband roll-out "risks perpetuating digital inequality across the UK".

The Government says the revised targets reflect how quickly industry could build in hard to reach areas that need public funding alongside their commercial roll-out.

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. There are many companies are building new networks including small operators focusing on particular geographical areas.

The Government expects that with the support of targeted policy reforms 80% of UK premises can be reached through commercial investment alone. The remaining 20% will require public subsidies.

Policy reforms to meet the target

Part of the Government's strategy on gigabit broadband roll-out is to bring policy reforms to make it easier for the telecoms industry to build infrastructure and to promote a competitive market for new networks.

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 have also been calling for further tax relief on new gigabit investments and for the Government to address skilled labour shortages that could delay roll-out.

Public funding for gigabit broadband

The Government has promised £5 billion to subsidise the roll-out of gigabit-broadband to the 'hardest to reach' premises in the country that will not be reached by private investment (20% of the UK). This is around 5 million premises, mostly in rural areas.

The funding programme is called 'Project Gigabit'. It is delivered by Building Digital UK (BDUK), an executive agency within the Department for Science, Innovation and Technology (DSIT).

Project Gigabit has three main parts:

- A series of procurements subsidising the roll-out of gigabit-capable broadband in specific areas. Broadband suppliers bid for contracts to build in each area.

- A voucher scheme for residents and businesses in eligible rural areas to subsidise the cost of a new gigabit-capable connection. A postcode-checker on the Government's voucher scheme website allows individuals to see if they are in an eligible area.

- Funding to connect public sector buildings such as schools (called 'GigaHubs').

BDUK is planning for Project Gigabit to reach at least 1.56 million premises by 2025. That equates to 5% of UK premises. The agency says that 600,000 have already been reached, primarily by reconfiguring existing contracts awarded during the rollout of superfast broadband. It anticipates transitional years of slower growth as these contracts expire and new ones go out for procurement.

The Government publishes quarterly progress updates that provide indicative timetables for procurements across the UK.

The devolved administrations also have their own broadband roll-out projects ongoing that are building gigabit-capable connections. These are: the R100 programme in Scotland, Superfast Cymru in Wales and Project Stratum in Northern Ireland.

1   Background: gigabit broadband in the UK

1.1   What is gigabit broadband?

Gigabit-capable broadband is the next-generation of high-speed broadband technology. It means any technology that can deliver speeds of at least 1 gigabit per second (Gbps). 1 Gbps is equal to 1,000 megabits per second (Mbps).

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

Technologies that can deliver gigabit-capable broadband include:

- Fibre to the Premises (FTTP) – where fibre optic cables run directly to each premises. It is also called 'full fibre' to differentiate it from fibre to the cabinet (FTTC) technology, where a fibre cable goes to the street cabinet and copper wires connect individual premises;

- high-speed cable broadband (DOCSIS 3.1, delivered by Virgin Media O2); and

- fixed wireless 5G networks (mainly used for remote areas where installing cables is prohibitively expensive – see section 4.7 below).

'Gigabit' is used in this briefing to refer to gigabit-capable broadband provided using any technology. New broadband networks are primarily being built with full fibre technology, so the term 'full fibre' is occasionally used instead in that context.

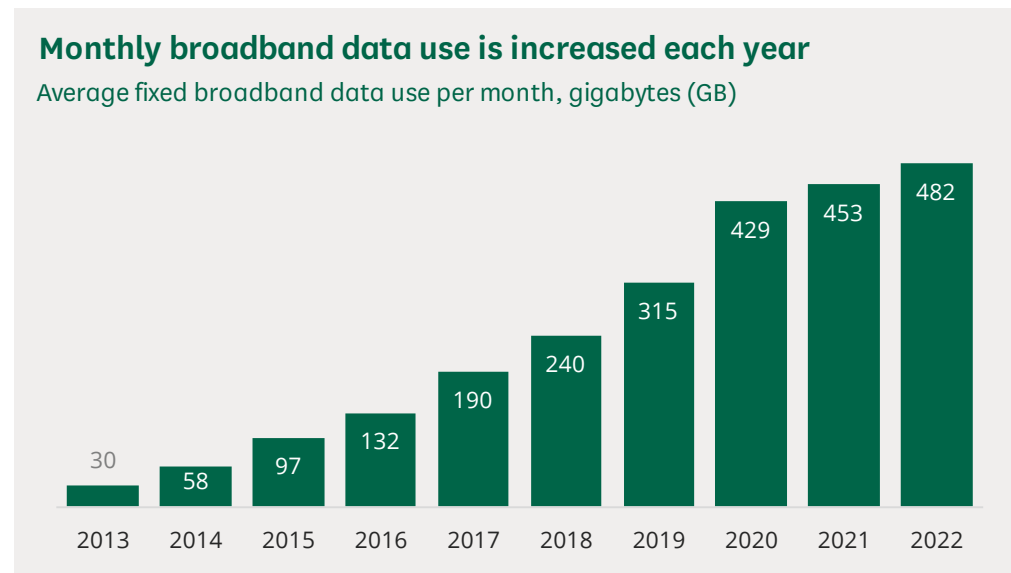A glossary of technical terms is provided in section 5.

1.2   Do we need a digital infrastructure upgrade?

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

Superfast broadband was available to 96% of UK homes as of September 2021 according to Ofcom.[1]

Superfast broadband has been delivered to most of the country by the private sector – primarily through BT/Openreach's Fibre-to-the-Cabinet (FTTC) network (a part-fibre, part-copper network) and Virgin Media's cable network. The Government's superfast broadband programme subsidised the delivery of superfast broadband infrastructure to areas not reached by the private sector.[2]

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 482 gigabytes (GB) per month in 2022. 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.

Monthly broadband data use is increased each year
Average fixed broadband data use per month, gigabytes (GB)

Year	GB
2013	30
2014	58
2015	97
2016	132
2017	190
2018	240
2019	315
2020	429
2021	453
2022	482

Source: Ofcom, Communications market report 2021 and Connected Nations 2022

In July 2018 the National Infrastructure Commission concluded that it was uncertain if and when the demand for data would outstrip existing networks. It said 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.[3]

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, 1.35 million premises (5%) still did not have access to superfast speeds in September 2021. These premises are generally the most expensive

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1   Ofcom, Connected Nations 2021, published 16 December 2021
2   Commons Library, Superfast broadband in the UK, 4 March 2021
3   NIC, National Infrastructure Assessment, 10 July 2018, p21-22

or difficult premises to reach with new infrastructure; 14% of rural premises don't have access to gigabit broadband compared to 3% of urban premises.[4]

Research commissioned by Ofcom in 2018 showed that broadband investment has contributed significantly to the UK economy over the last 15 years.[5] Most commentators agree that continuing investment in new networks such as full-fibre and 5G will continue to bring economic and societal benefits, although the extent and scale of benefits is difficult to predict.[6] In a March 2023 report commissioned by Openreach, for example, the Centre for Economics and Business Research estimated that the total gross value added of rolling out gigabit broadband would be £56 billion by 2026 and £72 billion by 2030.[7] The gains came from improved productivity and helping groups such as informal carers and women with dependent children to participate in the workforce.

In the 2019 General Election all main political parties pledged major digital infrastructure upgrades in their manifestos.[8] Delivering UK-wide gigabit-capable broadband is a major part of the Government's National Infrastructure Strategy and Levelling-Up White Paper.[9]

1.3   Current gigabit broadband coverage in the UK

As of January 2023, 72% of UK premises had a gigabit-capable broadband connection available according to Ofcom.[10] Ofcom publishes annual Connected Nations reports which set out current levels of broadband coverage across the UK. Supplementary reports updating the coverage statistics are published twice per year, in the spring and autumn.

The House of Commons Library uses Ofcom's statistics to produce broadband data dashboard. The dashboard allows users to explore where gigabit broadband is available by constituency. The map on the next page shows gigabit broadband coverage at the constituency level as of January 2023.

4   Ofcom, Connected Nations 2020
5   Ofcom, The economic impact of broadband, 27 April 2018
6   See for example: Broadband Stakeholder Group, Local Benefits for Full Fibre and 5G, 13 September 2019; Openreach, Full-fibre broadband: a platform for growth, October 2019; City Fibre, The Economic Impact of Full Fibre Infrastructure in 100 UK Towns and Cities, March 2018
7   Openreach, Full Fibre turbocharging the UK, March 2023
8   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
9   DLUHC, Levelling Up the United Kingdom, 2 February 2022; HM Treasury, National Infrastructure Strategy, 25 November 2020
10   Ofcom, Connected Nations – Autumn 2022 update, 7 October 2022

Gigabit broadband availability by constituency, January 2023

Percentage of premises

- Under 25
- 25% - 45%
- 45% - 60%
- 60% - 75%
- 75% - 90%
- Over 90%
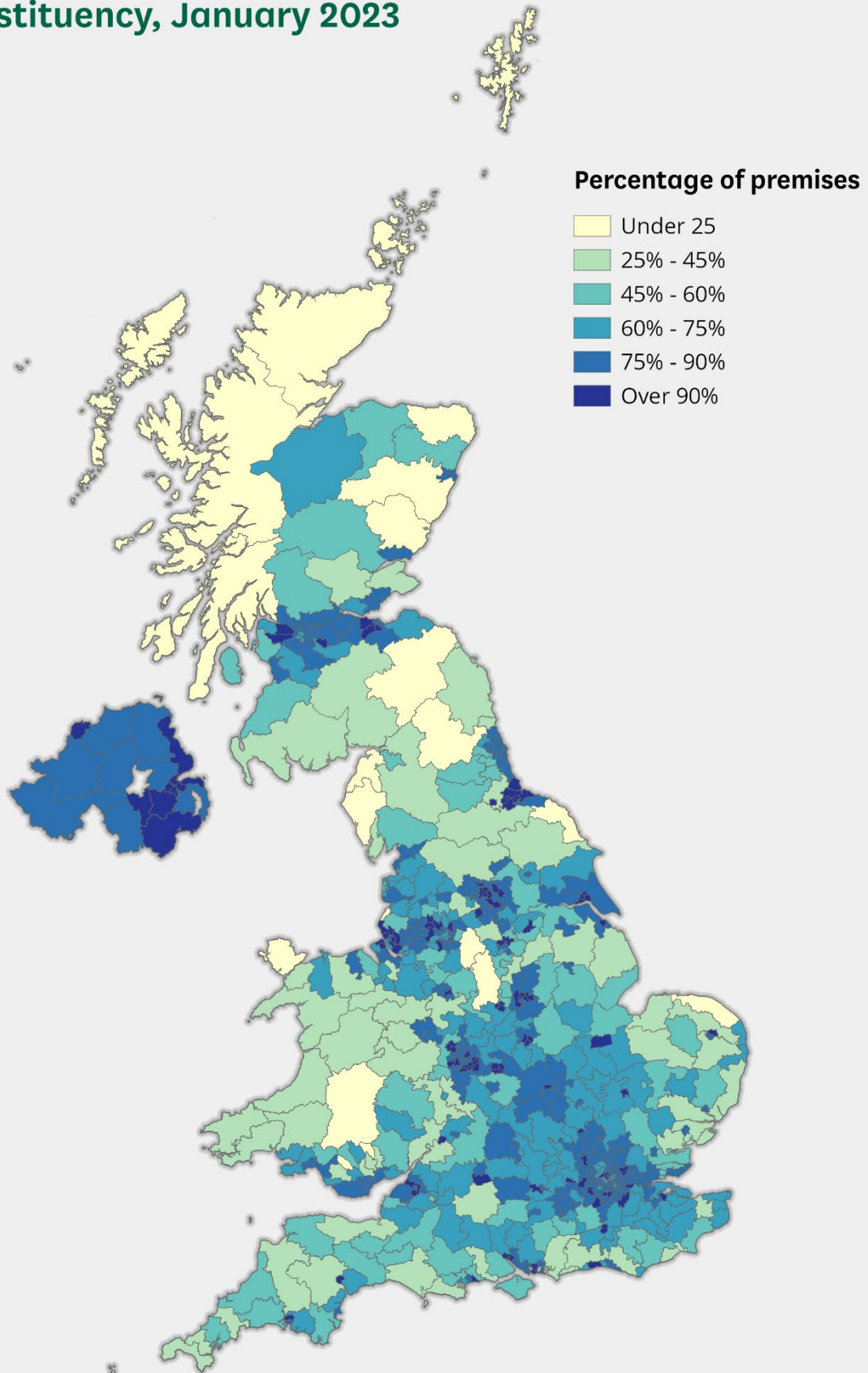
Source: Ofcom Connected Nations Spring 2023 update

Separately, broadband data website Thinkbroadband.com publishes regular coverage updates. It estimated that 76% of premises had gigabit-capable broadband available at the start of June 2023. Thinkbroadband uses a different methodology to Ofcom and its data is published weekly. Its coverage figures tend to be a few percentage points higher than Ofcom estimates that follow later.

Thinkbroadband's UK Broadband Map shows full-fibre and gigabit broadband networks from different broadband providers, illustrating the different networks currently in place across the UK.

Note that gigabit availability is not the same as gigabit take-up. Coverage statistics show the number of premises "passed". According to Ofcom's definition, a premises has been 'passed' if a network has been rollout out to the point where a customer would only need to pay a "standard installation charge" to connect their property.[11] Customers still need to purchase a gigabit-capable connection and a broadband package offering gigabit download speeds.

Gigabit broadband at rural and urban premises

The table below shows the percentage of premises (businesses and homes) in rural and urban areas in each nation able to receive gigabit-capable services as of January 2023. In all nations, urban areas are more likely to have gigabit-broadband available compared to rural areas.

Gigabit broadband availability by rural/urban classification January 2023, % of premises			
Country	Rural premises	Urban premises	Total
England	45%	81%	73%
Scotland	25%	76%	66%
Wales	36%	71%	55%
Northern Ireland	77%	95%	89%
UK	**44%**	**81%**	**72%**

Source: Ofcom Connected Nations Spring 2023 update data; Commons Library analysis

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[11]   Ofcom, Connected Nations 2021: methodology, 16 December 2021, Glossary – Full fibre coverage

International comparisons

Gigabit-capable broadband was available to 70% of premises in the European Union in mid-2021, according to the European Commission's 2021 Broadband Coverage Report.

European countries with the highest levels of gigabit coverage include Denmark, Spain, and the Netherlands, all of whom had reached over 90% of premises.[12] At the time of this report the UK had 40% gigabit coverage. This was lower than all EU countries except for Greece.

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. Some countries prioritised full-fibre infrastructure from an early stage, rather than prioritising fibre-to-the-cabinet (FTTC) in the first instance like in the UK.

Other factors influencing full fibre availability 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.[13]

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[12]   European Commission, Broadband Coverage in Europe 2021, 28 July 2021
[13]   Ofcom, International Communications Market Report 2017, 18 December 2018, p52

2 Government policy and targets

Government policy on broadband is led by the Department for Science, Innovation and Technology (DSIT). It took over from the old Department for Digital, Culture, Media and Sport (DCMS) in February 2023. Policy is delivered by Building Digital UK (BDUK), an executive agency within DSIT. It is a UK-wide policy area because telecommunications is a reserved power.

2.1 Government policy approach

The UK Government's approach to deploying gigabit-broadband networks has two broad strands. Gigabit broadband will be built to most of the country (around 80% of premises) by private investment. Private companies will decide when and where to build infrastructure based on commercial factors. The Government and Ofcom have committed to policy and regulatory reforms to promote a competitive commercial market to build new infrastructure. These are discussed in section 3 below.

The remaining 20% of premises are expected to be too expensive to reach commercially within the target timeframe. The Government is making public funding available to support the rollout to these premises. The subsidy programme, called Project Gigabit, is discussed in section 4 below.

This policy approach was adopted after a formal review of policy options through the Future Telecoms Infrastructure Review in 2018. [14] Both the National Infrastructure Commission and Ofcom also consider that market competition is the most appropriate way to encourage and deliver full-fibre build to most of the country.[15] International comparisons, such as with Spain, France and Portugal, have shown coverage of full-fibre networks to be correlated with competitive market conditions.[16]

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.[17] To date there has not been a formal review of the FTIR published.

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[14]   DCMS, Future Telecommunications Infrastructure Review, 23 July 2018

[15]   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

[16]   DCMS, Future Telecoms Infrastructure Review, 23 July 2018

[17]   DCMS, Future Telecoms Infrastructure Review, 23 July 2018

Chief executive of the National Infrastructure Commission James Heath, in a speech in November 2021 noted that the Commission felt the Government had a "clear plan in place" for digital infrastructure roll-out that was "working so far".[18] He noted that the Government and Ofcom's actions and priorities had helped underpin a rapid uptick in commercial investment in UK networks:

> Taking all these things together, the UK now has strong market fundamentals on demand growth, cost reduction and regulatory and policy stability. Unsurprisingly, operators and investors have responded to these conditions and we are seeing a huge wave of private investment as companies race to roll out networks and capture market share. [...]
>
> So, today, the UK is in a much better position on digital connectivity than we were two or three years ago. And this is not by accident – it is by design.
>
> But this is categorically not the time for complacency. Achieving nationwide gigabit coverage is a huge civil engineering project. We still need to connect around 15 million premises to achieve the goal – and many of these places will be harder to reach.[19]

He said that challenges remain including ensuring that the hardest to reach premises do not get left behind creating a digital divide.

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.[20]

1 Is telecommunications devolved?

The power to legislate with respect to telecommunications is reserved to the UK Parliament.[21] The UK Government has primary responsibility for setting broadband policy and coverage targets.

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18   NIC, James Heath to WEETF on delivering Gigabit-capable broadband, 2 November 2021

19   NIC, James Heath to WEETF on delivering Gigabit-capable broadband, 2 November 2021

20   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

21   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

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 building regulations, planning, and business rates.

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 gave funding to local authorities in England and the devolved administrations to deliver digital infrastructure projects in their regions.[22] 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 Government's "outside-in" strategy for public funding

In 2018, the Government said its public funding strategy would be based on connecting the 'hardest to reach' premises first, starting with areas that do not have access to superfast broadband. It called this an "outside-in" strategy. [23]

The commitment to "outside-in" follows one of the main 'lessons learned' from the Government's superfast broadband rollout programme, which began in 2010/11. While the superfast programme has been praised for connecting a large number of premises quickly, one criticism of the programme is that it prioritised the 'easier to reach' non-commercial premises first to maximise coverage and meet targets. [24] As a result, the most difficult and expensive to reach premises were 'left behind' contributing to what the National Audit Office called a "rural divide". [25]

The Government's "outside-in" commitment for its gigabit broadband funding was welcomed by rural stakeholders. [26] For example, the House of Lords

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[22]   Commons Library, Superfast broadband in the UK, 4 March 2021
[23]   DCMS, Future Telecoms Infrastructure Review, 23 July 2018, para 130.
[24]   NAO, Improving Broadband, 16 October 2020, para 20; NIC, National Infrastructure Assessment, 10 July 208; CMS Committee, Establishing world-class connectivity throughout the UK, 19 July 2016, HC147 2016-17, para 33
[25]   NAO, Improving Broadband, 16 October 2020, para 20 and 3.17
[26]   For example: Rural Services Network, Rural welcome for Government's digital connectivity plan, 25 July 2018; Country Land and Business Association, CLA responds to DCMS announcement of £200 million for rural broadband, 21 May 2019; INCA, INCA welcomes Government's Future Telecoms Infrastructure Review, 23 July 2018

Committee on the Rural Economy and the Commons Environment Food and Rural Affairs Committee welcomed the commitment in 2019, although with caution about how it would be delivered in practice. [27]

In December 2020 the DCMS Committee and Public Accounts Committee raised concerns about the Government's commitment to an "outside-in" strategy and its timeline for reaching rural and remote premises more generally, following delays to its gigabit broadband targets and funding.

In January 2022 the Public Accounts Committee reported that the Department was "unable to demonstrate that it is still following its "Outside-In" approach" and that its "approach to rolling out gigabit risks perpetuating digital inequality across the UK". [28]

2.2 Targets

Current target: 2025 and 2030

The Government's target is for gigabit-broadband to be available nationwide by 2030. [29] Nationwide means "at least 99%" of premises. [30]

This target is a reduction from the Government's 2019 manifesto commitment, which pledged to deliver nationwide gigabit-broadband by 2025. [31] That target had already been revised in November 2020, to target a minimum of 85% of premises by 2025. [32] The Government says it remains committed to reach 85% coverage by 2025. [33] The 'nationwide-by-2030' target therefore puts a timeline for connecting the remaining 15% of premises, which will mostly require public funding support.

The Public Accounts Committee in its January 2022 report said it was "not convinced" that the Government was on track to meet the 2030 timeline. The Committee pointed to delays to procurements under Project Gigabit and argued the Government was relying too heavily on commercial providers. [34]

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27   House of Lords Committee on the Rural Economy, Time for a strategy for the rural economy, Report of Session 2017–19, HL 330, 27 April 2019, para 252-254; House of Commons Environment Food and Rural Affairs Committee, An Update on Rural Connectivity, 2017–19, HC 2223, 18 September 2019, para 58

28   PAC, Delivering gigabit-capable broadband, HC 743 2021-22, 19 January 2022, para 5

29   DLUHC, Levelling Up the United Kingdom, 2 February 2022

30   DCMS, UK Digital Strategy, updated 2 October 2022

31   Conservative and Unionist Party Manifesto 2019, December 2019; PM's Office, Queens' Speech and background briefing notes,19 December 2019

32   HM Treasury, National Infrastructure Strategy, 25 November 2020, p31

33   PQ 116941 - Broadband, 7 February 2022

34   PAC, Delivering gigabit-capable broadband, 32nd report of session 2021-22, HC 743, 19 January 2022

Telecoms commentator Mark Jackson wrote that a 2030 timeline was a "reasonable expectation" for close to nationwide gigabit coverage, but noted that much will depend on the progress of Project Gigabit.[35]

The Government published an update on its progress on Project Gigabit in February 2022, saying it was confident that the roll-out is on track to meet the 2025 and 2030 targets.[36] The National Infrastructure Commission, in its annual infrastructure review for 2023, said that it also expects the targets to be met.[37]

The current status of progress towards the 2025/2030 target is discussed in section 2.3 below.

Past targets

The following table outlines successive Government targets on gigabit-capable and full-fibre broadband, discussed further in the following sections.

Government targets on full-fibre and gigabit-broadband coverage 2017–2022	
Target	Source
10 million premises connected to full-fibre in the next decade (2017-2027)	2017 Industrial Strategy[1]
Nationwide full-fibre by 2033 and 15 million premises connected by 2025	Future Telecoms Infrastructure Review (2018)[2]
Nationwide full-fibre by 2025	In Parliament in July 2019 (after Boris Johnson became Prime Minister)[3]
Nationwide gigabit-broadband by 2025	Conservative and Unionist Party Manifesto, December 2019[4] Queen's Speech, December 2019[5]
At least 85% gigabit-broadband by 2025	National Infrastructure Strategy, November 2020[6]
Nationwide gigabit-broadband by 2030	Levelling Up White Paper, February 2022[7]

Sources:
(1) HM Government, Industrial Strategy, November 2017, page 154.
(2) DCMS, Future Telecoms Infrastructure Review, 23 July 2018.
(3) HC Deb 663, 25 July 2019 c12486.
(4) Conservative and Unionist Party Manifesto 2019, December 2019.
(5) PM's Office, Queens' Speech and background briefing notes,19 December 2019.
(6) HM Treasury, National Infrastructure Strategy, 25 November 2020, page 31.
(7) DLUHC, Levelling Up the United Kingdom, 2 February 2022.

Government targets 2017-2018

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-

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[35] ISPreview, Gov Levelling Up Plan Confirms Nationwide Gigabit Broadband for 2030, 3 February 2022,
[36] DCMS, Project Gigabit delivery plan: Winter Update, 8 February 2022.
[37] NIC, Infrastructure Progress Review 2023, 27 March 2023, p22

fibre by 2025 (around 48%).[38] This target upgraded the Government's previous target set in 2017 to connect 10 million premises to full-fibre "over the next decade."[39]

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.[40]

Johnson Government

The Johnson Government's 2019 General Election manifesto adopted a target to deliver "nationwide gigabit broadband" by 2025.[41]

Commentators highlighted the Johnson Government's change in terminology, from originally promising nationwide "full-fibre" broadband by 2025 when Boris Johnson first became Prime Minister in July 2019,[42] to the later 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.[43] 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 has been a significant up-tick in gigabit capable coverage in 2020–21.

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.[44]

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."[45]

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[38]   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

[39]   Conservative and Unionist Party Manifesto, 2017. HM Government, Industrial Strategy, November 2017, p154

[40]   DCMS, Future Telecoms Infrastructure Review, 23 July 2018, p45-46.

[41]   Conservative and Unionist Party Manifesto 2019, December 2019; PM's Office, Queens' Speech and background briefing notes,19 December 2019

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

[43]   ISPreview, Government to Water Down 2025 Full Fibre for All UK Target – Become Gigabit, 14 September 2019; BBC News, Government dodges 'full fibre for all by 2025' pledge, 14 October 2019

[44]   Telegraph, Boris must not water down pledges on UK full-fibre broadband, 3 January 2020

[45]   DCMS Committee, Broadband and the Road to 5G, HC153, 22 December 2020, para 40

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.[46]

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."[47]

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 challenging but said he was "absolutely confident" the Government would "strain every sinew to get there".[48]

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.[49]

Press reports and rural stakeholders described the reduced target as a "kick in the teeth" for rural communities.[50]

Labour spokesperson for Digital, Chi Onwurah has criticised the Government's series of changes on its broadband policy as "either carelessness" or "deliberately misleading".[51]

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46   techUK, Connected Britain – Can reality meet the rhetoric on Fibre roll out?, 9 August 2019; BBC News, Broadband chiefs fire back at PM's full-fibre internet pledge, 3 August 2019

47   EFRA Committee, An Update on Rural Connectivity 17th Report of Session, HC 2223, 18 September 2019, para 67

48   DCMS Committee, Oral evidence: Broadband and the road to 5G, HC153, 20 October 2020, Q76

49   HM Treasury, National Infrastructure Strategy, 25 November 2020, page 31

50   BBC News, Gigabit broadband: Watered-down plans a 'kick in the teeth', 26 November 2020; Telegraph, Government's softened broadband pledge is 'kick in the teeth', 25 November 2020

51   HC Deb 2 December 2020, cWH240 [Rollout of broadband in Devon and Somerset]; HC Deb 3 December, c535 [Digital infrastructure, connectivity and accessibility]

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."[52] 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.[53]

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."[54]

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.[55]

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.[56]

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

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

54 [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

55 [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

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

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.[57]

Levelling-up White Paper

In the Levelling-up White Paper the Government expressed a new target for gigabit broadband and mobile connectivity. It was the fourth of 12 levelling-up 'missions':

> By 2030, the UK will have nationwide gigabit-capable broadband and 4G coverage, with 5G coverage for the majority of the population.[58]

In response to a Parliamentary question following the White Paper publication, the Department said it still remained committed to reach at least 85% of properties by 2025.[59] The 2030 target then effectively puts a timeline on the remaining 15% of premises.

Footnotes in the White paper clarified that nationwide gigabit-broadband means "at least 99% coverage".[60] This aligns with the Government's position that there will be some properties (estimated around 0.3%) that are too expensive to reach, even under the publicly funded Project Gigabit programme.[61]

The 2030 date for gigabit-broadband had been mentioned a few times in the months leading up to the publication of the Levelling Up White Paper but was not phrased in terms of a 'target'. For example, DCMS Permanent Secretary, Sarah Healey, told the Public Accounts Committee in a letter dated 22 October 2021 that the Department's internal plan was to deliver "all of the final 20% [of premises] by 2030".[62] Similar statements were made by officials in oral evidence to the Committee on 4 November 2021 and were referred to in the Committee's report published on 19 January 2022.[63] The 2030 date was also mentioned in accounting records submitted to the Public Accounts Committee in November 2021 and in response to Parliamentary question to the Department for Education.[64]

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57 Treasury Minutes: Government response to the Committee of Public Accounts on the Thirty fifth report from Session 2019-21, published 26 March 2021

58 DLUHC, Levelling Up the United Kingdom, 2 February 2022, Table 2.1, p120

59 PQ 116941, 7 February 2022 [Broadband]

60 DLUHC, Levelling Up the United Kingdom, 2 February 2022, Technical annex footnote 93

61 PQ 180575, 19 April 2021; DCMS, Improving broadband for Very Hard to Reach premises, 8 February 2022. For discussion, see section 2.7 of our briefing: Gigabit broadband: public funding

62 Letter from Sarah Healey, DCMS Permanent Secretary to Dame Meg Hillier MP, Chair of Public Accounts Committee dated 22 October 2021

63 PAC, Oral evidence: DCMS Recall (Broadband), HC 743, 4 November 2021, Q19; PAC, Delivering gigabit-capable broadband, 32nd report of session, 2021-22, HC 743, 19 January 2022

64 DCMS, DCMS Accounting Officer Assessments: UK Gigabit Programme Accounting Officer Assessment, November 2021 [accessed 8 February 2021]; PQ 62786, 25 October 2021 [Broadband: Schools]

2.3   Progress towards the targets

As of January 2023, 72% of UK premises had a gigabit-capable broadband connection available according to Ofcom.[65] That is up from 64% coverage in January 2022 and 36% in January 2021. A large part of the jump between 2021 and 2022 was driven by Virgin Media O2's work to upgrade its cable network to gigabit speeds. Full fibre coverage increased from 20% of UK premises in January 2021 to 47% in January 2023.

Gigabit broadband availability over time
UK, percentage of premises
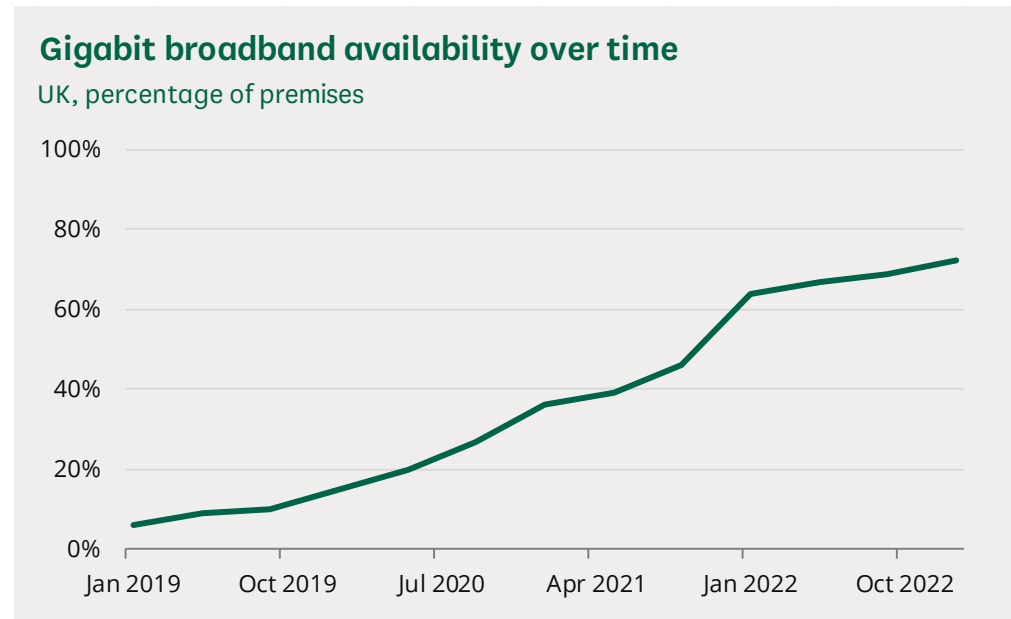
Source: Ofcom, Connected Nations Interactive Report

Ofcom has estimated that if operators' stated network deployment plans (commercial and subsidised) are achieved, over 90% of UK households will have access to gigabit capable broadband by March 2025, exceeding the Government's target.[66]

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[65]   Ofcom, Connected Nations – Autumn 2022 update, 7 October 2022
[66]   Ofcom, Connected Nations - Planned Network Deployment, 29 November 2022, p1

3 Policies to support the commercial gigabit rollout

The Government's general view is that enabling competition between commercial operators is the most appropriate way of rolling out gigabit broadband infrastructure. However, despite a growing competitive market, the Government concluded in the 2018 Future Telecoms Infrastructure Review (FITR) 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.[67]

Responding to the Johnson Government's target for full fibre coverage, Openreach urged the Government to create an "an environment that encourages greater investment".[68] A telecoms industry stakeholder group published an open letter calling for policy reform in four areas:

- Making it easier to access land and buildings to build gigabit networks;

- Reducing the tax on fibre cables;

- Requiring new build homes to have gigabit connections;

- Addressing the shortage of skilled labour.[69]

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

- Creating a stable regulatory environment that promotes investment in gigabit-capable networks by alternative network operators ('altnets') as well as Openreach. This is largely done by Ofcom through its approach to regulating Openreach (see sections 3.1 and 3.2 below)

- Introducing policy reforms to address practical 'barriers' to network deployment (section 3.3)

- Tax relief for investment in broadband networks (section 3.4);

- Investing in skills (section 3.5)

- Encouraging customers to switch to gigabit services (section 3.6).

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67 DCMS, Future Telecoms Infrastructure Review, 23 July 2018

68 BBC News, Broadband chiefs fire back at PM's full-fibre internet pledge, 3 August 2019

69 IPSA, FCS, and INCA, Letter to Boris Johnson MP, 2 August 2019

3.1   Encouraging a competitive market

Ofcom has a broad statutory duty to promote connectivity and access to gigabit-capable networks.[70] The regulator has an ongoing programme to promote investment in new gigabit-capable infrastructure by encouraging a competitive market, in line with the FTIR and the Government's Statement of Strategic Priorities to Ofcom.[71]

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. The Library briefing Building mobile and broadband networks (December 2022) has more detail.

- 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 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 to 2026, through its Wholesale Fixed Telecoms Market Review (WFTMR).[72] The WFTMR covers the whole of the UK apart from Hull, where KCOM, rather than Openreach, is the incumbent.[73]

The key decisions from the review include:

- Openreach will continue to be required to provide wholesale access to its network on non-discriminatory terms (compared to the terms it would offer BT). Ofcom will allow Openreach to raise the price of its standard superfast broadband services (download speed up to 40 Mbps) annually

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[70]   Communications Act 2003 as amended, section 4. See DCMS, New law changes to bring better connectivity to the UK, 22 July 2020

[71]   Ofcom, Regulatory certainty to support investment in full-fibre broadband: Ofcom's approach to future regulation, 24 July 2018; 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.

[72]   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). 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.

[73]   Ofcom published a separate WFTMR for the Hull area.

in line with inflation. This is a departure from previous reviews, where regulated prices had typically been reduced. It will not regulate pricing for Openreach's faster services. This is to ensure that both Openreach and altnets have a financial incentive to invest in new fibre networks.

- Openreach will continue to be required to let competitors use its network of telegraph poles and underground ducts. This is intended to encourage market entry by reducing capital costs. Ofcom estimates that using existing ducts rather than digging up streets to lay new ones could cut the cost of deploying fibre cables by up to 50%.[74]

- Openreach will not be able to charge geographic discounts for access to its FTTC or full-fibre networks. This is intended to prevent Openreach from targeting discounts in specific areas to undercut altnets who are trying to compete.

- Ofcom will support Openreach's plan to retire the copper network in areas where full-fibre has been built (see section 3.2 below). This means that Openreach will not have to maintain two separate networks.

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 indicated that it did not intend to impose price regulation on full-fibre services in next review period (2027 to 2031) and that it expected the same wholesale access prices to continue. This is to give investors confidence in the regulatory approach over the 10 years from 2021.

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 to achieve a 'fair return' for its investment while protecting consumers and encouraging Openreach to build.[75]

Press articles have commented on the difficult task Ofcom had in balancing many competing interests in this market review.[76] The review gives Openreach certainty to expand its network. Companies building networks in competition with Openreach, such as Virgin Media and City Fibre, have also welcomed Ofcom's review, saying it gives them confidence to bring forward new investments.[77] However, internet service providers (ISPs) that rely on Openreach's network (such as TalkTalk, Sky and Vodafone) say that the deal was too generous on Openreach and could lead to consumer prices rising

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[74] Ofcom, Opening up BT's infrastructure for new fibre broadband, 20 April 2017

[75] Ofcom, Ramping up the rollout of full-fibre broadband, 18 March 2021.

[76] ISPreview, Ofcom Unveils 2021 Changes to Boost UK Full Fibre Broadband, 18 March 2021. BBC News, BT's Openreach to build full-fibre internet 'like fury' after Ofcom move, 18 March 2021.

[77] ISPreview, Ofcom Unveils 2021 Changes to Boost UK Full Fibre Broadband, 18 March 2021; City Fibre, CityFibre responds to the publication of Ofcom's Wholesale Fixed Telecoms Market Review, 18 March 2021

without consumers seeing the benefit of new full-fibre services in the near future.[78]

Ofcom argued that its approach was justified in part because the move to full-fibre presents a "window of opportunity" for alternative providers to "deploy gigabit-capable networks in competition with Openreach and compete for ISPs and their end customers."[79] It took the view that the benefits of increased competition and investment in network infrastructure "outweigh any higher prices paid by consumers in the short term" and provide greater consumer protection in the long term.[80]

In October 2022 the Labour Party called for a return to cost-based wholesale pricing "so that telecoms wholesalers and internet service providers don't get a windfall from sky high inflation whilst families and firms struggle to pay their bills".[81]

2 A 'Wild West' of network building?

As a result of the Government's and Ofcom's policy to promote a competitive market there are many alternative network builders (altnets) building full fibre networks in competition with Openreach. Larger altnets include City Fibre and Hyperoptic. There are also many operators focusing only on a particular geographical area (for example, Wight Fibre on the Isle of Wight).

One consequence of this is a phenomenon called 'overbuild,' where multiple operators build separate networks in the same location. This is most likely to happen in densely populated urban areas where there are a large number of potential customers. An analysis of full fibre rollout plans conducted for the Financial Times found that network operators collectively have plans to build to around 80 million premises, far more than the total of 31 million in the UK.[82]

Commentators have questioned how sustainable this level of overbuild is, both financially for the industry and environmentally.[83] In a House of Lords debate, Lord Clement-Jones asked whether the country was in a "wild west for the laying of fibre-optic cable".[84]

Others have noted from a digital equality perspective that build plans are not evenly distributed across the country. The FT estimated that by 2030, around 3 million homes in wealthier and more densely populated areas could have

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78   ISPreview, Ofcom Unveils 2021 Changes to Boost UK Full Fibre Broadband, 18 March 2021; FT, Ofcom paves way for UK's rapid upgrade to fibre broadband, 18 March 2021 [subs only]; BBC News, BT's Openreach to build full-fibre internet 'like fury' after Ofcom move, 18 March 2021

79   Ofcom, Wholesale Fixed Telecoms Market Review 2021-26, Volume 4, March 2021, para 1.20

80   Ofcom, Wholesale Fixed Telecoms Market Review 2021-26, Volume 4, March 2021, para 1.91

81   Labour Party, Labour launches 3 point plan to ease the broadband bombshell and help families and firms facing cost of living crisis made in Downing Street, 13 October 2022

82   FT, Broadband market inequalities test Westminster's hopes of levelling up, 19 June 2022

83   FT, UK 'altnets' risk digging themselves into a hole, 25 June 2022

84   HL Deb 29 June 2022 vol 823 c745

more than five fibre network providers to choose from, while 1 million in poorer and rural areas could have none. Ofcom has calculated that, if existing commercial and subsidised deployments go to plan, 96% of urban households in the UK will have access to gigabit broadband in March 2024, compared to 66% of rural properties.

On the other hand, some commentators have argued that overbuild is preferable to underbuild. Ian Morris, of telecoms news website Light Reading, notes that until recently the "dearth of infrastructure competition gave Openreach no market incentive to invest in full-fiber networks" and that, as a result, the UK was "stuck at the bottom of European full-fiber rankings".[85]

The Government's view remains that it "welcomes" Ofcom's approach of encouraging "competitive build in the majority of the UK".[86]

3.2   Retiring the copper network

The UK's copper telephone and broadband network is owned by Openreach. Openreach's copper network supports the traditional landline telephone network, copper-based broadband connections (including FTTC) as well as other devices such as telecare alarms.

The telecoms industry is already working on plans to switch all customers to digital only telephone services by 2025. This means that landline voice calls will be transmitted over the internet. The traditional analogue phone network, the Publicly Switched Telephone Network (PSTN), will be retired by 2025. Further information is provided in the Library briefing, Digital telephone switchover (January 2023).

The digital switchover is independent from but complementary to the rollout of full fibre. 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.[87]

In the 2018 Future Telecoms Infrastructure Review, the Government supported an industry-led copper "switch over".[88]

85   Light Reading, Despite critics, fiber rollout is a rare UK success story, 20 June 2022
86   PQ 106697 – Broadband: Optical Fibres, 21 January 2022
87   DCMS, Future Telecoms Infrastructure Review, 23 July 2018, para 140-142
88   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

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

Switching off the copper network to broadband services would be the next phase to retiring the copper network completely. This would require all premises and devices to have access to a non-copper based broadband 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.

There is no date for switching off the copper network for broadband services. 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.[89]

Ofcom has said that where Openreach has built a full-fibre network alongside its copper-based network, it intends to switch wholesale regulation from the copper network to the fibre network. 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. When this will happen depends on the amount of fibre coverage in an area.[90]

Openreach is trialling a full switch-off of the copper network in Salisbury and Mildenhall. Both locations have universal full fibre coverage and their copper network will be completely switch off on 9 October 2023. Openreach had originally planned to complete the trial by April 2023, but the date was pushed back because some customers had not migrated despite repeated attempts to contact them. Openreach said that it would trial new methods to prompt customers to migrate before their service is switched off, including by limiting the broadband speeds of those still on copper-based connections.[91]

3.3 Removing barriers to network deployment

Telecoms industry operators say there is a strong willingness to invest in new networks but barriers to building infrastructure are holding the market back.[92]

In 2018, DCMS established a "Barrier Busting Task Force", which is a cross-Government group working to address barriers to building digital infrastructure.[93] Since it was established, the Task Force has focused on the following four areas:

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[89] DCMS, Future Telecoms Infrastructure Review, 23 July 2018, para 144
[90] Ofcom, Ramping up the rollout of full-fibre broadband, 18 March 2021
[91] Openreach, Openreach trials service methods to support analogue network retirement, 27 January 2023
[92] Openreach, The blueprint for a full-fibre future, October 2019
[93] The FTIR (July 2018) provided a summary of the work of the Task Force at pages 5-6

- access to land

- street works

- new build connectivity

- supporting mobile roll-out.[94]

The Task Force published a timetable for its future work in its March 2021 [progress update](#).[95]

Removing barriers to building infrastructure

Efforts to remove barriers to date include:

- Developing a [Digital Connectivity Portal](#) that offers resources and advice to local authorities and commercial providers to improve collaboration on digital infrastructure deployment;

- Reforming the building regulations to require new build properties to have gigabit-capable connections;

- Introducing 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.[96] The Act came into force on 26 December 2022 in England and Wales and on 1 July 2023 in Scotland[97];

- Introducing the [Product Security and Telecommunications Infrastructure (PSTI) Act 2022](#). The PSTI Act makes changes to the Electronic Communications Code, the legislation that governs the rights of operators to access land for the purpose of building and maintaining telecommunications networks. The reforms make it easier for operators to gain rights share and upgrade telecoms infrastructure located on public and private land[98];

- Collaborating with the Department for Transport to facilitate street works.

Further information on these reforms can be found in the Library briefing, [Building mobile and broadband infrastructure (December 2022)](#).

Chief Executive of the National Infrastructure Commission James Heath commented in November 2021 that the Government and Ofcom's efforts to

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94   DCMS, [Barrier Busting Task Force: next steps](#), 19 March 2021
95   DCMS, [Barrier Busting Task Force: next steps](#), 19 March 2021
96   The [Library briefing on the Act](#) has further information.
97   [Telecommunications Infrastructure (Leasehold Property) Act 2021 (Commencement No 1) Regulations 2022](#), (SI 2022/1308)
98   See Commons Library, [The Product Security and Telecommunications Infrastructure Bill](#), 25 October 2022

remove barriers to infrastructure build was one of a few factors contributing to the fast increase in gigabit-capable commercial build in recent years. However, he said it was an area that needed "continued, concerted action".[99]

Delivering broadband to apartment blocks

As noted above, the Telecommunications Infrastructure (Leasehold) Act 2021 aimed to address a key barrier identified by the industry: gaining access rights to a tenanted property if the landlord is unresponsive.

A related issue is gaining access to apartment blocks (referred to as multi-dwelling units, MDUs) where the landlord refuses permission or is difficult to identify. During the PSTI Act's passage through Parliament, MPs including Chris Elmore, the Labour Party's shadow minister, raised the problem of "broadband blackspots" in urban areas resulting from operators being unable to gain access to MDUs.[100] Amendments were tabled in the Commons and the Lords that would have given operators a right to upgrade equipment already in place without needing a new access agreement. This would allow them to upgrade copper wiring to fibre.

However, the Government did not accept this proposal, stating that it would infringe too heavily upon private rights. There is also no consensus in the industry about whether it would be appropriate. In evidence to the Public Bill Committee, Simon Holden of City Fibre noted that allowing operators to access MDUs for the purpose of upgrading cables would entrench the dominance of the operators who already have cables in place, "which most of the time is Openreach".[101]

3.4   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.[102] It was also introduced in Wales.[103] The relief was not extended.

The Scottish Government has introduced non-domestic rates relief for new fibre broadband infrastructure in Scotland for 10 years from 1 April 2019.[104]

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

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[99]   NIC, James Heath to WEETF on delivering Gigabit-capable broadband, 2 November 2021

[100] HC Deb 25 May 2022 vol 715 c329-330

[101] PBC Deb 15 March 2022 (second sitting), c45

[102] Telecommunications Infrastructure (Relief from Non-Domestic Rates) Act 2018; and The Non-Domestic Rating (Telecommunications Infrastructure Relief) (England) Regulations 2018

[103] Welsh Government, Legislative consent memorandum: Telecommunications Infrastructure (Relief from Non-Domestic Rates) Bill, July 2017

[104] Scottish Government, Rates relief puts Scotland in fibre fast lane, 24 March 2019

Government.[105] 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 digital infrastructure improvements.[106] techUK (the trade body for the tech industry) have called for business rates relief for full fibre for "at least the next 15 years".[107]

The super deduction

The Government announced the so-called "super deduction" in the Budget 2021.[108] 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".[109] The Government has confirmed that fibre infrastructure would qualify for the 130% first-year capital allowance.[110]

BT said the super deduction freed up around £650 million, which enabled it to "raise investment in Openreach, allowing them to pursue a bigger, quicker target for broadband investment."[111] Openreach increased its full fibre rollout target from 20 million to 25 million premises in response.

The super deduction expired in April 2023.

Full expensing

The super deduction was replaced in the 2023 Spring Budget by a new policy, 'full expensing'.[112] This allows companies to claim a deduction on their taxable profits equal to their expenditure on qualifying investments. The cost of new plant and machinery can be deducted in full in the year of purchase, rather than spread out over multiple years.

BT, which had called for the introduction of full expensing, said the announcement was:

> positive news for Openreach and many other businesses investing in national infrastructure projects … and it gives us a higher degree of certainty to back the plan we're pursuing to fully fibre the UK.[113]

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[105] Openreach, The blueprint for a full-fibre future, October 2019

[106] CBI, Ready, Steady, Connect, December 2018

[107] techUK, Connected Britain – Can reality meet the rhetoric on Fibre roll out?, 9 August 2019

[108] DCMS, Barrier Busting Task Force: next steps, 19 March 2021

[109] HM Treasury, Super-deduction factsheet, 3 March 2021. HM Treasury, Budget 2021; Budget report HC 1226, p57, 3 March 2021

[110] PQ 164465, 11 March 2021 [Broadband: Capital allowances]

[111] BT, Investing in the UK's future: The case for fundamental reforms to capital allowances, 22 February 2023, p18-19

[112] HM Treasury, Full expensing, 15 March 2023

[113] ISPreview, Spring UK Budget 2023 – full expensing may help FTTP and 5G rollout, 15 March 2023; ISPreview, BT calls for tax relief to aid UK FTTP broadband and 5G builds, 22 February 2023

Full expensing will initially be available for three years, until the end of March 2026. The Government said that it intended to make the measure permanent "when fiscal conditions allow".[114]

3.5 Visas for skilled workers

A shortage of skilled labour, notably engineers trained to lay and maintain fibre cables, is a longstanding concern in the industry. Clive Selley, CEO of Openreach, told the Financial Times in 2022 that the Home Office process for hiring overseas workers was "tortuous" and was "constraining the rate of fibre build in the UK".[115] Ookla, a network testing and analysis company, has reported that labour shortages are the most pressing challenge affecting the UK's gigabit rollout.[116]

Occupations for which there is a lack of skilled labour may be added to the Shortage Occupation List (SOL) Occupations on the SOL receive dispensations under the immigration rules, such as a lower salary threshold, making it easier for employers to recruit from overseas. The Migration Advisory Committee (MAC) published recommendations for the SOL in September 2020. The MAC said that it heard from stakeholders that there were difficulties recruiting telecoms engineers, but that "there was little evidence provided that there were insufficient resident workers to fill vacancies".[117] It therefore did not recommend adding telecoms engineers to the SOL.

Referencing the MAC's conclusion, the Government said in its response to the December 2020 Digital, Culture, Media and Sport (DCMS) Committee report that it was focusing on incentivising "the training and employment of workers in Britain" rather than immigration reform.[118]

The then-Home Secretary, Priti Patel, wrote to telecoms operators in August 2022 promising to help them navigate the immigration system.[119]

In September 2022 the Government asked the MAC to review the SOL, with media reports suggesting that broadband engineers could be added.[120] A call for evidence was published in February 2023 and its recommendations are expected in the Autumn.[121]

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[114] HM Treasury, Spring Budget 2023, 15 March 2023

[115] FT, BT executive says Brexit is slowing superfast broadband rollout, 14 June 2022

[116] Ookla, Fibre altnets have an important role to play in the UK's gigabit future, 3 October 2022

[117] MAC, Review of the shortage occupation list: 2020, 29 September 2020, p526-527

[118] DCMS, Letter to Julian Knight MP, Chair, DCMS Select Committee – Annex A: Additional information to Departmental response, 1 April 2021

[119] Times, Foreign broadband workers rushed in, 30 August 2022

[120] ISPreview, Government visa review to tackle shortage of UK fibre engineers, 26 September 2022

[121] MAC, Shortage Occupation List: call for evidence 2023, 27 February 2023

3.6   Promoting full fibre uptake

Customers switching to, and paying for, gigabit-capable services underpins the return on investment for private operators. Telecoms companies need around 40% of customers in their network area to take up gigabit broadband to make a return on their investment.[122] Promoting consumer demand for gigabit-capable services is therefore an important factor in supporting gigabit-broadband roll-out.

Take-up is also necessary if the economic gains of gigabit-capable broadband are to be realised.

Around 25% of customers with a full-fibre connection available subscribed to a full-fibre service in 2022.

Consumer take-up of gigabit-capable services is currently low. Ofcom estimated in December 2022 that around 25% of consumers with a full-fibre service available choose to take-up the service (with a range of download speeds available). Around 9% of customers take up services with gigabit speeds. These figures are similar to the previous year (24% and 7% respectively).

Barriers to take-up

In August 2020 DCMS launched a Gigabit Take-Up Advisory Group (GigaTAG), led by Which?, the Federation of Small Business, and the Confederation of British Industries. The group conducted a "strategic review into boosting take-up as gigabit connections among consumers and businesses become more widely available."[123] It published an Interim Report in December 2020 that looked at why people don't take up gigabit services.[124] Three broad consumer barriers were identified:

- Lack of awareness of gigabit-capable broadband;

- Lack of perceived benefit of gigabit broadband over other connections, and an associated unwillingness to pay a premium for it;

- Practical barriers including the hassle of switching and difficulty engaging in the telecoms market.

A study of take-up in four European counties by consultancy firm WIK Consult similarly highlighted lack of understanding and affordability as key 'demand-side' barriers.[125]

Another consultancy, Frontier Economics, has argued that while these 'rational barriers' are important they overlook behavioural traits that influence adoption of a new technology. For example, consumers may take

[122]   FT, UK 'altnets' risk digging themselves into a hole, 25 June 2022

[123]   DCMS, Gigabit broadband rollout milestone reached, 8 August 2020

[124]   Gigabit Take-up Advisory Group, Interim Report, December 2020

[125]   WIK Consult, Moving to a fibre-enabled UK: international experience on barriers to gigabit adoption, June 2020

fast and reliable broadband for granted, meaning that the psychological reward for switching from a good package to a superior one is limited. Benefits such as reliability are only noticeable over time.[126]

People also take the effort of making a decision into account when picking a course of action. The default choice (sticking with a non-fibre connection) benefits from being the easy choice, whereas migrating to full fibre would require the additional effort of comparing new products and providers, as well as the practical hassle of switching.[127]

The report, which was commissioned by ISP TalkTalk, forecasts that without intervention, take-up of full fibre will be at 50-66% in 2030 even if there is full network coverage. 16-33% of households would still be on a copper network, with the rest on Virgin Media's gigabit-capable cable network.[128]

Recommendations for improving take-up

In its December 2020 report, the DCMS Committee said the Government "had not given enough priority" to policy on promoting gigabit-broadband demand and "does not recognise the potential role that Government could play now."[129] In November 2021, the Chief Executive of the National Infrastructure Commission, James Heath, also commented that the Commission would like to see the Government "widen its focus" to demand stimulation, in particular for small businesses.[130]

The final GigaTAG report was published in June 2021. It made recommendations for solutions to help increase take-up, including:

- That Ofcom and industry develop common terminology to describe broadband services.

- The Government should develop a 'gigabit toolkit' for use by local authorities including information on benefits of gigabit-broadband and resources to help information campaigns including for digital skills courses.

- Digital skills courses should include vouchers for software or hardware so that businesses with the right support and skills can also pay for migration to gigabit broadband. The Government could also introduce an employee discount scheme, similar to Cycle to Work.

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[126] Frontier Economics, Unlocking the gigabit dividend: using behavioural insights to accelerate FTTP takeup, August 2022, p17
[127] Frontier Economics, Unlocking the gigabit dividend: using behavioural insights to accelerate FTTP takeup, August 2022, p18
[128] Frontier Economics, Unlocking the gigabit dividend: using behavioural insights to accelerate FTTP takeup, August 2022, p28
[129] DCMS Committee, Broadband and the Road to 5G, HC153, 2019-21, 22 December 2020, para 78
[130] NIC, James Heath to WEETF on delivering Gigabit-capable broadband, 2 November 2021

- The Government should run a nationwide awareness-raising activities with a coalition of key stakeholders and shared messaging. [131]

Frontier Economics' report makes similar recommendations as GigaTAG plus the following recommendations based on its analysis of behavioural barriers:

- Government should:

  - Allow tenants to assume that their landlord had given 'deemed consent' to works to install an FTTP connection, unless explicitly withdrawn;

  - Require property listings to say whether the property has an FTTP connection available, similar to the Energy Performance Certificate rating for energy efficiency.

- Ofcom should:

  - Set and publicise a copper network switchoff date;

  - Publish data on customers' FTTP experience versus FTTC;

  - Focus marketing guidelines on reliability as well as speed.

- Industry should:

  - Commit to higher service quality for FTTP fault repairs;

  - Set up dedicated support channels for vulnerable customers.[132]

Actions to improve take-up

In response to the GigaTAG report, the Government confirmed that Ofcom would work with the industry on the clarity of broadband terminology and information, and that Building Digital UK (part of what was then DCMS) would develop the gigabit toolkit. The Government said that it was "considering the Advisory Group's wider recommendations".[133]

The Government's general view, as expressed in its response to the DCMS Committee's 2020 report, is that the industry has the "key role" in stimulating demand. It said that it saw Ofcom's role as protecting customers, safeguarding competition, and ensuring that the switching process is easy.[134]

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[131]   Gigabit Take-up Advisory Group, Final report, 17 June 2021

[132]   Frontier Economics, Unlocking the gigabit dividend: using behavioural insights to accelerate FTTP takeup, August 2022, p30

[133]   PQ 20402 - Broadband, answered 29 June 2021

[134]   DCMS, Response to the DCMS Committee Broadband and the road to 5G report, 22 February 2021, p6-7

Product labelling

Some altnets who only offer full fibre services have complained about other ISPs advertising FTTC-based services (which are part fibre, part copper) as 'fibre' broadband. They say that this contributes to confusion among consumers. For example, a report commissioned by City Fibre found that 52% of people believed they already had a full fibre broadband connection, despite full fibre only being available to 18% of them.[135]

Ofcom initially sought to secure a voluntary agreement within the industry about the use of common terminology to describe broadband technologies, but without success. In March 2023 the regulator announced a consultation on improving the information available to consumers.[136] It proposed that providers should provide a short description of the underlying technology on their websites, using consistent terms such as 'fibre', 'cable', and 'part fibre'. Under the proposals, ISPs would only be able to use the terms 'fibre' and 'full fibre' in relation to FTTP networks.

The proposals were welcomed by altnets including City Fibre, Giganet, and FullFibre.[137] A decision is expected in Autumn 2023.

Making broadband switching easier

Ofcom plans to introduce new rules to make switching between different broadband networks easier, by a "one touch" process.[138] 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 system, the customer will only need to contact their chosen new provider, who will then manage the switch.

The new system was expected to be in place by April 2023. However, the telecoms industry, which was developing the system, missed the implementation deadline. Ofcom announced an enforcement investigation in response.[139] It is not clear when the one-touch switching system will be in place.

Further information on Ofcom's efforts to support consumer engagement in the telecoms market can be found in the Library briefing, Mobile and broadband: affordability and consumer protection (November 2022).

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[135] WIK Consult, Impact of labelling on broadband adoption, March 2021, p17-18

[136] Ofcom, Tackling consumer confusion about broadband technology, 8 March 2023

[137] ISPreview, Ofcom UK clamps down on misleading uses of "fibre" broadband, 8 March 2023

[138] Ofcom, New plans for seamless broadband switching, 3 February 2021

[139] Ofcom, Ofcom investigates broadband providers for failing to implement simpler switching, 3 April 2023

4 Project Gigabit: public funding for gigabit broadband

4.1 What is Project Gigabit?

The Government's £5 billion programme to support the rollout of gigabit broadband to hard-to-reach areas is called **Project Gigabit**. It is delivered by Building Digital UK (BDUK), an executive agency within the Department for Science, Innovation and Technology (DSIT).

Project Gigabit has three main parts:

- A series of procurements to subsidise the roll-out of gigabit-capable broadband in specific areas. This is the main part of the programme (described further in this section below). [140]

- Voucher schemes for rural areas (see section 3)

- Funding to connect public sector buildings (see section 2.8).

The Government has also provided funding through arrangements to extend contracts previously agreed under the superfast broadband programme (see section 2.6 and Box 2).

In the November 2020 spending review, the Chancellor allocated £1.2 billion of the total £5 billion funding to the years 2021-2025, broken down as follows: [141]

- 2021–22: £100 million

- 2022–23: £300 million

- 2023–24: £400 million

- 2024–25: £500 million

The remaining £3.8 billion is reserved for future years.

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[140] The NAO explained that £4.5 billion would be allocated to the procurement programme, with the remaining funding for the demand-side schemes such as vouchers. NAO, Improving Broadband, 16 October 2020.

[141] HM Treasury, Spending Review 2020, 25 November 2020, Table C6 note 2

The Government explained that the staged approach to funding reflects what it believes industry can deliver in hard to reach areas by 2025. It said in February 2021 that it would "accelerate" the investment in hard to reach areas if suppliers could "increase the build in these areas alongside their commercial build plans".[142] The Government described its programme as a "record investment" in digital that will "support levelling up across the UK."[143]

The DCMS Committee said that it was "disappointing" that only 25% of the funding for hard to reach premises had been made available in the first four years, adding that it would "undermine the ambition for such premises to receive better connectivity at the same time as other parts of the UK."[144] Rural stakeholders such as the Country Land and Business Association also expressed concern about how much of the funding had been held back.[145]

4.2 Project Gigabit contracts

The main part of the Project Gigabit is a series of public procurements in areas that would not otherwise receive commercial investment.

The Government will part-fund the roll-out in these areas, topping up industry investment to make the build commercially viable. Suppliers bid for contracts to build in each area.

There are two main types of contract:

- Regional contracts: each expected to cover up to around 150,000 premises across county-sized areas, called Lots.
- Local supplier contracts: smaller contracts of up to around 10,000 premises intended to be of interest to local specialist providers, where they can deliver more quickly and with better value for money than regional suppliers.
- Cross-regional contracts: a contract designed as 'catch-all' for premises not covered by regional or local contracts (because there was no market interest, for example) or where a larger area approach would provide better value for money.[146]

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[142] 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). Similar wording was used in response to the Public Accounts Committee, see: Treasury Minutes: Government response to the Committee of Public Accounts on the Thirty fifth report from Session 2019-21, published 26 March 2021

[143] HM Treasury, Spending Review 2020, 25 November 2020, para 6.86

[144] DCMS Committee, Broadband and the Road to 5G, HC 153, 2019-20, December 2020, para 49

[145] CLA, Calls for clarity on roll-out of broadband coverage, 4 December 2020

[146] BDUK, Detailed Overview of the Gigabit Infrastructure Subsidy Scheme, 9 June 2023; BDUK, Type C Post Public Review, 24 March 2023

The procurement process

The procurement process is being managed centrally by BDUK, working with local authorities and devolved administrations. This is a change of approach compared to the Government's previous public broadband roll-out programme (the superfast programme), where procurement was managed by local bodies and the devolved Administrations (see Box 2). The National Audit Office's October 2020 report, Improving Broadband, discusses this change of approach, alongside other lessons learned from the previous programme (see section 3 of the NAO's report).

The areas to receive public funds are defined by BDUK though a continuous process of engagement with industry to work out where commercial operators plan to build networks over the next three years. Those areas are then excluded along with areas where gigabit-broadband is already available. [147] The premises remaining are those in line to receive public funding.

Procurements are being taken forward in stages. England has been divided into areas called Lots for regional procurement. [148] The Lots are broadly county-sized and defined along local authority boundaries where possible. [149] Wales and Scotland are each a single Lot.

Details about which postcodes in area may be eligible for funding are first published as part of the Public Review consultation for that area.

Before a contract goes to procurement there will be consultations on the area to be covered. First, an Open Market Review (OMR) asks suppliers to provide information about their planned broadband infrastructure investment over the next three years. Based on this information, BDUK will identify specific areas within the Lot that it believes will not be served by the commercial rollout and which may therefore be eligible for subsidies. Its proposals then go out for a second consultation, called a Public Review, upon which all stakeholders, including the general public, can comment. All public reviews are collated on GOV.UK here: UK Gigabit Programme: public reviews.

The Lots prioritised for the first procurements were those where BDUK was most confident that it had accurate data showing there would not be gigabit-broadband built by commercial suppliers in the next three years. [150]

Following its consultations BDUK will conduct a final pre-procurement market engagement to ensure that the proposed contracts are viable and represent value for money.

The final contracts that go out for procurement contain the detail on specific premises to be covered. Within that, it is up to the telecoms provider to determine how the premises are prioritised for connections. BDUK says it will encourage providers to prioritise early delivery to premises that cannot

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[147]   DCMS Project Gigabit Phase 1 Delivery Plan, 19 March 2021
[148]   See map on page 14 of the Delivery Plan – Summer Update, 2 August 2021
[149]   DCMS Project Gigabit Phase 1 Delivery Plan, 19 March 2021
[150]   DCMS Project Gigabit Phase 1 Delivery Plan, 19 March 2021

access superfast broadband.[151] BDUK will require suppliers to set out in their contract bids how premises without superfast broadband will be addressed consistently throughout the build process so that they are not all left to the end. [152]

BDUK says that defining the areas for procurements will be 'dynamic' and will be adjusted to reflect industry plans that regularly change as new providers enter the market and existing ones expand their plans. In January 2022 BDUK launched a rolling national Open Market Review. Suppliers are asked to submit data about their national investment plans on a four-monthly basis, helping BDUK keep its information about the commercial rollout up to date.[153]

Timeline for procurements

Details on the timetable, number of premises, and funding expected for ongoing and future procurements is provided in BDUK's Project Gigabit Delivery Plan updates. The updates are collated on GOV.UK: Project Gigabit quarterly updates.

The first contract to be awarded was a local one covering 7,000 premises in North Dorset.[154] The first regional contract was signed with network operator Fibrus in November 2022 and will connect around 59,000 premises in Cumbria.[155]

According to BDUK's latest Project Gigabit update, the final regional contracts are expected to be awarded by June 2024. The dates, order and size for future procurements are subject to change, depending on industry plans, industry capacity, and the outcome of earlier procurements.

4.3   UK Gigabit Voucher scheme

For full details and eligibility conditions see DCMS's Gigabit Voucher Scheme website.

The UK Gigabit Voucher Scheme allows residents and small and medium-sized businesses (SMEs) in eligible rural areas to apply for vouchers towards the cost of a new gigabit-capable connection.

Voucher projects are intended to address specific gaps in coverage not otherwise met by industry or other public-funded programmes. [156] A postcode checker on the Gigabit Voucher Website allows users to check whether their premises is in an eligible area. These are rural areas where:

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[151]   DCMS, Project Gigabit Delivery Plan – Summer Update, 2 August 2021, p18

[152]   House of Commons Library correspondence with DCMS, 19 August 2021

[153]   BDUK, National Rolling OMR request for information, updated 15 February 2022

[154]   DCMS, Work begins on first major broadband upgrade under £5 billion Project Gigabit, 30 August 2022

[155]   DCMS, Major broadband rollout for Cumbria begins as part of £100 million plan to connect thousands of rural premises, 30 November 2022

[156]   BDUK, Project Gigabit Delivery Plan – Summer Update, 2 August 2021, p23

- Existing broadband speeds are less than 100 Mbps.

- a gigabit-capable network is not likely to be built to that area commercially in the near future; and

- there is no government-funded contract planned or in place to improve the network.

Projects are also subject to BDUK "commercial and value for money" assessments. [157]

Vouchers are worth up to £4,500 per residential or commercial premises. The vouchers were originally worth £1,500 for households and £3,500 for SMEs, but were increased to their current level in December 2022 following a review of the scheme. [158]

The scheme is supplier-led, which means that residents and businesses must approach a registered supplier interested in building in their area, who then applies for the vouchers on their behalf. The property owners rather than the supplier would be expected to fund the difference between the cost of the amount raised through vouchers and the total cost of the project.

The voucher scheme opened on 8 April 2021 with up to £210 million of public funds allocated. It follows two similar previous voucher schemes that have now closed: the Rural Gigabit Voucher Scheme and the Gigabit Broadband Voucher Scheme.

A total of 114,300 vouchers have been issued across the three schemes, as of January 2023. [159]

Additional funding is available in some areas

English local authorities

Some local authorities in England have provided additional funding to top-up the Government's vouchers. This funding could be drawn, for example, from their own budgets or from previous superfast broadband programme funding.

More information is provided through each local authority, or the broadband delivery body in each area. [160]

Wales

The Welsh Government previously provided additional funding to top-up vouchers issued through the gigabit voucher schemes in Wales. An additional

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[157] DMCS, Gigabit voucher Scheme: Who is eligible? [accessed 31 May 2023]

[158] ISPreview, Government triples value of UK gigabit broadband vouchers, 30 November 2022

[159] BDUK, Project Gigabit winter update 2022 to 2023, 7 February 2023

[160] The local broadband delivery body may led be the local authority or a local enterprise partnership. See DCMS's map of local broadband projects defined under the superfast broadband project.

£3,500 per rural business and up to £1,500 per residential premises was available.[161] At the time this was equivalent to the UK scheme.

Lee Waters MS, the Welsh Government's Deputy Minister for Climate Change, announced on 15 March 2022 that the top-up scheme would cease at the end of that month. He said that "in the face of continued budget pressures, we cannot continue to underwrite the UK Government who have the responsibility for this area."[162]

Scottish Broadband Voucher Scheme

The Scottish Government has a separate voucher scheme that provides vouchers up to £5,000 to premises with existing broadband speed of less than 30 Mbps that are not included in commercial or publicly funded build plans.

The Scottish Government's online postcode checker allows residents to see if they are eligible. In some cases, rural premises may be able to combine the Scottish Government funding with the UK voucher scheme.

4.4 GigaHubs

The Government has allocated £110 million of Project Gigabit funding to connect public sector 'hub' sites. The hub approach was trialled as part of the Rural Gigabit Connectivity Programme and continued in the Local Full Fibre Network (LLFN).

In the Project Gigabit Phase 1 Delivery Plan (March 2021) the Government provided the following details of how procurement to public sector hubs would continue to support the national roll-out of gigabit-broadband:

> We have set up a Dynamic Purchasing System (RM6095) with Crown Commercial Services for Gigabit-Capable Connectivity and now have 41 suppliers fully registered. Local authorities and devolved administrations are procuring services from the DPS, working with the supplier market to reduce barriers for the commercial sector to deliver gigabit services to the hardest to reach areas.

> We expect many other government departments and authorities to participate in regional procurements, with 100-200+ hubs sites expected in each regional procurement. As well as facilitating greater delivery of public services online, we estimate these hub sites will have c.30 premises passed with little incremental cost and c.200 addressable premises within 250-300 metres and so provide a platform for suppliers to extend connectivity in these local communities.

[161]   DCMS and Welsh Government, UK and Welsh governments team up on big broadband boost for rural Wales, 24 June 2020

[162] Plenary (15 March 2022), Statement by the Deputy Minister for Climate Change: Update on Digital Strategy, para 162

> The hubs programme remains highly active, with over £50m of future work in the pipeline including Oxfordshire, Dorset, Leicestershire and Lincolnshire due to commence their procurements imminently, with estimated funding value c.£12m. [163]

In February 2023 BDUK report that a total of 6,650 of public sector hubs had been connected under the RGC, LFFN, and GigaHubs programmes.[164]

4.5 Progress on Project Gigabit delivery

The Public Accounts Committee's January 2022 report, Delivering gigabit-capable broadband, criticised the lack of detail and consistency in the Government's reporting on the progress of Project Gigabit. In its recommendations, the Committee said that the Government should "work with the National Audit Office to determine the most appropriate metrics and frequency for reporting progress within the scheme."[165]

The Government accepted the PAC's recommendations.[166] BDUK's Corporate Plan 2022-23 set out the anticipated trajectory towards the target of 85% gigabit coverage by the end of 2025.[167] BDUK reports that of the estimated 1.56 million premises in Project Gigabit's scope 600,000 have already been 'passed', primarily by reconfiguring existing superfast broadband contracts. It anticipates transitional years of slower growth as these contracts expire and new ones go out for procurement, with delivery increasing from 2023 (see table below).

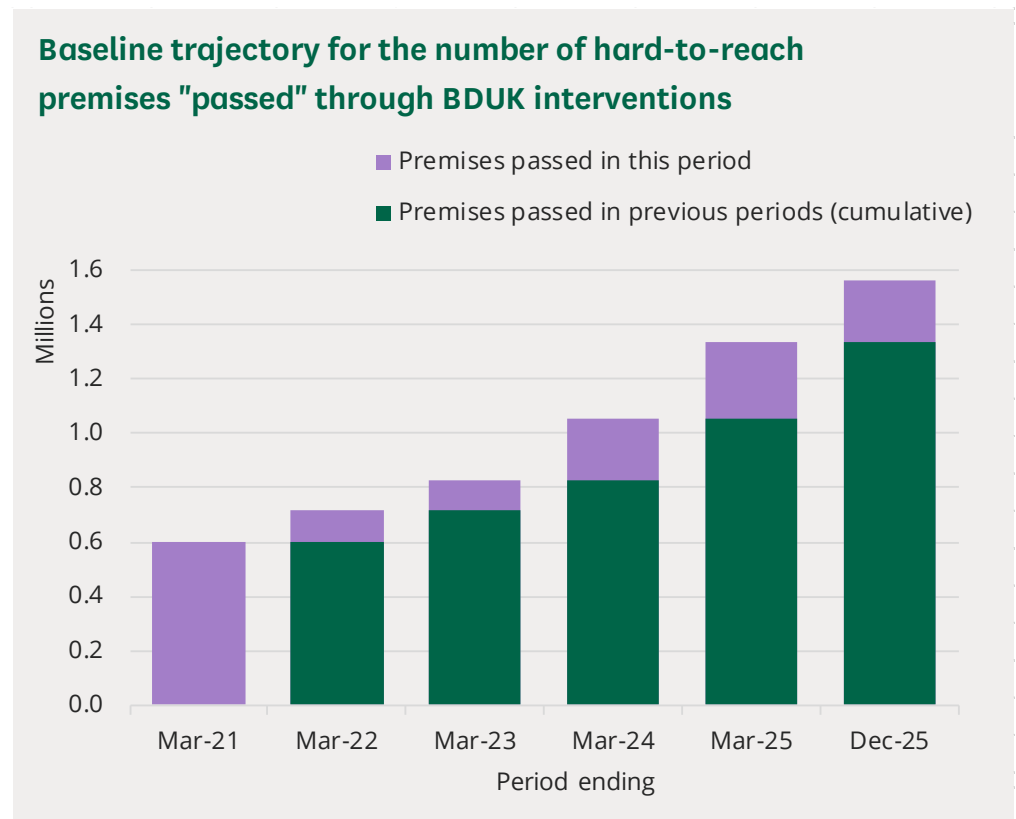[163] DCMS, Project Gigabit Phase 1 Delivery Plan: Public Sector Hubs, 19 March 2021
[164] BDUK, Project Gigabit winter update 2022 to 2023, 7 February 2023
[165] PAC, Delivering gigabit-capable broadband, HC 743 2021-22, 19 January 2022, para 1
[166] DCMS, Response to the thirty-second report of session 2021-22, CP 646, paras 1.2-1.5
[167] BDUK, Corporate Plan 2022-23, updated 29 April 2022, table 1

Baseline trajectory for the number of hard-to-reach premises "passed" through BDUK interventions

■ Premises passed in this period
■ Premises passed in previous periods (cumulative)

Millions

Period ending

Source: Building Digital UK, Corporate Plan 2022-23, updated 29 April 2022, table 1

Future annual reports will assess delivery performance against the baseline trajectory, which BDUK says that it hopes to "significantly exceed."

BDUK also publishes quarterly Delivery Plan Updates. Following discussions with the NAO, BDUK committed to providing greater detail and clarity in these updates. From the Spring 2022 version they will contain additional metrics, such as regional-level coverage data, and commentary on changes since the previous update.[168] Updates are collated on the GOV.UK webpage, Project Gigabit quarterly updates.

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[168] Letter from Sarah Healey, Permanent Secretary, DCMS, to Dame Meg Hillier, Chair, Public Accounts Committee, on DCMS and BDUK's commitment to transparency, dated 25 March 2022

4.6 Project Gigabit and the devolved administrations

See the [latest Project Gigabit Delivery plan update](#) (Spring) for details on progress in each nation.

Although telecommunications is a reserved power and Scotland, Wales, and Northern Ireland are all part of Project Gigabit, each of the devolved administrations have their own broadband roll-out programmes ongoing. The R100 programme in Scotland and Superfast Cymru in Wales were procured under the Government's previous broadband funding programme, the superfast broadband programme, which gave a formal role to the devolved administrations and local authorities in England (Box 2).

In Northern Ireland, Project Stratum has been delivering full fibre since 2020, when network operator Fibrus was contracted to build broadband networks to around 79,000 hard-to-reach premises.[169] Funding for Project Stratum was provided as part of the 'confidence and supply' agreement between the Conservative party and the Democratic Unionist Party following the 2017 General Election. The rollout was extended to an extra 8,500 premises following additional funding from DCMS, the Department for Education, Northern Ireland's Department of Agriculture, Environment and Rural Affairs, and Fibrus.[170]

The Library briefing: [Superfast broadband in the UK](#) covers background information for each of these projects.

Some parts of England also have ongoing superfast contracts that are still being rolled out.

BDUK says it is working collaboratively with the devolved administrations, looking first at how to use Project Gigabit funding to complement and extend the ongoing projects in each nation.[171]

For example, in February 2021 the Government announced that £4.5 million of Project Gigabit funding had been allocated through [an agreement with the Scottish Government](#).[172] The agreement was described as a "technology flip" – it is a modification of an existing superfast broadband contract rather than a new procurement. The funding will be used to connect 5,368 homes in Central Scotland with full-fibre (FTTP) broadband. These premises would have otherwise been connected to superfast-capable Fibre-to-the-Cabinet (FTTC) technology by Openreach, under a contract with the Scottish Government through its R100 programme. The UK Government said the agreement delivers greater value for money by avoiding the need to re-visit these premises later.

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[169] Department for the Economy, [Project Stratum](#), accessed 27 June 2023
[170] Department for the Economy, [Project Stratum - extension to include 8,500 additional premises](#), accessed 27 June 2023
[171] DCMS, [Planning for Gigabit Delivery in 2021](#) (PDF), 22 December 2020, p15
[172] DCMS, [£4.5m to help thousands in central Scotland get gigabit speed broadband](#), 27 February 2021

This approach has been extended to other R100 contracts, in the Autumn Project Gigabit Delivery Update the Government explained that £8 million had been provided to the final R100 contracts, to enable gigabit rather than superfast coverage for 3,600 premises across the north of Scotland in Aberdeenshire, Angus, Highland, Moray and Perth & Kinross.[173]

4.7 "Very hard to reach" premises

The Government expects that there will be some "very hard to reach" premises that are too expensive to connect with commercial or public funding on "current value-for-money metrics".[174] There is no strict monetary threshold above which premises are considered very hard to reach. The Government has said that they are likely to be "significantly above" the cost threshold for connections under the Universal Service Obligation for broadband (£3,400 per premises).[175]

In this context, what makes a property 'very hard to reach' is primarily, but not entirely, a question of geography. In geographically remote areas the infrastructure challenges are often higher and economies of scale lower than in densely populated areas. Factors that can make a property hard to reach may include:

- Physical distance from other properties and/or existing telecoms infrastructure;
- Island locations where there is no existing submarine cable;
- Challenging terrain, such as mountains, dense woodland, and bogs;
- Access issues, including climatic (such as where roads are inaccessible during poor weather) or regulatory (such as restrictions on infrastructure works in National Parks).[176]

Premises that are not geographically remote may be classed as 'very hard to reach' if other factors have a similar effect. For example, where a new property has been built in an area that has already been upgraded it may be prohibitively expensive for suppliers to connect it due to a lack of economies of scale.[177]

In response to a parliamentary question in April 2021, the Government stated that "less than 0.3% of the country or less than 100,000 premises" are likely

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[173]   DCMS, Project Gigabit Delivery Plan – Autumn Update, 28 October 2021, p17

[174]   NAO, Improving Broadband, 16 October 2020, para 2.7 and 2.9

[175]   DCMS, Call for evidence: Improving connectivity for very hard to reach premises, 19 March 2021; House of Commons Library, The Universal Service Obligation (USO) for Broadband, CBP 8146, 7 March 2022

[176]   DCMS, Call for evidence: Improving connectivity for very hard to reach premises, 19 March 2021;

[177]   DCMS, Call for evidence: Improving connectivity for very hard to reach premises, 19 March 2021

to be in such very hard to reach areas.[178] This is less than the 1% of properties the Government had previously estimated would fall into this category.[179]

The £5 billion Project Gigabit funding commitment does not include the cost of reaching these premises. The Government said it will "seek additional funding" and "explore all possible options" for improving broadband at these premises.[180] It also said it expects the number of premises in this category to fall as other ongoing programmes continue, such as the voucher schemes described below.[181]

Options for reaching the final 100,000

In March 2021 the Government opened a Call for Evidence on the challenges and approaches to delivering improved connectivity in 'very hard to reach' areas in order to develop more understanding about these areas.[182] The Government's response was published in February 2022. It summarises the responses it received across four topics: demand, benefits, barriers and technological approaches to delivering broadband connections.[183]

In terms of technologies, the survey sought views on options including:

- Fixed wireless access (FWA), where an internet signal is sent from antennas on a mast providing 4G/5G mobile broadband.

- Satellite broadband, where a signal is sent from satellites in low-Earth orbit (LEO) or geo-stationary orbit (GEO).

- High-altitude platforms, where signal is sent from unmanned airborne vehicle or device high in the Earth's atmosphere.

The feasibility of these technologies is considered in detail in a report by the consultant Analysys Mason.[184] It found that all apart from GEO, satellites had the potential to offer 'ultrafast' download speeds of up to 300 Mbps. Only FWA (with direct line of sight) was judged to be capable of delivering gigabit speeds. However, some organisations, including the National Farmers Union and the Agricultural Productivity Taskforce, noted in response to the Government's call for evidence that delivering 'good-to-average' speeds in the short term should be the first priority, rather than gigabit-capable broadband.

178 PQ 180575, 19 April 2021

179 NAO, Improving Broadband, 16 October 2020, para 2.7, 2.9; DCMS, Planning for Gigabit

180 Public Accounts Committee, Treasury Minutes: Government response to the Committee of Public Accounts on the Thirty fifth report from Session 2019-21, published 26 March 2021, para 5.1; DCMS, Project Gigabit Phase 1 Delivery Plan 19 March 2021

181 DCMS, Project Gigabit Phase 1 Delivery Plan: Very hard to reach premises 19 March 2021

182 DCMS, Improving broadband for Very Hard to Reach Premises, 19 March 2021

183 DCMS, Improving broadband for Very Hard to Reach Premises, 8 February 2022

184 Analysys Mason, Research on Very Hard to Reach Premises: technical and commercial analysis – report for the Broadband Stakeholder Group, August 2021

The Analysys Mason report concluded that line-of-sight FWA was likely to be the most cost-effective solution for 70-90% of very hard to reach premises, while LEO satellites were the most promising option for the final 10,000-30,000 premises.[185]

The Government concluded that further research was needed because the technological approaches under consideration "carry substantial commercial, financial and technical risks as well as having uncertain long-term affordability outlooks." [186]

On 30 November 2022 the Government announced satellite internet trials at four sites in the North York Moors, Lake District, and Snowdonia.[187] The trials will "assess the technological capability of, and end-user response to, new low latency Low Earth Orbit (LEO) satellite platforms across an expected maximum of 15 locations".[188] Two further trials – in the Shetland Islands and Lundy Island – were announced in April 2023.[189]

Alongside the announcement of its Wireless Infrastructure Strategy the Government committed to providing £8 million in grants to help the most remote 35,000 properties get a satellite broadband connection.[190] A written statement by Julia Lopez, the data and digital infrastructure minister, clarified that the grants will be available to properties where "suppliers will be unable to provide either gigabit capable or terrestrial fixed wireless connectivity."[191] The written statement says that for premises where FWA connectivity is possible, additional policy measures will be announced "later this year" to support deployment of FWA.

4.8   Community-led schemes

Communities that will not be reached by a commercial network rollout may consider setting up a community-led partnership to bring fibre broadband to their area.

There are a number of possible models, from buying into an existing rollout to developing a bespoke project. DCMS has identified six models that have successfully delivered local broadband projects across the country in

[185]   Analysys Mason, Research on Very Hard to Reach Premises: technical and commercial analysis – report for the Broadband Stakeholder Group, August 2021, p15

[186]   DCMS, Improving broadband for Very Hard to Reach Premises: Government response, 8 February 2022, section 9

[187]   DCMS, Broadband beamed from space to isolated areas under plans to boost countryside internet connections, 30 November 2022

[188]   PQ 105292

[189]   OneWeb, OneWeb to Deliver Remote Community Broadband in Trials for UK Government Connectivity Programme, 11 April 2023

[190]   DSIT, New investment boosts UK's digital connectivity, 11 April 2023

[191]   Digital infrastructure update, HCWS720, 18 April 2023

its Introduction to community-led schemes. Short case studies provide examples of each model.

No government funding is available specifically for community-led schemes, although it may be possible to use broadband vouchers. If vouchers are not available, funding arrangements would have to be agreed between the community group and the telecoms operator contracted to deploy the network.

Openreach runs a Fibre Community Partnership programme to help communities set up a project with them.

The Government has produced detailed guidance for those considering a community-led scheme, including legal structures for the community group, technology options, and funding methods.

5   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.[192]

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[192]   Ofcom, Connected Nations 2017, December 2017; Electronic Communications (Broadband) (Universal Service) Order 2018 (SI 2018/445).

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.

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.
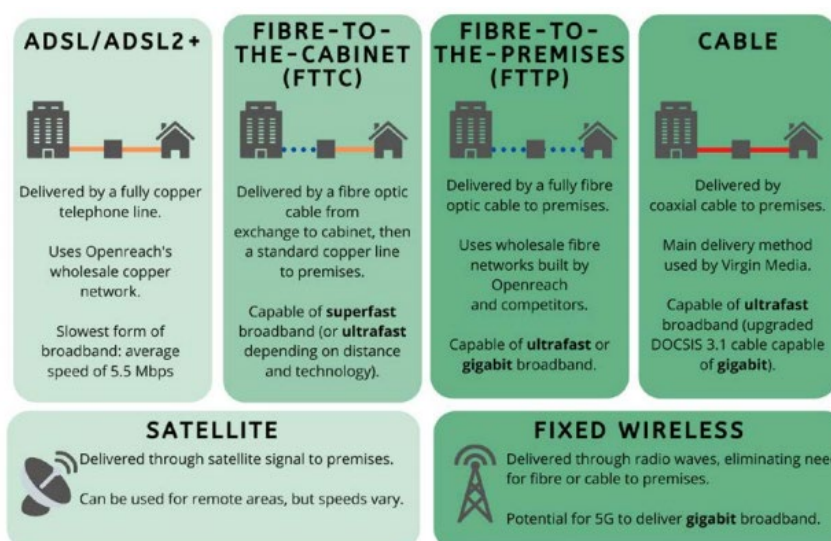
Ofcom reported that ultrafast broadband (300 Mbps) was available to 73% of UK premises as of January 2023.[193]

Gigabit-capable broadband

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.

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[193]   Ofcom, [Connected Nations Spring 2023 update](#), 19 May 2023

Broadband technologies

ADSL/ADSL2+	FIBRE-TO-THE-CABINET (FTTC)	FIBRE-TO-THE-PREMISES (FTTP)	CABLE
Delivered by a fully copper telephone line. Uses Openreach's wholesale copper network. Slowest form of broadband: average speed of 5.5 Mbps	Delivered by a fibre optic cable from exchange to cabinet, then a standard copper line to premises. Capable of **superfast** broadband (or **ultrafast** depending on distance and technology).	Delivered by a fully fibre optic cable to premises. Uses wholesale fibre networks built by Openreach and competitors. Capable of **ultrafast** or **gigabit** broadband.	Delivered by coaxial cable to premises. Main delivery method used by Virgin Media. Capable of **ultrafast** broadband (upgraded DOCSIS 3.1 cable capable of **gigabit**).

SATELLITE Delivered through satellite signal to premises. Can be used for remote areas, but speeds vary.

FIXED WIRELESS Delivered through radio waves, eliminating need for fibre or cable to premises. Potential for 5G to deliver **gigabit** broadband.

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.

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 deployed by Openreach.[194] 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.[195] 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.[196] Higher frequencies loose strength sharply with distance however so only premises within 350 meters of the cabinet are likely to benefit.

Cable Broadband (Hybrid Fibre Coaxial (HFC))

Cable broadband in the UK is provided by Virgin Media O2. 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, FTTP)

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

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.

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

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[194]   Openreach, Ultrafast fibre – G-fast, accessed 7 September 2017.

[195]   Openreach, Ultrafast fibre – G-fast, accessed 7 September 2017.

[196]   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.

different technologies available for delivering fixed wireless access, including mobile broadband technology.[197] 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 gigabit broadband speeds.

Mobile broadband 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.

There are two main ways of delivering satellite broadband. The first – and more established – is to have satellites in geo-stationary orbit, meaning that they remain in a fixed position relative to the Earth's surface. The second is to have satellites in low-Earth orbit (LEO) – around 180-2,000km above sea level. LEO satellites move along their own orbits. This means that multiple satellites, known collectively as constellations, are needed to provide reliable coverage to a given location on Earth. The benefit of LEO is that it is much closer than geo-stationary orbit (35,000km+ above sea level) so LEO satellites can provide better broadband performance.[198] LEO satellites are currently capable of delivering download speeds of up to 300 megabits per second.

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.

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[197]   Ofcom, Mobile and wireless broadband, accessed 20 February 2019.
[198]   Satelliteinternet.com, Low Earth Orbit Satellites, 14 January 2020

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