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Research Briefing

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

Summary

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Summary

The government's target is for next-generation, 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 recent government policies and funding to support 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 a broadband connection capable of 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?

As of January 2024, 78.5% of UK premises had a gigabit-capable broadband connection available according to Ofcom, the telecoms regulator.

Separately, broadband data website Thinkbroadband.com publishes regular coverage updates. It estimated that 85.5% of premises had gigabit-capable broadband available in November 2024. Thinkbroadband uses a different methodology to Ofcom and its coverage figures tend to be slightly higher.

The Library's broadband data dashboard, which is based on Ofcom's data, allows users to explore where gigabit broadband is available by constituency.

Government targets

The Conservative Party'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 Labour Government has said that it is committed to achieving these targets.

The government said in April 2024 it is "on track" to meet the 2025 target. Thinkbroadband's unofficial data indicates that the target has been met as of November 2024, although as noted above thinkbroadband's coverage figures tend to be a few percentage points higher than Ofcom's.

The National Infrastructure Commission, in its annual infrastructure review for 2024, said that it expects the 2030 target to be met if the private sector continues to deliver and the government maintains its funding commitments. Ofcom has estimated that if operators' stated network deployment plans (commercial and subsidised) are achieved, 97% of UK premises could have gigabit-capable broadband by May 2027. That includes 99% of urban areas and 88% of rural areas.

How is gigabit broadband being rolled out?

The government's policy is that gigabit-broadband infrastructure will be mostly built using private investment. The Conservative Government and Ofcom introduced policy reforms with the aim of enabling the private sector to reach around 80% of UK premises by 2025 through commercial investment alone.

The remaining 20% are not expected to be commercially viable in the target timeframe (that is, by 2030) and will require public subsidies.

The Labour Government has broadly continued this approach of supporting the private sector through policy and targeting subsidies at areas that would otherwise be left out.

Policy reforms to meet the target

Policy reforms under the Conservative Government focused on making it easier for the telecoms industry to build infrastructure and to promote competition among companies building broadband networks.

Reforms include making it easier to access land to install infrastructure and to require that new homes are built with gigabit-broadband installed. Ofcom has sought to encourage new entrants to compete with Openreach (the company that operates BT's broadband network) while also allowing Openreach to make a return on its own investment in full fibre. Industry stakeholders have called for further tax relief on new broadband investments and for the government to address skilled labour shortages.

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:

- Contracts awarded to a network operator to subsidise the large-scale deployment of gigabit-capable broadband in defined area. Broadband suppliers bid for contracts to build in each area.
- A voucher scheme for residents and businesses in eligible areas to subsidise the cost of a new gigabit-capable connection.
- Funding to connect public sector buildings such as schools (called 'GigaHubs').

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

The devolved administrations also have their own broadband subsidy 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).

By comparison, the majority of UK premises have 'superfast' broadband, which is capable of download speeds of 30 to 80 Mbps. These connections typically use a technology called Fibre to the Cabinet (FTTC) where a fibre-optic cable runs from the exchange to a street cabinet and copper wires are used to connect individual premises.

Technologies that can potentially deliver gigabit-capable broadband include:

- Fibre to the Premises (FTTP) – where fibre-optic cables are used throughout the network, including the final connection to the customer's premises.
- High-speed cable broadband (DOCSIS 3.1, delivered by Virgin Media O2).

Wireless technologies, including fixed wireless access (FWA) and satellite broadband, are also capable of delivering speeds beyond superfast broadband (up to around 400 Mbps).

'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?

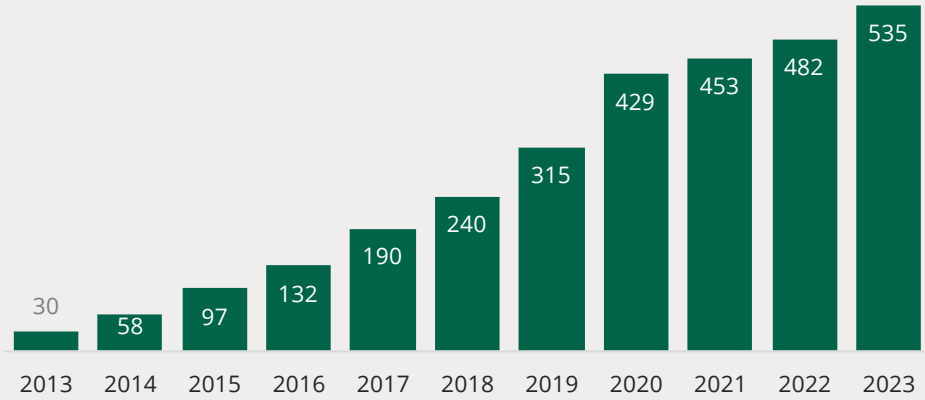
From 2010, government policy focused on the roll-out of superfast broadband – usually defined as download speeds of 30 Mbps.

Superfast broadband was available to 97% of UK premises as of January 2024 according to Ofcom.[1]

Superfast broadband is fast enough for most current individual and household needs. However, average fixed-line broadband data use per month has been steadily increasing since 2013, reaching 535 gigabytes (GB) per month in 2023. 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 multiple users on the network at the same time.

Monthly broadband data use has increased each year

Average fixed broadband data use per month, gigabytes (GB)



Source: Ofcom, Communications market report 2024

In 2018 the National Infrastructure Commission, which provides advice to the government on UK infrastructure needs, 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.[2]

Research commissioned by Ofcom in 2018 showed that broadband investment has contributed significantly to the UK economy over the last 15 years.[3] 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.[4]

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

1 Ofcom, Connected Nations 2023 – interim update, interactive report, 19 April 2024
2 NIC, National Infrastructure Assessment, 10 July 2018, p21-22
3 Ofcom, The economic impact of broadband, 27 April 2018
4 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

billion by 2030.[5] The gains came from improved productivity and helping groups such as informal carers and parents with dependent children to participate in the workforce.

1.3 Who builds broadband networks?

Broadband networks are built by private companies called network operators. Openreach (owned by BT) is the largest, followed by Virgin Media O2. Various smaller network operators are building separate full fibre networks in competition with these two, including City Fibre, Hyperoptic, and Gigaclear.

Network operators decide where to build network infrastructure primarily on a commercial basis.

The companies that offer retail broadband services to consumers are called internet service providers (ISPs). Most of them (including Sky and Vodafone) do not build their own broadband networks: instead, they pay network operators for access. Some companies (including Virgin Media O2) are 'vertically integrated', meaning that they are both network operator and ISP.

1.4 Current gigabit broadband coverage in the UK

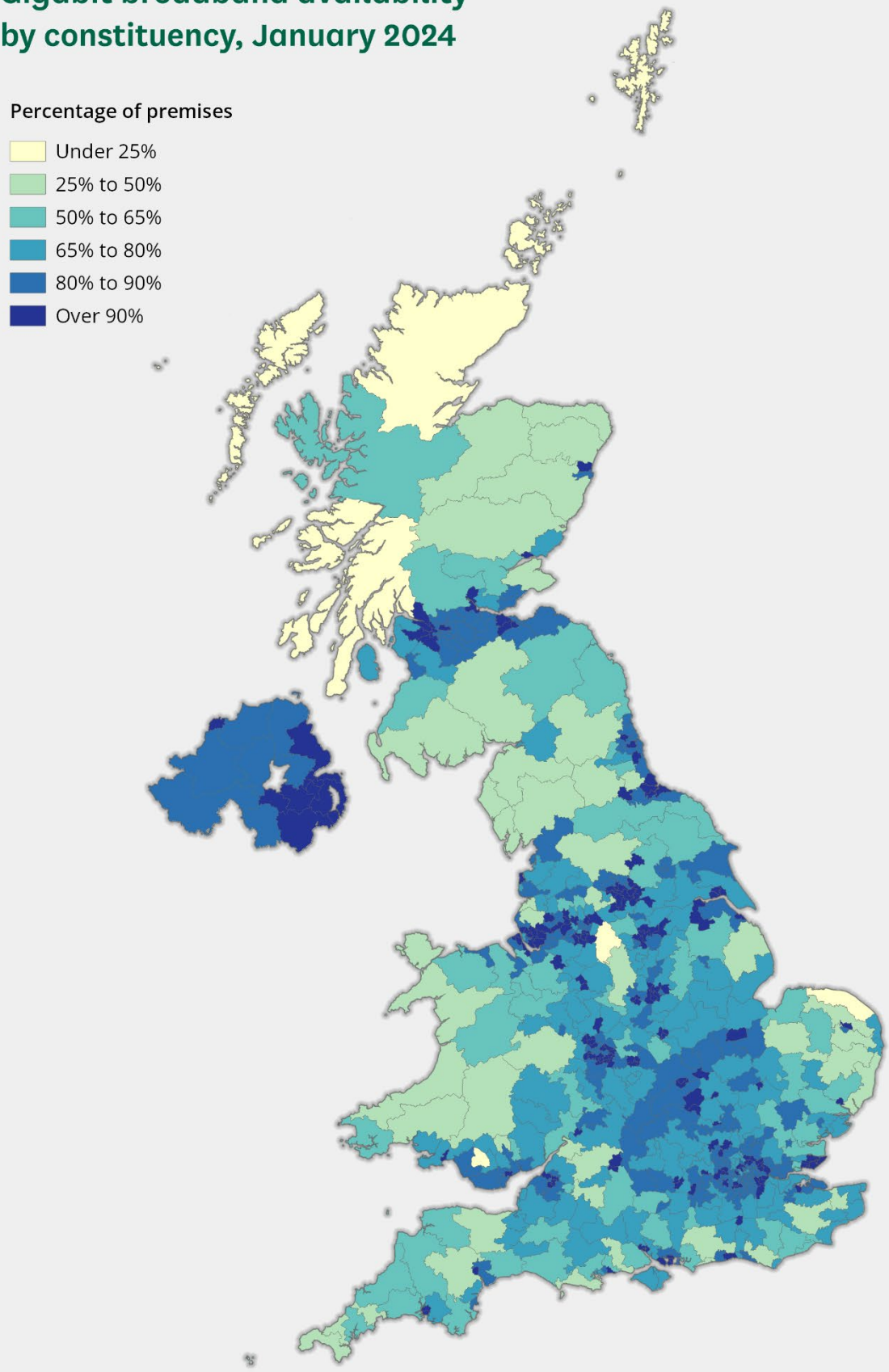
As of January 2024, 78.5% of UK premises had a gigabit-capable broadband connection available according to Ofcom.[6] Ofcom publishes annual Connected Nations reports which set out current levels of broadband coverage across the UK. Supplementary reports updating the coverage statistics are published twice per year, in the spring and autumn.

The House of Commons Library uses Ofcom's statistics to produce the 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 2024.

5 Openreach, Full Fibre turbocharging the UK, March 2023

6 Ofcom, Connected Nations – Spring 2024 update, 24 April 2024

Gigabit broadband availability by constituency, January 2024



Source: Ofcom, Connected Nations Spring 2024 update

Separately, broadband data website Thinkbroadband.com publishes regular coverage updates. It estimated that 85.5% of premises had gigabit-capable broadband available in November 2024. Thinkbroadband uses a different methodology to Ofcom and its data is published weekly. Its coverage figures tend to be slightly higher than Ofcom estimates that follow later (for example, its estimate for January 2024 was 80.5%, compared with Ofcom's 78.5%).

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.[7] 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 part of the UK that are able to receive gigabit-capable services as of January 2024. Across the UK, urban areas are more likely to have gigabit-broadband available compared to rural areas.

Gigabit broadband availability by rural/urban classification
January 2024, % of premises

Country	Rural premises	Urban premises	Total
England	47%	84%	79%
Scotland	36%	82%	73%
Wales	43%	74%	67%
Northern Ireland	84%	96%	92%
UK	**47%**	**84%**	**78%**

Source: Ofcom Connected Nations Summer 2024 update, interactive report

International comparisons

Gigabit-capable broadband was available to 79% of premises in the European Union in mid-2023, according to the European Commission's 2023

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

Broadband Coverage Report.[8] At the time of this report the UK had around 75% gigabit coverage. However, a separate report by the industry group FTTH Council Europe found that in the year to September 2023 gigabit coverage in the UK had grown by 38%, higher than any European country apart from Belgium (+43%).[9]

European countries with the highest levels of gigabit coverage include Denmark, Spain, and the Netherlands, all of whom had reached over 95% of premises by 2023.[10]

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.[11]

8 European Commission, Digital Decade 2024: Broadband Coverage in Europe 2023, 2 July 2024, p35
9 FFTH Council Europe, European FTTH market panorama 2024, 20 March 2024
10 European Commission, Digital Decade 2024: Broadband Coverage in Europe 2023, 2 July 2024, p35
11 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. Funding programmes are 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 (that is, nationwide coverage by 2030). 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 in the Future Telecoms Infrastructure Review in 2018. [12] 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. [13] International comparisons, such as with Spain, France and Portugal, have shown coverage of full-fibre networks to be correlated with competitive market conditions. [14]

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

12 DCMS, Future Telecommunications Infrastructure Review, 23 July 2018

13 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

14 DCMS, Future Telecoms Infrastructure Review, 23 July 2018

after three years.[15] To date there has not been a formal review of the FTIR published.

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".[16] 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.[17]

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 2024 General Election promised to make a "renewed push to fulfil the ambition of full gigabit and national 5G coverage by 2030."[18] In government, it has broadly continued with this approach. Chris Bryant, the minister for telecoms, said that government was "committed to achieving nationwide gigabit broadband, removing barriers to commercial deployment and, where necessary, providing subsidy for hard-to-reach premises through Project Gigabit."[19]

1 Is telecommunications devolved?

The power to legislate with respect to telecommunications is reserved to the UK Parliament.[20] The UK Government has primary responsibility for setting broadband policy and coverage targets.

However, the delivery of broadband infrastructure projects often involves local authorities or devolved responsibilities – for example, engagement with

15 DCMS, Future Telecoms Infrastructure Review, 23 July 2018
16 NIC, James Heath to WEETF on delivering Gigabit-capable broadband, 2 November 2021
17 NIC, James Heath to WEETF on delivering Gigabit-capable broadband, 2 November 2021
18 Labour Party, Labour's Manifest – Kickstart economic growth, 13 June 2024
19 PQ 7325 – Broadband and mobile phones: rural areas, 14 October 2024
20 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

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.[21] 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.[22]

The commitment to "outside-in" follows one of the main 'lessons learned' from the 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.[23] 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".[24]

The government's "outside-in" commitment for its gigabit broadband funding was welcomed by rural stakeholders.[25] For example, the House of Lords Committee on the Rural Economy and the Commons Environment Food and

21 Commons Library, Superfast broadband in the UK, 4 March 2021

22 DCMS, Future Telecoms Infrastructure Review, 23 July 2018, para 130.

23 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

24 NAO, Improving Broadband, 16 October 2020, para 20 and 3.17

25 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

Rural Affairs Committee welcomed the commitment in 2019, although with caution about how it would be delivered in practice. [26]

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". [27]

2.2 Targets

Current target: 2025 and 2030

The government's target is for gigabit-broadband to be available nationwide by 2030. [28] Nationwide means "at least 99%" of premises. [29] This target was announced in the Johnson Government's Levelling Up White Paper and remains in place under the new Labour Government. [30]

The 2030 target is a reduction from the Conservative'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 2025 target was retained, meaning that the 'nationwide-by-2030' target is effectively 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 the Project Gigabit subsidy programme and argued the government was relying too heavily on commercial providers. [33]

26 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

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

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

29 DCMS, UK Digital Strategy, updated 2 October 2022

30 PQ 11467 – Broadband: rural areas, 4 November 2024

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 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.[34]

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-fibre by 2025 (around 48%).[35] This target upgraded the government's previous target set in 2017 to connect 10 million premises to full-fibre "over the next decade."[36]

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

[34] ISPreview, Gov Levelling Up Plan Confirms Nationwide Gigabit Broadband for 2030, 3 February 2022,
[35] 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
[36] Conservative and Unionist Party Manifesto, 2017. HM Government, Industrial Strategy, November 2017, p154

(such as hybrid fibre-wireless solutions) may be necessary for some of the hardest to reach premises.[37]

Johnson Government

The Conservative Party's 2019 General Election manifesto adopted a target to deliver "nationwide gigabit broadband" by 2025.[38]

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,[39] 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 as Virgin Media's upgraded cable network could also contribute.[40] However, as full fibre is technologically capable of further upgrades beyond gigabit speeds it is seen in the industry as the more future-proof technology.[41]

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."[42]

The nationwide-by-2025 target was questioned

The House of Commons Environment Food and Rural Affairs (EFRA) Committee, in its September 2019 report on rural broadband, welcomed the 2025 target, but was "sceptical that this target will be achieved without substantial new, long-term, public investment and potentially controversial regulatory reform."[43] Telecoms industry stakeholders argued that urgent policy reform would be required to tackle issues causing delays to broadband deployment.[44]

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37 DCMS, Future Telecoms Infrastructure Review, 23 July 2018, p45-46.

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

39 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

40 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

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

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

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

44 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

In October 2020, the NAO stated that the 2025 timeline was "very challenging", adding 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".[45]

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.[46]

Press reports and rural stakeholders described the reduced target as a "kick in the teeth" for rural communities.[47]

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."[48] The Committee criticised the delay in doing revising the target:

> 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.[49]

In April 2021, the government wrote to the Committee that it had always expected industry to deliver 80% gigabit-broadband coverage by 2025 subject to 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

45 DCMS Committee, Oral evidence: Broadband and the road to 5G, HC153, 20 October 2020, Q76
46 HM Treasury, National Infrastructure Strategy, 25 November 2020, page 31
47 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
48 DCMS Committee, Broadband and the Road to 5G, HC153, 2019-21, 22 December 2020, para 27 and summary
49 DCMS Committee, Broadband and the Road to 5G, HC153, 2019-21, 22 December 2020, para 27

> 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.[50]

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.[51]

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.[52]

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.[53]

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.[54] 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".[55] This aligns with the Government's position that there will be some properties (estimated around 0.3%) that will be too expensive to reach, even under the publicly funded Project Gigabit programme.[56]

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

50 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

51 PAC, Improving Broadband, HC 688, 2019-21, 8 January 2021, summary

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

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

54 PQ 116941, 7 February 2022 [Broadband]

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

56 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

final 20% [of premises] by 2030".[57] 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.[58] 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.[59]

2.3 Progress towards the targets

As of January 2024, 78% of UK premises had a gigabit-capable broadband connection available according to Ofcom.[60] This is an increase from 72 % coverage in January 2023, 64% 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 (that is, not including Virgin Media's cable network) increased from 20% of UK premises in January 2021 to 61% in January 2024.

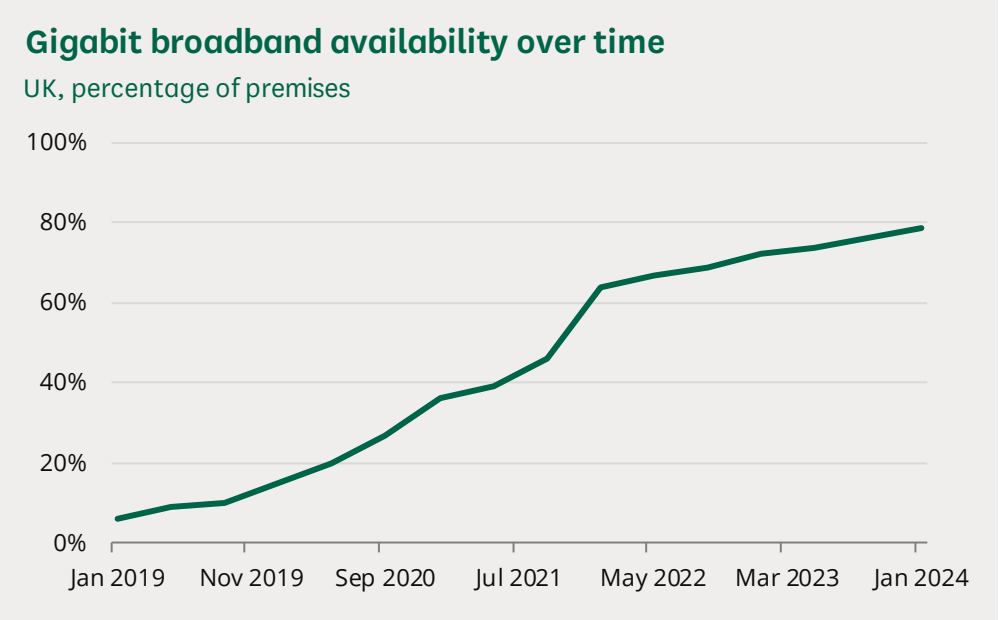
In its April 2024 Project Gigabit update, BDUK said that it is "on track" to meet the 2025 target. The updates are normally published quarterly but the April 2024 update is the most recent. Unofficial data published by broadband data website thinkbroadband.com indicates that the target has been met as of November 2024, although as noted above Thinkbroadband uses a different methodology than Ofcom and its coverage figures tend to be a few percentage points higher.

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

58 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

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

60 Ofcom, Connected Nations – Autumn 2022 update, 7 October 2022



Source: Ofcom, Ofcom, Connected Nations Spring 2024, interactive report

The National Infrastructure Commission, in its annual infrastructure review for 2024, said that it expects the 2030 target to be met if the private sector continue to deliver and the government maintains its funding commitments.[61]

Ofcom has estimated that if operators' stated network deployment plans (commercial and subsidised) are achieved, 97% of UK premises could have gigabit-capable broadband by May 2027.[62] That includes 99% of urban areas and 88% of rural areas.

61 NIC, Infrastructure progress review 2024, 16 May 2024

62 Ofcom, Connected Nations – planned network deployments 2024, 2 September 2024

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.[63]

Responding to the Johnson Government's target for full fibre coverage, Openreach urged the government to create an "an environment that encourages greater investment".[64] 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.[65]

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).

63 DCMS, Future Telecoms Infrastructure Review, 23 July 2018
64 BBC News, Broadband chiefs fire back at PM's full-fibre internet pledge, 3 August 2019
65 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.[66] 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.[67]

Ofcom's regulation of Openreach

Openreach is the part of BT that owns and operate the former telecoms monopolist's broadband network infrastructure. Openreach does not offer services directly to consumers. It is a 'wholesale' network operator, meaning that it sells access to its network to internet service providers (such as BT, Sky, and Vodafone) who in turn offer consumer broadband services.

In its 2016 Digital Communications Review, Ofcom noted that BT's dominance (through Openreach) of the wholesale market meant that it had "limited incentives" to upgrade its broadband network. At the time, BT was planning to upgrade its network using a technology called G.Fast, which still uses the copper network but can provide speeds of around 300-500 Mbps. Ofcom's view was that ISPs (and consumers) should not be constrained by BT's network investment decisions:

> The best driver for investment and innovation is network based competition: and this is at the heart of our future strategy. We believe competition between different networks (including those built from scratch or built using duct and poles owned by others) is the best way to drive investment in high quality, innovative services for consumers.[68]

In March 2021 Ofcom confirmed its approach to regulating the broadband network market for the next five years, from April 2021 to 2026, through its Wholesale Fixed Telecoms Market Review.[69] The review covers the whole of the UK apart from Hull, where KCOM, rather than Openreach, is the incumbent.[70]

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

67 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.

68 Ofcom, Digital Communications Review [PDF], 25 February 2016, p35

69 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.

70 Ofcom published a separate WFTMR for the Hull area.

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 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%.[71]

- 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 smaller competitors.

- 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 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.[72]

Press articles have commented on the difficult task Ofcom had in balancing many competing interests in this market review.[73] The review gives Openreach certainty to expand its network. Companies building networks in competition with Openreach, such as Virgin Media and City Fibre, also welcomed Ofcom's review, saying it gives them confidence to bring forward new investments.[74] However, internet service providers (ISPs) that rely on Openreach's network say that the deal was too generous on Openreach and could lead to

71 Ofcom, Opening up BT's infrastructure for new fibre broadband, 20 April 2017

72 Ofcom, Ramping up the rollout of full-fibre broadband, 18 March 2021.

73 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.

74 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

consumer prices rising without consumers seeing the benefit of new full-fibre services in the near future.[75]

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."[76] 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.[77]

While in opposition, 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".[78]

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.[79]

Commentators have questioned how sustainable this level of overbuild is, both financially for the industry and environmentally.[80] 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".[81]

75 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

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

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

78 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

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

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

81 HL Deb 29 June 2022 vol 823 c745

Concerns have in particular been raised about the number of telegraph poles being put, sometimes by multiple companies in the same street.[82]

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 more than five fibre network providers to choose from, while 1 million in poorer and rural areas could have none.

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".[83]

The Conservative Government responded to a Parliamentary Question on this in January 2022. It said that it "welcomes" Ofcom's approach of encouraging "competitive build in the majority of the UK".[84]

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 2027. Further information is provided in the Library briefing, Withdrawal of landlines and switch to digital calls (May 2024).

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.[85]

82 See Commons Library, Building broadband and mobile infrastructure, 22 March 2024, p20; and Commons Library, Broadband companies and telegraph poles, 5 February 2024

83 Light Reading, Despite critics, fiber rollout is a rare UK success story, 20 June 2022

84 PQ 106697 – Broadband: Optical Fibres, 21 January 2022

85 DCMS, Future Telecoms Infrastructure Review, 23 July 2018, para 140-142

In the 2018 Future Telecoms Infrastructure Review, the government supported an industry-led switch over.[86]

3.3 Removing barriers to network deployment

In 2018, DCMS established a "Barrier Busting Task Force", a cross-government group working to identify and address barriers to building digital infrastructure.[87]

Our briefing: Building mobile and broadband infrastructure has more detail on these reforms.

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.[88] The Act came into force on 26 December 2022 in England and Wales and on 1 July 2023 in Scotland[89];
- 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[90];
- 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

86 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

87 The FTIR (July 2018) provided a summary of the work of the Task Force at pages 5-6

88 The Library briefing on the Act has further information.

89 Telecommunications Infrastructure (Leasehold Property) Act 2021 (Commencement No 1) Regulations 2022, (SI 2022/1308)

90 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".[91]

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 passage of the Product Security and Telecommunications Act 2022 through Parliament, MPs including Chris Elmore, then 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.[92] 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 CityFibre 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".[93]

Further information can be found in the Library's Insight article, Broadband in flats: The urban digital divide (May 2024).

3.4 Tax relief

In 2017 the UK Government introduced 100% business rates relief to new fibre infrastructure built in England for five years from April 2017 to March 2022.[94] It was also introduced in Wales.[95] The relief was not extended.

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

92 HC Deb 25 May 2022 vol 715 c329-330

93 PBC Deb 15 March 2022 (second sitting), c45

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

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

The Scottish Government has introduced non-domestic rates relief for new fibre broadband infrastructure in Scotland for 10 years from 1 April 2019.[96]

Fibre infrastructure providers are calling for longer-term tax relief. Openreach argues that return on investment in digital infrastructure "takes decades" and that investors need a "clearer long-term commitment" from Government.[97] The Confederation of British Industry (CBI) has called for the government to review the business rates system, stating it is currently limiting UK investment in deploying and adopting digital infrastructure improvements.[98] TechUK (the trade body for the tech industry) have called for business rates relief for full fibre for "at least the next 15 years".[99]

The super deduction

The government announced the so-called "super deduction" in the Budget 2021.[100] 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".[101] The Government has confirmed that fibre infrastructure would qualify for the 130% first-year capital allowance.[102]

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."[103] 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'.[104] 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.

96 Scottish Government, Rates relief puts Scotland in fibre fast lane, 24 March 2019
97 Openreach, The blueprint for a full-fibre future, October 2019
98 CBI, Ready, Steady, Connect, December 2018
99 techUK, Connected Britain – Can reality meet the rhetoric on Fibre roll out?, 9 August 2019
100 DCMS, Barrier Busting Task Force: next steps, 19 March 2021
101 HM Treasury, Super-deduction factsheet, 3 March 2021. HM Treasury, Budget 2021; Budget report HC 1226, p57, 3 March 2021
102 PQ 164465, 11 March 2021 [Broadband: Capital allowances]
103 BT, Investing in the UK's future: The case for fundamental reforms to capital allowances, 22 February 2023, p18-19
104 HM Treasury, Full expensing, 15 March 2023

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.[105]

Full expensing was initially made available for three years, until the end of March 2026. In the Autumn 2024 Budget, the Labour government confirmed that it would retain full expensing for the rest of the Parliament.[106]

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".[107] Ookla, a network testing and analysis company, has reported that labour shortages are the most pressing challenge affecting the UK's gigabit rollout.[108]

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".[109] 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.[110] The then-Home Secretary, Priti Patel, wrote to telecoms operators in August 2022 promising to help them navigate the immigration system.[111]

In August 2024, Home Secretary Yvette Cooper wrote to the MAC asking it to "look at key occupations to understand the reasons behind their reliance on

105 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

106 HM Treasury, Corporate Tax Roadmap 2024, 30 October 2024

107 FT, BT executive says Brexit is slowing superfast broadband rollout, 14 June 2022

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

109 MAC, Review of the shortage occupation list: 2020, 29 September 2020, p526-527

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

111 Times, Foreign broadband workers rushed in, 30 August 2022

international recruitment".[112] The letter specifically identified telecommunications professionals as an occupational group to be included in the review. The MAC was asked to report back in nine months.

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 reportedly need around 40% of customers in their network area to take up gigabit broadband to make a return on their investment.[113] 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.

Ofcom estimated that as of May 2023 around 28% of consumers with a full-fibre service available choose to take-up the service, up from 25% the year before.[114] In areas with gigabit-capable networks using any technology (that is, including Virgin Media's cable network) around 42% take up gigabit services.

Ofcom found that take-up is higher in rural areas (49%) compared to urban (25%). This may be because urban areas are more likely to have superfast broadband available, which may already meet consumer needs.

TechUK has called on the government to publish a Future Connectivity Strategy to support the industry on take-up.[115]

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."[116] It published an Interim Report in December 2020 that looked at why people don't take up gigabit services.[117] 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;

112 Home Office, Letter from the Home Secretary to Professor Brian Bell, 6 August 2024
113 FT, UK 'altnets' risk digging themselves into a hole, 25 June 2022
114 Ofcom, Connected Nations 2023, 12 February 2024, p10
115 TechUK, Telecoms action plan, 8 July 2024
116 DCMS, Gigabit broadband rollout milestone reached, 8 August 2020
117 Gigabit Take-up Advisory Group, Interim Report, December 2020

- 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.[118]

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 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.[119]

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.[120]

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.[121]

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."[122] 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.[123]

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.

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

119 Frontier Economics, Unlocking the gigabit dividend: using behavioural insights to accelerate FTTP takeup, August 2022, p17

120 Frontier Economics, Unlocking the gigabit dividend: using behavioural insights to accelerate FTTP takeup, August 2022, p18

121 Frontier Economics, Unlocking the gigabit dividend: using behavioural insights to accelerate FTTP takeup, August 2022, p28

122 DCMS Committee, Broadband and the Road to 5G, HC153, 2019-21, 22 December 2020, para 78

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

- 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.
- The Government should run a nationwide awareness-raising activities with a coalition of key stakeholders and shared messaging. [124]

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. [125]

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

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

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

develop the gigabit toolkit. The government said that it was "considering the Advisory Group's wider recommendations".[126]

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.[127]

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.[128]

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.[129] It proposed that providers should provide a short description of the underlying technology on their websites and at the point of sale, 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.[130] Ofcom announced in December 2023 that it would implement the new rules from September 2024.[131]

The use of 'fibre' in advertising is regulated by the Advertising Standards Agency (ASA), not Ofcom. In 2017 the ASA ruled that 'fibre' was not a key differentiator for most consumers and was not likely to materially affect their decision-making. It therefore did not ban the use of 'fibre' to describe part-fibre products. Some respondents to Ofcom's consultation expressed concern about the inconsistency between the two regulators' guidance.[132]

Making broadband switching easier

In February 2021 Ofcom announced plans to introduce new rules to make switching between different broadband networks easier, by a "one touch" process.[133] Previously, for a customer to switch between networks that use

126 PQ 20402 - Broadband, answered 29 June 2021
127 DCMS, Response to the DCMS Committee Broadband and the road to 5G report, 22 February 2021, p6-7
128 WIK Consult, Impact of labelling on broadband adoption, March 2021, p17-18
129 Ofcom, Tackling consumer confusion about broadband technology, 8 March 2023
130 ISPreview, Ofcom UK clamps down on misleading uses of "fibre" broadband, 8 March 2023
131 Ofcom, Statement: Improving broadband information for consumers, 13 December 2023
132 Ofcom, Statement: Improving broadband information for consumers, 13 December 2023, p30-31
133 Ofcom, New plans for seamless broadband switching, 3 February 2021

different infrastructure or technologies, the customer had to contact both their old provider and their new provider to coordinate the switch. Under the new system, the only needs to contact their chosen new provider, who will then manage the switch.

The new system launched on 12 September 2024, 17 months later than the original target of April 2023.[134]

Further information on Ofcom's efforts to support consumer engagement in the telecoms market can be found in the Library briefing, Customer protection in the mobile and broadband markets, 16 September 2024.

[134] Ofcom, Simpler and quicker broadband switching is here, 12 September 2024

4 Project Gigabit: public funding for gigabit broadband

4.1 What is Project Gigabit?

Project Gigabit is a £5 billion programme to support the rollout of gigabit broadband to hard-to-reach areas. 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:

- Contracts awarded to network operators to subsidise the large-scale deployment of gigabit-capable broadband in defined area. This is the main part of the programme (described further in section 4.2 below). [135]
- A voucher scheme to subsidise smaller broadband delivery projects (see section 4.3)
- Funding to connect public sector buildings (see section 4.4).

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: [136]

- 2021–22: £100 million
- 2022–23: £300 million
- 2023–24: £400 million
- 2024–25: £500 million

The remaining £3.2 billion was reserved for future years. The government explained that the staged approach to funding reflected what it believed industry could deliver in hard-to-reach areas by 2025. It described Project

[135] 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.

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

Gigabit as a "record investment" in digital that will "support levelling up across the UK." [137]

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."[138] Rural stakeholders such as the Country Land and Business Association also expressed concern about how much of the funding had been held back.[139]

In the 2024 Autumn Budget, the Labour Government committed an additional £500 million for 2025-26 for Project Gigabit and the mobile coverage programme, the Shared Rural Network.[140]

4.2 Project Gigabit contracts

The main part of Project Gigabit is a series of public procurements in areas that would not otherwise receive commercial investment. Suppliers bid for contracts to build in each area, called a Lot. The contracts part-fund the roll-out to specified premises, topping up industry investment to make the build commercially viable.

There are three main types of contract:

- Regional contracts: each contract is expected to cover up to around 150,000 premises across county-sized areas.
- 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: designed as 'catch-all' for premises in multiple regions not covered by other contracts (because there was no market interest, for example) or where a larger-area approach would provide better value for money.[141]

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

137 HM Treasury, Spending Review 2020, 25 November 2020, para 6.86
138 DCMS Committee, Broadband and the Road to 5G, HC 153, 2019-20, December 2020, para 49
139 CLA, Calls for clarity on roll-out of broadband coverage, 4 December 2020
140 HM Treasury, Autumn Budget 2024, p102
141 BDUK, Detailed Overview of the Gigabit Infrastructure Subsidy Scheme, 9 June 2023; BDUK, Type C Post Public Review, 24 March 2023

programme (the superfast programme), where procurement was managed by local bodies and the devolved administrations. The National Audit Office's October 2020 report, Improving Broadband, discusses this change of approach, alongside other lessons learned from the previous programme.

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

Premises eligible for subsidies are identified by BDUK through a process of engagement with industry to understand where operators plan to build networks commercially over the next three years. [142] 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.

Subsidies can only be awarded for premises that are not expected to receive private investment.

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 access superfast broadband. [143] 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. [144]

3 Project Gigabit and competition

In areas where a company has been awarded subsidies to build a network they are, at least initially, likely to be the only network operator available. That is because subsidies are directed to areas that the government believes would otherwise not be commercially viable. Project Gigabit's subsidy control rules seek to avoid market distortions resulting from this situation:

> A key principle of the [Project Gigabit] scheme is that networks built utilising subsidy should offer effective wholesale access and are pro competitive. This is to prevent the beneficiary supplier from exploiting its monopoly position through anticompetitive practices in areas that are identified with market failure. To meet this requirement all contracted suppliers must offer open access to the subsidised network under fair and nondiscriminatory conditions to all operators who request it for any reasonable purpose...
>
> In case the network operator also provides retail services, a reference offer for wholesale services must be made available to competitors at least 6 months before starting the provision of retail services.

142 DCMS Project Gigabit Phase 1 Delivery Plan, 19 March 2021

143 DCMS, Project Gigabit Delivery Plan – Summer Update, 2 August 2021, p18

144 House of Commons Library correspondence with DCMS, 19 August 2021

In practice this means that the operator should allow ISPs to offer broadband services over its subsidised network on fair and transparent terms. They must also allow other network operators to access their passive infrastructure (such as telegraph poles and underground ducts). In addition, when building a subsidised network, the operator must build in spare capacity. For example, underground ducts must be large enough to accommodate at least three additional cables. This would make it cheaper and quicker for competing network operators to build their own infrastructure in the future.

It is a commercial decision for competing network operators and ISPs whether to offer services in the area.

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. They are usually published quarterly, although at the time of writing the latest update was from April 2024.

The first contract to be awarded was a local one covering 7,000 premises in North Dorset.[145] The first regional contract was signed with network operator Fibrus in November 2022 and will connect around 59,000 premises in Cumbria.[146]

As of the April 2024 update, 31 contracts have been signed, worth up to £1.38 billion in total and covering almost 785,000 premises. Additional contracts worth over £1 billion covering around 435,000 premises have been signed since then.

The press release announcing each contract will provide general information about when the duration of the build and when the first connections are expected. More detailed information may be available from network operator that was awarded the contract.

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

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

4.3 UK Gigabit Voucher scheme

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

The UK Gigabit Voucher Scheme allows residents and small businesses in eligible areas to apply for vouchers towards the cost of a new gigabit-capable connection. The voucher scheme opened on 8 April 2021 with up to £210 million of public funding 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 136,700 vouchers have been issued across the three schemes, as of April 2024.[147]

Vouchers are worth up to £4,500 per residential or commercial property. The vouchers were originally worth £1,500 for households and £3,500 for SMEs but were increased to their current level in December 2022.[148] If the cost of the project is higher than the value of the vouchers, residents or businesses are expected to pay the difference, not the broadband supplier.

Voucher projects are intended to address gaps in coverage not otherwise met by industry or other public-funded programmes.[149] Eligible premises are in areas where:

- existing broadband speeds are less than 100 Mbps.
- a gigabit-capable network is not likely to be built commercially in the near future.
- there is no government-funded contract planned or in place to improve the network.

To avoid duplication of subsidies, BDUK may close voucher applications in areas where there is a Project Gigabit contract. Given the number of contracts in place or in the late stages of procurement, this means in practice that there are very few parts of the country currently open for new applications. A map of areas eligible for vouchers is available on the BDUK webpage, Gigabit Broadband Voucher Scheme information.

Some in the industry, as well as MPs, have highlighted cases where the closure of applications in favour of a contract-funded build has jeopardised plans to build using vouchers. Tim Farron MP said that in his constituency, "many communities who were on the verge of being connected by [network operator] B4RN [through voucher funding] will rightly feel like they've had the rug pulled from underneath them."[150]

In response, BDUK said that it would introduce 'voucher priority areas' within the scope of a contract where it thinks that a proposed voucher-funded build

147 BDUK, Project Gigabit progress update – April 2024, 10 April 2024
148 ISPreview, Government triples value of UK gigabit broadband vouchers, 30 November 2022
149 BDUK, Project Gigabit Delivery Plan – Summer Update, 2 August 2021, p23
150 ISPreview, Parliament to Debate B4RN's Gigabit Voucher Scheme Concerns, 21 September 2021

would be able to deliver connectivity quicker.[151] Mr Farron has since commented that this issue is still affecting premises due to be reached in the latter stages of a contract-funded build, that could be reached more quickly through voucher funding.[152]

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.[153] More information is provided through each local authority, or the broadband delivery body in each area. [154]

Wales

The Welsh Government previously provided additional funding to top-up vouchers issued through the gigabit voucher schemes in Wales. An additional £3,500 per rural business and up to £1,500 per residential premises was available.[155] At the time this was equivalent to the UK scheme.

Lee Waters MS, then 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."[156]

Scottish Broadband Voucher Scheme (SBVS)

The Scottish Government has a separate voucher scheme that provides vouchers worth 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 SBVS webpage states that the scheme is currently closed for most new applications while Project Gigabit contracts covering Scotland are in the procurement phase.

151 ISPreview, Solution Found to Tackle UK Gigabit Voucher Concerns by AltNets, 24 September 2021

152 HC Deb 11 November 2024 vol 756 c551

153 For example Derbyshire County Council, Further funding to boost Derbyshire's rural connectivity, 12 November 2024

154 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.

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

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

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 for 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.
>
> 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. [157]

In April 2024 BDUK reported that a total of 90 public sector hubs had been connected under the GigaHubs programme.[158]

4.5 Monitoring progress on Project Gigabit delivery

The Public Accounts Committee's (PAC) 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."[159]

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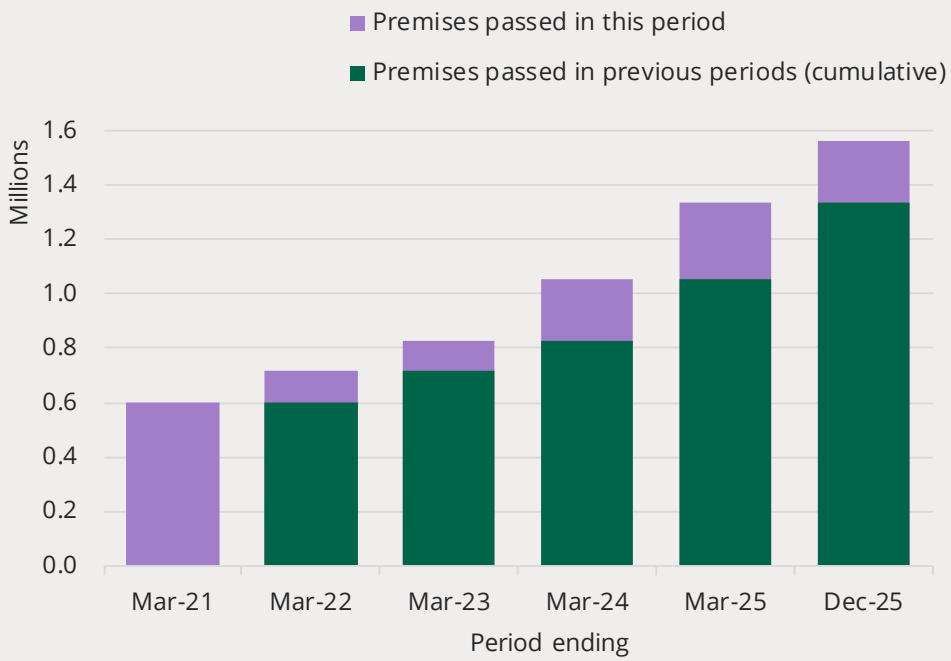
157 DCMS, Project Gigabit Phase 1 Delivery Plan: Public Sector Hubs, 19 March 2021

158 BDUK, Project Gigabit progress update – April 2024, 10 April 2024

159 PAC, Delivering gigabit-capable broadband, HC 743 2021-22, 19 January 2022, para 1

The government accepted the PAC's recommendations.[160] BDUK's Corporate Plan 2022 to 2023 subsequently set out the anticipated trajectory towards the target of 85% gigabit coverage by the end of 2025.[161] It noted that of the estimated 1.56 million premises in Project Gigabit's scope, 600,000 had already been 'passed', primarily by reconfiguring existing superfast broadband contracts. It anticipated transitional years of slower growth as these contracts expire and new ones go out for procurement, with delivery increasing from 2023.

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



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

BDUK's Annual Report 2022 to 2023 reported that by March 2023, 929,700 premises had been passed through BDUK interventions, compared to a baseline target of 875,000.[162]

BDUK also publishes Project Gigabit delivery updates. Following discussions with the NAO, BDUK committed to providing greater detail and clarity in these updates. From the Spring 2022 version they contain additional metrics, such as regional-level coverage data, and commentary on changes since the

160 DCMS, Response to the thirty-second report of session 2021-22, CP 646, paras 1.2-1.5
161 BDUK, Corporate Plan 2022-23, updated 29 April 2022, table 1
162 BDUK, Annual report and accounts 2022 to 2023, 21 November 2023

previous update.[163] While the updates are normally published quarterly, the most recent update was from April 2024.

4.6 Project Gigabit and the devolved administrations

See the latest Project Gigabit delivery update 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.

In Northern Ireland, Project Stratum has been delivering subsidised full fibre since 2020, when network operator Fibrus was contracted to build broadband networks to around 79,000 hard-to-reach premises.[164] 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.[165]

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.[166]

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.[167] The agreement was described as a "technology flip": 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 rather than superfast broadband. The UK Government

163 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

164 Department for the Economy, Project Stratum, accessed 27 June 2023

165 Department for the Economy, Project Stratum - extension to include 8,500 additional premises, accessed 27 June 2023

166 DCMS, Planning for Gigabit Delivery in 2021 (PDF), 22 December 2020, p15

167 DCMS, £4.5m to help thousands in central Scotland get gigabit speed broadband, 27 February 2021

said the agreement delivers greater value for money by avoiding the need to re-visit these premises later.

This approach has been extended to other R100 contracts. In the Autumn 2021 Project Gigabit update, for example, BDUK revealed that £8 million had been provided to the final R100 contracts, bringing gigabit coverage to 3,600 premises across the north of Scotland in Aberdeenshire, Angus, Highland, Moray and Perth & Kinross.[168]

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".[169] 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).[170]

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 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).[171]

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.[172]

168 DCMS, Project Gigabit Delivery Plan – Autumn Update, 28 October 2021, p17
169 NAO, Improving Broadband, 16 October 2020, para 2.7 and 2.9
170 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
171 DCMS, Call for evidence: Improving connectivity for very hard to reach premises, 19 March 2021;
172 DCMS, Call for evidence: Improving connectivity for very hard to reach premises, 19 March 2021

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 to be in very hard to reach areas.[173] This is less than the 1% of properties the government had previously estimated would fall into this category.[174]

The £5 billion Project Gigabit funding commitment does not include the cost of reaching these premises. In March 2021 DCMS told the PAC that it would "seek additional funding" and "explore all possible options" for improving broadband at these premises.[175]

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.[176] 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.[177]

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.[178] 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.

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,

173 PQ 180575, 19 April 2021

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

175 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

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

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

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

while LEO satellites were the most promising option for the final 10,000-30,000 premises.[179]

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." [180]

On 30 November 2022 the government announced satellite internet trials at four sites in the North York Moors, Lake District, and Snowdonia.[181] 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".[182] Two further trials – in the Shetland Islands and Lundy Island – were announced in April 2023.[183]

Policy and funding

Alongside the announcement of its 2023 Wireless Infrastructure Strategy the Conservative Government committed to providing £8 million in grants to help the most remote 35,000 properties get a satellite broadband connection.[184] A written statement by Julia Lopez, the then Data and Digital Infrastructure Minister, clarified that the grants would be available to properties where "suppliers will be unable to provide either gigabit capable or terrestrial fixed wireless connectivity."[185] The written statement said that for premises where FWA connectivity is possible, additional policy measures would be announced "later this year" to support deployment of FWA.

The Conservative Government published a consultation on policy options for very hard to reach premises in October 2023, which closed on 27 November 2023. The consultation document did not include specific policy proposals but set out broad options for support:

- Amending existing funding schemes (such as broadband vouchers) so that they incorporate very hard to reach premises.
- Creating new schemes that specifically target very hard to reach premises.

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

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

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

182 PQ 105292

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

184 DSIT, New investment boosts UK's digital connectivity, 11 April 2023

185 Digital infrastructure update, HCWS720, 18 April 2023

- Using regulatory/legislative changes to encourage market-led deployment.

The government has not yet responded to this consultation. The grant scheme for satellite broadband has also not opened.

Chris Bryant, the Minister for Telecoms in the new government, acknowledged in response to a November 2024 parliamentary question that very hard to reach premises "may require additional government intervention to help provide them with ultrafast connections".[186] However he did not mention policy or funding options under consideration.

[186] PQ 11249 – Broadband: rural areas, 5 November 2024

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.

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.[187]

[187] 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.

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.

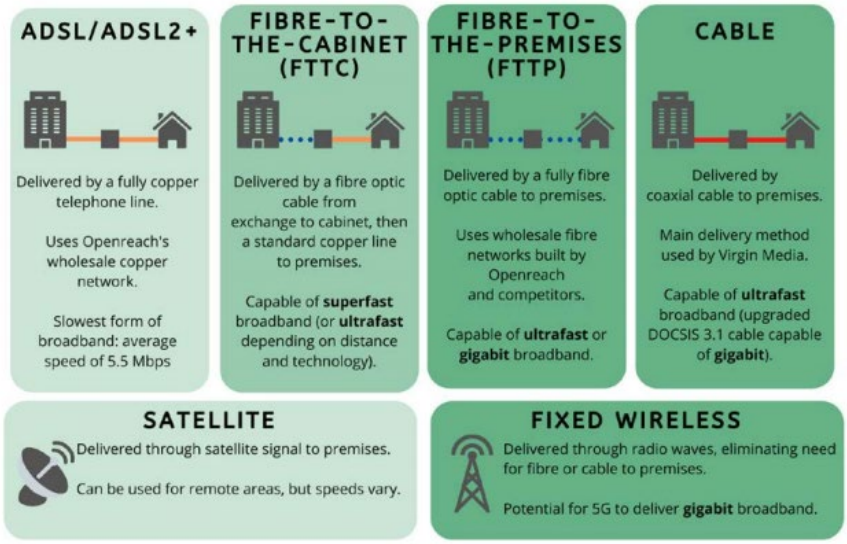
Ofcom reported that ultrafast broadband (300 Mbps) was available to 73% of UK premises as of January 2023.[188]

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.

[188] Ofcom, Connected Nations Spring 2023 update, 19 May 2023

Broadband technologies



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

ADSL

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

Fibre optic cable

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

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.[189] 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.[190] 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.[191] 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

189 Openreach, Ultrafast fibre – G-fast, accessed 7 September 2017.

190 Openreach, Ultrafast fibre – G-fast, accessed 7 September 2017.

191 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.[192] 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.[193] 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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192 Ofcom, Mobile and wireless broadband, accessed 20 February 2019.

193 Satelliteinternet.com, Low Earth Orbit Satellites, 14 January 2020

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