

EVALUATION OF THE SUPERFAST BROADBAND PROGRAMME

KEY FINDINGS



Department for
Digital, Culture,
Media & Sport

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Key evaluation questions

Question 1: What are the outcomes of the scheme?

Question 2: How has the behaviour of individuals/organisations changed for these outcomes to come about?

Question 3: How effective and efficient has the delivery of the programme been?

Question 4: Was the investment cost effective?

Question 5: What can we learn to improve future policy designs and implementation?

Analytical approach

Development of Theories of Change to underpin the evaluation: the first stage of the evaluation was to develop a series of Theories of Change for the Programme, to show a causal pathway from the provision of public funding through to economic, social and telecommunication market impacts.

Quasi-experimental approaches to robustly identify the outcomes and impacts achieved: The quasi-experimental analysis explored the impacts of the Programme on the availability and take-up of superfast broadband services, the performance of businesses located in the Programme area, the labour market, house prices, and the wellbeing of residents.

Descriptive and Thematic analysis: Where quasi-experimental approaches were not feasible, the research team undertook thematic analysis to identify and form conclusions about the likely impact of the Superfast Broadband Programme.

Cost-benefit analysis and Cost effectiveness analysis: A cost-benefit and cost-effectiveness analysis (the cost per premises passed) of the Programme were completed.

Primary research

Telephone survey of businesses: A large-scale telephone survey of 1,200 businesses that were either located in areas where the network had been upgraded or in comparator areas.

Depth interviews with businesses: 40 depth interviews with businesses to collect more information about how and why improved broadband connectivity contributes towards business performance.

Research with employees: A further nine interviews were undertaken with employees to explore how enhanced broadband connectivity has affected employees

Depth research with Local Bodies: 40 depth interviews with Local Bodies responsible for delivering the Programme contracts to explore the mechanisms used to deliver the Programme and its impacts.

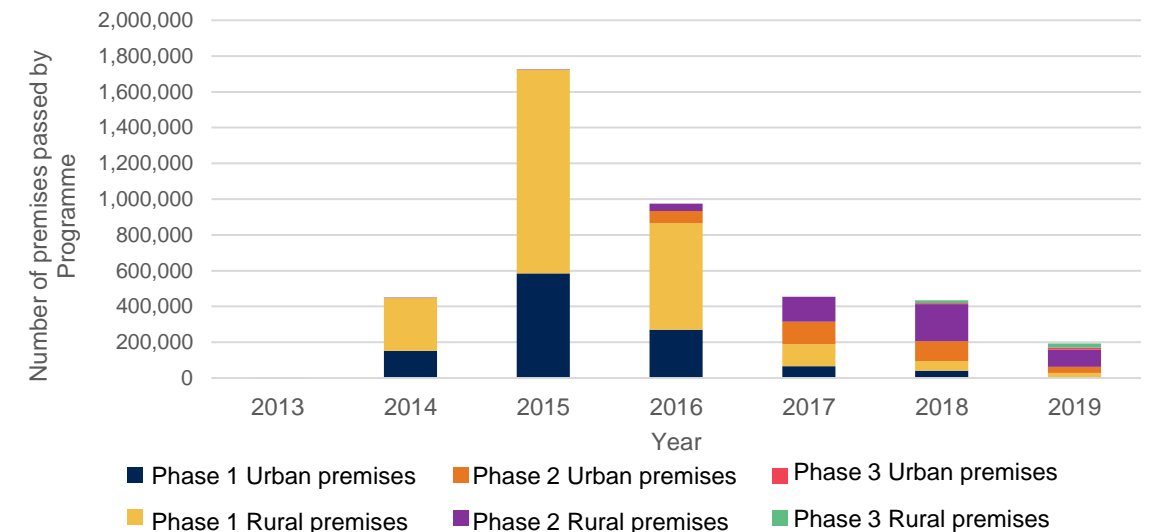
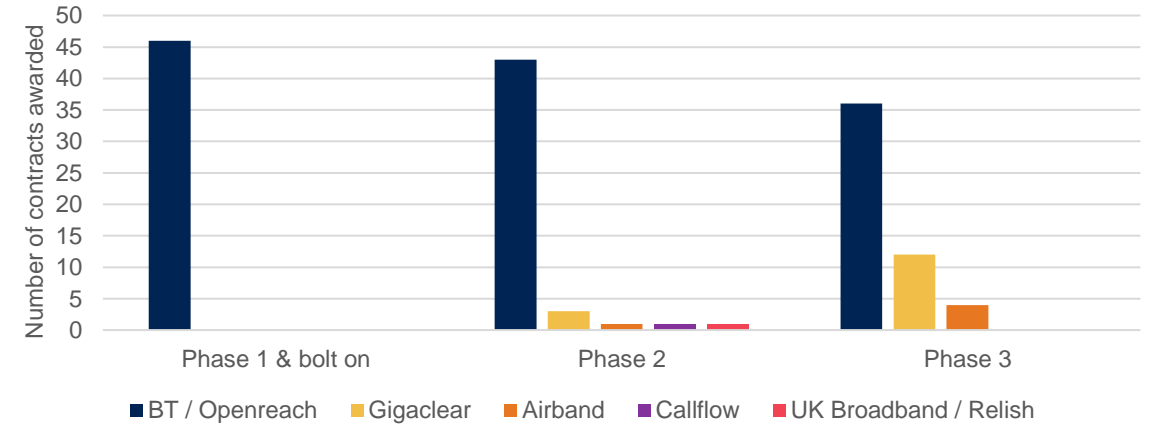
Depth research with public service providers: The evaluation also involved depth interviews with 33 providers of public services to explore the impact of enhanced broadband connectivity.

Depth research with telecommunication providers: 16 telecommunications provider interviews to understand the impact of the Programme on the telecommunications market.

PROGRAMME DELIVERY

Superfast Broadband Programme - delivery

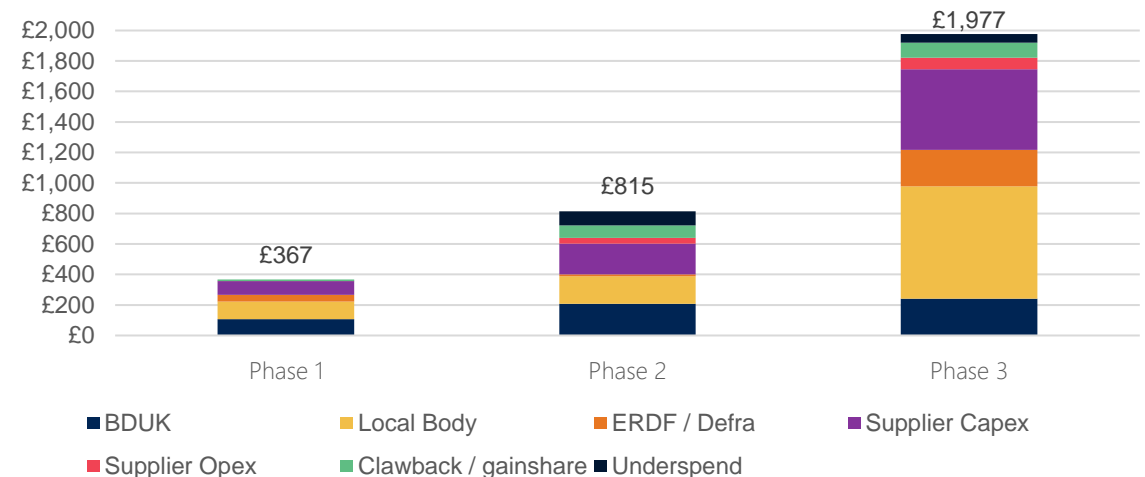
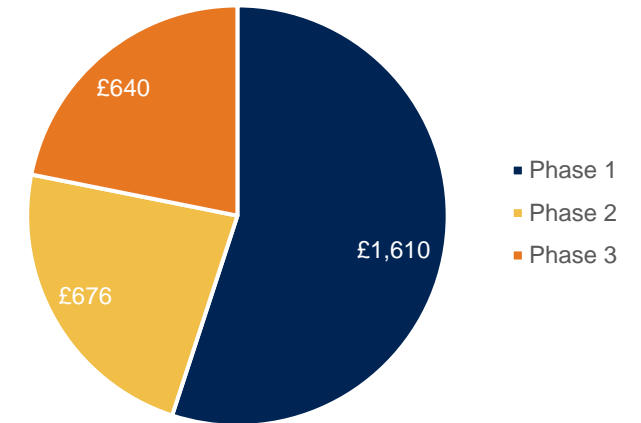
- A total of 147 contracts awarded through the programme (as of June 2020)
- Most awarded to BT / Openreach (85%). Contracts awarded to alternative suppliers in Phases 2&3 – due to a change in procurement approach.
- Contracts aimed to deliver Superfast connectivity to 5.5 million premises.
- A total of 5.3 million premises had received superfast broadband coverage by June 2020.
- Contracts awarded under Phase 1 of the Programme tended to be larger and peak delivery volumes were experienced during 2015.
- Delivery of Phases 1 and 2 were largely complete.



Superfast Broadband Programme - financial

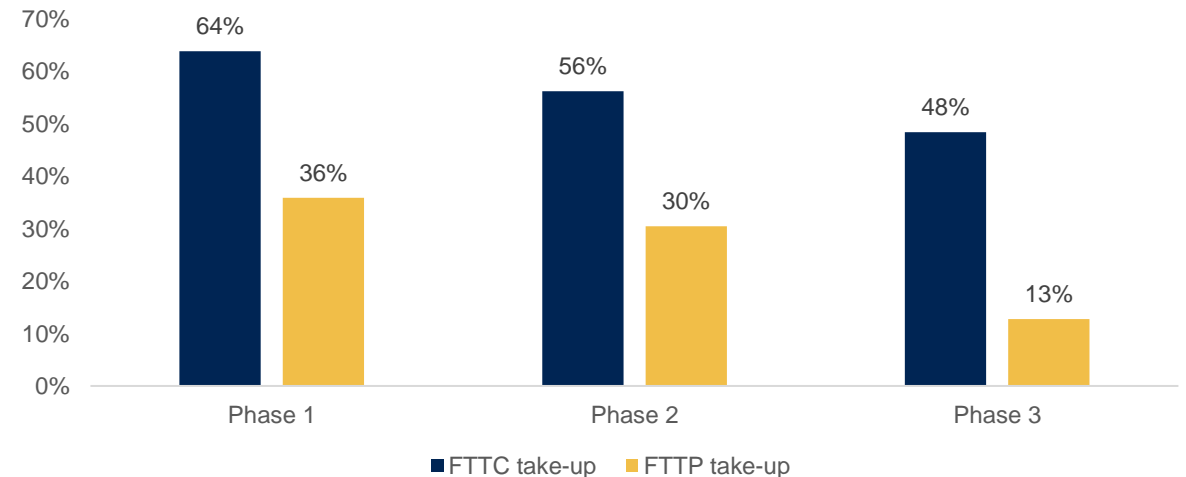
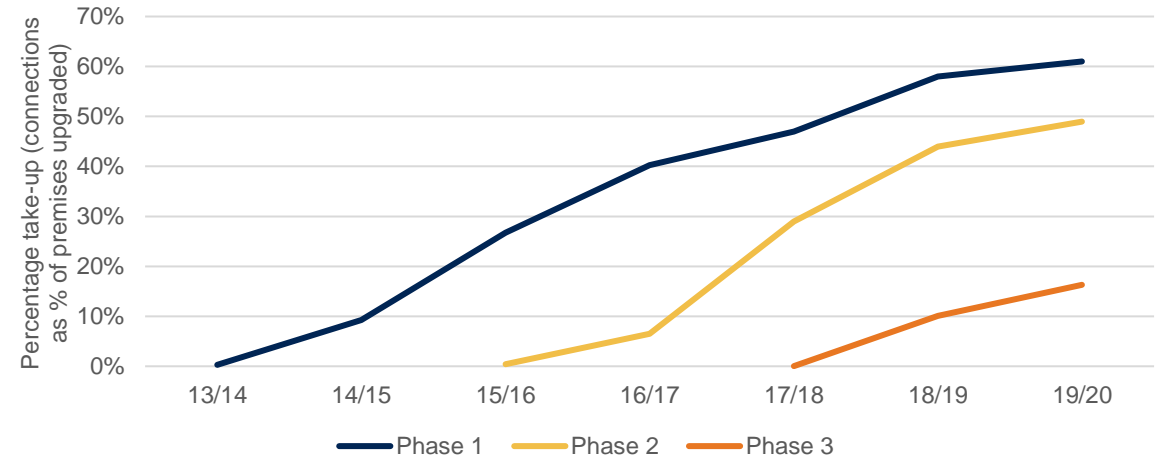
- The expected total value of funding for the programme was approaching £3 billion (June 2020), with most of this cost in Phase 1 of the programme.
- The average expected cost per premises increased from Phase 1 to Phase 3.
- This is not surprising, given that the aim of the projects was to maximise the number of premises upgraded, therefore easier / cheaper premises would be upgraded first.
- Additionally, in Phase 3, there was more of a focus on the more expensive FTTP connections (rather than Fibre to the Cabinet, FTTC), which may also contribute to the increase in unit cost.

Total expected cost (£m)



Superfast Broadband Programme – take-up

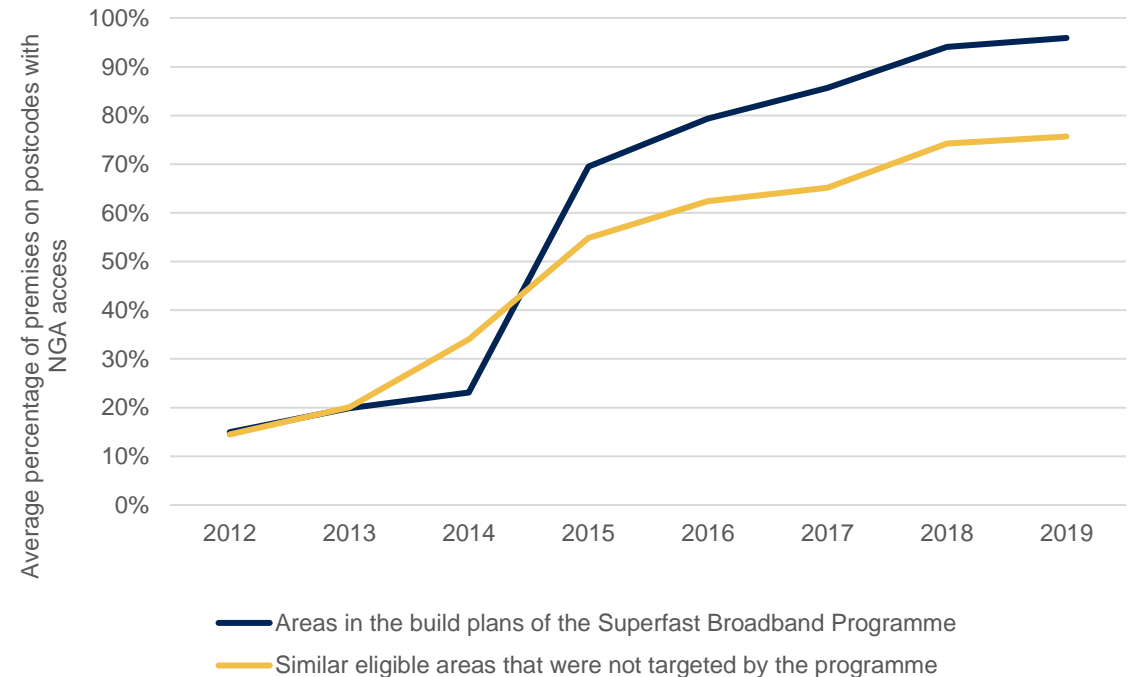
- Take-up of superfast broadband connections in the delivery areas has exceeded supplier expectations.
 - Take-up in Phase 1 areas, which were the first to deliver, has reached over 60%.
 - Take-up for later Phases growing at a similar rate.
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- Take-up of FTTC connections higher than for FTTP. This is consistent across all Phases.
 - This would be expected, as some FTTP connections are more expensive and many residents do not yet require the speeds being offered.



PROGRAMME OUTCOMES

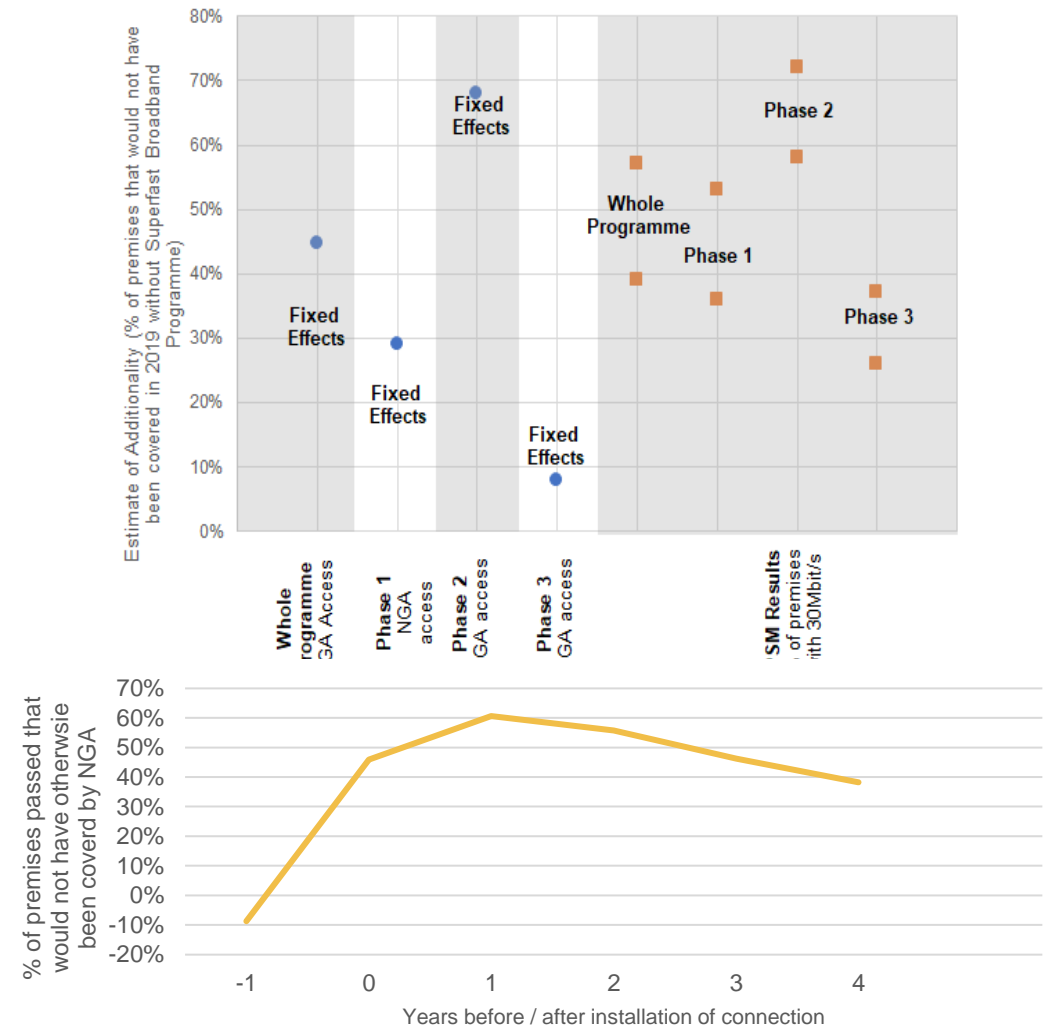
Programme outcomes – Digital divide

- There was an increase in the percentage of premises able to receive NGA coverage (from 15 to 95 percent) and superfast speeds (from 15 percent to 80 percent) to 2019.
- There was a significant increase in NGA access between 2014 and 2015 (in 2015 a large amount of premises received connectivity through the Superfast Broadband Programme).



Programme outcomes – Digital divide (2)

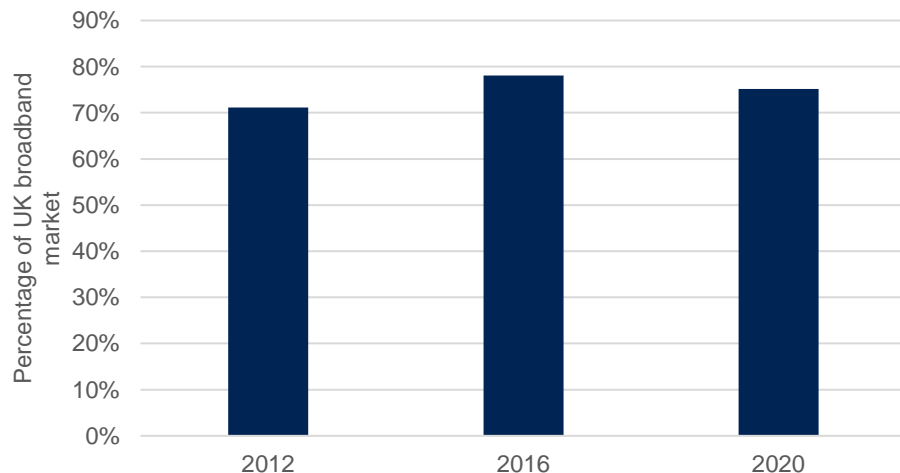
- The Superfast Broadband Programme increased the share of premises in Programme delivery areas with access to NGA technologies by 24 p.p. and the share of premises with superfast connectivity by 34 to 35 p.p.
- The results indicate that additionality peaks at 60 percent one year following the upgrade before decaying over time.
- This suggests that some areas benefitting from the Programme would have received improved broadband infrastructure at a later date in the absence of the Programme.



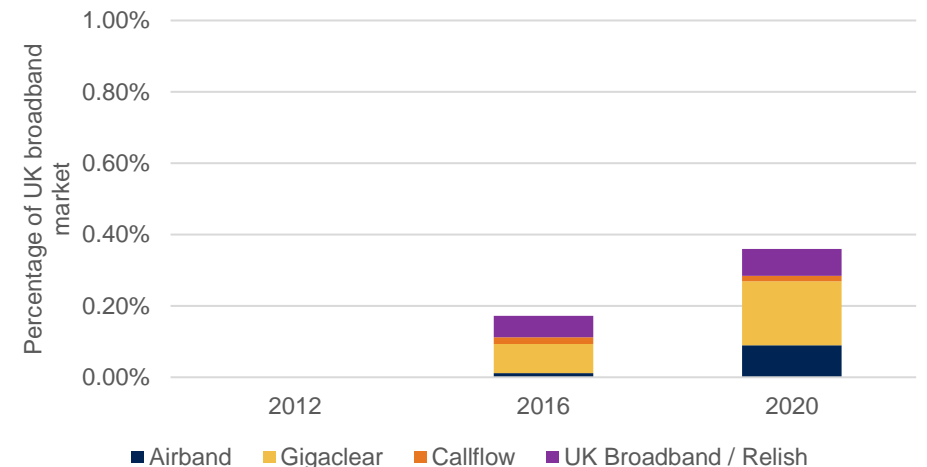
Programme outcomes – Stimulating Broadband market

- Openreach has maintained its market share of broadband connections in the UK between 2012 and 2020
- The other Programme beneficiaries have increased their market share since 2012 (when they had no share), but cumulatively they still represent under one percent of the UK broadband market.
- Therefore the Programme does not appear to have impacted the UK broadband market significantly.

Market share of Openreach (including Sky and TalkTalk)



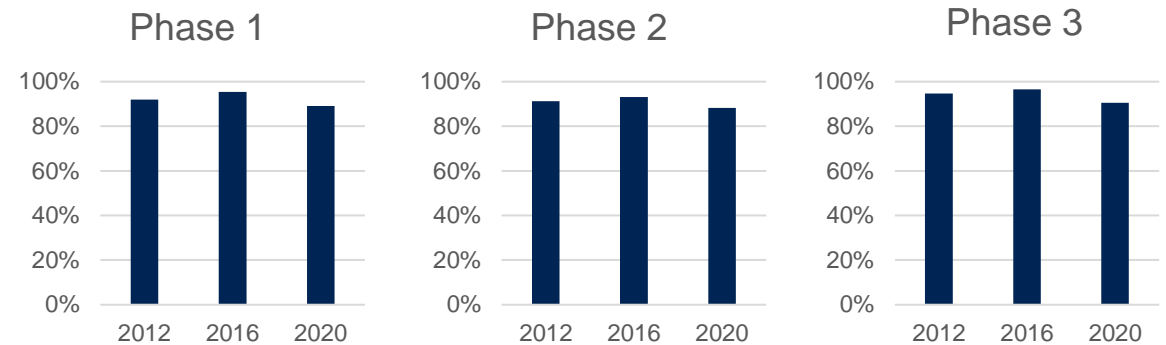
Market share of other Programme beneficiaries



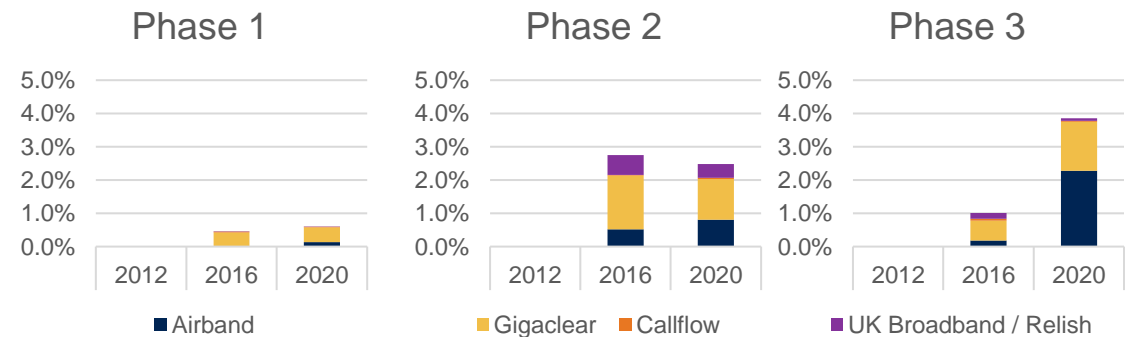
Programme outcomes – Stimulating Broadband market (2)

- The Superfast Broadband Programme does not appear to have had much effect on the market position of OpenReach in local areas where the Programme has delivered connectivity.
- The smaller providers saw large growth in their market share, indicating that the Programme may have helped them expand their market share, making a contribution to greater competition.

Openreach market share in Programme delivery areas



Other Programme beneficiaries market share in Programme delivery areas



Programme outcomes – productivity growth and employment



Enhanced broadband coverage was estimated to have increased employment by 0.6 percent, leading to the creation of approximately 17,600 local jobs by the end 2018.



Enhanced coverage also increased the turnover of firms by almost 1.0 percent by 2018, increasing the annual turnover of local businesses by approximately £1.9bn per annum.



There were also some evidence of efficiency gains - turnover per worker of firms in the areas with enhanced coverage rose by 0.4.



Employees working for firms located in the areas benefitting from subsidised coverage saw their hourly earnings increase by 0.7 percent in real terms in response to the upgrade



Local job creation also translated into reduced unemployment, with the number of unemployed claimants falling by 32 for every 10,000 premises upgraded.

Programme outcomes – local authority public service effects



The Superfast Broadband Programme had supported the advancement of local digital plans, particularly digital inclusion plans.



These were thought to be behind the increased use of online services and accelerating widespread adoption of these over face to face means.

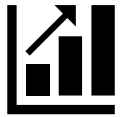


Council services to continue running without the need for face to face contact at a time when such contact had the potential to spread the COVID-19.



Access to superfast broadband at libraries was described as enabling some libraries to continue to provide digital skills and inclusion activities

Programme outcomes – educational public service effects



General administration processes for staff at schools were reportedly quicker and easier since upgrade of the school connection.



Improved connectivity also led to increased communication with parents through online means.



Increased engagement of primary school children with online learning: Children obtained more enjoyment from online learning resources relative to before the Programme.



During the COVID-19 pandemic, the enhanced connectivity provided by the programme has enabled children to learn remotely.

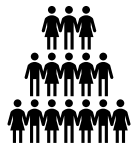


Connectivity is only part of the solution, for some disadvantaged children access to IT equipment was the prohibitive factor in enabling remote learning.

Programme outcomes – health and social care public service effects



Awareness of the three main services, booking, prescriptions and viewing medical records, increased by between five and seven percent.



Enhanced broadband coverage increased the number of patients registered with GPs by 3.2 to 5.9 percent. However, the number of staff employed by GPs did not change.



Enhanced coverage increased the proportion of patients that were satisfied with the amount of time given to them for their last appointment by one to two percentage points.



Enhanced coverage had a negative impact on access (reduction in the proportion satisfied by three to four p.p.) and continuity of care (reduction in the proportion satisfied by eight p.p.).



Covid-19 resilience and remote working: Enhanced connectivity had enabled video consultations to take place without the need for face to face contact at a time when such contact had the potential to spread the virus.

Programme outcomes – Public value



Changes in subjective wellbeing

A statistical modelling exercise was undertaken to explore the effect of the programme on subjective wellbeing, which provided mixed results:

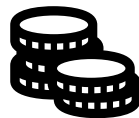


- No significant effects on the overall population.
- Those aged 65 and above experienced positive benefits, while there were neutral or negative effects on other age groups.



Effect on house prices

A statistical modelling exercise was undertaken to explore the effect of the programme on house prices:

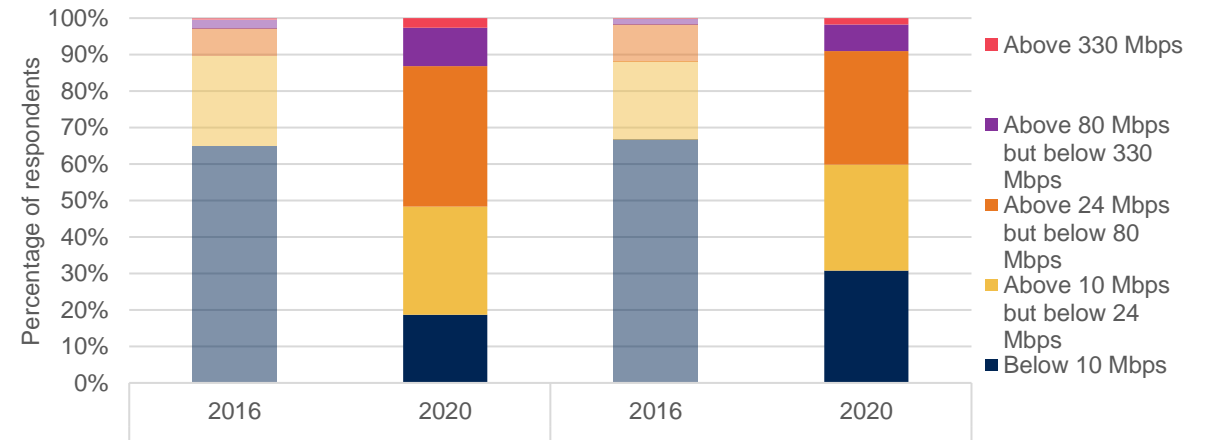
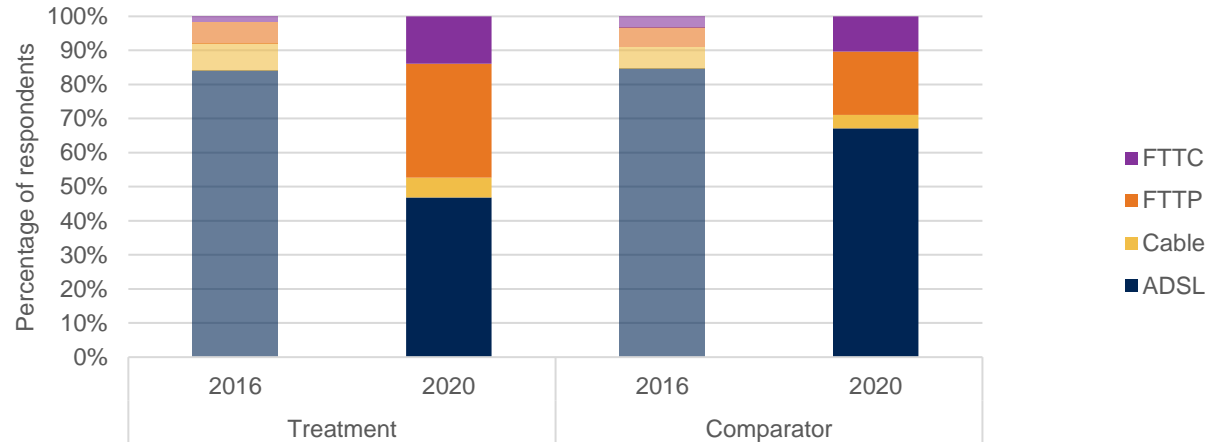


- The programme led to an increase in house prices of between £1,700 and £3,500 on average.
- This represents a total increase of between £0.7bn and £1.5bn in the programme areas.

CHANGES IN BEHAVIOUR

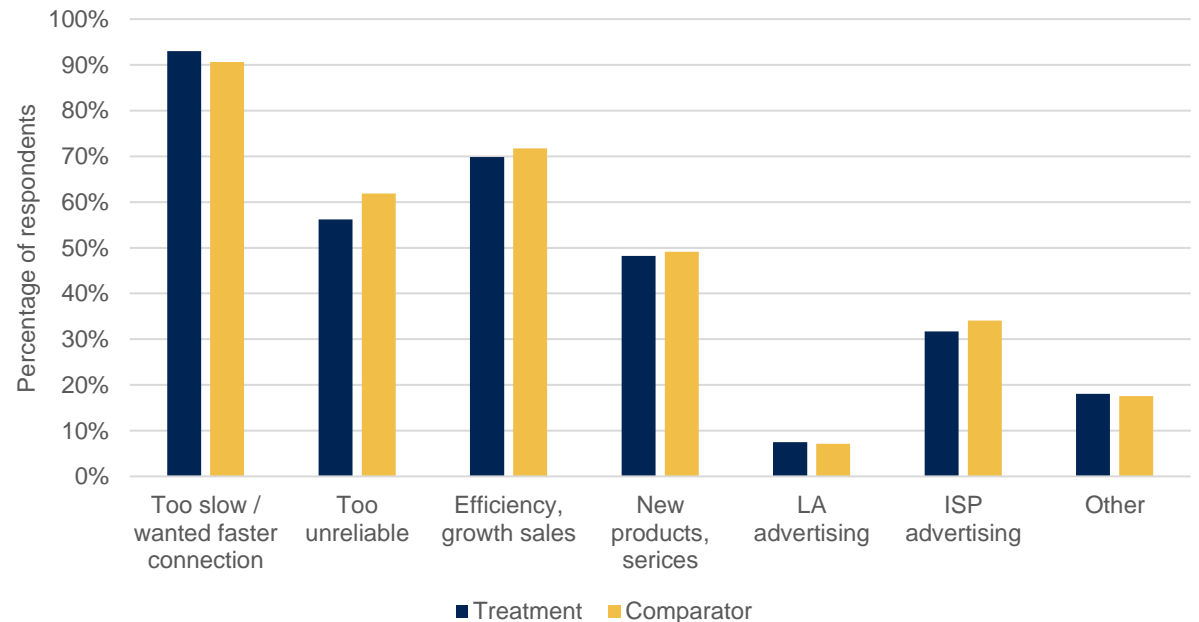
Changes in behaviour - businesses

- The Programme enabled businesses to upgrade their internet connection. Nearly half of businesses in areas benefitting from the Programme reported using fibre connections compared to 30 percent in comparator areas in 2020, compared to under 10 percent in 2016.
- Businesses in the Superfast Broadband Programme delivery areas reported an increase in connection speeds between 2016 and 2020.
- Forty-four percent of the treatment group reported having faster connections compared to 33 percent of the comparator group.



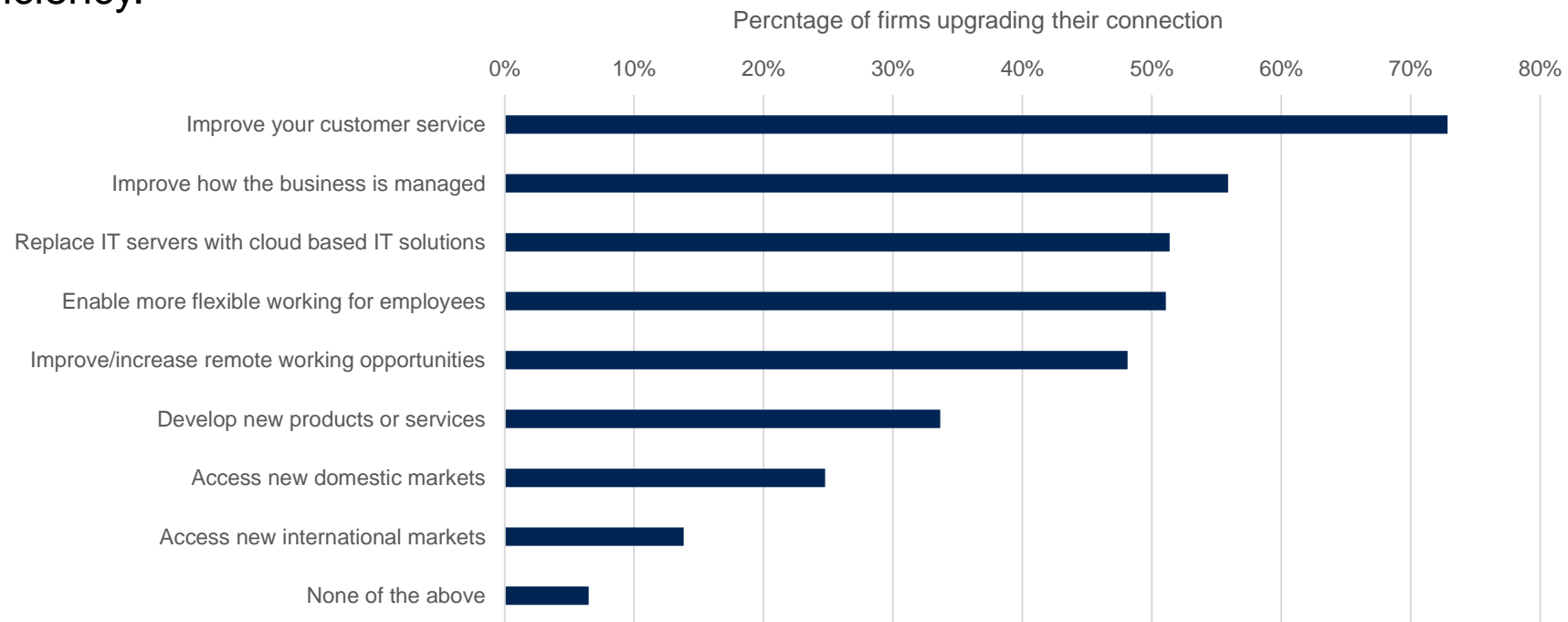
Changes in behaviour – businesses (2)

- The main reasons businesses reported for wanting to upgrade their internet connection was to increase the speed of their connection or because they felt their existing connection was too slow.
- More than half of businesses responded that a reason for upgrading was that their existing connection was too unreliable.
- 70 percent of businesses wanted to upgrade their connection to improve efficiency, and generate a growth in sales.



Changes in behaviour – businesses (3)

- The most reported perceived impacts of improved connections were enhanced customer services (72 percent), utilising the Internet of Things (55 percent), cloud-based computing (51 percent) and promoting flexible working (50 percent).
- Fewer businesses reported introducing new goods or services or opening up new markets.
- This suggests that the benefits of the subsidised coverage may have arisen primarily through enhanced operational efficiency.



Changes in behaviour – public sector effects

“ Before [the Superfast Broadband Programme], I don't think I would be able to work from home and I think that is the same for a lot of people here. Connectivity wasn't good enough I don't think. ”

“ We can now run sessions with members of the local community, teaching them the basics of the internet, some IT skills and accessing content [as] well as other local services ”

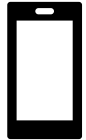
“ We've definitely seen more people use the computers we have in the library. That's also seen in the people using the full range of online services we provide ”

“ Video consultations have meant that appointments can go ahead with both the patients and staff kept safe ”

“ We've made much more use of different learning resources for the children. The variety of things we have available to use has got better and hopefully pupils will connect with them ”

Changes in behaviour – public value

Behaviour changes driving public value outcomes



- **Communication:** Individuals with enhanced connectivity were more likely to state that the internet is essential for keeping in touch. These individuals were more likely to use internet-based messaging services such as WhatsApp and Facebook Messenger and use social networks several times a day or more than those with poorer connectivity.



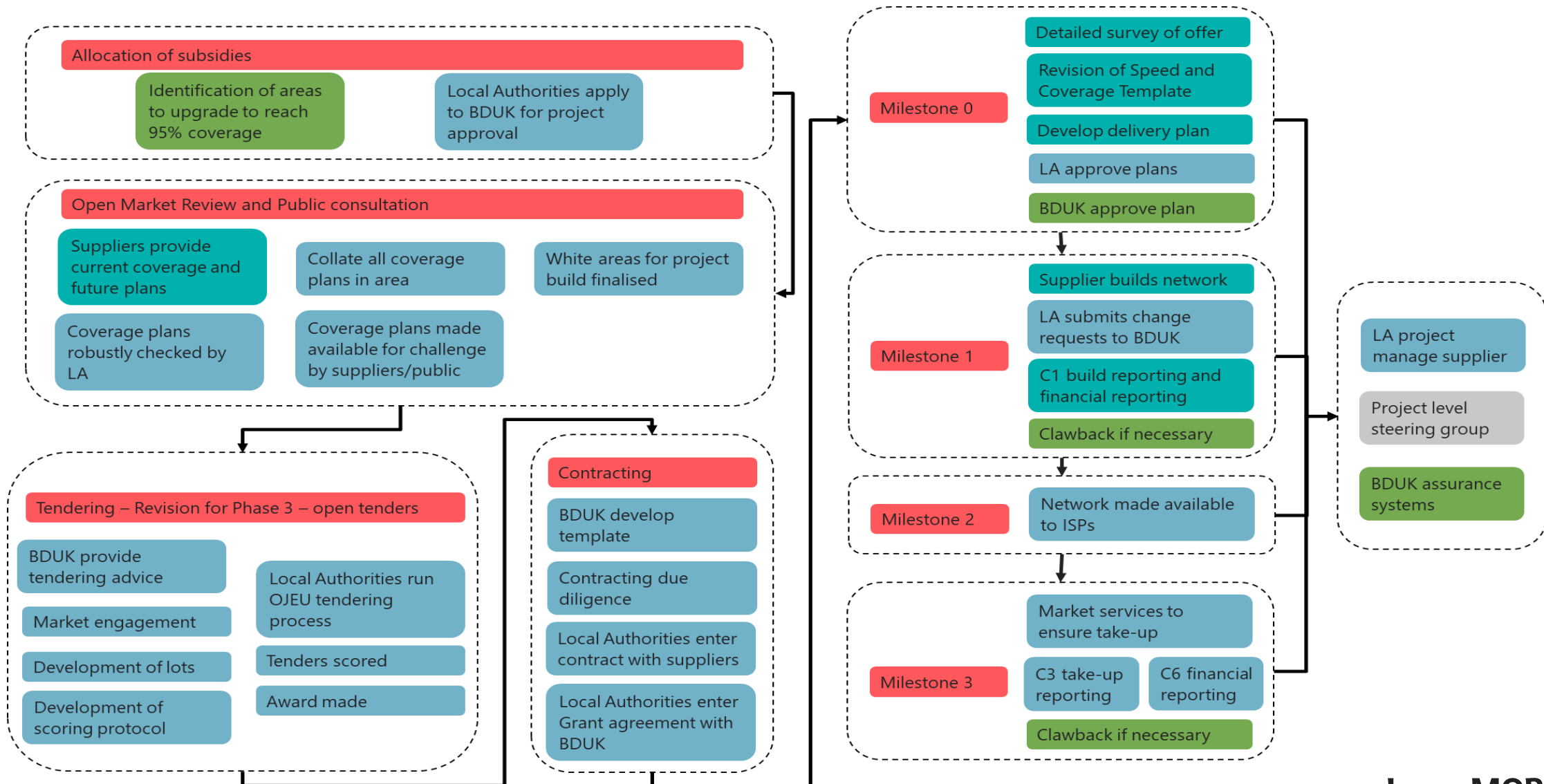
- **Accessing content:** Individuals with enhanced connectivity were more likely to consider the internet essential to accessing content than those with poorer connectivity



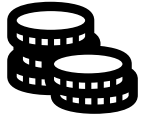
- **Managing everyday life:** Many individuals with enhanced connectivity described making use of online banking, online accounts for utilities, as well as online shopping, and most agreed with the statement “I manage as much I can of my day-to-day life online”.

PROGRAMME EFFICIENCY AND EFFECTIVENESS

Efficiency and effectiveness – process map



Efficiency and effectiveness – allocation of funding



Local Bodies did not report difficulties in obtaining resources in earlier phases.



There was an increased dependence on match funding in Phase 3 relative to Phase 1 and 2 contracts. The increased dependence on match funding may have led to some schemes being scaled back owing to resource constraints.



Match funding sources had implications for the direction of projects, for example projects being targeted more at businesses due to eligibility criteria.



In addition to those sources noted above, gainshare and clawback funding were utilised to top-up funding for Phase 3 contracts or to extend Phase 2 contracts. This process was seen to be an efficient mechanism to deliver publicly funded projects.

Efficiency and effectiveness – OMR and Public Consultation

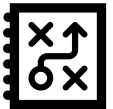


The OMR and Public Consultation process is an important element of the design of the Programme which has helped direct resources to areas that were unlikely to receive improved broadband infrastructure without public subsidies.



There was a high level of engagement with the Open Market Review (OMR) process.

Local Bodies were able to secure responses from most relevant network providers.



There were some issues with the quality and accuracy of data provided and challenges in assessing the realism of plans put forward.



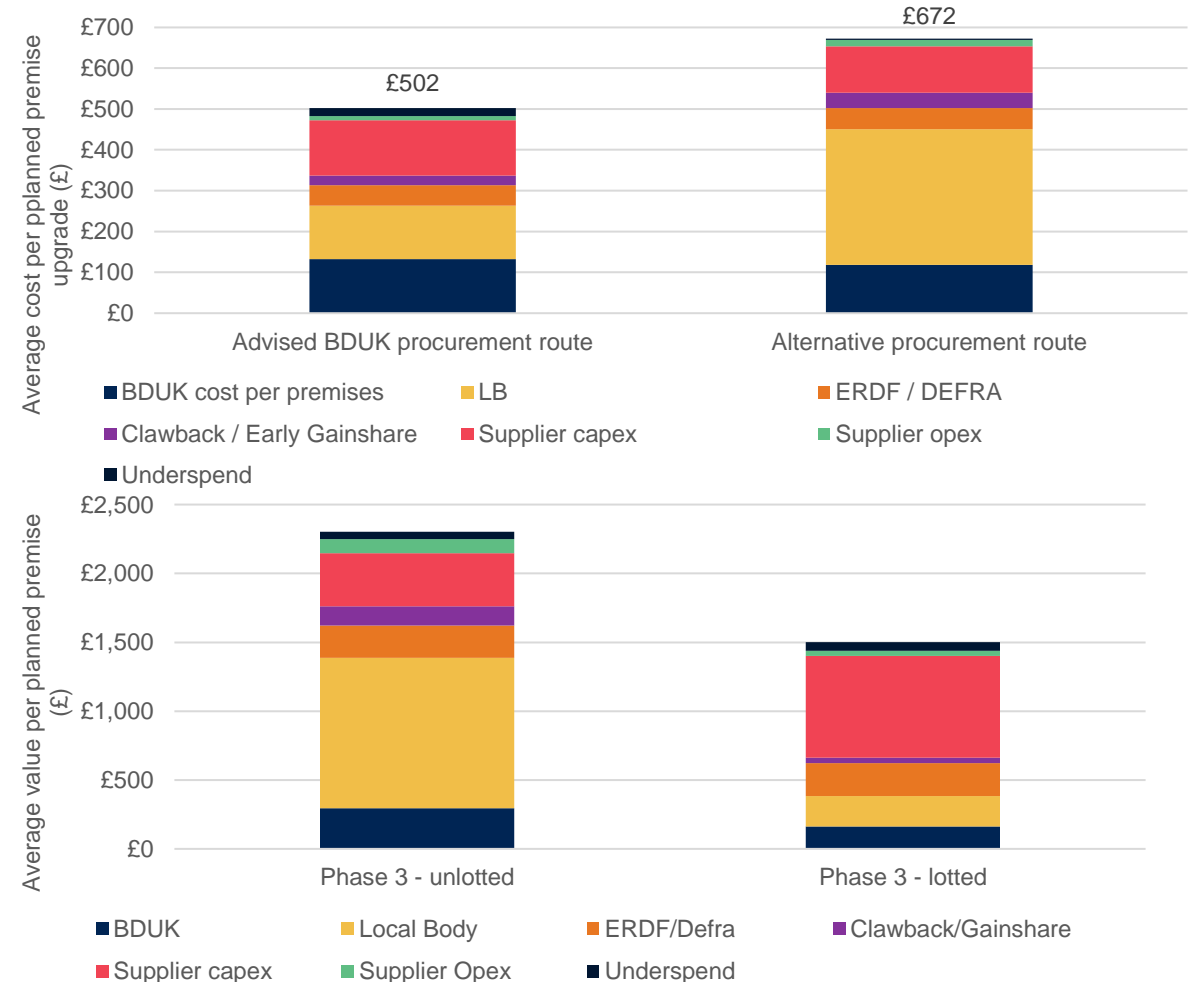
The investment cycles of many network providers were determined over relatively short time horizons (12 to 24 months) which did not match the three-year period covered by the OMR.



The snapshot provided by the OMR also became out of date as network provider's plans evolved in response to changes in demand and regulatory innovation.

Efficiency and effectiveness – procurement and contracting

- There was no evidence that utilising an alternative tendering and / or contracting approach to that recommended by BDUK had beneficial outcomes for Local Bodies (in terms of the cost per premises upgraded or project delivery).
- However, dividing contracts into smaller lots in Phase 3 did appear to reduce the contracted cost per premises upgraded and increase competition at the margins.



Efficiency and effectiveness – project delivery



Most Local Bodies used similar project management approaches, with day-to-day project managers overseen by steering groups / committees and where required support was provided by BDUK.



A small number of projects described working with the network providers as being a partnership rather than a client-contractor relationship. These bodies felt they got more out of the provider on the delivery of the project with barriers addressed through close partnership working.



Local Bodies also suggested there were some issues with a lack of capacity amongst network providers throughout the Programme. Civil engineering capacity was seen to be limited with the contracts stretching sub-contractors delivering the infrastructure on the ground.

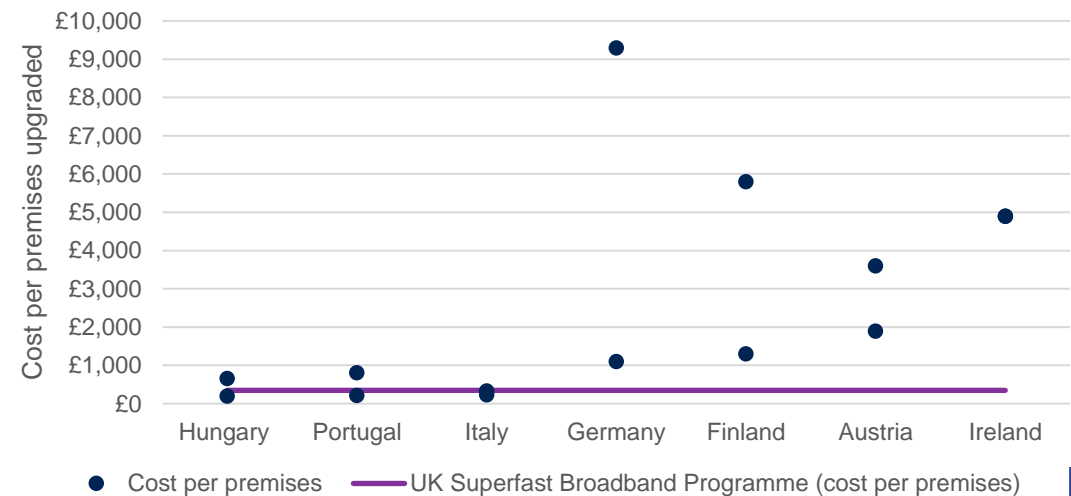
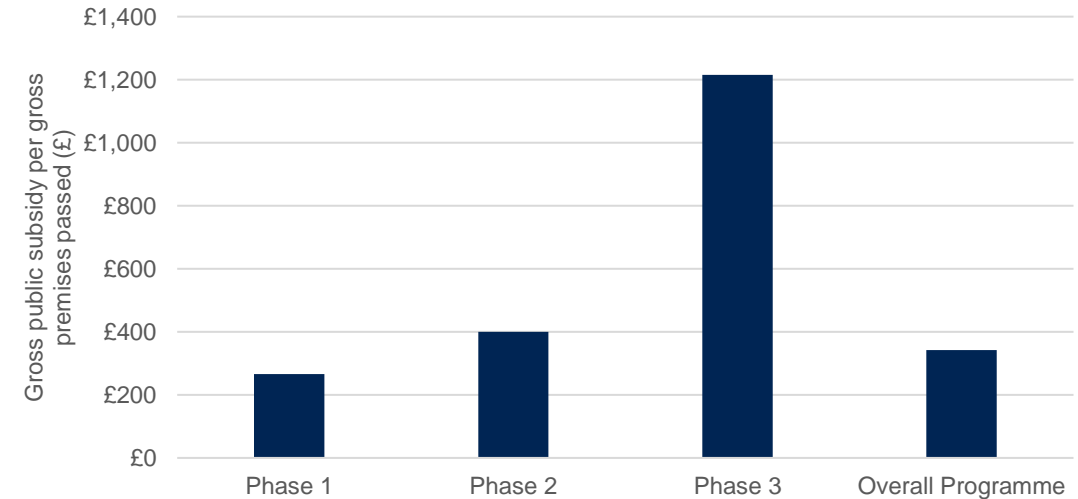


Local Bodies were happy with the degree of support provided and that provided through their designated contact.

COST EFFECTIVENESS

Cost effectiveness – cost per premises

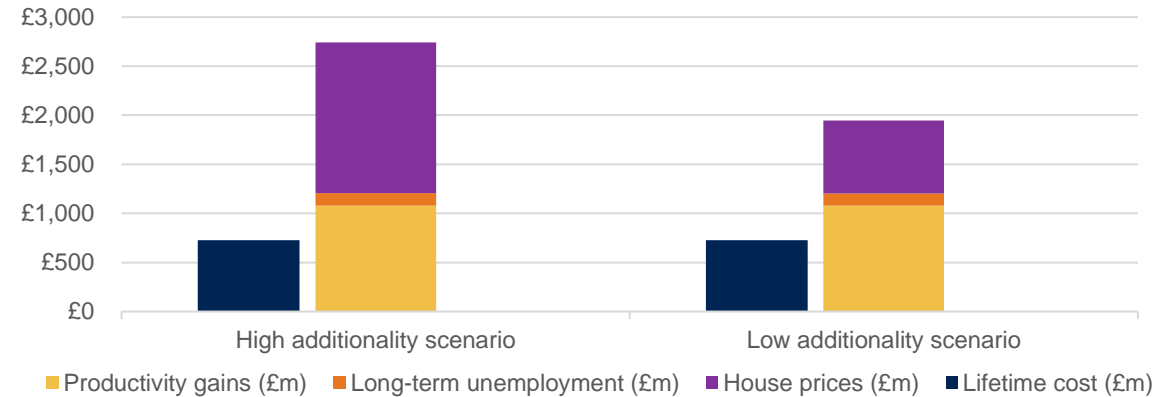
- The expected gross public sector cost per premises passed was £342 (before clawback).
- Phase 1 had the lowest cost per premises passed of £266. Phase 3 had the highest public sector cost per premises at over £1,216, driven by the higher share of FTTP build and geographical factors increasing deployment costs.
- The cost per premises passed appears to show the Programme to be one of the most efficient broadband deployment programmes in the EU.
- It was not possible to assess whether this is due to the approach taken by the Programme or the physical factors which affect unit costs.



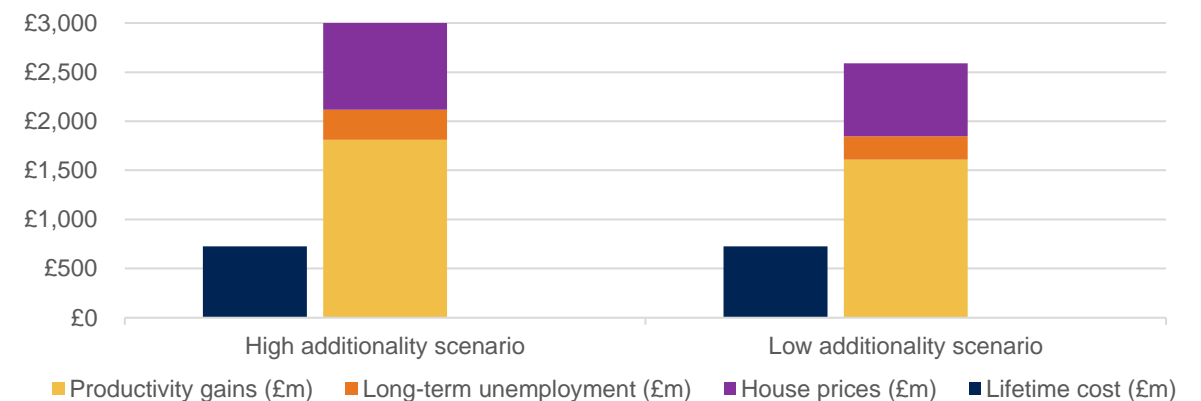
Cost effectiveness – Cost Benefit Analysis

- The short-term Benefit to Cost Ratio (based on benefits from 2012 to 2019) is estimated at between £2.7 and £3.8 per £1 of net lifetime public sector costs (after clawback).
- This suggests that the Programme has already delivered a strong rate of return.
- In the long run (allowing for future economic benefits from 2012 to 2030), the Benefit to Cost Ratio is estimated to rise to £3.6 to £5.1 per £1 of net public sector spending (after clawback).

Costs and Benefits of Programme from 2012 to 2019



Costs and Benefits of Programme from 2012 to 2030



KEY LEARNING

Key learning – programme design



Subsidising network deployment has proven an effective means of accelerating broadband coverage which has significant economic and social benefits. Alternative delivery models are unlikely to have produced outcomes on a similar scale or offered equivalent value for money.



The Open Market Review process is an important element of the Programme – however, the static snapshot it provides can become outdated. Smaller projects of shorter duration should also minimise the risk that the Open Market Review gets ‘overtaken’ by external events.



The clawback mechanisms are likely to prove effective in protecting the public purse. Increased levels of competition in Phase 3 have limited the extent to which network providers can transfer cost to the public sector, therefore clawback mechanism may have less of an effect on public finances.



The delivery of Phase 3 contracts have been delayed, by issues such as insufficient capacity amongst network providers to deliver at the scales required by the contracts awarded, contractual challenges and challenges in the building of the networks. This is clearly a risk for any future Programme and will need to be considered carefully.

Key learning – implementation



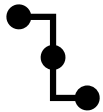
Reviewing the conditions attached to the of the sources of match-funding, to ensure that the projects target appropriate areas to achieve BDUK objectives, rather than areas required for the match-funding.



Business cases for new funding should include the most recent evidence and include all benefits and disbenefits of the intervention.



Building strong relationships with network providers to ensure appropriate responses to OMR and public consultation processes and encourage more network providers to tender for local contracts.



Implementing systems to ensure change requests are managed in an expedient manner.

