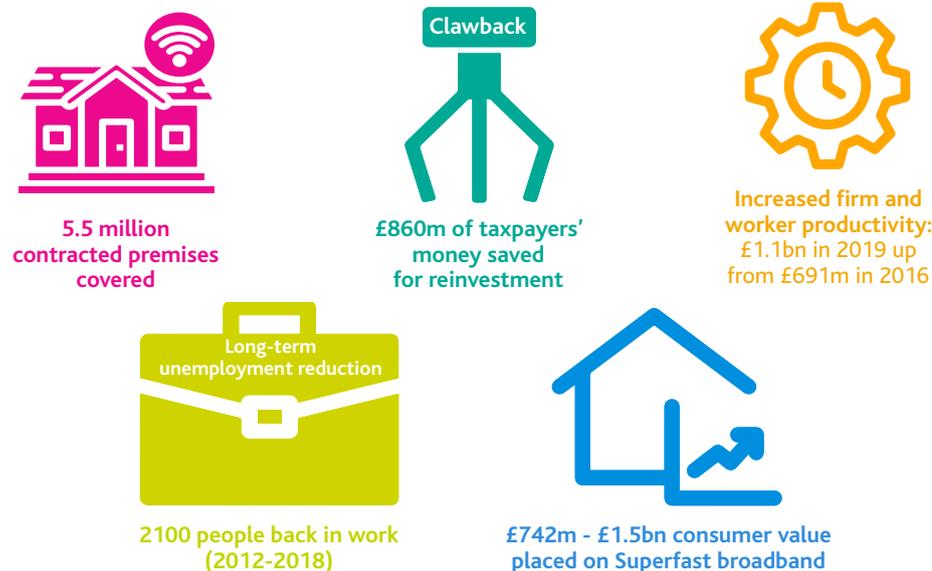




Superfast Broadband Programme Evaluation: Key Benefits and Impacts

Introduction to the programme

The Superfast Broadband programme was announced in 2010/11 in response to concerns that the commercial deployment of superfast broadband would fail to reach many parts of the UK. On the expectation that extension of superfast broadband coverage to these areas would produce economic, social and environmental benefits, the Government established the programme to fund further deployment. Building Digital UK (BDUK), a directorate of DCMS, is the accountable body for the programme.



An additional two percent of premises will receive superfast speeds under existing BDUK contracts. This phase includes all contracts agreed under the 2016 National Broadband Scheme (NBS) state aid agreement and is utilising the remainder of BDUK funding from the previous phase, as well as funding from a variety of sources including the clawback mechanism.

This mechanism has been used to recover underspend: network providers were required to place any unused funds in an Investment Fund to help resource further schemes or extend the contract coverage to a greater number of premises than originally offered.

There has been no additional funding round from the Government for Superfast Procurements. The Future Telecoms Infrastructure Review stated that "Phase 3 of the Superfast programme is seeking to address coverage in as much of the remaining 5% of the country as possible, anticipated an additional 2% coverage from the Superfast programme, and identified the need for additional 'outside-in' interventions alongside the Broadband Universal Service Obligation to address remaining premises." Subsequently, the Government allocated £5bn of funding for the UK Fibre Programme to deliver future gigabit capable connectivity in the least commercially viable areas, with a delivery model designed to maximise the delivery of sub-superfast premises.

CONTENTS

This research brief, produced by the Building Digital UK Benefits and Evaluation team, reports findings from the first evaluation (published in 2018) and the second evaluation (published alongside this research brief) which focuses on the state aid impacts of the Superfast Broadband programme. It also shows the change in the expected outcomes over the years, and summarises evidence gaps and plans for the final round of evaluation activities.

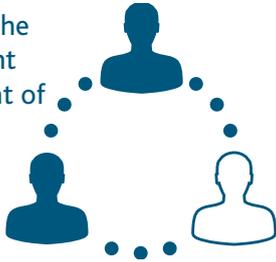
Introduction	1
Key Findings to Date	2
Evaluation Structure	2
1. Driving Growth in the Economy	3
National Economic Impacts	3
Local Economic Impacts	3
2. Driving growth in the economy	5
The story behind the numbers	5
3. Reducing the Digital Divide and Providing Public Value	7
Superfast availability	7
National Broadband Scheme 2016 (Phase 3) Contracts.	8
Superfast take-up	8
Providing public value	8
2020 Evaluation wellbeing approach	9
4. Reducing Impact on the Environment	10
5. Stimulating the Broadband Market	10
Financial analysis	10
Market analysis	11
Technology change	12
6. Enabling Public Sector Efficiency	13
Methodologies	14
Next steps	14
Glossary of key terms	15

Key Findings to Date

Subsidising Superfast Broadband coverage has led to the following benefits:

Strong economic impacts:

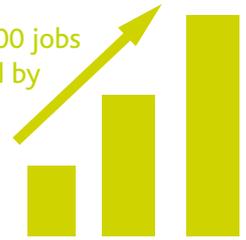
Reduction in the unemployment claimant count of 32 people for every 10,000 premises upgraded.



Net increase in the number of firms in programme areas driven by relocation and the formation of new firms.



Increase of 17,600 jobs in areas targeted by the programme



Firms in programme areas experienced higher turnover of £1.9bn per annum by 2018 with efficiency improvements accounting for £845m of this.



Employee's hourly earnings increased by 0.7% above the comparator group



Consumer welfare benefits:

- Consumer welfare benefits at the UK-wide level are estimated at £741m to £1.5bn⁴.

Cost-benefits analysis:

- 2020 evaluation:** The 2020 evaluation estimates a Benefit to Cost Ratio (BCR) of between £2.7 and £3.8 per £1 of public funding across 2012-2019.

- 2018 evaluation:** The previous interim evaluation estimated a BCR of £1.96 for every £1 of public funding spent over the 2012-2016 period.
- The future:** The 2020 evaluation estimates that the BCR will rise, based on current trends, to between £3.5 and £5.1 per £1 of net public sector spending across the 2012-2030 period.

Evaluation Structure

The Evaluation of the Superfast Broadband Programme is structured around the BDUK Evaluation and Benefits Realisation Framework, which delivers outcomes to demonstrate the impact of Government's investment in improved digital infrastructure through BDUK.

- To date, this has largely relied on the interim Superfast Broadband Programme Evaluation² (published August 2018), the UK Broadband Impact Study³, and the Superfast Broadband State Aid Evaluation Report (published alongside this document).
- Work undertaken through this framework will continue to evidence the impact of BDUK programmes and projects on the economy, society, public sector, broadband market and the environment.

Evaluation of the programme's benefits and impacts seeks to answer five key questions:

- 1) What are the outcomes of the programme?
- 2) How has the behaviour of individuals/organisations changed for these outcomes to come about?
- 3) How effective and efficient has the delivery of the programme been?
- 4) Was the investment cost effective?
- 5) What can we learn to improve future policy design and implementation?

Benefits have been grouped into five categories:

1. Driving Growth in the Economy

The programme has led to a range of economic benefits⁵ in the areas that it has delivered to. The 2020 State Aid evaluation report, published alongside this briefing, indicates that:

National Economic Impacts

The national economic impacts represent a real increase in economic activity that would not have occurred in absence of the Superfast programme at the national level. The figures are estimated in line with HMT Green Book guidance, allowing for factors such as the possibility that network providers would have brought forward infrastructure improvements in the absence of the programme and offsetting impacts such as the loss of jobs resulting from businesses relocating to areas with improved broadband infrastructure. These impacts

represent the cumulative benefits due to productivity gains and a reduction in long term unemployment across 2012-2019 and are suitable for comparison against figures from the previous interim evaluation report.

At a national level, the estimated economic benefit of the programme through productivity gains between 2012 and 2019 is £1.1bn. This is predicted to rise to between £1.6bn and £1.8bn over the 2012 to 2030 period.

Local Economic Impacts⁶

The local economic impacts are defined as the economic benefits that accrue to the output areas that have received subsidised broadband coverage through the Superfast programme. It is worth bearing in mind that these figures are in part driven by firms relocating from other areas. These areas will experience a loss of economic activity as a result. It has not been possible to estimate this impact as part of the evaluation.

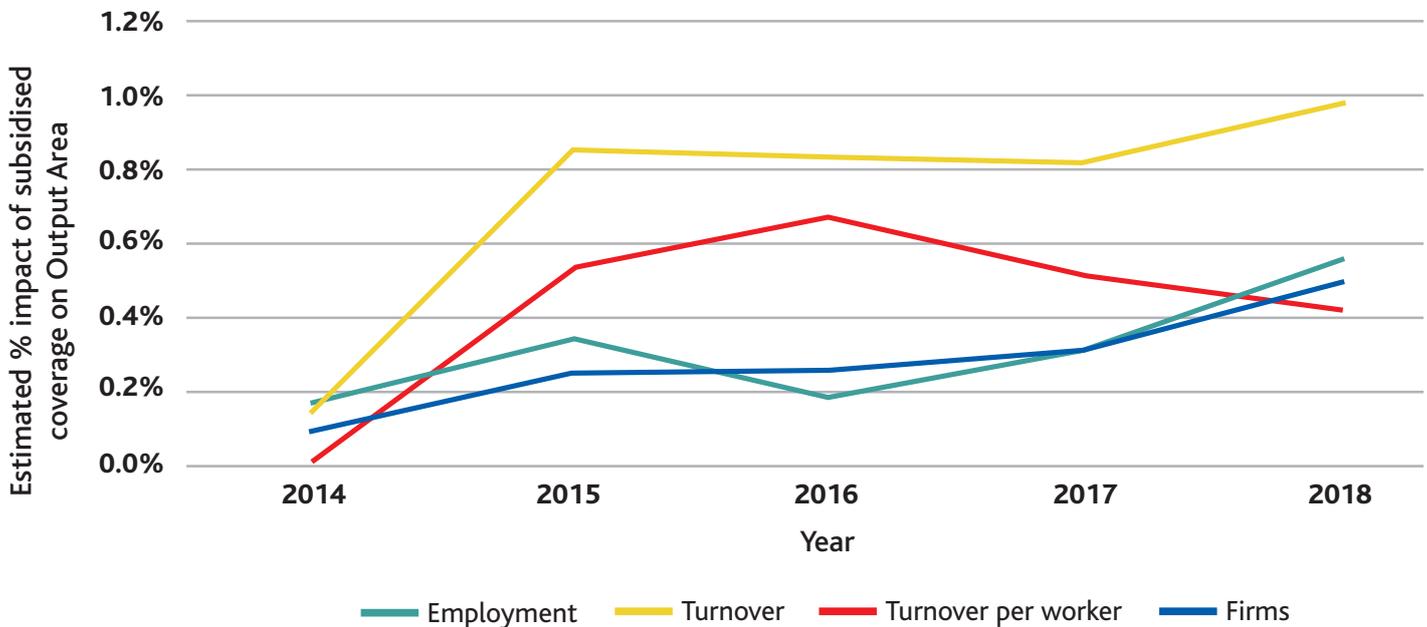
- **Employment:** Subsidised coverage was estimated to have increased employment in the areas benefiting from the programme by 0.6 percent, on average, between 2012 and 2018, leading to the creation or retention of 17,600 jobs across the programme area.
- **Turnover**
 - Superfast broadband effect: Subsidised coverage increased the annual turnover of firms located in the areas benefiting from the programme by 1.0 percent on average between 2012 and 2018. This

corresponds to an annual turnover increase of firms located in the programme area by £1.9bn overall in 2018⁷, an increase from £1.4bn at the end of 2016.

- **Efficiency effect:** Of the £1.9bn increase in GVA, £845m was driven by efficiency gains which is derived through impacts on turnover per worker, outlined below.
- **Overall area growth:** The turnover of firms located in output areas benefiting from the programme grew by 8% overall between 2012 and 2018. The Superfast effect therefore appears to account for approximately 12.5% of local area growth.
- **Turnover per worker:** Turnover per worker of firms in the areas benefiting rose by 0.4 percent in response to subsidised coverage (equivalent to £88 per worker per year) for spatially stable firms across 2012 to 2018. This gives evidence of the productivity effect for firms.

- **Persistence of worker productivity gain:** The productivity effect, measured through turnover per worker, remains in the years following upgrade, however it does decline at an estimated rate of 12.8%. This increase and subsequent decline is represented by the red trend line in Figure 1, below

Figure 1: Impact of the Superfast programme's coverage delivered by March 2016 on employment, turnover, turnover per work and the number of local firms



Source: Ipsos MORI analysis (2020). Figure 1 displays the average impact on employment, turnover and the number firms across 2014-2018 for Superfast intervention areas. The graph shows an increase in turnover and a productivity effect evidenced through higher turnover per worker across the time period. The turnover per worker effect declines in magnitude post-2016 as firms take on more employees.

• Wages

- **Superfast average effect:** The local impact of the subsidised infrastructure in programme areas was also visible in wages. Employees working for firms located in these areas saw their hourly earnings increase by 0.7% in response to the upgrades.
- **Overall area growth:** Median weekly wages in the local authorities receiving coverage rose on average by 3.8%. The Superfast effect could account for approximately 18% of this growth if local authority wage growth is similar to intervention areas within them.

• Unemployment

- **Reduction in claimant count:** In output areas targeted by the programme, the number of unemployed claimants fell by 32 for every 10,000 premises upgraded.
- **Reduction in long term unemployed:** For every 10,000 premises upgraded, it is estimated that the number of long-term claimants fell by 19.4. Over 2012-2019, this is equivalent to 16,900 people.



2. Driving growth in the economy

The story behind the numbers

In addition to econometric analyses, a **quantitative telephone survey** was carried out to understand the impact of Superfast Broadband on businesses benefitting from improved connectivity. The fieldwork took place between January and March 2020. One thousand two hundred responses were received from a quota sample of businesses. This sample was composed of:

- 1) **Treatment group** - 700 participants from businesses in areas where Superfast Broadband infrastructure was built in 2017.
- 2) **Comparison group** - 500 participants from businesses in areas where Superfast delivery is planned in the future.

To complement the survey findings, a series of forty **qualitative interviews** was undertaken with business owners or managers drawn from the sample of businesses which took part in the large-scale quantitative survey. The key findings are included alongside results from the quantitative survey below.

The results indicated that:

- **Impact of higher capacity connections:** this was experienced mainly through increases in operational efficiency such as: enhanced customer services (72% of upgraded respondents); utilising the Internet of Things (55%); cloud-based computing (51%); promoting flexible working (50%).

Evidence from the qualitative interviews suggests that:

- Improved connectivity for residents in the hospitality and care sectors, allowing customers to access and utilise online facilities while they resided in the premises (for example streaming services or accessing the internet), therefore enhancing the quality of their stay.
- IT support companies being able to run online support for their clients, which made them more responsive to client needs.
- Reduction in waiting times for files to upload/download, which improved productivity and the ability of colleagues to work collaboratively.
- Increased ability for IT professionals to work remotely, without having to visit the premises of clients. This improved productivity through a

reduction in commuting time and the ability to work on problems from multiple clients at the same time.

- The programme influenced the **type of internet connection** available to and used by businesses: by 2020, nearly half of businesses (49 percent) in the treatment group reported using fibre connections⁸, whilst only around 30 percent of those in the comparison group were using fibre connections.
- **Connection speeds:** by 2020, 51 percent of businesses in the treatment group reported access to at least superfast connections (24Mbps), whilst only 40 percent of those in the comparator group reported having access to these speeds.
- **Satisfaction:** satisfaction with broadband connections increased between 2016 and 2020 for businesses in the treatment and comparison groups. Those most satisfied are businesses in the treatment group that have upgraded their connection: 95 percent reported being satisfied with the speed and reliability of their connection.

This was reinforced in the qualitative interviews undertaken with businesses:

- Many businesses consulted stated they were dissatisfied with their internet connection and were actively seeking alternatives, as their previous connection hindered their business performance. When the network in their local area was upgraded, they changed their connection straight away, and their level of satisfaction with both the speed and reliability of their connection improved.
- **Reasons for/against upgrading:** businesses in both groups were compelled to upgrade if they felt their existing connection was too slow or unreliable, and dissuaded from upgrading primarily due to administrative or supply-side difficulties such as a lack of trust in suppliers (telecommunications providers) or perceived lack of availability (though there were no overwhelming or unifying motivators- businesses reported a variety of factors). Businesses in the treatment area were more likely to have upgraded to a Superfast Broadband connection as a result of the subsidised coverage.

Qualitative interviews with a sample of these businesses indicated that:

- The most common reason for not upgrading was that businesses did not think they required a faster internet connection (they were already satisfied with the speed and reliability they received)
- A lack of speed and reliability encouraged businesses to upgrade their connection for a number of reasons. For example, if: the sharing of large files between workers in different locations was challenging as the files took a long time to share via email or upload to the cloud, meaning staff time was wasted (particularly in sectors handling large files, such as publishing and design industries); the speed and bandwidth was insufficient to support the high number of individuals using shared networks in the hospitality and care sectors; a lack of connection reliability in offices in rural areas resulted in wasted time for workers, particularly those who had commuted long distances.
- **Business performance:** firms in superfast subsidised areas that upgraded their connection increased their employment by an average of 11 percent between 2016 and 2020, whilst firms that did not were broadly stagnant (though it is difficult to infer causality here) i.e. a connection upgrade was associated with an increase in employment numbers of 1.9 workers.



3. Reducing the Digital Divide and Providing Public Value

The digital divide is the gap between people in areas who are able to benefit from fast and reliable internet speeds and those who live in areas which cannot access these networks. This section summarises the Superfast programme's impact on reducing the digital divide.

Superfast availability

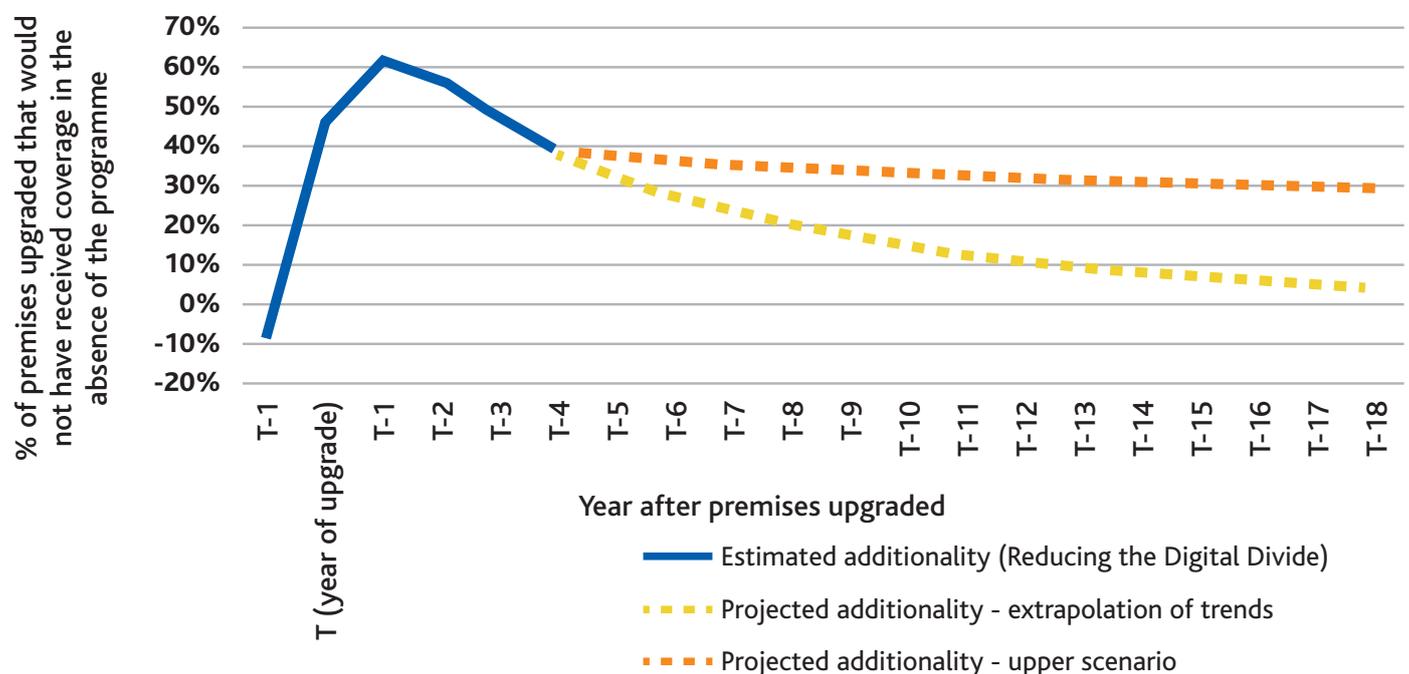
The analysis found that the programme had a positive effect on Next Generation Access (NGA)⁹, superfast¹⁰, and Fibre to the Premise (FTTP)¹¹ availability in postcodes benefitting from subsidised coverage by September 2019.

- Programme level additionality: By September 2019, it is estimated that between 1.6 million and 2.3 million additional premises benefitted from superfast broadband coverage that would not have done without the programme.
- Impact on superfast broadband availability: The impact of the programme on superfast broadband availability

continued to rise to 34 percent of premises on the postcodes in the build plans of local schemes by 2019.

- Pace of Superfast coverage rollout: The programme had a substantial effect in accelerating the roll-out plans of network providers (as illustrated in the following figure). Sixty percent of the households benefiting from subsidised coverage would not have otherwise had access to NGA networks within 2 years. Forty percent would not have otherwise had NGA access within 4 years. There was also some evidence that the programme delayed the availability of NGA coverage for a minority of premises.

Figure 2: Additionality of Superfast Broadband programme rollout



Source: Ipsos MORI analysis (2020). The graph also projects future additionality after the fourth year, using two different scenarios¹³.

National Broadband Scheme 2016 (Phase 3) Contracts.

- **Superfast coverage:** NBS 2016 contracts¹⁴ are estimated to have increased the number of premises with superfast coverage (30Mbit/s) by 10,800 to 27,400 by September 2019 in subsidised postcodes.
- **FTTP coverage:** NBS 2016 contracts are estimated to have resulted in 19,000 to 30,300 additional premises with FTTP coverage.

Superfast take-up

The maximum and average speed of connections have increased with time, suggesting (as might be expected) that effects on take-up have lagged behind the effects on coverage. Using the number of superfast broadband connections data contained within Connected Nations since 2014 supports this finding, with take-up rising slowly over time. There were *up to 3.6 additional connections taken up per postcode as a result of the programme for Phase Two contracts by 2019.*

Maximum download speeds rose most rapidly in those areas that had received subsidised coverage by September 2019 (reaching an average of 66 Mbit/s in September 2019). This evidence suggests that early adopters may be taking advantage of the faster speeds made available through FTTP.

Crowding Out

Very few network providers were dissuaded from providing service upgrades in non-subsidised postcodes as a result of subsidised infrastructure improvements nearby (crowding out effects).

Open market review (OMR) learnings

The OMR is a process by which BDUK collects information from network providers on their network infrastructure and planned network roll out for the next three years. The purpose was to identify non commercial premises that required public subsidy. Interviews with local bodies drew out the following areas of improvement for the process.

- **Static nature of process:** The OMR collected data at one point in time, however commercial build plans of network operators are responsive to regulatory change as well as changes in demand. A more dynamic process could more accurately target eligible premises.

- **Data quality:** Ensuring that data collected is as accurate as possible in order to reduce the number of change requests on postcodes where other network providers have begun deployment in intervention areas. This relates to the challenges around investment cycles outlined below.
- **Realism of plans:** Local bodies have found it difficult to determine the reliability of build plans, in particular being able to identify plans which overstate build to deter competition.
- **Investment cycles:** Both smaller and larger providers found it challenging to submit robust build plans for the next three years. One provider in particular stated that they could only provide accurate build data for the next 12 months and had plans rejected when attempting to provide three year plans. The mismatch in timelines contributed to a proportion of premises determined to be 'white' by the OMR when in fact they were eventually realised to be commercially viable.

Providing public value

This section presents an overview of how the public value of the programme, through its social and wellbeing impacts, has been explored so far, as well as plans to improve future measurement of benefits in this area.

The 2018 interim evaluation attempted to evidence the 'wellbeing impacts'¹⁵ of the programme through two methods:

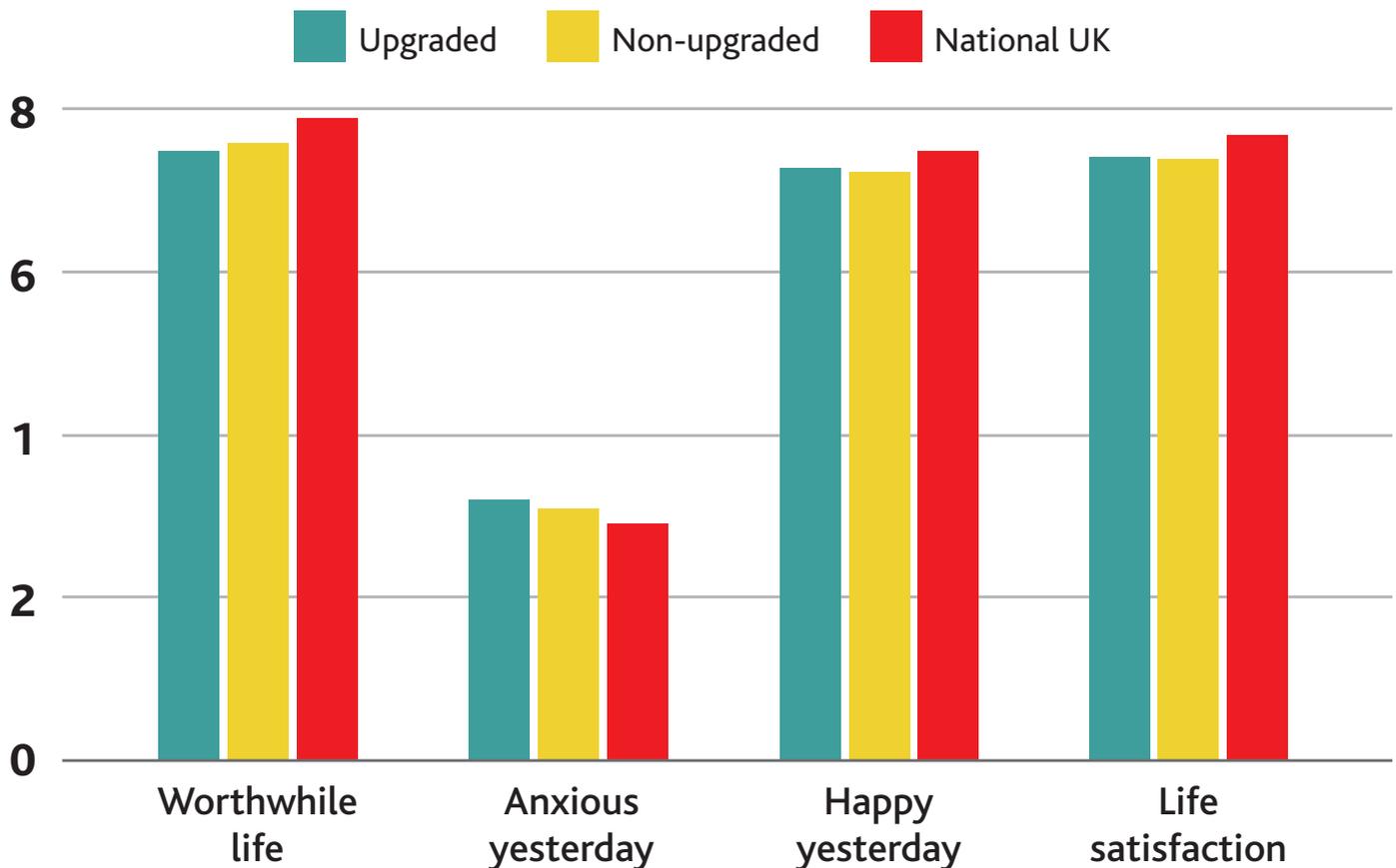
i) wellbeing valuation which linked Superfast programme data to national surveys

The wellbeing valuation indicated that residing in a postcode within a superfast intervention area is associated with a wellbeing uplift equivalent to £222.25 per year per premise compared to those without access to superfast services.

ii) a postal survey of upgraded and non-upgraded households which had a subscription with Sky, and in-depth interviews with households.

Results from the survey concluded, as demonstrated below, that there were no statistically significant differences in subjective wellbeing between those living in upgraded and non-upgraded areas.

Figure 3: Subjective wellbeing in upgraded and non-upgraded areas



Source: Ipsos MORI analysis (2020), Superfast Broadband evaluation: Public Value (Annex D, 2018). Survey participants were asked to respond to statements on a scale of 1-10

Respondents in upgraded and non-upgraded areas reported levels of wellbeing broadly in line with the national average published by ONS.

These observations are thought to be a consequence of the forward-looking nature of many of the impacts of superfast broadband provision: lack of take-up of superfast broadband in upgraded areas and the period of adaptation required for the behaviours of superfast adopters to change as a result of their upgrade could delay the manifestation of social benefits.

2020 Evaluation wellbeing approach

The 2020 evaluation also investigated the programme's public value through social and wellbeing impacts, again employing two approaches:

i) **Understanding Society¹⁶ subjective wellbeing data** reported in longitudinal social surveys, updated from the 2018 evaluation, to model the programme's effect on upgraded areas.

Subjective wellbeing impact: the findings provided mixed evidence as to how far there was an overall

impact on the subjective wellbeing of households, with modelling of the effect of the programme on subjective wellbeing showing no significant effects on the population living in upgraded areas.

ii) **House price analysis**, based on a revealed preference method to identify the value placed on superfast connectivity. It is assumed that this will be reflected through higher willingness to pay for these premises over time¹⁷. This measure acts as an indicator for the **consumer welfare benefit** of the programme.

House price uplift: findings suggested that the programme led to an increase in house prices of between £1,700 and £3,500, or 0.56% and 1.16% uplift in prices respectively. At a programme level, land value uplifts have contributed to between £742m and £1.52bn by 2019. This estimate represents how much house buyers valued access to a Superfast Broadband connection, accounting for many of the programme's indirect effects such as enabling greater remote working and reducing commute times.

Further work is being carried out to understand the wellbeing and social impacts of superfast broadband. This includes analysis of the programme's management information data which has been linked to data from the Oxford Internet Survey¹⁸, and ongoing primary research with households in upgraded and non-upgraded areas. The findings of research carried out so far predate the COVID-19 pandemic and it is likely that the effects of the programme on wellbeing will differ substantially from those presented here, given the role that connectivity has played in supporting responses to the outbreak.

4. Reducing Impact on the Environment

To date, the evaluation of the Superfast Broadband Programme's environmental impacts has remained limited because of a lack of robust data. Research into these impacts will form a component of the final round of the programme's evaluation.

5. Stimulating the Broadband Market

A rationale for intervention of the Superfast programme was a market failure of network providers to serve less densely populated areas that were deemed commercially unviable. The Superfast programme was designed to provide an incentive effect for network providers to invest in these areas whilst at the same time minimising the amount of public subsidy required and market distortion effects.

Network providers that are Superfast programme beneficiaries include: Openreach, Gigaclear, Airband, Callflow, and UK Broadband/Relish.

Financial analysis

Incentive effect: At the portfolio level, public subsidies would have been required to ensure that the Internal Rate of Return (IRR)¹⁹ on the investments exceeded the cost of capital faced by network providers. The IRRs on Phase 1, 2 and 3 contracts without subsidy were lower than the network provider's Weighted Average Cost of Capital²⁰. This implies that the subsidies were required to provide a necessary 'incentive effect' for network providers to invest in their expansion of their networks.

Effectiveness of contractual mechanisms: The contracts have been designed so that network providers are required to return resources to the public sector if build costs are understated or if take-up proves higher than expected (leading to higher levels of profitability). Early indications suggest that these mechanisms, put in place by BDUK to protect the public sector from the risk of providing more than the minimum subsidy required, are likely to prove effective.

Market analysis

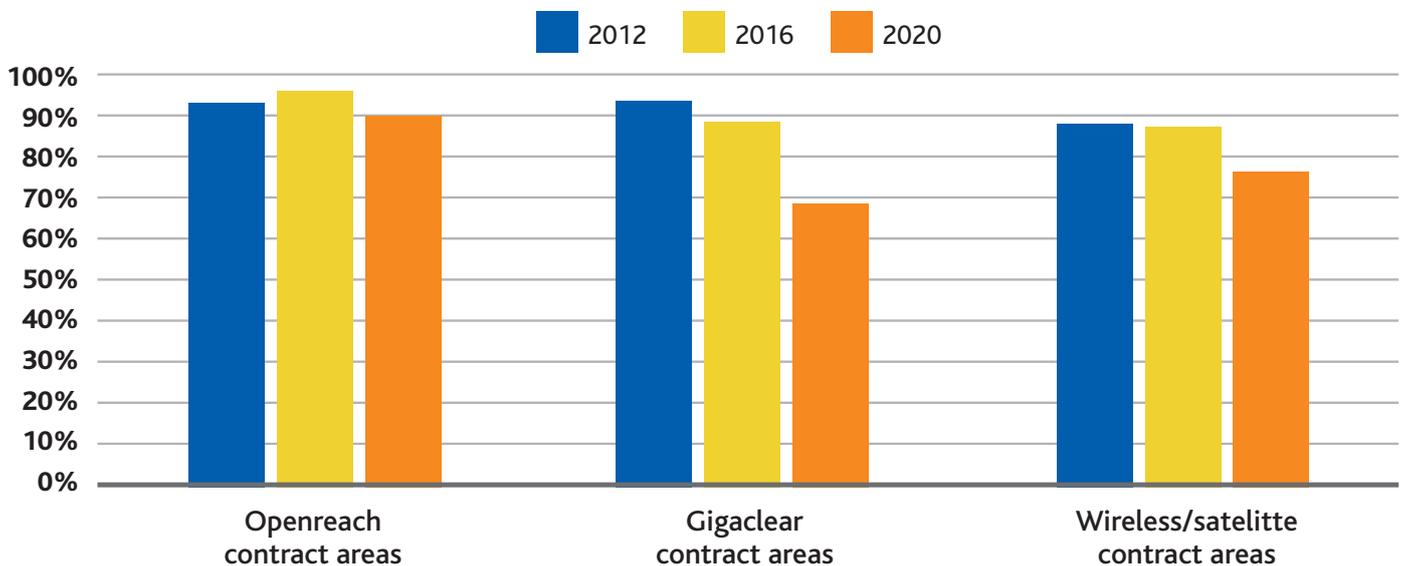
National market share: At a national level, there have not been significant changes in the market share of programme beneficiaries in the broadband market between 2016 and 2020.

The market share for Openreach has remained fairly constant between 2016 and 2020, and above the national average in the areas supported by the Superfast Broadband programme (90 percent compared to the national average of 75 percent nationally in 2020).

Market share of smaller providers: However, the market share in both the overall broadband and NGA market for the smaller programme beneficiaries increased between 2016 and 2020 in Phase 3 delivery areas which is not observed at a national level. This suggests that the programme has positively affected the market share of the programme beneficiaries in these areas. In these areas:

- Openreach still hold the largest market share, but this has fallen to nearer 70% of the market

Figure 4: Openreach market share of total broadband market

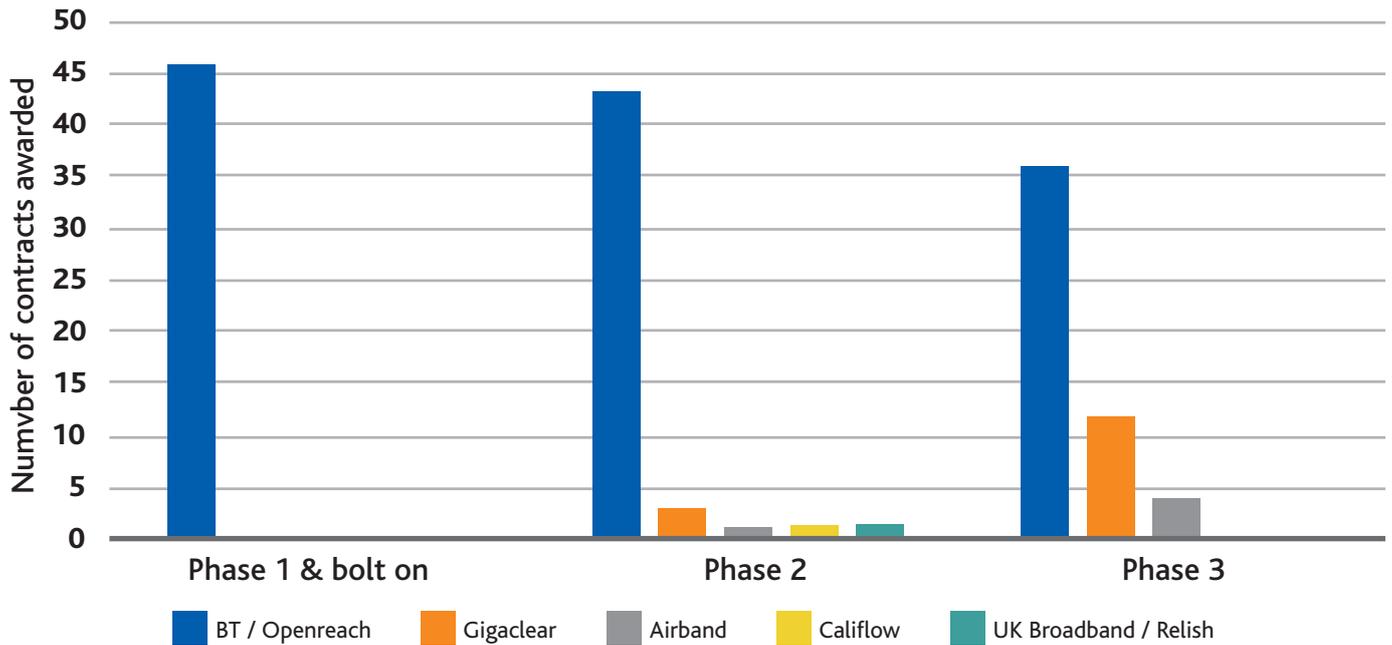


Source: Ipsos MORI analysis (2020)

- **Gigaclear areas:** In intervention areas, Gigaclear has obtained an estimated market share of 25% (compared to 0.2 % nationally).
- **Wireless areas:** wireless / satellite providers have a market share of 6% in the areas they have delivered contracts in (compared to 0.1% nationally).

Overall, this suggests that at a local level where contracts were awarded to smaller providers the Superfast Broadband programme had a positive effect on their market share relative to their position in the national telecommunications market. However, as displayed in figure 6 below, it should be noted that Openreach were awarded the majority of contracts across phases.

Figure 5: Number of contracts awarded to each beneficiary, grouped by phase of programme

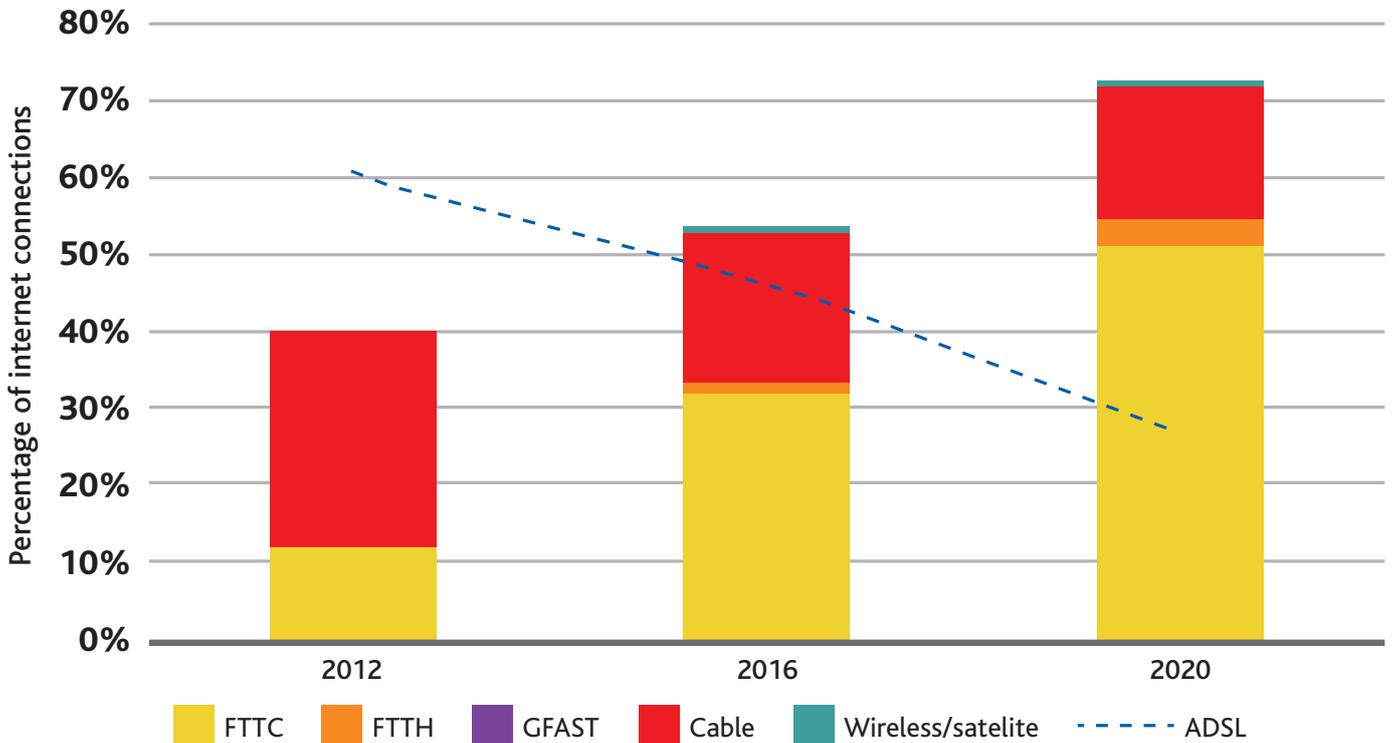


Source: Ipsos MORI analysis (2020)

Technology change

In areas where the Superfast Broadband programme has operated, there has been a steep decline in the market share of ADSL connections, and an increase in the market share of technologies capable of superfast connections, most notably FTTC (see below).

Figure 6: Market share of broadband take-up for NGA and ADSL connections



Source: Ipsos MORI analysis (2020)

The market share of NGA connections in the Superfast Broadband areas is below the national average (at just over 60% of the broadband market compared to over 70 percent nationally in 2020). This is to be expected, as some areas have only recently had NGA connections made available to them, which would limit the opportunity of households and businesses to take up these connections.

As with the national pattern, fibre to the cabinet (FTTC) is the dominant technology for NGA connections,

representing around one third of total broadband connections in 2016 and over half of broadband connections in 2020. However, cable connections are a lot less prevalent in Superfast Broadband delivery areas (under three percent of total broadband connections in both 2016 and 2020). FTTP and wireless connections are slightly more prevalent in Superfast Broadband delivery areas than nationally, representing 5.5 percent of connections in the delivery areas in 2020.

6. Enabling Public Sector Efficiency

An experimental analysis of the impact of the Superfast Broadband Programme on the public sector has been undertaken. This has been achieved by linking the Superfast programme's management information data to administrative data sources from the Department of Health and Social Care²¹ and Department for Education. Further primary research is being undertaken and findings will be reported in second quarter of 2021 as part of the Superfast Benefits Realisation and Evaluation report. The emerging findings to date, which will form the basis of the third round of evaluation, are:

- **Number of patients:** Subsidised coverage increased the number of patients registered with GPs by 3.2 to 5.9 percent on average between 2013 and 2019.
- **Staffing:** The number of staff employed by GP surgeries did not rise to the same degree. While subsidised coverage led to an increase in the number of nursing and non-clinical staff of 5.3 to 5.4 and 5.4 to 7.4 percent respectively, there was no effect on the number of GPs.
- **Overall satisfaction with GP services:** Subsidised coverage appeared to reduce the share of patients that described their experience as fairly or very good by two percentage points.
- **Primary School income:** Total income was estimated to rise by 1.7 percent largely due to increases in self-generating income (this could be explained if superfast connectivity has enabled schools to make more efficient use of leisure facilities and/or has attracted higher income residents to the area).
- **Primary school resources:** The programme had an impact on ICT and teaching expenditure, and teacher numbers, with these decreasing by 17.7 percent and increasing by 8.2 percent and 2.0 percent respectively. However, these findings were not robust to the addition of further control variables in the modelling and, as such, are inconclusive.

These results support hypotheses which suggest that the programme has worked to alter the composition of rural populations. More research is planned to provide further evidence on these emerging findings for the third and final round of the evaluation of the programme.

Methodologies used for the evaluation

The evaluation uses principles from the Magenta Book and the Common Methodology for State Aid Evaluation²². A range of methodologies have been employed to evaluate outcomes in these areas, including:

- Theory of change development
- Analysis of the programme's management information
- Econometric analysis based on a quasi-experimental design (pipeline approach²³) including methods such as difference-in-difference, fixed effects regression, propensity score matching and regression discontinuity design²⁴
- Financial analysis of expected Internal Rates of Return (IRR) of Superfast contracts.
- Market share analysis of network providers.
- Primary research with Local Bodies, telecommunications providers, businesses and households, including surveys, in-depth interviews and case studies.
- Cost benefit and cost-effectiveness analysis

The robustness and validity of the evaluation is testament to this broad range of approaches that combines findings from primary and secondary research.

Next steps

- Ongoing qualitative research with businesses and public sector providers to provide further insight into how and why the outcomes of the programme have occurred.
- Scoping a programme of work to evidence the programme's environmental impacts.
- Continue to draw out time-series trends as the evaluation takes on an increasingly longitudinal character.
- More work to establish a methodology to evidence the 'wellbeing impacts' of the programme, through piloting a face to face survey of households, and linking the programme's management information data to the Oxford Internet Users Survey.
- The process evaluation of the programme and an overarching benefits realisation and evaluation report will be published in the second quarter of 2021.



Glossary of key terms

Additionality: An impact arising from an intervention, which is additional if it would not have occurred in the absence of the intervention

Benefits: The measurable improvement resulting from an outcome perceived as an advantage by one or more stakeholders, which contributes towards one or more organisational objectives

Clawback (implementation): A mechanism to recover underspend. In the event of any underspend, the network provider was required to place unused funds in an Investment Fund to help resource further schemes or extend the contract coverage to a greater number of premises than originally offered.

Clawback (take-up): A mechanism to recover underspend. In the event of any underspend, the network provider was required to place unused funds in an Investment Fund to help resource further schemes or extend the contract coverage to a greater number of premises than originally offered.

Cost-benefit analysis (CBA): analysis which quantifies in monetary terms as many of the costs of a proposal as feasible, including items for which the market does not provide a satisfactory measure of economic value (non-financials)

Crowding-out: The extent to which public spending reduces levels of private investment

Digital Divide: Difference in connectivity between areas, with some areas having access to much faster speeds than others

Displacement: Describes effects in product markets where the growth of one firm results in the loss of market share for its competitors

Effectiveness: a measure of the extent to which a project, programme or policy achieves its desired outcomes/outputs.

Efficiency: A measure of the extent to which a project, or policy's associated throughputs are increased

Evaluation: Evaluation is a systematic assessment of the design, implementation and outcomes of an intervention. It involves understanding how an intervention is being, or has been, implemented and what effects it has, for whom and why. It identifies what can be improved and estimates its overall impacts and cost-effectiveness.

Fixed effects: Fixed effects refers to econometric models applied to compare outcomes over time that accommodate unobserved characteristics of areas or businesses that do not change over time

FTTC: Fibre to the Cabinet refers to an access network structure in which the optical fibre extends from the exchange to the cabinet. The street cabinet is usually located only a few hundred metres from the subscriber's premises. The remaining part of the access network from the cabinet to the customer is usually copper wire.

FTTP: Fibre to the Premises refers to an access network structure in which optical fibre runs from the local exchange to the end user's living or office space.

GVA: Gross Value Added - the value added in the production process, and measured as the sum of wages and profits

Impacts: Impacts are the effects on the outcome that are attributable to the programme over and above what would have occurred in the absence of the programme

Network provider: Telecommunications providers which own infrastructure which is used to deliver internet services

NGA: Next Generation Access refers to new or upgraded access networks that will allow substantial improvements in broadband speeds. This includes Fibre to the Cabinet, Fibre to the Premises (Fibre to the Home), Wireless and Cable broadband connections.

OMR: Open Market Review is a process by which network providers outlined their existing broadband networks and their network roll out plans for the coming three years.

Outcome: Outcomes are social or economic measures that could be affected by the programme (e.g. jobs, turnover, life satisfaction)

Postcode categories:

White postcodes: Areas identified in the OMR process where there were no commercial plans to roll-out superfast broadband within three years.

Grey postcodes: Areas identified in the OMR process where one provider was offering or expected to offer superfast broadband services within three years.

Black postcodes: Areas identified in the OMR process where multiple providers were offering or expected to offer superfast broadband.

Productivity: Refers to the effectiveness of production as measured by the rate of GVA per unit of input.



Programme beneficiary: One of the five network providers that were awarded Superfast Broadband contracts.

Superfast: Superfast speeds refer to download speeds of at least 24Mbit/s (as applied by BDUK) or 30Mbit/s (as applied by Ofcom)

Take-up: The share of premises receiving subsidised superfast coverage taking up superfast broadband services

Underspend: Underspend occurs when the actual investment costs are lower than the budget defined in contracts

Value for Money: (as defined in the Magenta Book and following HMT Green Book guidance on economic appraisal and cost-benefit analysis)