National Audit Office

**Report**
by the Comptroller
and Auditor General

**Department for Digital, Culture, Media & Sport**

# Improving broadband

HC 863 SESSION 2019–2021 16 OCTOBER 2020

# Key facts

**£1.9bn**

Public funding committed to subsidising the roll-out of broadband infrastructure in harder-to-reach areas through government's Superfast Broadband Programme

**5.3m**

Number of UK premises whose broadband infrastructure was upgraded through government's Superfast Broadband Programme

**1.6m**

Number of UK premises currently unable to access broadband speeds of at least 30 megabits per second (Mbps)

| | |
|---|---|
| **29.5 million** | number of UK premises out of a total of 31 million that can sign up to internet packages offering download speeds of at least 30 Mbps, of which 17% (5.1 million) was reached through government's Superfast Broadband Programme |
| **95%** | proportion of UK premises able to access superfast broadband speeds of at least 30 Mbps |
| **80%** | proportion of premises in rural areas able to access superfast broadband speeds of at least 30 Mbps compared with 97% in urban areas |
| **2025** | government's target date for all UK premises to have access to gigabit-capable broadband (speeds of at least 1,000 Mbps) |
| **£5 billion** | total government funding committed to its future programme for subsidising roll out of gigabit-capable broadband infrastructure to the hardest to reach 20% of UK premises |
| **27%** | proportion of UK premises currently covered by broadband infrastructure that provides speeds of 1,000 Mbps. 14% is covered through fibre-optic cable |

# Summary

## Context

**1** Government views digital infrastructure as central to the future of the economy and wants every part of the UK to benefit. It considers fast and reliable broadband as key to improving productivity and to delivering economic, social and well-being benefits. Commercial operators supply broadband infrastructure where profitable, but the cost of infrastructure and lower population density make some areas, typically rural, less attractive commercially. Government policy is to subsidise commercial operators to provide broadband infrastructure in these areas.

**2** The Department for Digital, Culture, Media & Sport (the Department) manages government's broadband policies and Building Digital UK (BDUK), a unit within the Department, implements these policies. Ofcom is the regulator and competition authority for the UK's communications industries, including telecoms.

**3** In 2010, government announced its aim for the UK to have the best superfast broadband network in Europe. It established the Superfast Broadband Programme (the Superfast Programme) to support broadband roll-out to areas which were not commercially viable. The Department allocated grant funding to local bodies (a local authority or group of local authorities, devolved governments or local economic partnerships). Local bodies would then provide additional funding and procure superfast broadband services for their areas. The Superfast Programme's original target was for 90% of premises to have access to download speeds of at least 24 megabits per second (Mbps) by 2015. In June 2013, the Department revised its target to achieving 95% by 2017. These targets could only be met in conjunction with industry-funded roll-out. Industry stakeholders and Ofcom now consider superfast to mean download speeds of at least 30 Mbps, a definition since adopted by the Department.

**4** Superfast broadband is fast enough for most household use today, but internet traffic is growing at around 40% each year driven largely by video streaming. The *National Infrastructure Assessment*[1] anticipated that demand could outstrip current part-copper, part-fibre capacity between 2030 and 2040 and recommended full-fibre, which is more reliable and can provide 'gigabit' speeds (1,000 Mbps), as the next step for the UK's digital connectivity.

1 National Infrastructure Commission, *National Infrastructure Assessment,* July 2018.

**5** In 2018, to meet future demands of consumers and businesses, government announced a new policy for the UK's telecoms industry to provide gigabit-capable infrastructure to 50% of premises by 2025 and nationwide coverage by 2033. It has since committed to 2025 for nationwide coverage and has allocated £5 billion for its UK gigabit programme (the Future Programme), to subsidise roll-out to the most difficult to reach 20% of premises. It intended to take an "outside-in" approach by starting with the most difficult to reach premises first. The Department estimates that accelerating nationwide gigabit capability to 2025 will need government to subsidise roll-out of 20% of premises compared with only 10% for a 2033 timeline.

**6** In 2013 and 2015 we published reports on the progress of the Superfast (Rural) Broadband Programme.[2] Since we last reported, the Superfast Programme has moved increasingly to gigabit-capable full-fibre solutions in place of copper telephone wires from premises to a local cabinet. Local bodies used contractors to deliver the programme, the largest of which was Openreach, a subsidiary of BT that runs the UK's largest broadband network. Openreach remains the dominant provider under the Superfast Programme, responsible for 125 of the 147 contracts and for delivery to around 97% of premises overall.

## Scope of this report

**7** This report considers what the Superfast Programme has delivered and how the UK's broadband infrastructure has held up during the COVID-19 pandemic. We examine the lessons from the Superfast Programme and other comparative projects, and how the Department could apply these as it establishes its Future Programme. The report focuses on the role of the Department and considers:

- progress with superfast broadband (Part One);
- managing current and future broadband provision (Part Two); and
- learning lessons (Part Three).

Our audit approach is summarised at Appendix One and our evidence base in Appendix Two.

**8** The Department is still developing its plans for the Future Programme. It expects to let its first contracts in autumn 2021 and is currently awaiting approval of its outline business case. This report therefore does not examine the Department's progress on the Future Programme in detail. Those that are digitally excluded out of choice or for financial or other reasons are also out of scope.

2 Comptroller and Auditor General, *The rural broadband programme*, Session 2013-14, HC 535, National Audit Office, July 2013 and Comptroller and Auditor General, *The Superfast (Rural) Broadband Programme: update,* National Audit Office, January 2015.

## Key findings

### Progress with superfast broadband

9 **Along with the commercial roll-out, government's Superfast Programme has helped to extend the UK's superfast broadband coverage.** In combination with industry-funded roll-out to profitable areas, which delivered to the majority of UK premises, the Superfast Programme helped the Department to achieve its roll-out target of 95% coverage of 24 Mbps by 2017 broadly on time. Broadband download speeds of at least 30 Mbps are now available to around 95% (29.5 million) of UK properties, approximately 17% (5.1 million) of which were reached through the Superfast Programme. By mid-2019, the European Commission's Digital Economy and Society Index ranked the UK eighth out of the 28 EU countries on overall superfast broadband coverage, ahead of Germany and France, and fifth out of 28 on rural coverage. Since 2011-12, the Superfast Programme has provided £1.9 billion of public subsidy to commercial suppliers, which has supported delivery of faster broadband (24 Mbps) to 5.3 million properties in harder-to-reach areas. Some local bodies are seeking to further extend coverage in their areas by reinvesting money returned to them through clawback mechanisms designed to safeguard value for money. The Department estimates that £0.9 billion will be returned to local bodies in this way (paragraphs 1.11 to 1.14, 1.16, 1.20 and Figures 2 and 4).

10 **Government's programme is delayed, meaning that those without superfast broadband speeds in hard-to-reach areas will have to wait longer to benefit.** More than half of the Superfast Programme's current contracts are reporting delays due to suppliers underestimating build times, insufficient supply chain capacity and local bodies having to rescope contracts because of supplier data errors. This means that some people in harder-to-reach areas are waiting longer to get superfast speeds. The Department now expects its contracts to run until 2024, four years longer than originally planned. This is partly due to delays to existing contracts but also because the programme has been extended, with local bodies awarding new contracts to increase coverage. Ofcom estimates that nearly 1.6 million premises cannot yet access speeds of 30 Mbps and nearly 600,000 cannot access 10 Mbps (paragraphs 1.14 and 1.20).

**11 Despite wide coverage, many people in the UK still experience poor broadband, including those who should have access to higher speeds.** Although coverage is at 95%, it is not consistent across areas or types of premises and MPs still receive complaints from constituents about their broadband. Achieving maximum benefits, as set out in the business case, requires the remaining problems to be addressed:

- Rural coverage in the UK is now 80%, compared with 97% in urban areas. Overall, England has higher coverage than the devolved administrations. While urban coverage is broadly the same across the four nations, rural coverage varies and, at 66%, is lowest in Northern Ireland. These data, from Ofcom, are based on actual and predicted data from network operators. The speeds achieved in practice may be higher or lower than those predicted.

- Only 57% of covered properties have signed up to superfast broadband packages. Consumers can be unaware that faster services are available, may find their existing service sufficient or consider faster services too expensive.

- Premises do not necessarily experience their advertised speeds, either because of poor-quality copper lines, distance from the cabinet or factors in the home affecting performance (paragraphs 1.19 to 1.22, 3.3 and Figures 5 and 7).

**12 Prioritising coverage over broadband speeds has left the UK with infrastructure that will not meet future demand.** The UK's existing infrastructure allowed it to follow a fibre to the cabinet (FTTC) approach. This is where fibre-optic cables run to a street cabinet, then existing copper telephone wires connect the cabinet to individual premises. It is cheaper and faster to deploy than running fibre to the premises (FTTP) – also called 'full-fibre' – and allowed most people to access speeds over 30 Mbps. However, the Department expects future demand to require faster broadband. Other countries, often those without existing reliable telecoms infrastructure, such as the Baltic States, went straight to full-fibre. Full-fibre can achieve gigabit download speeds and is more reliable and cheaper for operators to maintain, but more expensive and time-consuming to deploy. At around 14%, the UK now has one of the lowest full-fibre coverage rates in Europe. Including other technologies, gigabit-capable coverage rises to 27% (paragraphs 1.2, 1.15, 1.16 and 2.2).

**13 The way in which the Department set up the Superfast Programme makes it difficult to assess performance.** It is difficult to assess programme performance as the business case lacked programme-specific measures against which to judge success. For example, the Superfast Programme's primary objective of 95% UK coverage was achievable only in conjunction with industry roll-out. A 2013 research paper commissioned by the Department projected a return of £20 for every £1 of public investment across all of government's broadband interventions – which included the Superfast Programme. To date there has been no collective evaluation of what these interventions have achieved. The Department has conducted a formal evaluation of the Superfast Programme and concluded that, over the seven years to 2019, it had delivered £2.70 to £3.70 for every £1 of public investment. It has also conducted a separate cost–benefit analysis of its voucher scheme but differing evaluation periods make it difficult to say whether the Department will achieve its projected returns. The Department expects the Superfast Programme's impact to increase over time (paragraphs 1.12, 1.17 and 1.18).

## Managing current and future broadband provision

**14 The existing infrastructure has coped well with increased demand for the internet during the COVID-19 pandemic.** The UK's broadband infrastructure has been tested rigorously in recent months. There has been an unprecedented increase in daytime demand for internet services as more people work and study from home and keep in touch with friends and family using video conferencing tools. BT reported a weekday daytime increase in demand of 35% to 60% as people started to work from home extensively in March but overall demand has remained below the usual evening peak when many users are online simultaneously. Ofcom considers the existing infrastructure to have held up well although there has been some congestion at local levels. In general, local stakeholders support Ofcom's assessment but some representing areas with large rural populations told us that those with poor broadband have felt the impact more sharply during the pandemic (paragraphs 2.3 and 2.4).

**15 Government has set a challenging 2025 timeline for nationwide gigabit coverage and the Department is currently considering how to deliver this to the hardest to reach premises.** Roll-out of gigabit-capable broadband across the UK is a complex challenge requiring the telecoms industry to deliver connectivity to approximately 31 million premises and lay around 500,000 kilometres of cable. The Department estimates that this would require a four-fold increase in build rates and accepts it will be challenging to achieve the 2025 target, particularly for the hardest to reach 20%. In an open letter to the Prime Minister in 2019, industry experts said they stood ready to meet the challenge but called on government to deliver a fully coordinated cross-government strategy to remove significant regulatory barriers. The Department is developing its detailed plans and has much work to do. It needs to deliver a substantial change project to increase its capacity and capability; secure State Aid approval, which can take 18–24 months from start to finish; and design and deliver a complex procurement in time for industry to deliver to the final 20%. The Department has told us that it considers the final 1% could be prohibitively expensive and for these premises is exploring alternative solutions to gigabit broadband. Government's July 2020 decision to reduce its dependency on technology originating from certain high-risk vendors could introduce delays and additional expense to nationwide roll-out. Ahead of the programme starting in 2021 the Department has told us it is finalising its plans and will keep these under regular review (paragraphs 2.8 to 2.11 and 3.13).

## Learning lessons

**16 The Superfast Programme has shown that future success will depend on good data and local knowledge.** To maximise value for money, the Future Programme should avoid funding premises that are already covered, or which suppliers plan to cover without subsidy. These are becoming more difficult to identify as the number of suppliers increases and because there is no single map or database of current and planned broadband installations. There are now more than 20 suppliers building new infrastructure, many of whom are not required to submit coverage data to government. Identifying premises for intervention therefore needs comprehensive local knowledge. With the Superfast Programme, local experts and contacts were also critical, for example, in organising street works and engaging with local communities. The Department told us that it recognises data as a potential risk but is still planning how to address it. There is a further risk that pressures on local government finances may lead to existing teams in local bodies being disbanded, with a consequent loss of local knowledge (paragraphs 3.2 to 3.6 and 3.12).

**17 The Department concluded that aspects of its contractual approach had contributed to delays and discouraged competition.** The Department believes that lengthy contracts covering too many premises under the Superfast Programme discouraged smaller suppliers and contributed to high numbers of change requests, which subsequently caused delays. For its Future Programme, the Department is introducing more contracts with shorter duration and involving fewer premises. Greater competition should encourage innovation and competitive pricing, as it did for the later phases of the Superfast Programme. However, a market with more suppliers offering competing infrastructure also risks creating the types of integration issues that we have seen on other projects. Elsewhere, we have seen some suppliers face issues when integrating their systems with a central infrastructure. The Department also has some concerns about the long-term financial stability of some smaller suppliers (paragraphs 3.7 to 3.9).

**18 The Department considered its local partnership approach to have worked well despite contributing to delays.** The Department concluded that the locally procured, locally managed approach for its Superfast Programme worked well and that it was difficult to see how an alternative approach would have delivered a better result. However, it identified that having multiple bodies undertaking procurements and allowing them to vary the standard contract templates had been causes of delay, and therefore will fund, let and manage all contracts for its Future Programme. Some local bodies welcome this, citing difficult relationships with suppliers and limited capacity, but a new approach introduces new risk. Some local bodies fear that without direct accountability for managing local performance, they may be less engaged. Our previous work on major government projects has highlighted some of the risks with a more centralised procurement approach (paragraphs 3.10 to 3.12).

**19 Prioritising speed of programme delivery over other objectives poses a risk to value for money.** Many government programmes, including the Superfast Programme, have taken longer to deliver than originally planned. Our work on other projects shows that publishing a fixed deadline and not continuing to test whether it remains achievable can negatively influence decision-making and lead to delays and cost overruns. Maximising gigabit-capable build by 2025 means that the Department is likely to try to deliver to as many premises as possible in the timeframe, rather than starting with those in greatest need. The timeline has been a key driver both in determining the procurement approach, which the Department views as critical to meeting the challenging timeline, and in its decision to broaden the range of technologies used in the Future Programme. This shift away from full-fibre helps make government's 2025 gigabit ambition more realistic but some stakeholders, who view fibre as a superior technology, consider this a watering down of the target (paragraphs 3.15 and 3.16).

**20 Encouraging suppliers to prioritise easier-to-reach premises has left the rural divide in place.** Under the Superfast Programme, suppliers were able to prioritise roll-out to easier-to-reach premises. The properties left behind were largely the hardest and most expensive to reach and, mostly, in rural and remote areas. In 2018, government committed to an "outside-in" approach to supporting full-fibre deployment by starting with the most difficult to reach premises. This approach is strongly supported by rural stakeholders but the Department has not yet confirmed how closely it intends to keep to it and does not yet have the right data to support it. If it prioritises the timeline, there is a risk that the same properties are left behind (paragraph 3.17).

**21 Increased infrastructure competition did not translate into more competition for internet services or better outcomes for consumers.** Government wants to encourage competition in broadband infrastructure but it is not clear that this approach increased consumer choice during the later phases of the Superfast Programme. Under the Superfast Programme, suppliers receiving government subsidy had to allow other service providers to offer products to customers over the subsidised parts of their networks. Average take-up of services over Openreach's infrastructure is 60% compared with less than 20% over smaller networks. This is partly explained by Openreach's infrastructure having been available in the market for longer, but the cost and effort to internet service providers of integrating their networks to work with those of smaller suppliers may have made it unprofitable for them to offer their products over smaller networks. Looking forward, smaller infrastructure suppliers may gain dominant positions in areas which cannot support competition. Superfast Programme contracts include obligations on infrastructure providers to offer access to other suppliers on a wholesale basis, but, for technical and commercial reasons, other suppliers may choose not to take up this access. Without support to make these networks more attractive, consumers in these areas may find themselves with a very limited choice of service providers, making switching difficult. Parliament has also expressed concern that in the event of a single infrastructure provider, consumers in rural areas may get locked into higher prices (paragraphs 3.18 to 3.20).

## Conclusion

**22** The Superfast Programme has extended the nation's broadband connectivity and has delivered benefits, which the Department expects will continue to increase with time. Better broadband has helped communities across the nation to work and study from home and stay connected during the COVID-19 pandemic in ways that would not have been possible five years ago. However, in managing the trade-off between coverage and speed, the UK has a broadband network that is not fully future-proof and, less than a decade after launching its Superfast Programme, government has identified the need to upgrade it again.

**23** Government has set a very challenging timeline in promising nationwide connectivity by 2025 and the experience from the Superfast Programme, as well as our previous work on major programmes demonstrates the importance of setting and publishing a realistic timetable and continuing to test whether this is achievable. The Department is working towards finalising its plans for its Future Programme to support nationwide gigabit coverage. In doing so, it must manage the tension between meeting a timeline and serving those in greatest need. Failure to do so risks leaving those left behind by the Superfast Programme even further behind and widening the rural divide. The Department still has much to do to mobilise and deliver a substantial programme. It has applied some learning from the Superfast Programme but it has moved away from some of its more successful aspects in a bid to meet its challenging timeline. As the Department develops its approach for the Future Programme it will need to show that it has considered how best to mitigate any new risks arising.

## Recommendations

**24** The Department should, in respect of both the Superfast and Future Programmes:

**a** **work with suppliers and Ofcom to address customer issues with broadband and encourage take-up**, to help realise the benefits from widespread broadband envisaged in its Superfast Programme's business case and to ensure the Future Programme also achieves the benefits of gigabit-capable technology;

**b** **set out how it will ensure better outcomes for consumers**, including any relevant learning from similar programmes, so that they have both choice and the ability to switch providers; and

**c** **set out how it intends to measure the benefits of its investment**, including setting programme-specific objectives as clear measures of success for its Future Programme.

In respect of the Future Programme, it should:

**d** **set out how it intends to improve its data**, including how it will:

- secure the required quality of data for identifying which areas and premises it intends to subsidise;
- replicate local body knowledge and systems; and
- encourage suppliers to set out their plans;

**e** **set out how it will retain local body expertise in a centralised procurement model**, including how it will mitigate the risk of financial pressures on local government leading to broadband teams being disbanded;

f **present a detailed plan and schedule**, reflecting on learning from the recent pandemic to pinpoint gaps in current broadband provision, identifying:

- how it will meet the proposed timeline together with additional costs and benefits of accelerating the programme;
- the key risks to delivery, costs and outcomes and its proposed mitigation approaches;
- the extent to which it intends to follow an "outside-in" approach;
- those local areas which will still not be covered by the final 20% of the Future Programme and any mitigations to ensure that these areas are not left behind; and
- how and when it intends to review and update these plans to ensure transparency about what it considers to be deliverable and by when.