
The UK's National Broadband Scheme— an independent ex post evaluation of the UK's broadband state aid measure

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the European Commission

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Executive summary

Broadband Delivery UK (BDUK), part of the Department for Culture, Media and Sport (DCMS), commissioned Oxera to undertake an independent, ex post evaluation of the UK's National Broadband Scheme, a £780m, government-funded initiative to support commercial broadband investment in the UK. In November 2012, the Scheme received 'umbrella' state aid clearance from the European Commission based on the application of a balancing test to determine whether the positive impact of the Scheme outweighed the potential negative effects. Thus, local projects funded under the Scheme (having met BDUK guidelines and requirements) have not needed to apply individually to the Commission for state aid clearance.

The ex post evaluation is a requirement of the decision to grant the Scheme state aid clearance and is intended to assess whether:

- local broadband projects approved under the BDUK umbrella have received approval in compliance with the compatibility conditions that led to the Scheme's approval;
- the Scheme has been effective in achieving its predefined objectives;
- the Scheme has not created undue distortions of competition or trade.

Based on our evaluation of the National Broadband Scheme as implemented to date, and the representations made by various stakeholders, Oxera draws the following conclusions with regard to these evaluation questions.

Compliance

- BDUK has been effective in its role as an agency for the Commission under the umbrella state aid clearance. In its role as the National Competence Centre (NCC), BDUK has established robust processes to ensure that, prior to approval, projects are compliant with the requirements of the Decision and the Broadband Guidelines.
 - For the most part, the processes put in place by the NCC have led to compliance with the Decision and the Broadband Guidelines in terms of the tender process, the subject of the aid, aid intensity, technological neutrality, the claw-back mechanism, monitoring, wholesale access, transparency and the step change requirements.
 - Moreover, despite a lack of upfront clarity about the allowed geographical coverage of the Scheme, BDUK has put in place an appropriate two-part test to minimise the risk that the Scheme has been extended further than intended by the Decision.
 - The use of a standard call-off contract has been helpful in securing compliance from local bodies. Even where there is no central procurement framework, national competence centres should consider whether they can publish templates and standardised documents to aid local bodies.
 - The ex post evaluation has, however, identified a small number of potential compliance issues, which relate to the mapping process and the requirements of the Broadband Guidelines with regard to the use of existing infrastructure. These are as follows.
-

- BDUK's guidance allows for mapping of white/grey areas using a threshold of 24Mbps (and as low as 15Mbps) rather than the 30Mbps used in the Decision.
- BDUK has not published a national database of existing infrastructure that could be reused for the deployment of next generation access (NGA) infrastructure.
- There is some evidence of local bodies including white areas in Phase Two roll-out plans that BT had previously indicated were seen as potentially viable for commercial investment and had been classified as grey. (We note, however, that there is also evidence of areas initially classified as white subsequently being covered by BT Openreach's commercial roll-out based on updated modelling.)
- We understand that BDUK is engaging with the Commission on these issues outside of this evaluation process.¹

Effectiveness

- BDUK has overseen the establishment of a large number of local broadband schemes, leading to significantly greater investment in broadband and extension of coverage in rural areas in the UK than would otherwise have occurred. The realised cost, coverage and average aid intensity appear to be broadly aligned with the expectations at the time of the Decision.
- Both the National Audit Office and Public Accounts Committee have argued for greater cost transparency in future.
- While Oxera considers that local bodies have had sufficient transparency to implement the scheme effectively, the degree of transparency has been improved by the provision of bid comparison reports to local authorities. The local bodies responding to Oxera's survey indicated that they have supplemented this information with third party expertise to assess value for money.
- Oxera observes that there were limitations in the data that BDUK had available at the contracting phase in terms of being able to assess whether the build of BT's bid prices was reasonable. While access to the bid model may have helped BDUK to understand the basis on which BT's bids were created, it is not obvious that this would have provided a robust basis for estimating actual likely future costs of the Scheme and the value for money represented by bids. The value-for-money safeguards reduce the scope for limited transparency over the build-up of the bid price to result in higher outturn costs.
- BDUK's value-for-money safeguards are sufficiently robust to ensure that the supplier is paid only for costs incurred under clearly defined criteria.
- The current contract design provides the supplier with strong incentives not to overspend, but limited incentive to make further capital savings (as it is paid only for its actual level of expenditure where this is below the forecast level). This approach reflected the information asymmetry at the time of the initial Scheme notification. However, BDUK has now developed its understanding of BT's cost base. Consequently, BDUK could consider whether it would be

¹ Oxera understands that, following the draft evaluation report, the Commission has raised a number of project-specific queries directly with BDUK.

possible to design future contracts in a way that would provide the supplier with enhanced incentives to secure capital efficiencies (i.e. some form of efficiency-sharing). Any such efficiency-sharing mechanism would need to balance the benefits of stronger efficiency incentives with the risk that suppliers inflate their bids in order to benefit from 'false' cost reductions relative to the bid.

- Overall, Oxera considers that, on the basis of the information that was available to BDUK at the time of the National Broadband Scheme's notification, the Scheme was designed in an appropriate manner that was targeted at overcoming the identified market failure. There do not appear to be obvious ways in which the Scheme could have been designed differently at that time in order to deliver a lower subsidy requirement for an equivalent level of network coverage, or greater coverage for an equivalent level of subsidy.

Competition and trade

- BT has become the sole supplier on the framework contract that has been used to procure the majority of projects under the Scheme. This may not, in itself, be an issue in the short term provided that BT is providing value for money and all other suppliers would offer a higher cost. It is not apparent that greater coverage could have been achieved for the same amount of funding via another mechanism or supplier.
- However, the lack of competition for local tenders raises the question as to whether BT has now locked in an incumbency advantage that is of future detriment to competition. This issue relates not only to BT's actual costs, but also to rivals' beliefs about whether it is worthwhile to bid against BT.
- BDUK has put in place contractual safeguards and financial controls intended to ensure that the balancing test is met, even with BT acting as the sole supplier.
- Where an incumbent supplier is in a position to win the majority of funding, client bodies should explicitly consider how to encourage entry by competitors, or, where this is not feasible, look to ensure that there are contractual or regulatory safeguards in place, such as those used by BDUK, to prevent the incumbent from benefiting from inflating its bid price or actual deployment costs. We note that the Commission has previously argued that:

To establish a market price, the tender must give rise to a sufficient level of competition to be qualified as a competitive tender process. In the case of procedures where it is apparent that only one operator is realistically able to submit a credible bid, the tender cannot be deemed competitive and thus cannot be considered to adequately establish the market price for the transaction.²

- Once the potential for aid is known, there may be a dampening of incentives to make plans for commercial investments. The mapping process implemented by BDUK to identify intervention areas helps to mitigate the potential for crowding out of investment.

² European Commission (2014), 'Draft Commission Notice on the notion of State aid pursuant to Article 107(1) TFEU', p. 27, para. 99.

- Member states should put in place robust processes to ensure that providers do not hold back on their commercial investments in order to receive state funding for more projects.
- As regards wholesale access to BT's aid-funded network assets, BT introduced a new passive access product (PIA Plus) to comply with the requirements of the Decision. However, there has been no formal request for PIA Plus at this time. The immediate-term market structure appears to be based on (active inputs) service-based competition.
- There is some evidence that imposing further passive access conditions would have been unlikely to change the market outcome, while it could have reduced the coverage of the BDUK programme. The evidence points at demand for passive access in state aid areas—which are characterised by low population density—being low, suggesting that competition benefits from passive access were likely to be limited.
- Operators' take-up of PIA and PIA Plus has been limited so far. This has been acknowledged by both Ofcom and operators, some of which have attributed the low take-up to the usage restrictions imposed on the PIA remedy (as business connectivity services cannot be delivered).³ One of the respondents to Oxera's survey of providers argued that the restrictions on PIA Plus make it unusable, while another stated that it plans to request PIA Plus in order to supply NGA-based superfast services in a BDUK-funded area in the future.

³ Ofcom (2012), 'Business Connectivity Market Review', Statement, Section 8, p. 656.

1 Introduction

- 1.1 Broadband Delivery UK (BDUK), part of the Department for Culture, Media and Sport (DCMS) commissioned Oxera to undertake an independent, ex post evaluation of the UK's National Broadband Scheme (the Scheme).
- 1.2 The project has focused on gathering information, quantitative evidence and result indicators with which to evaluate the Scheme's implementation, in terms of its compliance with state aid rules and the extent to which it has fulfilled its objectives. Importantly, this report follows an ex post approach, in that it evaluates the Scheme as implemented to date. It is not intended to provide an ex ante evaluation of the re-notification of the Scheme for the future.⁴
- 1.3 In line with the requirements of the European Commission's 2012 state aid decision⁵ on the UK's National Broadband Scheme (the Decision) and its guidelines,⁶ Oxera has conducted the evaluation in an independent and open manner. Oxera is an independent economics consultancy that advises clients across Europe on competition and state aid matters in the telecommunications sector, among other areas. We have no vested interest in the findings of the evaluation or in the outcome of the re-notification of the Scheme.
- 1.4 Stakeholders have been invited to make representations regarding the Scheme's operation and performance directly to Oxera.⁷ Oxera has also conducted interviews with industry participants, industry groups, and public bodies that use the Scheme or otherwise support its implementation (e.g. Ofcom). To ensure a representative sample of views on the Scheme, we have also undertaken a survey of local bodies and potential suppliers. The views of all stakeholders have been considered as part of the evaluation.⁸

⁴ This ex post evaluation of state aid is entirely distinct from the programmatic monitoring and evaluation package that the DCMS is undertaking, and does not aim to address specific state aid matters.

⁵ European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', OJEU, C25/1, 26 January, para. 38, p. 11, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:025:0001:0026:en:pdf>.

⁶ European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', OJEU, C25/1, 26 January, para. 53, p. 12, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:025:0001:0026:en:pdf>, and European Commission (2014), 'Common methodology for State aid evaluation', SWD(2014) 179 final, Brussels 28.5.2014, section 3.7, pp. 12–13, available at: http://ec.europa.eu/competition/state_aid/modernisation/state_aid_evaluation_methodology_en.pdf.

⁷ Stakeholders were invited to make representations to christopher.davis@oxera.com via a press release on BDUK's website. Broadband Delivery UK (2014), 'Independent evaluation of the UK's broadband State aid measure', 28 November, available at: <https://www.gov.uk/independent-evaluation-of-the-uks-broadband-state-aid-measure>. Additionally, the Commission was given the contact details for Oxera in order to enable any representations made directly to European officials to be passed on to Oxera.

⁸ The evaluation team would like to thank these stakeholders for their input and for openly explaining their submissions when requested.

1A Context

1Ai UK National Broadband Scheme

- 1.5 Overseen by BDUK, the National Broadband Scheme is a £780m initiative to support commercial broadband investment with the dual purpose of:
- extending the roll-out of next generation access (NGA) infrastructure⁹ capable of delivering superfast broadband speeds to as many homes and businesses as possible in the 'final third' of the UK;¹⁰
 - ensuring that there is universal access to minimum broadband speeds of at least 2 Mbps in the UK.
- 1.6 In 2012, the UK notified the Commission of the National Broadband Scheme. In November 2012, the Commission confirmed that the notified aid measure constituted state aid within the meaning of Article 107(1) TFEU. The Commission applied a balancing test to determine whether the positive impact of the Scheme outweighed the potential negative effects. It determined that this was the case, and thus the National Broadband Scheme was approved.
- 1.7 Importantly, the Decision granted the National Broadband Scheme 'umbrella' clearance—i.e. local projects funded under the Scheme (having met BDUK guidelines and requirements) would not need to apply individually to the Commission for state aid clearance.
- 1.8 As part of the Decision, the UK committed to undertake an ex post evaluation of the Scheme before 31 March 2015. The Commission reported that re-notification of the Scheme would be subject to the results of this evaluation.¹¹ Moreover, the evaluation might be used to inform the design of similar future schemes and future state aid guidance.
- 1.9 The Decision expires on 30 June 2015, and Oxera understands that BDUK intends to seek an extension to the current National Broadband Scheme.

1Aii Legislative context

- 1.10 In recent years, the Commission has been focusing on modernising its state aid rules as part of its State Aid Modernisation (SAM) initiative.

⁹ NGA networks are access networks that rely wholly or partly on optical elements. Coaxial, wireless and mobile technologies make use, to a certain extent, of a fibre support infrastructure, thereby making them conceptually similar to a wired network using copper to deliver the service for the part of the last mile not covered by fibre. These networks are capable of delivering enhanced broadband access services compared with existing basic broadband networks. The final connection to the end-user may be ensured both by wired and wireless technologies. Given the rapid evolution of advanced wireless technologies such as LTE-Advanced and the intensifying market deployment of LTE and WiFi, next generation fixed wireless access (e.g. based on possibly tailored mobile broadband technology) could qualify as NGA networks. This form of NGA must also ensure the quality of service level required by the customer at a fixed location while serving any other nomadic subscribers in the area of interest. See European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', OJ C25, 26 January, p. 13, paras 57 and 58.

¹⁰ The UK's definition of superfast broadband is set out in para. 7 of the Decision: 'Superfast broadband is defined as speeds greater than those available on current generation network infrastructure (i.e. in excess of the top of the current generation network infrastructure being ADSL2+, which can provide a maximum of 24Mbps), and which is delivered over next generation networks capable of providing at least 30 Mbps download speeds.'

¹¹ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 29, para. 88.

- 1.11 In 2012, the Commission set out an ambitious programme of reforms to the rules that are used to assess state aid.¹² The SAM initiative comprises three pillars:
- Promoting the use of ‘good aid’ that encourages aid more targeted at identified market failures, encourages real incentive effects and fosters growth in a way that minimises the cost to taxpayers;
 - Simplifying the system of guidelines and notices;
 - Adopting a more structured policy approach that allows the Commission to focus on cases that are either novel, or large.
- 1.12 These reforms aim to streamline the nature of state aid rules, focusing Commission resources on assessing the largest cases, as well as those that propose alternative design features.
- 1.13 One aspect of these reforms is the use of ex post evaluations to complement the (primarily) ex ante approaches traditionally used to assess and approve state aid. The use of ex post evaluations is intended to allow the Commission to assess the economic effects of different design features, providing it with evidence that in turn can help to inform the development and use of state aid control.
- 1.14 The use of an ex post evaluation of approved state aid for broadband infrastructure is provided for in the Commission’s Broadband Guidelines.¹³ The Commission has also published guidance on a common methodology for state aid evaluation.¹⁴ The Broadband Guidelines set out three main areas of assessment for ex post evaluations:
- The Commission may require that certain Schemes are subject to...an evaluation in order to verify (i) whether the assumptions and conditions which led to the compatibility decision have been realised; (ii) the effectiveness of the aid measure in light of its predefined objectives; (iii) its impacts on markets and competition and that no undue distortive effects arise under the duration of the aid Scheme that is contrary to the interests of the union.¹⁵

1B The evaluation questions

- 1.15 In line with the Broadband Guidelines, the ex post evaluation needs to address whether:
- local broadband projects approved under the BDUK ‘umbrella’ have received approval in compliance with the compatibility conditions that led to the Scheme’s approval;
 - the Scheme has been effective in achieving its predefined objectives;
 - the Scheme has not created undue distortions of competition or trade.

¹² European Commission (2012), ‘Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, EU State Aid Modernisation (SAM)’, 8 May.

¹³ European Commission (2013), ‘EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks’, 2013/C 25/01, 26 January.

¹⁴ European Commission (2014), ‘Common methodology for State aid evaluation’, Commission Staff Working Document, 28 May.

¹⁵ European Commission (2013), ‘EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks’, 2013/C 25/01, 26 January, para. 53.

- 1.16 These questions are the focus of the analysis conducted in this report.
- 1.17 The effectiveness of the Scheme has been considered in terms of coverage, speed, take-up and cost-efficiency. In conducting this analysis, Oxera has considered the potential for quantitative and econometric techniques to inform the evaluation. While such techniques are possible in principle, we consider that the application of such techniques to the Scheme is limited by the lack of a potential control group to proxy for the counterfactual. Therefore, for this report Oxera has not undertaken econometric analysis.¹⁶

1C Data collection and sources of evidence

- 1.18 At the outset of the project, Oxera provided BDUK with a formal information request to gather sufficient information to cover all the evaluation questions. This was supplemented by a second information request, covering a range of qualitative and quantitative information. Further information was collected from BT and Ofcom. The evaluation team has also taken account of previous assessments and reviews undertaken by independent bodies (such as the UK National Audit Office, NAO). As noted above, a number of interested parties have made submissions directly to Oxera (in response to the details placed on BDUK's website).
- 1.19 Moreover, Oxera has interviewed a range of stakeholders and used a tailored survey to understand whether there were any state aid/competition concerns. Table 1.1 lists the parties invited to respond to our survey. The sample set for this survey was suggested by BDUK based on discussions with the Commission. It was intended to represent a cross-section of stakeholders including local bodies, alternative suppliers, and parties that have made formal complaints regarding the National Broadband Scheme. The survey response rate was around 40%. The responses to this survey have been used to inform the findings throughout this report and Oxera has provided the survey responses to the Commission.

Table 1.1 Parties invited to respond to the Oxera survey

Local bodies	Communications providers
Cambridgeshire	B4RN
Kent	BeyondDSL
Northamptonshire	Briskona
Northmoor	CityFibre
Wales	Fujitsu
	Gigaclear
	KCom
	Lonsdale Net Service
	Solway Communications
	UK Broadband
	Virgin Media

Source: Oxera.

- 1.20 We have conducted this evaluation using the following sources of evidence:
- procurement documentation;

¹⁶ This is discussed further in section 4Av.

- BT commercial accounting information and other public announcements, as well as information provided by BT to local authorities and BDUK for the purposes of monitoring;
- BDUK guidance documentation;
- information on the open market review (OMR) and public consultation processes for each project;
- market analysis undertaken by BDUK;
- independent assurance reviews conducted by external consultants;
- monitoring information compiled by the National Competence Centre (NCC);
- information on connectivity and take-up of broadband in the white areas targeted by aid;
- BDUK state aid approval and decision documents;
- independent assessments of the National Broadband Scheme, including:
 - the UK NAO's reviews of rural broadband roll-out;
 - the UK Public Accounts Committee's (PAC) publications on the rural broadband programme;
 - submissions made to the Environment, Food and Rural Affairs (EFRA) Committee inquiry into rural broadband and digital-only services;
 - interviews with representatives from industry participants including BDUK, Ofcom, BT, alternative providers, and local bodies;
 - direct representations made by stakeholders to the Oxera team and written survey responses;
 - data collected by Ofcom on broadband availability and penetration (including detailed data on individual areas);
 - analysis and responses in various Ofcom consultations, as relevant—such as the current business connectivity market review, where the costs and benefits of passive access are one of the main issues, together with Ofcom decisions and associated appeals.¹⁷

1.21 The documents reviewed by the evaluation team are listed in Appendix 1.

1D Structure of the report

1.22 The report is structured as follows:

- section 2 gives an overview of the projects granted aid under the National Broadband Scheme to date;

¹⁷ Ofcom consultations include the wholesale local access market review, where the regulated passive infrastructure access (PIA) product is first introduced as a passive remedy (<http://stakeholders.ofcom.org.uk/consultations/wla/statement/>), and the wholesale local access review (<http://stakeholders.ofcom.org.uk/telecoms/ga-Scheme/specific-conditions-entitlement/market-power/fixe-access-market-reviews-2014/statement/>). Additionally, the CAT–COLT appeal judgment (<http://www.catribunal.org.uk/238-8028/1212-3-3-13-Colt-Technology-Services.html>) was taken into consideration.

- section 3 considers the compatibility of the Scheme with the conditions set out in the European Commission's Decision and the Broadband Guidelines, and assesses the adequacy of the wholesale access conditions;
 - section 4 reviews the overall effectiveness of the Scheme in delivering the UK government's objectives;
 - section 5 assesses the impact of the UK's broadband state aid measure on competition;
 - section 6 provides the conclusions of the evaluation in terms of areas of concern and recommendations.
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2 Overview of the Scheme

2.1 The National Broadband Scheme currently consists of:

- 44 Phase One projects aimed at providing superfast broadband coverage to 90% of the UK by 2016. BDUK has provided funding of £530m for these projects;
- six Phase Two projects that have completed procurement and have begun delivery. A further 37 Phase Two projects are in the procurement or pre-procurement stage. These projects, which will receive £230m of BDUK funding, are aimed at providing superfast broadband to 95% of the UK by 2017;
- four Rural Community Broadband Fund projects;
- three non-BDUK projects funded by local bodies.

2.2 As at Q2 2014/15, the Scheme had led to additional access to BT's fibre network for around 1.6m premises. By the end of 2017, this is expected to rise to approximately 5m premises, which is slightly above the coverage envisaged at the time of the Decision. BDUK grants to local authorities amounted to a cumulative £99.7m up to the end of September 2014. The total amount of approved aid was £530m to the end of 2015.

2.3 Table 2.1 gives an overview of the projects procured to date, which form the focus of this evaluation.

Table 2.1 Overview of interventions procured to date

Project	BDUK funding	Aid intensity (incl. local body funding)	Scope of intervention	Premises passed (as at Q2 2014/15)	Milestone dates	Contracted completion date
Phase One—local bodies						
Berkshire Councils	£2,579,767	72%	NGA: 48,142 Basic: 10,912	3,587	M1: Q1 15/16 M2: Q2 15/16	September 2015
Buckinghamshire and Hertfordshire	£4,731,586	75%	NGA: 118,113 Basic: 17,555	14,193	M1: Q1 16/17 M2: Q4 15/16	March 2016
Cambridgeshire, Peterborough	£6,750,000	77%	NGA: 99,000 Basic: 19,000	39,116	M1: Q2 15/16 M2: Q3 15/16	December 2015
Central Beds, Bedford Borough, Milton Keynes	£2,600,000	70%	NGA: 59,363 Basic: 9,152	4,960	M1: Q3 15/16 M2: Q3 15/16	September 2016
Cheshire East, Cheshire West & Chester, Warrington, Halton	£4,000,000	77%	NGA: 94,000 Basic: 9,000	38,026	M1: Q4 14/15 M2: Q4 14/15	March 2015
Coventry, Solihull, Warwickshire	£4,445,000	78%	NGA: 67,000 Basic: 3,500	10,700	M1: Q4 15/16 M2: Q4 15/16	March 2016
Cumbria	£17,130,000	63%	NGA: 110,000 Basic: 22,000	46,328	M1: Q2 15/16 M2: Q2 15/16	March 2015
Derbyshire	£7,390,000	71%	NGA: 104,509 Basic: 6,782	12,721	M1: Q1 16/17 M2: Q2 16/17	September 2016
Devon & Somerset	£31,970,000	73%	NGA: 360,000 Basic: 16,000	71,919	M1: Q1 14/15 M2: Q2 14/15	March 2016
Dorset, Bournemouth and Poole	£9,440,000	77%	NGA: 87,400 Basic: 4,900	18,872	M1: Q2 16/17 M2: Q2 16/17	September 2016
Durham, Gateshead, Tees Valley and Sunderland	£10,103,267	76%	NGA: 134,000 Basic: 18,000	22,912	M1: Q1 16/17 M2: Q2 16/17	October 2016
East Riding of Yorkshire	£5,570,000	72%	NGA: 56,932 Basic: 5,190	13,039	M1: Q2 15/16 M2: Q2 15/16	December 2015
East Sussex, Brighton and Hove	£10,640,000	83%	NGA: 73,224 Basic: 12,474	18,718	M1: Q4 15/16 M2: Q1 16/17	June 2016
Essex, Southend-On-Sea, Thurrock	£6,460,000	71%	NGA: 169,186 Basic: 24,821	9,316	M1: Q1 15/16 M2: Q2 15/16	September 2016
Greater Manchester	£2,990,000	64%	NGA:47,688	4,705	M1: Q2 14/15	March 2015

Project	BDUK funding	Aid intensity (incl. local body funding)	Scope of intervention	Premises passed (as at Q2 2014/15)	Milestone dates	Contracted completion date
Hampshire	£5,020,000	72%	NGA: 115,000 Basic: 13,000	20,017	M1: Q3 15/16 M2: Q4 15/16	December 2015
Herefordshire and Gloucestershire	£18,170,000	79%	NGA: 108,000 Basic: 13,000	34,818	M1: Q3 16/17 M2: Q3 16/17	December 2016
Isle of Wight	£3,090,000	78%	NGA: 20,179 Basic: 1,133	1,605	M1: Q1 15/16 M2: Q1 15/16	June 2015
Kent and Medway	£11,463,509	70%	NGA: 170,000 Basic: 28,000	53,621	M1: Q2 15/16 M2: Q3 15/16	March 2016
Lancashire, Blackpool, Blackburn with Darwen	£10,830,000	64%	NGA: 212,000 Basic: 23,000	76,090	M1: Q4 14/15 M2: Q4 14/15	November 2015
Leicestershire	£3,418,895	68%	NGA: 73,930 Basic: 5,507	9,242	M1: Q3/Q4 15/16 M2: Q3/Q4 15/16	March 2016
Lincolnshire	£14,310,000	75%	NGA: 157,000 Basic: 22,000	51,407	M1: Q3 15/16 M2: Q4 15/16	March 2016
Merseyside	£5,460,000	62%	NGA: 47,297	24,859	M1: Q1 16/17 M2: Q2 16/17	September 2016
Newcastle upon Tyne	£970,000	66%	NGA: 8,304 Basic: 2,535	1,978	M1: Q2 15/16 M2: Q2 15/16	August 2015
Norfolk	£15,440,000	77%	NGA: 244,000 Basic 44,000	93,626	M1: Q2 15/16 M2: Q3 15/16	November 2015
North Lincolnshire, North East Lincolnshire	£3,140,000	74%	NGA: 39,078 Basic: 2,660	15,931	M1: Q4 14/15 M2: Q4 14/15	December 2015
North Yorkshire	£20,840,000			141,133	N/A	October 2014
Northamptonshire	£4,080,000	72%	NGA: 81,000 Basic: 13,000	28,608	M1: Q2 15/16 M2: Q3 15/16	December 2015
Northumberland	£7,030,000	85%	NGA: 56,000 Basic: 10,000	28,608	M1: Q3 15/16 M2: Q4 15/16	December 2015
Nottinghamshire	£4,500,000	69%	NGA: 70,386 Basic: 7,346	11,312	M1: Q4 15/16 M2: Q4 15/16	June 2016
Oxfordshire	£4,060,000	71%	NGA: 87,203 Basic: 5,301	17,020	M1: Q3 16/17 M2: Q3 16/17	September 2015

Project	BDUK funding	Aid intensity (incl. local body funding)	Scope of intervention	Premises passed (as at Q2 2014/15)	Milestone dates	Contracted completion date
Rutland	£820,000	74%	NGA: 9,908 Basic: 2,178	9,390	M1: Q3 14/15 M2: Q1 14/15	December 2014
Shropshire	£9,294,257	82%	NGA: 71,000 Basic: 4,000	21,609	M1: Q3 15/16 M2: Q4 15/16	March 2016
Staffordshire and Stoke-on-Trent	£7,440,000	74%	NGA: 91,000 Basic: 11,000	20,138	M1: Q4 15/16 M2: Q1 16/17	June 2016
Suffolk	£11,680,000	77%	NGA: 135,000 Basic: 21,000	55,774	M1: Q4 13/14 M2: Q1 14/15	December 2015
Surrey	£1,310,000	80%	NGA: 93,000	75,693	Project Completion: Q3 14/15	December 2014
West Sussex	£6,260,000	79%	NGA: 61,000 Basic: 3,000	18,875	M1: Q3 15/16 M2: Q4 15/16	November 2016
West Yorkshire	£4,615,000	60%	NGA: 81,838 Basic: 10,367	23,660	M1: Q1 15/16 M2: Q2 15/16	September 2015
Wiltshire, South Gloucestershire	£5,370,000	77%	NGA: 104,000 Basic: 8,000	13,061	M1: Q3 15/16 M2: Q4 15/16	April 2016
Worcestershire	£4,497,032	73%	NGA: 71,749 Basic: 6,154	7,092	M1: Q3 16/17 M2: Q3 16/17	June 2016
Phase One—devolved administrations —devolved administrations						
Highlands and Islands	£50,830,000	95%	NGA: 247,000 Basic 28,000	29,016	M1: Q3 16/17 M2: Q3 16/17	December 2016
Northern Ireland	£4,400,000	83%	NGA: 148,319	8,231	M1: Q3 FY15/16 M2: Q3 FY15/16	December 2015
Rest of Scotland	£50,000,000	74%	NGA: 681,000 Basic: 39,600	95,562	M1: Q3 17/18 M2: Q3 17/18	December 2017
Wales	£56,930,000	80%	NGA: 727,000	276,320	Non-framework contract which did not adopt the milestone system	March 2016
Phase One—community projects						
Fell End	£106,650	50%	NGA: 58			n/a n/a
FibreGarden	£790,000	48%	NGA: 555			n/a n/a

Project	BDUK funding	Aid intensity (incl. local body funding)	Scope of intervention	Premises passed (as at Q2 2014/15)	Milestone dates	Contracted completion date
Kent Community Projects	£640,000	62.5%	NGA: 4,447			n/a n/a
Lincolnshire Community	£300,000	100%	Basic: 4,000			n/a n/a
Northmoor	£426,051	43.6%	NGA: 523			n/a n/a
Tove Valley	£424,000	43%	NGA: 596			n/a n/a
Worcestershire Community	£573,000	100%				n/a n/a
Phase Two						
Black Country	£3,000,000	62%	NGA: 41,996 Basic: 227	n.a.	M1: Q4 FY16/17	June 2017
Hampshire	£7,640,000	80%	NGA: 58,249	n.a.	M1: Q2 18/19 M2: Q1 19/20	Q1 2019/20
Norfolk	£5,590,000	83%	NGA: 67,223	n.a.	M1: Q4 17/18 M2: Q3 18/19	Q3 2018/19
Northamptonshire	£3,640,000	74%	NGA: 33,630	n.a.	M1: Q3 17/18 M2: Q4 18/19	Q4 2018/19
South Yorkshire	£8,000,000	68%	NGA: 103,433 Basic: 9,391	n.a.	M1: Q2 17/18 (This project did not have separate M2 milestones)	Q2 2017/18
Suffolk	£10,000,000	90%	NGA: 54,000	n.a.	M1: Q4 17/18 M2: Q3 18/19	Q3 2018/19

Source: Information provided by BDUK.

3 Compliance

- 3.1 As discussed above, the Decision and the Commission's Broadband Guidelines set out conditions with which the National Broadband Scheme must comply.¹⁸ This section focuses on how the Scheme, as implemented to date, has complied with these conditions. In the section, we look at the conditions that form part of the balancing test assessment and other conditions referenced in the Decision that are a consequence of UK policy decision (e.g. aid intensity limits on community broadband schemes).
- 3.2 Oxera has undertaken a project-by-project assessment of the compatibility of the Scheme with each condition. This has involved reviewing and assessing information provided by BDUK, and publicly available information, on each project—including procurement documentation, the contents of the framework and non-framework contracts, BDUK's assurance process and decision documents, and market analysis undertaken by BDUK. The evaluation considers all projects that were provided with state aid approval by BDUK up to 15 December 2014. Projects approved after that date were deemed out of scope.
- 3.3 The focus of this part of the evaluation is on the compliance of the processes put in place by BDUK and local bodies in implementing the Scheme and choosing where to grant funding, as opposed to the outcomes and competition impacts of the subsequent interventions (which are the focus of sections 4 and 5).

3A Oversight of the Scheme

3Ai The role of BDUK as the National Competence Centre

- 3.4 As the party responsible for establishing, operating and monitoring the National Broadband Scheme, BDUK has acted as the NCC for the UK's broadband state aid measure. In this role, BDUK is required to verify that projects that are granted state aid comply with general Scheme conditions and the specific compatibility conditions set out in Section III.2 of the Decision.¹⁹ Moreover, the NCC is tasked with ensuring that state aid rules are consistently applied to projects operating under the terms of the Scheme, as specified by the Broadband Guidelines.²⁰ The NCC is therefore responsible for ensuring that state aid interventions under the UK's broadband state aid measure are appropriately targeted in order to deliver the Scheme objectives in qualifying 'white areas' and do so in a manner that limits competitive distortions.
- 3.5 The Decision outlined the following responsibilities for the NCC:

- 1) the central coordination of the Broadband Delivery Programme; (2) the development and management of the overall approach to the delivery of broadband projects; (3) primary liaison and coordination with industry stakeholders; (4) acting as a conduit for, and assurance of the use of, central Programme funds; (5) any

¹⁸ The Broadband Guidelines require that, on the basis of Article 108(1) TFEU, the UK is required to take appropriate measures and amend, where necessary, its existing aid schemes in order to bring them into line with the provisions of the Guidelines. See European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 89. This requirement is reflected in the Decision. See European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 6, para. 88.

¹⁹ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 6, para. 19.

²⁰ 'In addition to the role of NRAs, some Member States set up national competence centres to help small, local authorities to design, adequate State aid measures and ensure consistency in the application of the State aid rules specified in these guidelines.' European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 43.

national approaches to sourcing; and (6) providing support, guidance, information sharing and toolkits for local bodies.²¹

The NCC has performed the responsibilities outlined in the Decision and Broadband Guidelines, including liaising with industry stakeholders; publishing guidance, templates and toolkits for local bodies; and verifying the compliance of local projects with the relevant conditions. Furthermore, while BDUK has developed a central procurement framework based on a gap-funding investment model, the NCC has offered support to local bodies for all permissible intervention models with no bias towards any single intervention type.

In addition, there is evidence that BDUK has encouraged suppliers to come forward with innovative ideas to get superfast broadband to Britain's hardest-to-reach communities through the use of Market Testing Pilots. Following an open procurement, DCMS commissioned eight pilot projects in June 2014 to develop a range of technical, commercial and operational solutions with the potential to provide coverage to a significant proportion of the remaining 5% of unserved areas in the UK with superfast broadband.²² The NCC has provided full and appropriate support to those projects.

3Aii Ofcom's role

3.6 In line with the Decision and the Broadband Guidelines, Ofcom (the independent regulator and competition authority for the UK telecommunications sector) has provided technical advice to BDUK in the context of the design of the National Broadband Scheme and the associated procurement framework, and ongoing issues with its implementation.

3.7 The Decision set out the role envisaged for Ofcom as follows:

(1) the review of and comment on BDUK approach to producing its central baseline map; (2) technical advice on wholesale access arrangements benchmarking pricing exercise; (3) advising on published guidance on wholesale access and benchmarking principles for local authorities, (4) advising BDUK on whether a supplier's proposal for wholesale access is consistent with the UK's notification and guidance; (5) advising BDUK on the appropriateness of the wholesale benchmark pricing points and pricing policy proposed by suppliers and advising BDUK when it is required to resolve disputes between the local body and suppliers. Ofcom will provide (6) a dispute resolution between access seeker and the subsidized operator: if the third party operator is dissatisfied with the outcome of that process and/or cannot reach agreement with the network operator then the third party operator could approach Ofcom at that point and will investigate the claims accordingly.

3.8 Ofcom has carried out this role and has captured the projects subsidised by Scheme in its periodic market reviews.

²¹ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 5, para. 15.

²² https://www.gov.uk/.../MTP_state_aid_consultation_document_v1-1.pdf

3B Has the UK met the conditions set out in the Decision and the Broadband Guidelines that are necessary for granting aid under the BDUK Scheme?

3Bi Mapping and analysis of coverage

Compatibility requirements

- 3.9 Under the terms of the Decision, the use of state aid funding is exclusively permitted for delivering basic broadband in 'basic broadband white areas' and NGA projects in 'white NGA areas'.²³ Correct identification of target areas is therefore critical for ensuring that project funding is compliant with state aid requirements.
- 3.10 'Basic broadband white areas' are defined as areas where existing broadband infrastructures do not exist or cannot provide minimum download speeds of 2 Mbps at affordable prices, and where there are no private sector plans to deliver these services within three years of the start of the public consultation.²⁴
- 3.11 'White NGA areas' are defined as areas where NGA broadband services are not available at affordable prices for access speeds of at least 30 Mbps and there are no private sector plans to deliver these services within three years of the start of the public consultation.²⁵
- 3.12 With regard to the Scheme's geographical coverage, the Decision states that:
- This decision covers projects in the so-called 'final third' areas of the whole area of the United Kingdom (including the areas of Wales, Scotland or Northern Ireland). Any urban [broadband] development projects are subject to a separate state aid notification and not covered under the current Commission decision.²⁶
- 3.13 Paragraph 7 of the Decision refers to 'final third' areas in terms of 'rural and remote' areas.²⁷ However, neither 'rural and remote' areas nor 'urban development projects' are explicitly defined in either the Decision or Broadband Guidelines. The Guidelines refer to 'lower density' areas in the context of reduced access conditions (as in the UK Scheme).²⁸ The exact nature of 'lower density' areas is also undefined.
- 3.14 The Decision requires each local or community body intending to rely on BDUK state aid to provide detailed mapping and coverage analysis, including:²⁹
- details on the proposed geographic areas subject to public intervention, updated with information from a public consultation;
 - a justification, for each target area, for why intervention is needed.

²³ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 6, para. 20.

²⁴ Affordability for 'basic broadband white areas' is defined as installation costs of under £100 and rental prices of under £25 per month.

²⁵ Affordability for 'white NGA areas' is defined as installation costs of under £200 and rental rates over £30 per month.

²⁶ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 6, para. 21.

²⁷ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 2, para. 7.

²⁸ European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 80(a).

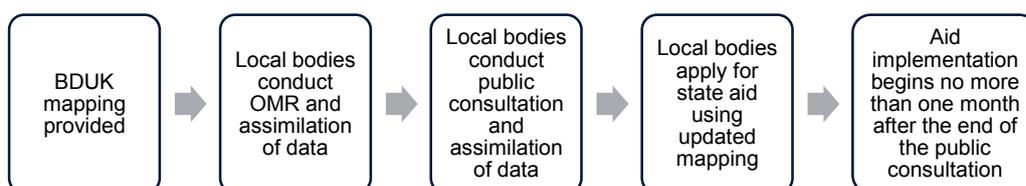
²⁹ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 11, para. 39.

Once the local body has undertaken this mapping process, it is required to hold a public consultation to validate the mapping.³⁰ The primary purpose of this public consultation is to understand whether providers have credible, existing investment plans to undertake similar projects. The Decision requires that a link to the consultation document is published on BDUK's website and that the consultation is open for at least one month. Projects should begin within one month of the public consultation closing.

Steps taken to ensure compliance—BDUK mapping process

- 3.15 BDUK produced a guideline document on mapping requirements. Figure 3.1 summarises the mapping process set out in this document.

Figure 3.1 The National Broadband Scheme mapping process



Source: Broadband Delivery UK (2014), 'State aid guidance: Mapping', July.

- 3.16 First, BDUK provided postcode-level mapping to local bodies (approved by the Commission), with basic broadband and NGA white areas initially pre-identified to provide a base onto which local bodies could add further local data.
- 3.17 The postcode-level data initially supplied by BDUK to local bodies provided information on:
- the number of premises within the area;
 - the BT exchange and cabinet serving that area and, where relevant, whether these are exchange-only lines;
 - whether BT Openreach has announced a planned upgrade to fibre to the cabinet/premises (FTTC/FTTP) for that exchange or cabinet;
 - whether Virgin Media provides a superfast broadband cable service;
 - modelled estimates of distances and broadband speeds;
 - modelled estimates of the cost of public subsidy (per premise) for cabinets, based on estimated wholesale revenues, the discounted cost of capital, and operating costs over a projected seven-year period. This gap in funding is then divided by the number of premises in white areas.
- 3.18 This information was gathered from public sector mapping files; postal information; infrastructure data provided by BT, Virgin, Kcom and Digital Region; and estimates of speeds, distances and costs based on BDUK modelled information. BDUK has updated its information from BT Openreach and Virgin Media every three months in order to update its mapping document.

³⁰ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 11, para. 40.

3.19 The tables below contain the set of conditions that BDUK used to identify broadband and NGA areas.

Table 3.1 NGA coverage

NGA superfast grey	NGA superfast black	NGA superfast white
Declaration by BT Openreach in OMR or public consultation verifying that speeds of above 24Mbps can be achieved in the majority of its premises within three years OR Declaration by Virgin Media in the 'cable coverage area' OR Another provider with appropriate qualifying NGA technology can meet the requirements of the NGA technology guidelines published by BDUK with minimum speeds of 24Mbps	If at least two of the three conditions for NGA superfast grey coverage are met	If none of the conditions for NGA superfast grey coverage is met

Note: ¹ While the 24Mbps speed threshold was recommended by the National Broadband Scheme, local authorities were given the flexibility to choose their own speed threshold for determination of 'grey areas'. As a result, many authorities chose to use a 15Mbps speed threshold instead. There are also indications that the data provided by BT Openreach in its contribution to the OMR will cover premises over or under the 15Mbps threshold. If authorities decide to use the original 24Mbps threshold in their mapping, they can adjust their mapping to the new thresholds provided, or interpolate the white area by estimating speeds using the line length of premises from the cabinet. Interpolations are subject to input and verification by BT on the speeds and possibility of speed uplifts within three years. Department for Culture, Media & Sport (2014), 'A practical guide to managing pre-procurement state aid requirements: Guidance to local authorities', December 12, slides 13 and 25.

Source: Broadband Delivery UK (2014), 'State aid guidance: Mapping', July.

Table 3.2 Basic broadband coverage

Basic grey	Basic black	Basic white
The area is not listed in the 'Sub 2 Mbps premise list' provided by BT Openreach OR Declaration by Virgin Media in the 'cable coverage area' OR Another provider with appropriate qualifying NGA/basic technology can meet the requirements of the wireless guidelines published by BDUK with minimum speeds of 2Mbps	If at least two of the three conditions for basic broadband grey coverage are met	If none of the conditions for basic broadband grey coverage is met

Source: Broadband Delivery UK (2014), 'State aid guidance: Mapping', July.

3.20 In the second stage of the mapping process, BDUK recommends that local bodies augment its mapping with information received from local operators via an OMR. This is a precursor to the public consultation and is not required by the Commission. The guidance document provided by BDUK on the OMR recommends that local authorities send this request to all known broadband infrastructure and Internet providers, and provide a period of at least one month

- for the receipt of responses.³¹ The OMR provides additional data from alternative providers to verify the information provided in BDUK's mapping.
- 3.21 After information from the OMR is incorporated into BDUK's mapping, local bodies are required to submit their information to allow all interested stakeholders to comment on the intended target areas through a public consultation. This consultation must:
- contain a description of the proposed aid measure;
 - contain a description of the proposed targeted areas;
 - contain any opinions already lodged by stakeholders;³²
 - include a public link on the BDUK website to the consultation document;
 - remain open for feedback for at least one month.
- 3.22 Local and community bodies are additionally required to plan for implementation of the aid no more than one month after the end of the consultation.
- 3.23 BDUK has frequently advised local bodies to investigate any feedback from the public consultation in order to validate credibility, such as requesting further detail on business plans, financing, or other documentation from future investment plans submitted during the consultation. Should a local authority fail to receive feedback despite having knowledge of a supplier that has future investment plans in the area, the BDUK guidance indicates that authorities should directly contact these known suppliers to seek feedback.
- 3.24 If the supplier does not respond, BDUK recommends that the local authority extends the deadline for the consultation to as close to the start of the tender process as possible. If, to the best of the authority's knowledge, the supplier has no infrastructure or relevant investment plans in the area, the authority is advised to seek advice from BDUK. It is possible for an authority to be permitted to finalise its mapping for submission to BDUK in the absence of supplier feedback, should all appropriate steps be taken during the course of the public consultation.
- 3.25 BDUK recommends that guidance be sought in cases where more than one month has elapsed between the close of the public consultation and the start of the tender process. The local authority may need to take additional steps to demonstrate that there is a good reason for why additional time was required, and that the mapping results were not affected.
- 3.26 Following the OMR and public consultation processes, updates from local information may increase or reduce the number of white and grey areas. Table 3.3 outlines factors that may affect the final speed and coverage template.

³¹ Broadband Delivery UK (2014), 'National Broadband Scheme for the UK: Supporting the local and community roll-out of superfast broadband. State aid guidance: Open Market Review Template', July, available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/379335/State_aid_-_Guidance_-_Open_Market_Review__OMR_.pdf.

³² Although not required by the Decision, this information can be gathered through BDUK's requirement that local authorities conduct an OMR.

Table 3.3 Factors that affect the final mapping and coverage template

Increase NGA/ broadband coverage	Reduce NGA/ broadband coverage	Outcome unclear
Local bodies may have information about other providers not listed in BDUK's initial mapping, increasing the level of coverage	BDUK mapping assumes that all premises will be upgraded to FTTC/P coverage according to information from BT. If only a portion of premises are switched to FTTC/P in areas indicated for upgrade by BT, this would extend the number of white or grey areas	Authorities are advised to verify whether existing coverage meets the speed/coverage/price claimed, and whether the services offered are in line with the services sought by users
	Broadband speeds provided in initial BDUK mapping are based on straight-line distances between exchanges or cabinets and postcodes, whereas local bodies may have better information on actual broadband speeds, reducing the level of coverage	Authorities are advised to ascertain whether any future investment in broadband deployment in an area within three years is credible, through the verification of financing, business plans, calendar deployment plans, etc.

Source: BDUK.

3.27 Local bodies are then able to apply for state aid approval using BDUK mapping information updated with:

- information gathered from the OMR and public consultation on alternative providers;
- known basic broadband notspots and slowspots;
- verification of future investment plans;
- verification of speed, coverage and price for existing services.

Steps taken to ensure compliance—geographic scope of aid

3.28 Following completion of the public consultation by the relevant authority, the NCC assesses compliance of the proposed intervention with the terms of the Decision and the Broadband Guidelines. A key requirement of the Decision is that aid is granted solely for use in 'lower density' areas across the 'final third'. Given that the exact nature of lower-density 'rural' areas was not defined in the Decision, Oxera understands that BDUK sought clarification from the Commission of what geographical areas could be covered by the Scheme.³³

3.29 Following correspondence with the Commission, BDUK determined that the Scheme permits BDUK to provide state aid to a range of 'white' area geotypes (defined by subscriber density) in lower-density areas (including remote, rural and urban fringe areas). As required by the Decision, the Scheme explicitly excludes the use of state aid for urban development projects.

3.30 BDUK has implemented a consistent set of principles/criteria for assessing whether geographical areas can be included within interventions. As part of its compliance assessment, the NCC applies a two-part test to the mapped intervention area identified by the relevant authority to ensure an appropriate geographic scope. The two-part test assesses:

³³ In particular, BDUK has provided Oxera with the email exchanges titled '121204 Redactions of UK rural umbrella scheme decision text and other clarifications' between Norbert Gaal (European Commission) and Kathryn Boyd (UK representation to the EU).

- the proportion of subscribers located in higher-density urban fringe areas as a proportion of the total intervention area;
 - whether a part of the proposed intervention area was/is covered by an urban broadband development project.
- 3.31 Part one of the test is intended to ensure that only a relatively low proportion of subscribers in higher-density urban fringe areas is included within the mapped intervention area. Part two of the test aims to ensure that those higher-density premises that would otherwise be covered by an urban development project are removed from the project intervention area.

Assessment of compliance

- 3.32 Oxera has assessed whether BDUK has adopted the correct processes with regard to defining target areas, mapping and coverage analysis, and public consultation. This assessment is based on BDUK's guidance documentation (including its mapping guidance and information provided to local bodies on the definition of target areas), project approval documentation provided by the NCC, mapping and public consultation documents, and complaints made to BDUK. Mapping issues were also raised in several representations made directly to Oxera.
- 3.33 In terms of the definition of target areas, Oxera notes the following.

- The minimum download speed used in the determination of basic broadband white/grey areas is compliant with the Decision, at 2 Mbps. The minimum download speed used in the definition of NGA white/grey areas in the Decision is 30 Mbps. This is significantly higher than the recommended threshold used in BDUK mapping guidelines of 24 Mbps, with the flexibility for local authorities to choose an alternative threshold. Some authorities adopted a 15 Mbps threshold in the determination. This may suggest that some areas have been defined as NGA grey/black by local bodies which should have been categorised as NGA white/grey according to the Decision. This could raise a concern that the definition of speed thresholds has acted to protect the interests of incumbent suppliers of non-NGA services.³⁴
- Oxera understands that the intention of this approach to mapping was to ensure that the state aid measure matched the policy objective and was targeted at areas that would generate the greatest benefits. (In other words, BDUK took the view that there would be greater benefits from increasing the available speeds of an area with sub-24Mbps speeds than targeting areas that already benefited from 24–30Mbps speeds). BDUK took a two-step approach to limiting the intervention area: first by targeting regions with current generation broadband networks, and second by focusing the intervention on those premises with the lowest speeds. BDUK therefore considers that the lower definition of speeds for mapping purposes has:

had no material impact on the intervention outcome, or on the choice of supplier. Additional flexibility to map other areas (i.e. between 24Mbps and 30Mbps) as NGA white would not have changed BDUK and local bodies' choice to target the intervention to a smaller area to prioritise limited funding [at those on current generation and/or on slowest speeds] to achieve maximum benefit.³⁵

³⁴ Indeed, this argument was raised by a respondent to the survey.

³⁵ <

- Oxera understands from BDUK that regardless of whether the mapping was undertaken with a speed threshold of 30Mbps or 24Mbps, BDUK would have targeted funding at sub-24Mbps areas given that it was not a policy objective to target all sub-30Mbps areas and BDUK was unlikely to have sufficient funding to do so. Oxera considers that it would follow from this that the outcome of the intervention might not be materially affected by the definition of the speed threshold for mapping purposes. However, Oxera notes the view of the Commission that, while BDUK is free to choose not to intervene in 24–30Mbps white areas, the mapping process should be done in line with the terms of the Decision in order to accurately reflect NGA coverage. BDUK has indicated to Oxera that it believes that the terms of the Decision provide flexibility for the use of a speed threshold below 30Mbps.³⁶ To the extent that this relates to interpretation of a Commission decision, it is an area in which the European Commission may wish to engage directly with BDUK to establish compliance.
 - Given that there is no explicit definition of what is meant by rural areas in either the Decision or the Broadband Guidelines, BDUK has provided local bodies with guidance on the classification of geographical areas. The NCC has applied a two-part test to ensure that proposed interventions are within the parameters of the Decision and the Broadband Guidelines. This test has been applied on a consistent and objective basis across interventions.
 - Oxera considers that the criteria used in the classification process are appropriate for defining white area interventions in the 'final third', including de-scoping urban development projects. We note that the criteria were the subject of an independent legal assessment undertaken on behalf of a local body which concluded that BDUK's approach was 'appropriate' and 'prudent'.³⁷
- 3.34 Oxera has received evidence from BDUK that shows that all projects have been compliant with the mapping and public consultation processes set out in paragraphs 39 and 40 of the Decision. BDUK has required each local and community body to identify the geographic area to be targeted and justify the need for intervention in that area. The NCC has put in place a clear assurance process to assess the compliance of local bodies with its OMR and public consultation guidance. In particular, the NCC has undertaken in-depth reviews of the mapping, speed and coverage templates provided by local bodies. All local bodies have conducted the required public consultation processes, and the NCC has taken steps to ensure that the resultant mapping reflects the best available information.
- 3.35 From our project-by-project review of compliance, we note the following.
- The NCC, and other stakeholders, raised concerns about the mapping process for Lancashire. This project pre-dated the BDUK notification and thus a degree of retrofitting was necessary to meet the requirements of the Decision. Although a market review was undertaken for this project, a final public consultation on the local body's maps was not initially undertaken in the manner prescribed. BDUK subsequently required the local body to undertake further consultation and update its mapping.

³⁶ In particular, BDUK considers that footnote 20 and paragraph 20 of the Decision allow for setting the speed threshold at the top of the current generation network infrastructure (i.e. ADSL2+).

³⁷ Bates, A. (2013), 'In the matter of: Leeds City Council and the other local authorities concerned in the West Yorkshire Local Broadband Project ('the Project')', The compatibility of the project with the European Commission's State Aid Authorisation Decision in case S.A. 33671 (United Kingdom – National Broadband Scheme)—Opinion', 21 August.

- Lonsdale Net Services Ltd, a wireless provider, raised a formal complaint regarding potential overbuild in Cumbria. It argued that its coverage plans had incorrectly been excluded from the mapping process because the local body had concluded that fixed wireless access was not a qualifying NGA technology. The procurement was conducted prior to the Decision, which explicitly recognised that wireless technology was a qualifying NGA technology, and Lonsdale Net Services believed that the consultation process should be reopened as a result.

BDUK considered that, regardless of the treatment of wireless technology, Lonsdale Net Services had failed to provide sufficient information on the technical capability of its infrastructure, company financial information or business plans to support its financial claims, and the timing of its roll-out. BDUK thus determined that it:

would be entirely impractical and counterproductive for a Local Body such as [Cumbria County Council] to reopen a consultation process and ultimately halt a deployment simply to give a further opportunity of consultation to an entity which did not take up the many opportunities which it was originally presented as part of the public consultation process.³⁸

- A further potential compliance issue has been raised regarding overbuild and overlap with Virgin Media infrastructure in Rugeley (Staffordshire). Oxera has been advised that BDUK investigated the matter in detail with BT. It was found that the coverage within the Virgin Media footprint was incidental to the legitimate targeting of white premises within the intervention area and that there were no other white premises within the intervention area that could be targeted for a similar level of public subsidy (or less) with less distortive effects.
- In approving Schemes, BDUK has expressed minor concerns with mapping in a number of other instances. Where these issues have been identified, BDUK has typically required the local body to undertake a particular resolution action. Table 3.4 identifies these issues and the response required by BDUK.

³⁸ Broadband Delivery UK (2013), 'Subject: SA. 37268 (2013/CP) – United Kingdom – Broadband Delivery UK ("BDUK") national Scheme, Request for information', letter to Wouter Pieke, 18 October.

Table 3.4 Mapping—potential compliance issues identified

Project	Issue identified	Response required by BDUK	Outcome
Bedfordshire	Responses from Bright Yellow, Vtesse Networks and Stoddenworld were assessed as having not provided sufficient evidence that they could meet (or were planning to meet) the service requirements	Local body required to inform Bright Yellow, Vtesse and Stoddenworld that the intervention areas were not changing as a result of their responses	The requirements were discharged by the local body
Berkshire	No response (regarding presence or plans for Berkshire) received from MLL Telecom, which provides infrastructure services in the area. Disagreement with Broadband UK over coverage provided by 4G LTE wireless network	A condition in the B2 letter issued to the local body required it to follow up with MLL Telecom and Broadband UK to determine whether the providers had any NGA infrastructure in the intervention area prior to contract award	The requirements were discharged and BDUK was happy with the final mapping
Buckinghamshire and Hertford	The responses of six suppliers were disregarded. These six were Vodafone, UK Broadband, Talk, CityFibre, Level 3 and Tariam	The local body was asked to confirm why these responses were disregarded, and in particular to provide further details on why CityFibre and UK Broadband were disregarded	The local body stated that: Tariam provided insufficient details on plans for upload and download speeds, and the affordability criteria were not met; and Skylogic, a satellite provider, did not provide future plans Follow-up by the local body with CityFibre and UK Broadband confirmed that neither had existing coverage or plans to deploy There were no subsequent changes to the local body's mapping
East Riding	The public consultation document was not linked to the BDUK website	A condition in the B2 letter issued to the local body required it to follow up with Airtel, Quickline, Linpop, Diamond net and AB Internet to determine coverage and future plans in the intervention area as soon as possible (and prior to the contract award)	Condition discharged as local body wrote to wireless providers in the intervention area seeking their plans. Wireless providers were discounted on the grounds of affordability
Essex	Local body disregarded County Broadband's current and future coverage claims owing to a lack of information on quality of services and future investment plans from County Broadband. Discussions are ongoing with the supplier to review the intervention area if and when sufficient information becomes available to provide reassurance that the supplier's claims are valid	Condition placed on local body to ascertain further evidence from County Broadband on its existing and planned coverage across the intervention area	The local body commissioned Atkins to assess County Broadband's NGA claims Despite agreeing with the findings of the Atkins report, BDUK was unable to establish the basic coverage of the Defra funding for County Broadband Final approval of the aid was conditional on 'the requirement that the Local Body removes basic white premises from its intervention area associated with wireless provision which is being delivered by separately using DEFRA funding of £106,000'

Project	Issue identified	Response required by BDUK	Outcome
Isle of Wight	<p>WightFibre's fibre footprint was incorporated into the mapping of NGA areas, but its fixed wireless plans were disregarded owing to concerns about its commercial plans</p> <p>High Point Infrastructure's response was excluded from the mapping as it was assessed as having provided insufficient evidence that it could meet the service requirements</p>	<p>The local body was required to request additional information from WightFibre and High Point Infrastructure</p>	<p>The retail pricing of High Point Infrastructure's service provider, Click 4, was deemed unaffordable</p> <p>WightFibre's future plans were deemed not credible and were excluded</p>
Kent	<p>Feedback from three suppliers (Vfast/Orbital, Call Flow and Medwave) was disregarded</p>	<p>Kent agreed to include its own funded contracts with Vfast/Orbital within the mapping</p> <p>The local body committed to continue engagement to better understand current coverage and any credible plans for the future</p>	<p>The decision to approve the aid was contingent on the local body: 'within one month of the date of the National Competence Centre approval letter, (i) completing their assessment of any credible claims of coverage or plans of coverage made by Vfast and agreeing this with the National Competence Centre and (ii) removing from the intervention area the assessed coverage and updating the Project's Documentation to reflect this'</p>
Lincolnshire	<p>BDUK noted that, for a number of local wireless providers (AB Internet, Linpop, F1 Group, Quickline, Inkspot and LN Communications), information was incomplete or responses had not been received</p>	<p>The local body committed to continue engagement with providers prior to the contract award, and to revise its mapping as appropriate</p>	<p>No significant changes to the mapping following the engagement, which was carried out in an informal manner. The local body was unable to provide documentation to support its claim that local providers were content with the proposed scope of the intervention. It was therefore required to: 'provide written evidence that infrastructure providers have been made aware of the scope of the intervention area and have no outstanding objections. Confirmation should be provided within one month of the date of the formal State aid approval'</p>
Merseyside	<p>High overspill at 35%</p>	<p>Openreach provided a detailed response on overspill, confirming that it would minimise this when carrying out its design</p> <p>Following its own analysis, the local body identified that the overspill postcodes were served by cabinets serving other non-overspill postcodes. This provided further assurance that the design would target white premises and minimise aid</p>	<p>The local body was informed of the issue and is to monitor this as part of the in-life review of the intervention, challenging the supplier should there be a risk of significant overbuild</p>

Project	Issue identified	Response required by BDUK	Outcome
Nottinghamshire	Some inconsistencies between the local body's mapping and BDUK's maps	The local body was asked to engage with suppliers to check the accuracy of the data with which it had been provided where there was a discrepancy with BDUK data	This issue was resolved by the time the Invitation to Tender (ITT) was issued
Rest of Scotland	BDUK had concerns about how suppliers' responses to the OMR and public consultation were handled BDUK also identified discrepancies between the OMR data and the BDUK model	BDUK asked to review the correspondence between the local body and suppliers regarding coverage The local body was asked to check the discrepancies and identify whether they were the result of revised OMR data from BT (i.e. data that was more up-to-date than that held by BDUK)	The correspondence with suppliers and queries in relation to the OMR were resolved satisfactorily. BDUK was also content with how suppliers' responses were handled and had no issues The Scottish government produced a post-consultation report publishing a final mapping and outline on the treatment of responses
Shropshire	BDUK initially had concerns about postcode issues, and noted that Virgin Media coverage did not appear to be included in the maps	BDUK made the local body aware of the anomalies in the mapping prior to the ITT being issued	The local body took on board the comments raised by BDUK, and all the issues identified were addressed in the ITT BDUK had some concerns about the final mapping data, but these were not considered to be material to state aid. The issues were raised with the local body anyway
Staffordshire	A number of providers did not supply details to the OMR	BDUK asked the local body to seek further information on coverage from a number of wireless operators The local body was also asked to confirm that it did not intend to intervene in grey or black areas, which it had not done in the application form or the Data Quality Method document	In general BDUK was content with the responses and the mapping modifications, but required some areas to be reclassified as grey. A condition was thus added to the state aid approval requiring 'that the Speed and Coverage template (SCT) is updated to reflect the removal of those premises identified as no longer in scope for intervention (the premises are currently set out only within the reference data of the SCT) provided that this amendment and any other necessary resultant amendments to the Project documentation are made within one month of the date of this letter'
Warwickshire	BDUK initially identified some inaccuracies in the data submitted by providers (including issues with Virgin Media coverage)	BDUK recommended that the local body continue to review the coverage of BT and Virgin Media	There was a significant re-scoping of the intervention area prior to the ITT due to the removal of Coventry. It was noted that this area could be included again under a change control, which would require further review of the coverage mapping for this area

Project	Issue identified	Response required by BDUK	Outcome
Worcestershire	BT updated its OMR data in the public consultation, identifying additional premises that already received speeds of at least 2Mbps		<p>The approval of aid was contingent on:</p> <ul style="list-style-type: none"> • the SCT being fully updated to reflect the removal of premises identified as no longer in scope for intervention; • further verification of any variation to the scope identified within the project's documentation to ensure that the project maintains its compliance with the requirements of the National Broadband Scheme, specifically in relation to the reconfirmation that the areas to be covered remain basic or NGA white, and the additional scope can be incorporated within the Scheme <p>Approval was granted subject to the local body updating its speed and coverage template to take account of 636 additional premises identified by BT as being in receipt of basic coverage following an updated OMR</p>

Source: Oxera, based on information provided by BDUK.

- 3.36 The process that BDUK has implemented regarding the definition of white/grey and rural/urban areas appears to be compliant with the requirements of the Decision. However, one stakeholder raised a concern that, on some projects, areas originally identified as being covered by commercially funded investments (i.e. non-white areas) appeared to have been reclassified as white areas for the Phase Two roll-out. Documentation from the meeting of Suffolk County Council to decide whether to match BDUK funding for the county's (Phase Two) 'Superfast Extension Programme' appears to support this claim:

The market review identified every premise in Suffolk which will not be served with fibre broadband giving at least 15Mbps. This is over 50,000 premises, or ~15% of Suffolk. These are the premises which have been targeted with the additional funding, and are those where we are able to make the most difference by providing a step change to their service.

Critically, areas which were originally excluded from the initial Suffolk Better Broadband rollout have now been identified and included within the scope of the Superfast Extension Programme contract. **These were excluded as they were identified as being included in commercially funded upgrades under the Open Market Review process relating to the first contract. As commercial rollouts have developed, it has become clear that some areas will not be served, and they therefore require state subsidy for upgrade, and hence should be included within the scope of the Superfast Extension Programme.**³⁹ [Emphasis added]

- 3.37 Oxera has raised this with BDUK, which has advised us that such changes in coverage can happen as a result of updates to BT Openreach's modelling subsequent to the OMR and public consultation processes for Phase One. We note that BDUK has provided evidence to show that some areas originally mapped as white have subsequently been covered by BT's commercial roll-out, suggesting that these updates to BT Openreach's modelling have had consequences in both directions.

- 3.38 BDUK has provided Oxera with its views on the reclassification of white areas, which can be summarised as follows.⁴⁰

- Some changes to mapping between Phase One and Phase Two is likely to be justified given that BT does not hold perfect information about the future costs of network upgrades.
- In the two- to three-year period between the mapping exercises conducted for Phase One and Phase Two, BT conducted additional surveying and planning and made adjustments to its commercial deployment model. BDUK believes that, as a result, it is reasonable to expect that some cabinets initially identified for commercially funded upgrades have turned out to be more costly than anticipated and hence commercially unviable, and vice versa.
- These changes to mapping have been dealt with in a transparent way through the use of OMR and public consultation processes prior to both Phase One and Phase Two procurements. BDUK does not believe that these changes have led to a reduction in the overall scope of BT's commercial roll-out.⁴¹

- 3.39 Oxera understands that BDUK has set out a process under which BT is required, in such instances, to provide BDUK with evidence and justification as

³⁹ Suffolk County Council (2014), 'Broadband Superfast Extension Programme', 14 October.

⁴⁰ Broadband Delivery UK (2015), 'Changes to Grey areas between Phases 1 and 2', March.

⁴¹ We understand that BDUK sought assurance on this from BT, which confirmed that BT Openreach has achieved the level of commercial coverage that it originally committed to prior to Phase One.

to why its commercial plans are no longer viable. However, at this time Oxera has not been provided with any such justification from BT or BDUK and, as such, we are not in a position to validate the compliance of these mapping revisions on an individual basis.

3Bii Tender process

Compatibility requirements

3.40 The Decision and the Broadband Guidelines require that aid be allocated through an open tender process, in line with the spirit and principles of the EU Public Procurement Directives (including Directive 2004/18/EC).⁴²

3.41 The Broadband Guidelines state that there must be:

transparency for all investors wishing to bid for the implementation and/or management of the subsidised projects. Equal and non-discriminatory treatment of all bidders and objective evaluation criteria are indispensable conditions.⁴³

3.42 Moreover, the Decision and the Broadband Guidelines require that contracts be awarded to the supplier presenting the most economically advantageous offer.⁴⁴

3.43 Importantly, the local body must be compliant with these conditions regardless of whether it uses BDUK's central procurement framework (discussed below) or its own, non-framework tender process. The Decision requires that where a non-framework tender process is followed:

the local authorities shall comply with the conditions of openness, transparency and non-discrimination when conducting the tender procedure in line with the principles of the national and EU public procurement rules.⁴⁵

Steps taken to ensure compliance

3.44 BDUK developed a national procurement framework (the Broadband Delivery Framework), with the intention to provide local bodies with a panel of potential suppliers capable of delivering the design, build and operation of a local broadband project. It was intended that local bodies would run mini-competitions to select a single supplier from the framework for each project. A call-off contract—outlining any project-specific terms and conditions, a detailed design and implementation plan, and a complete financial model—would then be agreed between the local body and the chosen supplier for each individual project.

3.45 The steps taken by BDUK in establishing the procurement framework included outlining its commercial approach, publishing a prior information notice, holding an industry day (at which participants were invited to provide feedback on the proposed framework) and publishing a notice in the Official Journal of the

⁴² European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 13, para. 44; European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 78(c).

⁴³ European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 78(c).

⁴⁴ European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 14, para. 49; European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 78(d).

⁴⁵ European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 14, para. 48.

European Union (OJEU). Following a pre-qualification process, final tenders were evaluated according to a pre-specified set of criteria and allowed the mandatory standstill period.

- 3.46 The outcome of this procurement process was that two suppliers—BT and Fujitsu—were appointed to the national procurement framework. Nine companies had pre-qualified to submit tenders, with three subsequently choosing to submit final tenders.⁴⁶
- 3.47 Local bodies were given freedom to run their own public tender process or use another framework agreement. Where local bodies have chosen to use non-framework contracts, BDUK has reviewed the compliance of the tendering process and the contractual terms with the requirements of the Decision. The approval process has included assessment of whether:
- the local body's procurement process has been conducted in line with the principles of transparency, equal treatment, non-discrimination and proportionality;
 - the tender process has been run on the basis of securing the most economically advantageous offer;
 - the evaluation criteria and weightings were explicitly set out in the ITT documents and consistently applied, as well as whether the evaluation criteria used were appropriate;
 - the contract was awarded to the supplier requiring the lowest level of aid possible in a situation in which two or more bids were similar or identical in terms of their offering.

Assessment of compliance

- 3.48 To date:
- 33 Phase One projects have used the national procurement framework with local call-off contracts. A further six Phase Two projects have also used the framework contract;
 - 11 local body Phase One projects have been tendered through non-framework contracts;
 - seven community broadband projects have been tendered through non-framework contracts.
- 3.49 As discussed above, only two bidders (BT and Fujitsu) were ultimately appointed to the framework. Fujitsu contested two non-framework tenders, for North Yorkshire (NYNET) and Cumbria. The Cumbria tender entered into a negotiated procedure from which Fujitsu ultimately withdrew, citing its inability to meet the local authority's requirements.⁴⁷ Fujitsu announced in March 2013 that it would no longer be bidding for any additional projects. Fujitsu has not contested any of the subsequent procurements (whether these were tendered for under the framework, OJEU, or some other open tender procedure). BT has therefore won all contracts awarded under the framework contract.
- 3.50 Although BT has been the sole supplier of projects procured under the framework contract, the process for establishing the Broadband Delivery

⁴⁶ The final three bidders were BT, Fujitsu and The Final Third consortium.

⁴⁷ A negotiated procedure was entered into following significant non-compliance issues with the final tender responses received from both BT and Fujitsu.

Framework was compliant with relevant procurement legislation (including EC Directive 2004/18/EC) and the Broadband Guidelines. The compliance of the framework procurement process was explicitly noted by the Commission in the Decision:

The UK conducted the procurement of the Broadband Delivery Framework in accordance with the applicable EU procurement directives and the UK legislation implementing them.⁴⁸

- 3.51 Of the local bodies that have chosen not to use the framework contract, the majority have followed OJEU procurement processes. These projects, and the competing bidders, are outlined in Table 3.5. This table shows that, while a total of 19 suppliers were invited to bid across all 11 projects, only four submitted ITT responses. Moreover, there were never more than two ITT responses for a single project and BT ultimately won all of the contracts.

Table 3.5 Overview of non-framework contracts

Project	OJEU contract notice published	Suppliers invited to bid	ITT responses
Cumbria	25 March 2011	BT, Commendium, Fujitsu, Cable & Wireless Worldwide, CSC	BT, Fujitsu
Wales	2 March 2011	Balfour Beatty Group, BT Wholesale, Fujitsu, Geo Networks, Thales Group	BT
Hereford and Gloucestershire	9 June 2011	BT, GEO, Kcom, Fujitsu, Updata, AEM, Skanska	AEM (non-compliant), BT
Greater Manchester	13 September 2012	BT, Gamma Telecom, Metronet, ETDE (Bouygues), Wireless Infrastructure Group	BT
Highlands & Islands	10 June 2011	BT, Commendium	BT
Cambridgeshire	27 January 2012	BT, Briskona, ETDE Infrastructure Ltd, Avonline PLC, Shanghai Baud Data	Briskona, BT
Oxfordshire	26 May 2012	BT, ETDE	BT
Rutland	24 March 2011	BT, Commendium, Fujitsu, Kcom	BT
Surrey	28 September 2012	Briskona, BT, ETDE	Briskona, BT
Lancashire (ISFT)	8 March 2012	Commendium, BT	BT
NYNET ¹	28 February 2012	GEO, Cable & Wireless, Thales, BT, Fujitsu	BT, Fujitsu

Note: ¹ NYNET has its own state aid approval but is included here as a project on which Fujitsu competed.

Source: Information provided by BDUK.

Table 3.6 considers the compliance of the processes used to tender the six non-framework community projects.

Table 3.6 Compliance of community projects

Project	Compliance of tender process	Supplier	Monitored by
Fell End	As the contract value is below the £173,934 threshold, the procurement regulations do not apply. A procurement process was	BT for connectivity; TS Trenching for ducting works	Defra

⁴⁸ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 13, para. 45.

Project	Compliance of tender process	Supplier	Monitored by
	implemented by Ravenstonedale Parish Council. BDUK assessed this tender process to be open and transparent		
FibreGarden	The NCC identified a potential compliance issue with the procurement process. The contractor developed and used different evaluation criteria from those published in the tender document, although this would not have resulted in a different outcome. The results of the tender were published on the contractor's website and all bidders were notified of the outcome. This provided transparency over the evaluation criteria that were used and gave losing bidders an opportunity to challenge the process	ITS for the design and build of the passive network; Hellerman-Tyton, Huber & Suhner and OFS for various network components	Defra
Kent Community Projects	Kent County Council used its own existing broadband framework, rather than the BDUK framework. There are nine suppliers on the framework. An ITT for each project was issued to all suppliers on the framework. 4-5 bidders submitted bids for each project. Kent County Council confirmed that the contract terms agreed with Call Flow Solutions Limited would not differ substantially from the terms laid down in the framework agreement	Call Flow Solutions won all four projects	Local body
Lincolnshire Community	Competitive process followed, with an OJEU notice published on 26 April 2012	BT	Local body
Northmoor	West Oxfordshire District Council conducted a procurement of works, using the open procedure, for the design, build, implementation and operation of superfast broadband connectivity. The ITT was issued on 20 December 2013. Three responses were received—from Gigaclear, County Broadband and Airband. BDUK was happy that the local body conducted an open and fair tender process	Gigaclear	Defra
Tove Valley	Abthorpe Broadband Association Ltd (ABAL) appears to have conducted an open tender process in respect of the Tove Valley Communities Superfast Broadband Project	ABAL has decided to progress with a Community DIY Project. The community will pay suppliers to construct the network but all the assets will transfer into ABAL ownership	Defra
Worcestershire Community	An OJEU process was followed, with an OJEU notice issued on 27 July 2012	Airband	Local body

Source: Information provided by BDUK.

- 3.52 On the basis of the evidence reviewed for this evaluation, Oxera concludes that all projects have been tendered in a way that is compliant with EU procurement legislation and the Decision.
- BDUK's project approval process has included assessment of whether the tender process has been run in line with the principles of transparency, equal treatment, non-discrimination and proportionality; and whether the winning bidder is the supplier with the most economically advantageous offer.
 - The compliance of the procurement process for the framework contract was confirmed by the Commission in the Decision.
 - A further 11 non-framework contracts have been procured under OJEU requirements and have complied with the terms of the Decision.
 - A review of community projects suggests that these have also been compliant, although the NCC identified some concerns with the tender process conducted for the FibreGarden project. As a result of this compliance concern, FibreGarden's state aid approval was conditioned on the community publishing a summary of the procurement process followed (including an explanation of the aid measure and mapping, the process conducted, and details of the scoring mechanism applied). All suppliers involved in the procurement process were alerted to this summary and it was published on the community body's website for a period of 30 days. Oxera understands that no challenges were raised during this period
- 3.53 Oxera has not reviewed the actual breakdown of the award criteria for each project based on the information provided by BDUK to date. However, we note that BDUK has put in place assurance processes to check that the award criteria have been predefined and correctly applied in each case.

3Biii Subject of the aid

Compatibility requirements

- 3.54 The Decision sets out the eligible costs for which state aid funding can be used. Eligible costs include a mixture of network elements that can be used for the design, build, implementation and operation of new broadband infrastructure and/or upgrades of existing broadband infrastructure.⁴⁹ The Decision noted that these will include: 'middle mile' upgrades, access network upgrades, systems upgrades, connectivity of retail Internet service providers, spectrum lease costs, supply of customer premises equipment, and, potentially, demand stimulation.

Steps taken to ensure compliance

- 3.55 BDUK provided general guidance on expenditure items that can be classed as permitted expenditure according to Appendix 2, Schedule 5.1 of the standard call-off template. The template sets out costs that can and cannot be classified as permitted expenditure. Each local body using the call-off contract has been required to set out its own specific list of expenditure items where these differ from the guidance provided.

⁴⁹ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 8, para. 25.

Assessment of compliance

- 3.56 The guidance on costs set out in the template call-off contract is consistent with the requirements of the Decision. In particular, the template contract establishes that costs related to the activities set out in Table 3.7 are not permitted under the Scheme. As required by the Decision, this excludes all expenditure relating to the bid and mapping process, as well as the operation and maintenance of the network once it is built.

Table 3.7 Examples of costs not permitted under the template contract

Expenditure supported from other government sources or EC structural funds	Power and other utility running costs
Operating and maintenance costs of the broadband infrastructure created	Costs incurred before the date of the contract (including bid costs)
Additional costs incurred as a result of supplier underperformance against or in breach of the contract	Insurance costs
Retail connection costs and end-user premises equipment at retail level	Customer acquisition and churn costs
Operating costs of providing broadband services (wholesale or retail) to third parties and consumers	General corporate or unabsorbed overheads
Demand surveys, marketing, other sales costs	Depreciation, amortisation and impairment of assets
Corporation tax and non-domestic rates	Service and financing costs under finance leases, of broadband infrastructure, plant, machinery and equipment
Operating lease rentals	Provisions and contingent liabilities
Supplier profit mark-up, margin or administration charge that is added to the actual bought-in costs of goods or services procured from third parties	Administration and general management costs
Dividends	Other interest and financing charges

Note: This is a non-exhaustive list.

Source: BDUK template call-off contract, Appendix 2 of Schedule 5.1.

3Biv Aid intensity

Compatibility requirements

- 3.57 Aid intensity refers to the proportion of total investment that comprises public funding (whether from BDUK or the local body). The Decision does not specify the required aid intensity for the majority of projects approved under the BDUK Scheme. However, in the specific case of community broadband projects that receive Defra funding, the Decision caps the level of public funding at a maximum of 50% of the eligible costs.⁵⁰

Assessment of compliance

- 3.58 Table 3.8 shows aid intensities for the four community broadband projects that have received Defra funding.

⁵⁰ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 8, para. 25.

Table 3.8 Compliance of community projects

Project	Aid intensity	Compliant
Fell End	50%	✓
FibreGarden	48%	✓
Northmoor	43.6%	✓
Tove Valley	43%	✓

Source: Oxera based on BDUK.

3.59 The table shows that all of the Defra-funded community broadband projects have aid intensities below 50%, and therefore BDUK has been compliant with the requirements of the Decision.

3Bv Use of existing infrastructure

Compatibility requirements

3.60 The Decision and the Broadband Guidelines require that local and community bodies are encouraged to offer suppliers the use of existing infrastructure where this is possible and economically advantageous.⁵¹ This includes the following:

- the use of suppliers' own infrastructure;
- the use of BT Openreach infrastructure;
- the use of other existing utility companies' infrastructure (including, for example, water and sewerage pipes, and electricity infrastructure);
- the re-utilisation of radio masts;
- ease of access rights;
- public infrastructure such as public buildings (e.g. schools);
- coordination of civil works.

Steps taken to ensure compliance

3.61 BDUK has required all local and community bodies to identify, at the outset of their tender process, appropriate existing infrastructure. For local bodies using the framework contract, section 2.9 of the template ITT allows for identification of re-usable assets. The template ITT also stipulates that: 'the bidder MUST provide a statement of how it will re-use other (i.e. non-Local Body) assets or, where it will not re-use such assets, the specific reasons why not'.⁵² The use of existing infrastructure feeds into the local solution design component of the template award criteria.

3.62 Oxera understands that local bodies have publicised the existence of existing infrastructure in data rooms accompanying their tender documents to ensure that all bidders are aware of such infrastructure at an early stage.

⁵¹ European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 15, para. 51; European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 78(f).

⁵² Broadband Delivery UK (2014), 'Call Off ITT Part 2: Requirements', July, para. B.6.1.

Assessment of compliance

- 3.63 On the basis of the evidence reviewed, Oxera considers that BDUK has been compliant with the Decision and Broadband Guidelines in terms of promoting the use of existing infrastructure. The ITTs used by local bodies have encouraged suppliers to propose solutions that re-use existing infrastructure, and have generally reflected this in the award criteria.⁵³
- 3.64 A large number of projects have built on BT's existing infrastructure (see Table 3.9). The implication of this for competition is considered further in section 3Bxvii below.

Table 3.9 Use of existing infrastructure

State aid summary response	Local body
Existing BT assets considered/used	East Riding, Cambridgeshire, Devon and Somerset, Newcastle, Rutland, Durham, Hampshire Phase Two, Worcestershire, Fell End, Hampshire, HIE, Lancashire, Shropshire, Staffordshire, Greater Manchester, Norfolk, Suffolk, Suffolk Phase Two, Surrey, Hereford and Gloucestershire
Local body assets offered/used	Hereford and Gloucestershire

Source: Information provided by BDUK.

3Bvi Technological neutrality

Compatibility requirements

- 3.65 The Broadband Guidelines require that aid be allocated in a manner that is neutral towards the technology that is used to deliver the target outcome—i.e. the local body should not favour any technology over others or exclude any potential NGA technologies.

As different technological solutions exist to provide broadband services, the tender should not favour or exclude any particular technology or network platform. Bidders should be entitled to propose the provision of the required broadband services using or combining whatever technology they deem most suitable. On the basis of the objective tender criteria, the granting authority is then entitled to select the most suitable technological solution or mix of technology solutions. In principle, universal coverage of larger target areas can be reached with a mix of technologies.⁵⁴

The Decision noted that BDUK recognised that a mix of technologies would be needed to deliver superfast broadband.⁵⁵

Steps taken to ensure compliance

- 3.66 BDUK has taken the following steps to ensure compliance with regard to the requirement for technological neutrality.

⁵³ We note that the Commission has asked for a project-by-project description of actual proposals to use existing infrastructure and the importance attached to this in the award of the tender. We understand that BDUK is providing this information directly to the European Commission given that it falls outside the scope of this study.

⁵⁴ European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para. 78(e)

⁵⁵ European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, pp. 14–15, para. 50.

- The OJEU notice for the Broadband Delivery Framework underlined that suppliers would need to be capable of delivering ‘broadband solutions that meet outcomes-based specifications rather than being tied to specific technologies and platforms’.⁵⁶
- The text of the template, standard ITT for local bodies procuring under the Broadband Delivery Framework does not refer to specific technologies. It states only that the proposed solution must use a qualifying NGA technology. The requirements of the ITT are specified in terms of outcomes (e.g. speed and coverage requirements) rather than the technologies to be used.
- BDUK has provided guidance to local bodies on the requirement for technological neutrality. The guidance document specifies that:

To be able to use State aid under the UK's Scheme, local bodies are required to run open procurement processes that are technology neutral. They must not ‘pick technologies’, but rather select suppliers on the basis of the most economically advantageous tender⁵⁷
- As part of the project approval process, BDUK has assessed whether tenders have been run in a technologically neutral manner (particularly for non-framework contracts that have not used the standard ITT text).

Assessment of compliance

- 3.67 Based on a review of BDUK's state aid approval documentation for each project, there appear to have been few concerns regarding technological neutrality. The OJEU notice for the Broadband Delivery Framework and the template ITT used by local bodies have been specified in technologically neutral, outcome-oriented terms and are compliant with the terms of the Decision. An example of alternative technologies is fixed wireless access technology being used as a qualifying NGA network to meet the superfast broadband objectives as defined by Tove Valley. There is further evidence of technological neutrality in BDUK's support for the use of alternative technologies in the market pilot tests.⁵⁸
- 3.68 However, Oxera notes that the NCC identified concerns relating to technological neutrality for one community broadband project (FibreGarden), where the ITT appeared to state a preference for fibre-based solutions. As discussed above, FibreGarden's state aid approval was conditioned on the community body publishing a summary of the procurement process followed on its website for a period of 30 days. No complaints were received in this time.

⁵⁶ Official Journal of the European Union (2011), ‘UK-London: telecommunications services 2011/S 122-202671 Contract Notice’, 29 June, para. II.1.5.

⁵⁷ Broadband Delivery UK (undated), ‘Guidance: The role of Next Generation Access technologies in addressing superfast broadband market failure under the UK's State aid Scheme’, p. 1, para. 1.4.

⁵⁸ Broadband Delivery UK (2014), ‘State aid consultation: Market Testing Pilot Intervention Areas (First wave)’, consultation document, 29 September.

3Bvii Step change

Compatibility requirements

- 3.69 The Decision requires that public funding under the BDUK Scheme ensure a 'step change' in availability of broadband services at the target areas.⁵⁹ A 'step change' is defined as evidence that significant new investments in the broadband network were undertaken as a result of the public funding, as well as evidence that the subsidised infrastructure brings significant new capabilities to the market in delivering capacity or service availability.⁶⁰ Verification of the 'step change' must be conducted by the BDUK as the NCC.

Steps taken to ensure compliance

- 3.70 The text of the template, standard ITT for local bodies procuring under the Broadband Delivery Framework outlines the requirement for the suppliers' solution to represent a step change. It includes specifically defining the step change in accordance with the Decision. The template highlights three conditions requiring: a significant new investment in the broadband network; the introduction of new capabilities in terms of the availability, capacity and speed of broadband services; and that the network should allow for access at different levels, including wholesale access.
- 3.71 BDUK's guidance outlines the specific requirements for suppliers to represent a step change.⁶¹ This guidance indicates that the NCC is responsible for ensuring that outputs in NGA white areas are the same as for other NGA network deployments. The specific conditions for this are included in Table 3.10.

⁵⁹ European Commission (2012), 'State aid SA. 33671 (2012/N)—United Kingdom National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, p. 12, para. 41.

⁶⁰ Significant is taken to mean new passive elements, or civil works, and does not include upgrades to already active equipment.

⁶¹ Broadband Delivery UK (undated), 'Guidance: The role of Next Generation Access technologies in addressing superfast broadband market failure under the UK's State aid Scheme'.

Table 3.10 Requirements in establishing step change

Access speeds	Minimum speed requirements	Minimum download access of 30 Mbps, evidenced by calibrated performance measurements based on an existing deployment in the target area, or an equivalent deployment in a geographically similar environment
	Average speed requirements	Doubling of access speeds over the NGA target area
	Peak-time requirements	A minimum of 15 Mbps download access speeds for 90% of peak times
Scalability		Must include calculations demonstrating the maintenance of commercial and technical viability in cases of both increased take-up and increased capacity demand Must demonstrate the ability to maintain service quality in cases of both increased take-up and increased capacity demand
Provision of advanced services		Evidence of the capability of the project to deliver advanced services, such as video-conferencing or high-definition video
Longevity		Evidence of a reasonable expectation of increases in quality over the next seven years

Source: Information provided by BDUK.

- 3.72 The NCC has also set out the evidence that it expects to see from applicants in order to verify compliance with the step change compatibility condition.⁶²

Assessment of compliance

- 3.73 Oxera has not identified any concerns regarding BDUK's compliance with the step change requirements set out in the Decision. The NCC has explicitly verified the compliance of all projects with this compatibility condition.

3Bviii Wholesale access and price benchmarking

Compatibility requirements

- 3.74 The Decision sets out the minimum wholesale access conditions with which the direct beneficiaries of aid provided by BDUK are required to comply:

In exchange for receiving state support, the direct beneficiaries of the BDUK Scheme will provide third parties with effective wholesale access for at least seven years. In particular, the access obligation imposed also includes the right to use ducts or street cabinets in order to allow third parties to have access to passive and not only active infrastructure.⁶³

- 3.75 Table 3.11 summarises the minimum access requirements required by the Decision. The Decision also recommends additional/alternative access conditions.

⁶² This evidence includes business cases, scenario analysis, obtained or anticipated planning consents for proposed developments, actual deployment of similar scale or end-user density, results from field trials or commercial deployment used in models of different take-up scenarios, access network planning for wired NGA technology, radio plans and interference analysis for wireless NGA technologies, proposed product offerings and service-level guarantees, network dimensioning calculations, and other evidence that the enabling technology has a future development path.

⁶³ European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final.

Table 3.11 Minimum access requirements under the Decision

Technology	Minimum access condition
Fibre to the home (FTTH) or fibre to the building (FTTB)	One point of physical access One point of active access (full unbundling in the case of deployment of a point-to-point network infrastructure; virtual unbundled local access (VULA) equivalent in the case of deployment of a point-to-multipoint infrastructure) Other wholesale access if mandated by Ofcom
FTTC	One point of physical access One point of active access (i.e. VULA equivalent) Other wholesale access if mandated by Ofcom Sub-loop unbundling (SLU) if sub loop deployed as part of subsidised project
Powerline	No point of physical access required (already provided by DNO) One point of active access (i.e. VULA equivalent)
Wireless/mobile	Access to the backhaul network Mast access Either Bitstream or White label
Satellite	Either Bitstream or White label
Cable	One point of physical access One point of active access
New duct and new poles	Wholesale open access

Source: European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 16.

- 3.76 All contracts are required to include a price benchmarking for wholesale access products, with wholesale access prices for the subsidised infrastructure set with reference to these benchmark prices.⁶⁴ The benchmarking mechanism should be set out in the ITT documents issued to tenderers by the local body.
- 3.77 The Decision also requires BDUK to undertake a proportionality analysis where there are requests for additional wholesale access products.⁶⁵

Steps taken to ensure compliance

- 3.78 BDUK has taken steps to ensure compliance with the wholesale access conditions set out in the Decision. It has published guidance on its approach to proportionality analysis.⁶⁶ The three basic criteria of BDUK's test are that:
- all reasonable costs of providing the new wholesale access products should be met by the access seeker(s);

⁶⁴ European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, pp. 18–19, para. 58.

⁶⁵ Paragraph 55 of the Decision states that: 'As regards additional wholesale access products, any additional requirement for open access should be identified through an analysis of the benefits and costs of requiring differing levels of wholesale access... According to the UK, such mechanism will ensure that in line with the long duration of the framework Scheme, any changes in the wholesale access market will be reflected in the state aid Scheme, and third party operators shall have access to other wholesale access products if they are able to demonstrate reasonable demand for such additional access.' European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 17, para. 55.

⁶⁶ BDUK (2011), 'Basic test for new wholesale access requests on part-state funded networks', available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205729/State_Aid_Guidance_or_new_wholesale_access_requests_1_.pdf

- the introduction of the new products should deliver sustainable and effective competition in the downstream market;
- the new product should clearly address the market problem that led to the original intervention.

3.79 The award criteria under the template ITT include consideration of wholesale access conditions and price benchmarking, and bidders have been asked to identify where they are proposing access conditions beyond the minimum requirements. As part of the project approval process, the NCC has verified the compliance of the proposed supplier with the minimum access conditions and price benchmarking requirements.

Assessment of compliance

3.80 For the purposes of this evaluation, Oxera has reviewed all projects implemented to date (including both local body and community projects) to verify that each project has complied with the minimum access conditions and related requirements outlined in the Decision. The findings of this review are as follows.⁶⁷

- In May 2013 BT Openreach launched a new passive product (PIA Plus) which is compliant with the Decision requirements. The general product terms and details of how to apply for the product were simultaneously posted on the Openreach website and industry stakeholders were briefed on them.⁶⁸ The terms and conditions of the product are available upon application to interested communications providers (CPs).
- As at December 2014, BT had received only one expression of interest in PIA Plus. Under the terms of the PIA Plus product, in order to be eligible for the extended services product, the access seeker must establish itself as a PIA customer (with certain security checks at this stage) and must be primarily investing in competing NGA services (and not targeting business connectivity services only). In this instance, the access seeker was neither established as a PIA customer nor investing in a competing NGA network, meaning that the CP was ineligible for the product. BT has received no expressions of interest from PIA communications providers to consume PIA Plus.
- BT has supplied its standard network access products to the intervention areas, as well as non-intervention areas.⁶⁹
- To date, BT has received no requests for new forms of wholesale network access within the intervention areas covered by BDUK.
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⁶⁷ Based on information provided by BT.

⁶⁸ <http://www.openreach.co.uk/orpg/home/products/ductandpolesharing/ductandpolesharing.do>

⁶⁹ Oxera requested data on the take-up of standard access products in intervention areas. BT was unable to provide information on take-up of standard access products broken down into intervention and non-intervention areas.

- Ofcom has confirmed that it has not received any formal complaint about any request for network access to BT's state-subsidised infrastructure, or use of/access to PIA Plus.
- To date, BDUK has not been required to undertake proportionality analysis and has received no complaints in relation to this matter.

3.81 On the basis of this review, Oxera considers that BDUK and BT have been compliant with the requirements relating to minimum wholesale access conditions, price benchmarking and proportionality analysis set out in the Decision and Broadband Guidelines. In line with the provisions of paragraph 78(g) of the Broadband Guidelines, the minimum access conditions set out in the Decision apply to the entirety of the subsidised network, and these access conditions exceed the minimum requirements in the non-BDUK areas in all instances.⁷⁰ The appropriateness of the wholesale access conditions is considered in section 3.C.

3Bix Claw-back mechanism

Compatibility requirements

3.82 In receiving state aid approval, BDUK set out that—for all projects with aid in excess of £150,000—local bodies would be required to include a claw-back provision in the contract with the supplier.⁷¹ The intention of this provision is to prevent suppliers from receiving more subsidy than is required to make the project commercially viable (i.e. 'overcompensation'), by ensuring that there is a claw-back, or reinvestment, of any excess profit earned by the supplier.⁷²

Steps taken by BDUK to ensure compliance

3.83 BDUK's recommended claw-back mechanism is set out in Schedule 5.1 of the Broadband Delivery Framework Template Call-Off Contract, and covers three scenarios:

- the supplier's outturn deployment costs are below the forecast level. In such instances, the full difference between the outturn and forecast costs is treated as excess subsidy and is subject to the claw-back mechanism.⁷³ (By contrast, the supplier fully bears the risk of outturn costs exceeding forecast, such that the payment to the supplier never exceeds the level that is originally agreed). The assessment of the capital expenditure claw-back amount takes place upon completion of deployment (typically three years from the date the contract was signed);⁷⁴

⁷⁰ Paragraph 78(g) of the Broadband Guidelines states that: 'The type of wholesale access obligations imposed on a subsidised network should be aligned with the portfolio of access obligations laid down under the sectoral regulation. In principle, subsidised companies should provide a wider range of wholesale access products than those mandated by NRAs under sectoral regulation to the operators who have significant market power... The same access conditions shall apply on the entirety of the subsidised network, including on the parts of such network where existing infrastructures have been used.' European Commission (2013), 'EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks', 2013/C 25/01, 26 January, para 78 (g).

⁷¹ For projects with aid of less than £150,000, a claw-back mechanism was deemed to be disproportionately costly to implement. European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 19, para. 59.

⁷² That is, where the supplier's outturn profits are greater than the forecast level of profits.

⁷³ See sections 4.B and 5.A for a discussion of the incentive properties of this mechanism.

⁷⁴ Grants are paid on a quarterly basis and the supplier is not paid more than the level of eligible costs that it is able to evidence. At the three-year mark, a calculation is made of the amount to go into the reinvestment fund.

- take-up is greater than the forecast level. The outturn take-up of broadband products on the network is periodically compared with the forecast level of take-up (20% after seven years). The claw-back amount is equal to a pre-agreed proxy for the margin multiplied by the number of customers beyond the forecast level.⁷⁵ For framework contracts, the assessment of the take-up claw-back amount is undertaken three years after the contract award and then every two years over the duration of the contract;⁷⁶
 - the outturn additional revenues that the supplier earns from non-broadband products are greater than the forecast level. The claw-back amount is equal to the differential between outturn and forecast revenues for non-broadband products sold on the network, multiplied by a proxy figure for the net margin (agreed at the contract award stage). The excess subsidy is the aggregate of this calculation. This assessment is conducted at the same time as the assessment of take-up.
- 3.84 The framework contract allows local bodies to reclaim the claw-back amount from the supplier upon expiry of the contract, or to transfer it to a reinvestment fund that is used to fund additional broadband investment in the local area. That is, the claw-back mechanism is used either to reduce the level of required subsidy or to extend the roll-out of broadband.
- 3.85 BDUK has published guidance on the claw-back mechanism for local and community bodies.⁷⁷ This guidance highlights that the claw-back mechanism is a standard element of the template call-off contract and is a requirement for all contracts worth over £150,000. The guidance recommends that local bodies using non-framework contracts incorporate the same design of claw-back mechanism as specified in the template, although this is not a requirement.
- 3.86 As part of the approval process for each local project, BDUK has assessed whether the relevant ITT and contract incorporate a claw-back mechanism that is consistent with the Decision and Broadband Guidelines.

Assessment of compliance

- 3.87 As part of this evaluation, Oxera has reviewed whether BDUK has been compliant with the Decision in its implementation of the claw-back mechanism. In particular, we have reviewed the design of the claw-back mechanism for BDUK's framework contract and verified whether all contracts with a value in excess of £150,000 have incorporated such a mechanism.
- 3.88 Given that a claw-back mechanism is included in the template call-off contract, this mechanism has applied to all projects covered by the framework agreement. Local bodies that have chosen to use non-framework procurement processes have used the wording from Schedule 5.1 of the template call-off contract with adjustments solely intended to reflect the context as non-framework projects instead of call-off contracts.
- 3.89 Local bodies that have used non-framework contracts have been required to provide a copy of the relevant contract highlighting the claw-back provision, and all approved projects have included such a provision. Oxera therefore considers that BDUK has complied with the requirements of the Decision with regard to the claw-back mechanism.

⁷⁵ Oxera understands that this margin (around £15 per quarter) is consistent across projects and is based on its virtual unbundled local access (VULA) margin.

⁷⁶ For some non-framework contracts, the take-up claw-back amount is assessed on an annual basis.

⁷⁷ Broadband Delivery UK (2014), 'State Aid Guidance: Clawback', July.

3Bx Monitoring

Compatibility requirements

3.90 To facilitate the implementation of the claw-back mechanism and to assess the Scheme's performance, the Decision required BDUK to require local bodies to gather certain information from their suppliers for ongoing monitoring purposes (e.g. outturn expenditure, coverage and take-up).⁷⁸ The Decision also required accounting separation of subsidised projects from non-subsidised parts of the supplier's business.

Steps taken by BDUK

3.91 BDUK has taken the following steps to ensure compliance with the monitoring requirements set out in the Decision.

- The monitoring requirements are captured in the template call-off contract, and BDUK has met with local bodies on a frequent basis. 37 local bodies have used BDUK's milestones-to-cash process, which has allowed for standardised reporting across these projects. Each project is brought to the BDUK Assurance Board every six months. The Assurance Board assesses how the project has been implemented and explicitly considers whether there are any state aid compliance issues. Contract variations which exceed pre-agreed thresholds (e.g. funding moving between financial years) are also brought to the BDUK Assurance Board, and are verified for state aid compliance.
- Each project has a BDUK project director that is responsible for monitoring the project on an ongoing basis. The BDUK project directors are active members of project governance boards. Their role includes:
 - ensuring that the local project team is kept up to date with BDUK developments;
 - ensuring that project trackers (e.g. details of project finance, targets, milestones, action plans, and risk assessments) are correctly recorded and updated;
 - ensuring that value-for-money processes are adhered to via the milestones-to-cash reporting process; and
 - overseeing the payment of grant claims and contract change requests.

3.92 The project-by-project monitoring dates are set out in Table 2.1 of this report (above). The milestones-to-cash process is considered further in section 4.

Assessment of compliance

3.93 Across all of the projects that are currently in delivery, Oxera has not identified any issues regarding the monitoring of the Scheme.

⁷⁸ Paragraph 60 of the Decision states that: 'the UK will oblige local bodies to impose on their suppliers a number of reporting obligations. These obligations will require regular reporting on matters such as: actual deployment; actual expenditure; and demand levels.' European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 19, para. 60.

3Bxi Transparency

Compatibility requirements

- 3.94 The Decision required BDUK to set up a central website providing information and guidance on the National Broadband Scheme, as summarised in Table 3.12.

Table 3.12 Information to be published on the BDUK website

Information on the state aid notification and the Decision

Guidance on compliance with the state aid notification, as relevant to local bodies
Template documents for the use of local bodies, including a template application form, template public consultation and template OMR documents
Information for suppliers seeking to provided broadband projects covered by the Scheme
Information for suppliers seeking access to the new subsidised broadband infrastructure
Information on local broadband projects
A state aid-specific email address to which questions or comments can be addressed

Source: European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final.

Steps taken by BDUK

- 3.95 In line with the requirements of the Decision, BDUK has set up a central website (<https://www.gov.uk/government/publications/state-aid-advice>) providing documentation, information and guidance on the National Broadband Scheme. BDUK has also established a state aid-specific email address (stateaidforbroadband@culture.gsi.gov.uk).

Assessment of compliance

- 3.96 Oxera understands that, while BDUK has provided local bodies with template documents for the OMR, it has not provided a template public consultation document. Instead, it has provided local and community bodies with examples of best-practice public consultation documents.

With this exception, Oxera has found BDUK to be compliant with the transparency requirements set out in the Decision (see Table 3.13).

Table 3.13 Compliance with the transparency requirements

Information on the state aid notification and the Commission approval decision, as well as the legal background	https://www.gov.uk/government/publications/state-aid-decision-on-the-national-broadband-scheme-for-the-uk
Guidance on compliance with all aspects of the state aid notification as relevant to local bodies seeking clearance under the BDUK Scheme. This will include guidance on: public consultations; requirements in relation to an open and technology-neutral tender process; wholesale access requirements (prepared in conjunction with Ofcom); benchmarking (prepared in conjunction with Ofcom); claw-back; and monitoring and reporting requirements	<p>Public consultations: https://www.gov.uk/government/publications/state-aid-guidance-public-consultation</p> <p>Technology: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/379762/State_aid_-_Guidance_-_Technology_Guidelines.pdf</p> <p>Wholesale access https://www.gov.uk/government/publications/state-aid-basic-test-for-new-wholesale-access-requests-on-part-state-funded-networks https://www.gov.uk/government/publications/state-aid-guidance-new-wholesale-access-requests</p> <p>Benchmarking: https://www.gov.uk/government/publications/state-aid-guidance-benchmarking</p> <p>Claw-back: https://www.gov.uk/government/publications/state-aid-guidance-clawback</p> <p>Monitoring and reporting: Contained in Section 7 of the application form, which is published on a dedicated web portal (Huddle) to which all local bodies have access</p>
Template documents for the use of local bodies, including a template application form, template public consultation and template OMR documents	BDUK provides the template document as 'State Aid Guidance: Open Market Review Template', available at: https://www.gov.uk/government/publications/state-aid-guidance-open-market-review-omr . BDUK State aid guidance on the public consultation can also be found at https://www.gov.uk/government/publications/state-aid-guidance-public-consultation
Information for suppliers seeking to provide broadband projects covered by the Scheme	Generic programmatic information was given to suppliers via two documents: 'Broadband Delivery Framework Summary', available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/376430/Broadband_Delivery_Framework_Summary.pdf ; and 'BDUK delivery Programme Delivery Model', available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/376431/BDUK_Delivery_Programme_Delivery_Model.pdf
Information for suppliers seeking access to the new subsidised broadband infrastructure	BDUK has directed local bodies to upload links to BT Openreach's website regarding access products. Information on roll-out (to seven-digit postcode level) is included on local bodies' websites.
Information on local broadband projects	Available at: https://docs.google.com/a/culture.gov.uk/spreadsheet/ccc?key=0Ah3sVRjT82kKdEItX0IJNjNVWWWhNbjBnNGwxeHhQMhc#gid=0
A state aid-specific email address for questions or comments	BDUK provides the following email address for representation: stateaidforbroadband@culture.gov.uk

Source: European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final; and information provided by BDUK.

3Bxii Alternative measures

The UK government has undertaken policy and regulatory measures to facilitate commercial deployment of basic broadband and NGA networks, including the following.

- Regulatory interventions and market reviews to ensure effective and efficient competition in the delivery and use of NGA infrastructure.
- The government implemented measures to reduce the cost of civil engineering in the deployment of broadband infrastructure (e.g. by allowing broadband street cabinets and other infrastructure to be installed without the need for prior approval from the local council).
- The UK government has considered ways of revising the regime governing the rights of telecommunications providers to maintain infrastructure on public and private land to provide a more transparent and user-friendly system.
- The UK government has published guidance to inform house builders, builders and developers of the need to install digital infrastructure into all new-build domestic dwellings.
- The UK government has promoted the use of other utility infrastructure (e.g. sewers, electricity poles and other ducts) to roll out fibre.
- Leveraging public sector networks (e.g. that connect schools, hospitals and other public buildings to the Internet) where possible.
- The UK government has encouraged the development of 4G mobile services (through, for example, 4G LTE revision of the applicable regulatory framework, the 4G spectrum auctions and re-farming of existing spectrum).

3.97 Although these measures have been permissive in promoting commercial deployment, BDUK believed that these would be likely to have only a marginal impact on the level of investment that was commercially viable absent public sector funding. It was deemed that these measures alone would not be sufficient to deliver a fully private-funded broadband network to final-third areas (and would therefore not deliver the government's broadband objectives in their entirety).

3.98 Similarly, the government considered the use of demand-side measures, but did not feel that these would effectively address the objectives of the measures.⁷⁹

3.99 Consequently, the UK government identified the need for the broadband state aid measure, which led to the Decision. BDUK considered that the National Broadband Scheme was the most appropriate aid instrument to deliver the deployment of basic and superfast broadband infrastructure to the final-third areas of the UK.

⁷⁹ The government considered that connections vouchers are complementary to supply-side measures and are used in conjunction with marketing activities to drive take-up, often amongst specific target groups (e.g. SMEs). Given vouchers are directed at supporting end-users their effect on incremental deployments is incidental to those choices. BDUK's view is that the use of vouchers generally favours 'urban' applications where the incremental costs are relatively low and there are more likely to be a range of competing infrastructure suppliers able to offer NGA services. Only, BDUK considers that connections vouchers are only likely to 'tip' the commercial deployment case for NGA networks in certain marginal cases, where end-user choices aggregate in specific geographic locations.

- 3.100 In addition to the National Broadband Scheme, a £20m Rural Community Broadband Fund (the Fund), jointly overseen by BDUK and Defra, was set up to give premises in 'hard-to-reach areas' (i.e. the final 10% of premises) earlier roll-out of superfast broadband. The Fund had an original target of up to 70,000 premises. The outturn cost per premises has been significantly above the forecast level, and it is now expected that the Fund will lead to coverage for 20,000–25,000 premises.⁸⁰

3Bxiii Regulatory compliance

- 3.101 Oxera has conducted an interview with the member of staff at Ofcom responsible for overseeing the National Broadband Scheme. No issues relating to regulatory compliances were raised as part of this interview. A formal information request was sent to Ofcom, which confirmed that it has received no complaints regarding regulatory compliance issues in intervention areas covered by the Scheme.⁸¹

3Bxiv Wholesale and retail services

Table 3.14 outlines the wholesale and retail services provided across the different intervention areas. For all framework and non-framework contracts supplied by BT, BT Openreach offers its generic ethernet access (GEA) product on an equivalent basis to non-intervention areas. There is significant competition in the retail market in the UK with 22 residential retail providers and 52 business retail providers. BT offers its BT (Retail) and Plusnet services.

- 3.102 For the community broadband projects that have been won by alternative suppliers, wholesale services are available directly from the supplier or through the Fluidata platform. In these areas, the suppliers have offered their own retail services and there is typically limited competition from other internet service providers.

⁸⁰ Department for Environment, Food & Rural Affairs (2014), 'Premises with the potential to receive superfast broadband, as a result of Rural Community Broadband Fund investment in England, 2013/14 to 2014/15', 21 August.

⁸¹ The only complaint/dispute was submitted by Digital Region Ltd and Thales in 2011. Digital Region was not an intervention covered by the National Broadband Scheme.
http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01067/

Table 3.14 Wholesale and retail services across intervention areas

Intervention area	Wholesale services	Retail services
All framework and non-framework contracts (BT)	BT Openreach offers its GEA wholesale service on an equivalent basis to non-intervention areas	22 residential retail suppliers, including BT (Retail) and Plusnet 52 business retail suppliers, including BT (Retail) and Plusnet Choice of retail providers is set out at http://www.superfast-openreach.co.uk/buy-it-now/
Fibre Garden (ITS)	Wholesale services will be made available through the Fluidata platform (http://www.fluidata.co.uk/solutions/serviceexchangeplatform/)	Service is yet to go live, so currently no active retail providers
Kent Community Projects (Call Flow)	Wholesale services are available direct from Call Flow	Call Flow offers its own retail service
Northmoor (Gigaclear)	Wholesale services available through the Fluidata platform	Gigaclear offers its own retail service
Tove Valley	Wholesale services available direct from Tove Valley	Tove Valley offers its own retail service
Worcestershire Community (Airband)	Wholesale services available direct from Airband	Airband offers its own retail service

Source: BDUK and publicly available information.

3Bxv Appropriate measures

- 3.103 Paragraph 88 of the Decision requires that the UK take ‘appropriate measures’ to bring the scheme into line with any subsequent updates to the Commission’s Broadband Guidelines. Subsequent to the publication of the Decision, the Commission published the 2013 Broadband Guidelines, which introduced changes to the state aid rules regarding the deployment of broadband infrastructure.
- 3.104 DCMS reviewed the need to amend the Scheme in order to comply with the updated Broadband Guidelines, but ultimately determined that no such appropriate measures were required. DCMS noted that the Decision played an important role in informing the content of the 2013 Broadband Guidelines, with some ‘best practice’ aspects of the Decision featuring in the updated guidelines. Moreover, the Broadband Guidelines were published only two months after the Decision.
- 3.105 Oxera has reviewed the UK’s decision not to take appropriate measures in relation to the National Broadband Scheme and considers that, overall, this decision was reasonable. The requirements of the 2013 Broadband Guidelines are closely aligned with those of the Decision. However, Oxera notes that BDUK has chosen not to maintain a national database on the availability of existing infrastructure that could be reused for broadband roll-out and therefore may be non-compliant with paragraph 78 (f) of the Broadband Guidelines.
- 3.106 This evaluation has considered compliance in terms of the requirements of the 2013 Broadband Guidelines, and thus any other potential issues of non-compliance have been raised above.

3Bxvi Other issues

3.107 BDUK has provided Oxera with a complaints log, identifying all complaints received regarding the implementation of the National Broadband Scheme and the actions taken in response.

3.108 In total, BDUK has received five complaints, although two of these are not relevant to this evaluation. These complaints have been discussed above, with the exception of:

- A complaint raised by B4RN regarding the tender process for the Lancashire project. This complaint was subsequently withdrawn and thus we have not considered it further.
- A complaint raised by Solway Communications regarding the Cumbria project. This complaint preceded the Decision and we have therefore not considered it as part of this evaluation.
- A complaint raised by Mr Patrick Cosgrove regarding the compliance of the scheme with the requirement for maximum coverage to be achieved for the level of aid granted. This complaint was submitted during the course of the ex post evaluation and is currently being reviewed by the Commission. We therefore do not consider that it is appropriate for Oxera to comment on this complaint as part of the evaluation.

3.109 We therefore do not consider there to be any other compliance issues.

3Bxvii Overall assessment of compliance

3.110 Table 3.15 summarises Oxera's assessment of BDUK's compliance with the relevant conditions, as set out in the Decision and the Broadband Guidelines, in implementing the National Broadband Scheme to date. Overall, we consider that BDUK has been compliant with the compatibility conditions. We have highlighted a small number of potential concerns.

Table 3.15 National Broadband Scheme compliance: a summary

Condition	Key considerations	Information gathered	Comments	Compliant?
Mapping and analysis of coverage	<p>What process was followed for defining white areas for each project? Was there any scope for gaming by suppliers?</p> <p>Has the Scheme been compatible with the Decision in terms of providing aid only to rural white areas?</p> <p>Were any issues raised by stakeholders on mapping and coverage, and, if so, how were they dealt with?</p> <p>Did local bodies undertake market research and public consultation in the process of defining white areas?</p>	<p>Paper trail on the definition of white areas, including:</p> <ul style="list-style-type: none"> • mapping guidance document • presentations made to local authorities on mapping • state aid approval spreadsheets and decision forms • list of issues raised in response to OMR/public consultation 	<p>We observe that the definition of speed thresholds (at as low as 15Mbps) may be non-compliant in the strictest sense</p> <p>Oxera has also observed potential non-compliance issues regarding the definition of white areas for Phase Two due to changes to BT's commercial investment plans</p> <p>We have also received representations regarding potential overbuild in one area</p>	<p>✓ subject to clarification of the issues identified</p>
Tender process	<p>How was the tender process run?</p> <p>Compliance of chosen tender process with EU procurement rules?</p> <p>Analysis should highlight any differences in offers, award criteria weightings (e.g. more points for more access conditions), approach to technological neutrality, etc.</p> <p>Was the most economically advantageous offer accepted in each instance?</p>	<p>Information on the design of the national procurement framework</p> <p>Template call-off contract</p> <p>OJEU notices, where applicable</p> <p>Procurement documentation</p> <p>Documentation on local tender processes</p>	<p>On the basis of the evidence reviewed, Oxera concludes that all projects have been tendered in a way that is compliant with EU procurement legislation and the Decision</p>	<p>✓</p>
Use of existing infrastructure	<p>Have bidders made proposals to use existing infrastructure, and how were proposals to use existing infrastructure scored in the tender process?</p>	<p>Information on the use of existing infrastructure for each project</p>	<p>Local bodies have encouraged the use of existing infrastructure in ITTs</p> <p>A large number of projects have built on BT's existing infrastructure</p> <p>However, BDUK has not published a national database of existing infrastructure (given that it believes the aim of such a database is achieved through other measures)</p>	<p>✓ subject to clarification of the compliance of BDUK's decision not to produce a national infrastructure database</p>

Condition	Key considerations	Information gathered	Comments	Compliant?
Wholesale access and price benchmarking	<p>Has there been compliance with the minimum access conditions outlined in the Decision?</p> <p>Have there been requests for access (for active and passive infrastructure)? If so, how have these been treated?</p> <p>Have stakeholders raised any competition or state aid concerns relating to access?</p> <p>Has any price benchmarking been undertaken?</p>	<p>List of requests for network access, provided by BT</p> <p>Information on PIA Plus from BT's website</p> <p>Interviews with BT staff</p>	<p>BT introduced a compliant passive product (PIA Plus). It has received only one request for PIA Plus, and the CP was ineligible</p> <p>Ofcom has confirmed that it has not received any formal complaint about any request for network access to BT's state-subsidised infrastructure, or use of/access to PIA Plus</p> <p>BDUK has published guidance on its proposed proportionality analysis but has not been required to conduct such analysis to date.</p>	✓
Claw-back mechanism	<p>Has a claw-back mechanism been applied as per the Decision?</p>	<p>Contract documentation</p> <p>Project-specific information on the claw-back mechanism</p> <p>Presentations provided by BDUK's value for money team</p> <p>Schedule 5 of the framework contract</p>	<p>Included in the template call-off contract, so applied for all projects covered by the framework agreement. Local bodies that have chosen to use non-framework procurement processes have used the wording from Schedule 5.1 of the template call-off contract, with adjustments solely intended to reflect the context as non-framework projects instead of call-off contracts</p>	✓
Monitoring	<p>Information on the activation of monitoring (e.g. frequency of reporting, items of verification)</p>	<p>Monitoring information compiled by the NCC</p>	<p>No issues identified. The monitoring requirements are captured in the template call-off contract, and BDUK has met with local bodies on a frequent basis</p>	✓
Horizontal separation	<p>Description of BT's success in projects and motivation for this success</p>	<p>Information on costs—evidence that BT was considerably lower-cost than other suppliers</p>	<p>We note that BT has won all the (Phase One and Phase Two) framework contracts and the majority of the non-framework contracts (with the exception of a small number of community projects)</p> <p>BT has a number of advantages over competing suppliers that have meant that there is a smaller subsidy requirement where BT is awarded contracts. The following competitive advantages were identified by BDUK prior to the procurement process</p> <ul style="list-style-type: none"> • BT benefits from economies of scale—BT would be extending its existing network 	✓

Condition	Key considerations	Information gathered	Comments	Compliant?
			<p>whereas alternative suppliers would be starting from scratch</p> <ul style="list-style-type: none"> • BT has a highly optimised supply chain • BT has an existing service footprint and a large field force • BT is further up the learning curve than other providers. <p>We note further that a number of BT's projects have built on its existing infrastructure. This may provide BT with a competitive advantage over alternative providers, particularly if the latter have less detailed understanding of the availability of existing infrastructure.</p> <p>From discussions with stakeholders, Oxera understands that BT offered a significantly lower price than Fujitsu in the tenders for which Fujitsu competed.</p>	
Regulatory conditions	For each project, have there been any concerns relating to regulatory compliance?	<p>Interviews conducted with Ofcom staff</p> <p>A formal request for information regarding regulatory compliance has been sent to Ofcom</p>	<p>No regulatory compliance issues were raised during the interview</p> <p>The response to the request for information regarding regulatory compliance has not been reviewed at this stage</p>	n.a.
Other issues	Have stakeholders raised any other state aid or competition issues?	Information held by Ofcom and BDUK on complaints/issues raised by stakeholders	Oxera has received a complaints log from BDUK and these complaints have been considered in the analysis above. Ofcom has confirmed it has not received any complaints regarding the scheme.	n.a.

3C Was the Commission correct to assume that providing all types of wholesale access products (i.e. 'open access' to passive infrastructure) on the subsidised network in the UK would disproportionately increase the investment costs for those final-third areas that are within scope of the Decision without bringing otherwise anticipated competition benefits?

- 3.111 According to the Broadband Guidelines, subsidised networks should provide all forms of wholesale access to interested operators. However, the Decision established a minimum set of wholesale access conditions, while recommending that additional wholesale access conditions be assessed on a case-by-case basis according to a proportionality test.⁸² This Decision was based on the idea that imposing all types of access on the final-third areas would disproportionately increase the investment costs without necessarily bringing otherwise offsetting competition benefits. Other national regulatory authorities (NRAs), through BEREC, have expressed a similar concern in the past, stating that imposing all types of network access could affect the 'business case for network roll-out in areas where there is evidence of a long-term lack of competitive provision'.⁸³
- 3.112 In this section, we examine whether the Decision should have established a wider set of wholesale access conditions. The analysis focuses on passive access conditions, which allow operators to use the physical infrastructure of the subsidised network. Although the Decision required a form of 'open access', it was limited in initial scope as it was conditioned on access seekers obtaining most of their revenues from broadband services—this being a primary objective of the measure and the identified market failure—rather than requiring all forms of wholesale access to be offered at the outset to deliver other services, such as business connectivity.⁸⁴ Fujitsu was proposing to use BT's regulated PIA product to address 'white' intervention areas and to offer full 'open access' to all state-funded infrastructure it built in those areas. The main qualitative difference in the bids therefore being that Fujitsu would have built more new infrastructure to deliver superfast services in the white intervention areas, to which unrestricted open access would have been provided.⁸⁵
- 3.113 Ofcom has imposed complementary passive (PIA) and active remedies (Generic Ethernet Access) on BT in the wholesale local access market to support the deployment of superfast broadband, including in final-third areas of the UK. However, certain operators have called for passive access conditions to extend into other markets in which BT holds a position of significant market power, specifically in business connectivity markets.
- 3.114 The analysis starts by outlining the wholesale access conditions imposed by the Decision and analysing their relationship with Ofcom's sectoral regulation, with the aim of understanding the gap between full passive access and the access conditions established in the Decision, coupled with the existing regulatory framework. The analysis then examines whether it would have been

⁸² European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, para. 55.

⁸³ BEREC (2011), 'BEREC Report on Open Access', February, p. 14.

⁸⁴ Where BT receives state funding to deploy new duct and pole infrastructure, this must be provided on unrestricted wholesale access terms.

⁸⁵ Other forms of access have not yet been requested by access seekers, as evidenced by BT's response to the BDUK information request.

proportional to introduce stronger passive access conditions based on the available evidence, which includes:

- information on the take-up of passive access inside and outside state aid areas;
- market information on the way in which operators price and market their products;
- previous analysis/advice by independent authorities, including Ofcom and the Competition Appeal Tribunal (CAT);
- evidence from BT and Fujitsu's bids on the incremental costs of providing passive access.

3.115 Note that Ofcom is currently consulting again on the possibility of imposing passive access in the business connectivity market.⁸⁶ This consultation may bring to light new evidence that is not being considered in this analysis.

3.116 Wholesale access conditions set in the Decision, and their relationship with Ofcom's regulatory framework

3.117 The Decision required subsidised networks to offer a minimum set of wholesale access points (see Table 3.16). In the case of fibre-based networks, this minimum set of conditions included:

- one access point to the supplier's physical network (i.e. passive access) for new infrastructure deployed;
- one access point to the supplier's active network (e.g. Bitstream, VULA);
- others imposed by Ofcom.

3.118 For FTTC projects, the minimum access conditions also included SLU—i.e. access to the copper terminating segment or sub-loop—but were limited to new copper loops installed by the supplier.

3.119 In addition, the Decision required subsidised networks to offer other 'recommended' forms of access when requested by interested operators, albeit this was conditional on them passing a proportionality test (which would be applied by Ofcom).

⁸⁶ Ofcom (2014), 'Business Connectivity Market Review Preliminary consultation on passive remedies', Consultation, 5 November.

Table 3.16 Wholesale access requirements set out in the Decision

Technology	Minimum access condition	Recommended additional conditions
FTTH/FTTB	<ul style="list-style-type: none"> • One point of physical access on infrastructure (albeit restricted on existing infrastructure) • One point of active access (full unbundling in the case of deployment of a point-to-point network; VULA equivalent in the case of a point-to-multipoint network) • Other wholesale access if mandated by Ofcom 	<ul style="list-style-type: none"> • Multiple points of physical access • Splitter access • White label
FTTC	<ul style="list-style-type: none"> • One point of physical access on new infrastructure • One point of active access (i.e. VULA equivalent) • Other wholesale access if mandated by Ofcom • SLU if sub-loop deployed as part of subsidised project 	<ul style="list-style-type: none"> • Multiple points of physical access • Cabinet space and power • White label
Powerline	<ul style="list-style-type: none"> • No point of physical access required (already provided by DNO) • One point of active access (i.e. VULA equivalent) 	
Wireless/mobile	<ul style="list-style-type: none"> • Access to the backhaul network • Mast access • Either Bitstream or White label 	
Satellite	<ul style="list-style-type: none"> • Either Bitstream or White label 	
Cable	<ul style="list-style-type: none"> • One point of physical access • One point of active access 	<ul style="list-style-type: none"> • Multiple points of physical access • Head end space and power • White label

Note: Although passive access was initially restricted to new infrastructure, BDUK modified this condition to allow competitors whose business plan relied upon providing business connectivity services to have access to existing infrastructure, albeit under the condition of them obtaining most of their revenues from broadband services.

Source: European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 16.

- 3.120 The Decision imposed full unrestricted passive access on new fibre-based infrastructure, but restricted this in the case of existing infrastructure.⁸⁷ Specifically, interested alternative operators were able to access the supplier's existing infrastructure only if i) their main target were the retail NGA 'mass market'; and ii) their business case were made viable only when providing business connectivity services in addition to the retail NGA service. The passive condition imposed in the Decision was therefore limited in scope.
- 3.121 However, the Decision went further than Ofcom's existing regulatory framework. In 2010, Ofcom imposed a passive access condition on BT's network (PIA), but its use by access-seekers was restricted to the provision of retail broadband and voice services (see Box 3.1). In other words, operators could not use PIA to provide other services such as business connectivity.

⁸⁷ European Commission (2012), 'State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, p. 18, para. 57.

Box 3.1 Ofcom's wholesale access remedies on BT's NGA network

In its Wholesale Local Access market review,¹ Ofcom imposed wholesale access remedies on BT that are relevant to NGA services. These remedies are national in scope (excluding the Hull area), and include both active and passive wholesale access conditions:

- VULA, which allows operators to access BT's NGA local network with a degree of control similar to that achieved by local loop unbundling;
- PIA, which allows operators to build their own NGA network using BT's duct and poles infrastructure to provide broadband and voice services exclusively;
- SLU, which allows operators to build their own NGA network using BT's copper wire from the cabinet to the customer's premises.

Source: ¹ Ofcom (2010), 'Review of the wholesale local access market', 7 October; Ofcom (2014), 'Fixed access market reviews 2014', 26 June.

3.122 BT introduced PIA Plus in order to be compliant with the Decision. Below we examine whether the Decision should have gone even further and imposed full, unrestricted passive access.

3Ci Should stricter passive access conditions have been imposed by the Commission?

3.123 This question can be addressed by assessing the additional costs and benefits of extending the PIA Plus condition to full unrestricted passive access. This would involve removing the condition set on PIA that operators using the input would need to generate their revenues mainly from serving the 'mass market'. Removing such restrictions would, in principle, make such wholesale input more attractive to access seekers, and thus have the effect of increasing its take-up.

3.124 The degree of additional benefits therefore depends on the extent to which operators are expected to use this type of network access, if made available. It would also depend on the consequent competition benefits, such as lower retail prices and greater scope for product differentiation and innovation.

3.125 On the other hand, encouraging further passive access could bring additional costs:

- increasing investment duplication by operators (which might feed into higher retail prices);
- hindering incentives to invest in new physical infrastructure;
- promoting inefficient entry.

3.126 In addition, Ofcom has identified other potential risks/costs, such as an undermining of BT's ability to recover common costs, and an inconsistency with the current control charge framework (these are discussed below).

3.127 These benefits and costs have been assessed in the past by Ofcom, albeit with a national perspective. Below, we use the available evidence (e.g. Ofcom's previous analysis, available market information, additional information provided by BDUK and stakeholders) to inform a cost-benefit analysis in the context of state aid areas.

Benefits of passive access in state aid areas

Evidence of the demand for passive access

- 3.128 Assessing the demand for passive inputs is important to establish the scope of the benefits that could be derived from the use of these inputs. If little demand for passive access is expected, the potential effect on competition will be limited and, as a result, will not be expected to lead to major market changes.
- 3.129 Previous analysis undertaken by Ofcom suggests that demand for passive access in the UK is relatively weak. In its 2012 Business Connectivity Market Review (BCMR), Ofcom was not able to find evidence of operators willing to invest 'substantially' in infrastructure based on passive inputs.⁸⁸ Crucially, Ofcom highlighted that operators failed to show evidence that 'extending the allowed uses of PIA to leased lines would unlock significant new investments in NGA infrastructure.' It suggested that the apparent interest shown by operators in using passive access was based on the false premise that access prices would be set at PIA levels, which it thought would be unrealistic given the usage restrictions imposed on this input.
- 3.130 In relation to state aid areas, Ofcom provided advice to BDUK suggesting that demand for passive access in these areas would be even less likely to happen. It acknowledged that the use of passive access requires operators to make further investments, which would be more difficult to recover in less densely populated areas, as is the case in state aid areas. Instead, Ofcom considered that competition in these areas would be more likely to develop based on active inputs.
- 3.131 This hypothesis appears to be supported by the fact that operators have not yet shown interest in using passive access for providing retail NGA services in state aid areas (the target of the intervention).⁸⁹ This is despite BT being required to consider requests from operators that are also planning to provide business connectivity services.
- 3.132 Considerations on the effects on competition inside state aid areas
- 1) Scope for product differentiation and innovation*
- 3.133 A key potential benefit of passive access over active access is that it provides competitors with more control over the broadband connection. This was acknowledged by Ofcom in the 2012 BCMR. Such greater control allows competitors to differentiate their products (e.g. by quality, speed, service) and innovate more widely, thereby increasing the product variety available in the market and, in general, improving the market outcome for consumers.
- 3.134 Such product differentiation may not happen in practice if operators are constrained by their commercial strategies. In the residential segment of the market, for example, operators in the UK tend to design their product offerings on a national basis. This is despite the fact that access seekers use a different wholesale input mix across the UK—i.e. operators may use local loop unbundling more in some areas of the country than in others. In this case, relative to active access, passive access would be highly unlikely to lead to

⁸⁸ Ofcom (2012), 'Business Connectivity Market Review: Review of the retail leased lines, wholesale symmetric broadband origination and wholesale trunk segments markets', June, Section 8, p. 658.

⁸⁹ According to BT's response to BDUK's information request, BT has received only one PIA Plus request in state aid areas. However, this request was denied on the basis that the operator was not yet a PIA customer and was not planning to provide retail NGA services. We understand that Ofcom has not yet received any complaints from operators in relation to passive access in state aid areas.

operators offering different products in state aid areas compared with the rest of the country.

- 3.135 However, operators may have a greater scope to differentiate their products in the business segment of the market, where products are often bespoke. In this case, operators may benefit from having greater control over the broadband connection, which could in turn bring competition benefits to consumers.

2) Effect on retail prices

- 3.136 Passive access could also affect retail prices. By using passive inputs, more efficient operators could deploy their own NGA networks and achieve lower unit costs, relative to BT. Such efficiency gains could then be passed on to consumers via lower prices. However, these cost savings depend on the access seeker achieving its minimum efficient scale—i.e. the critical number of subscribers/traffic that allows the access seeker to operate at minimum unit costs. This critical level is more difficult to achieve in low densely populated areas (as is the case of state aid areas), where fewer subscribers would share the fixed costs of the local network compared with higher-density urban areas.
- 3.137 Even if efficiency gains were possible to achieve in these areas, cost savings would still need to be passed on to consumers—via retail prices—to have an effect on the market. Similar to the above case (of product differentiation), commercial strategies (such as national pricing) may constrain such pass-through. In this case, an operator setting national pricing would have to forgo revenues in non-state aid areas to lower its prices in state aid areas, making it a costly strategy. As discussed above, such a trade-off could be avoided in the case of business users, where prices are often bespoke.

Costs of passive access in state aid areas

Evidence from Ofcom's BCMR, and confirmed by the CAT

- 3.138 In the past, Ofcom has considered introducing passive access remedies on BT's network. As mentioned above, as part of the 2010 WLA market review, Ofcom decided to impose a physical access condition on BT (known as PIA) which allowed competitors to deploy their own NGA networks using BT's duct infrastructure. The aim of PIA was to encourage the deployment of NGA networks in places where BT had not deployed its own—as Ofcom thought that competitors would consider it uneconomical to duplicate BT's NGA network.
- 3.139 The take-up of PIA and PIA Plus by operators has been limited so far. This has been acknowledged by both Ofcom and operators, some of which have attributed the low take-up to the usage restrictions imposed on the PIA remedy (as business connectivity services cannot be delivered).⁹⁰ One of the survey respondents argued that the restrictions on PIA Plus make it unusable, while another stated that it plans to request PIA Plus in order to supply NGA-based superfast services in a BDUK-funded area in the future.
- 3.140 In the 2012 BCMR, Ofcom considered extending the PIA remedy to business connectivity services. In its assessment, Ofcom acknowledged the benefits that passive access could bring, including:
- providing operators with more control over the broadband connection, enabling them to differentiate their products more widely and to innovate;

⁹⁰ Ofcom (2012), 'Business Connectivity Market Review', Statement, Section 8, p. 656.

- incentivising investments from alternative operators;
 - the potential for lower retail prices.
- 3.141 Ofcom also identified the costs of extending the passive access condition to business connectivity services, including:
- an adverse effect on incentives to invest in new physical infrastructure;
 - inefficient duplication of investment;
 - a risk of inefficient entry;
 - undermining BT's ability to recover common costs.
- 3.142 Ofcom was particularly concerned about the impact that passive access could have on BT's ability to recover common costs and its consistency with the overall regulatory framework. Specifically, Ofcom had designed a charge control for business connectivity services that provided BT with the flexibility to determine how to recover its common costs—by setting the relative prices (or price gradient) between the wholesale products that comprised the basket of controlled services.
- 3.143 Ofcom considered that imposing passive access could undermine such a mechanism for recovering common costs as it allowed operators to access BT's infrastructure at a flat rate and then target the services that were priced the highest by BT. Ofcom argued that this meant that operators could be attracted to use passive access to take advantage of the arbitrage opportunity provided by BT's price gradient. In turn, this raised concerns about possible inefficient entry.
- 3.144 After balancing the costs and benefits identified, Ofcom concluded that the risks of imposing passive access outweighed the potential benefits, and decided not to impose the access condition. The decision was later confirmed by the CAT as part of an appeal process initiated by Colt.

Impact of passive access on BT's common cost recovery in state aid areas

3.145 Consistent with Ofcom's analysis, BDUK sought to estimate the impact of full passive access on BT's common cost recovery inside the intervention areas. Based on information provided by BT, BDUK estimated this impact to be in the order of £43m on yearly profits. (See Box 3.2 for a description of the assumptions underpinning this calculation.)

3.146 ✂
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3.147 ✂
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⁹¹ ✂
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Box 3.2 Assumptions underpinning BDUK's estimation of the financial impact of passive access on BT's common cost recovery



Source: BDUK.

- 3.157 Another way of measuring the impact of full passive access is by estimating how much less geographic coverage would have been achieved based on the funding available for the programme. On this basis, BDUK estimates that BT's forgone profits in the business connectivity market would have reduced programme coverage from 90% to 85% of premises.

Could the outcome of the tender process be different if full passive access had been required?

- 3.158 The above calculations suggest that BT could have raised its bid by around ✂% if additional access were required, while we understand that BT has suggested that it might not have bid at all in such a scenario. We further understand that Fujitsu's bid was substantially higher than BT's actual bid. This could imply that the outcome of the tender process would have remained unchanged if full passive access to existing infrastructure would have been required. However, in the absence of any formal cost proposal by BT on the additional cost of open access, it is difficult to assess what the outcome would have been.

⁹² ✂
✂
✂

**Concluding remarks including identification of any areas of concern
and/or any recommendations**

- 3.159 The above analysis provides some evidence that imposing further passive access conditions would have been unlikely to change the market outcome, while it could have reduced the coverage of the BDUK programme. The evidence points at demand for passive access in state aid areas—which are characterised by low population density—being rather low; thus suggesting that competition benefits from passive access were likely to be limited.
- 3.160 Stricter passive access conditions, on the other hand, may have raised the subsidies required by potential suppliers, particularly those required by BT. Previous analysis by Ofcom has shown that passive access can undermine BT's ability to recover common costs when providing business connectivity services. Such risk was likely to be material in state aid areas (as evidenced by BT's business connectivity revenues services) relative to the estimated net profits from NGA roll-out in these areas. To compensate for such risk, BT could have added a price premium to its bid, raising the cost of the programme. However, we are unable to observe what this cost would be as BT did not submit a formal proposal.
- 3.161 Importantly, such a price premium was unlikely to result in a different outcome for the tender. We understand that Fujitsu's bid price—which offered wider passive access conditions than BT—was significantly higher than BT's in areas in which it competed, while the price premium is estimated to have been in the order of 3%.
- 3.162 Therefore, imposing stricter passive access conditions threatened to reduce the programme coverage—by increasing the amount of subsidies required—while potential competition benefits were likely to be limited. We understand that BDUK's main objective was value for money, and, on this basis, requiring further passive access conditions would have been disproportionate.
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4 Effectiveness

4.1 The EU's 'Digital Agenda for Europe, one of the flagship initiatives under the Europe 2020 Strategy, sets out key objectives for broadband roll-out by 2020, including:

- roll-out of basic broadband to all European citizens (including those living in rural, remote and isolated areas) by 2013;
- access to Internet speeds above 30 Mbps for all European citizens by 2020;
- access to Internet speeds above 100 Mbps for at least 50% of European citizens by 2020.

4.2 The overarching aim of investment in superfast broadband infrastructure is to foster economic growth. A recent review of the economic impact of investment in superfast broadband—commissioned by the DCMS and led by the SQW Group—estimated the benefits of broadband to be a £20 return for every £1 invested in broadband roll-out from economic, social and environmental benefits.⁹³ The study further estimated that the availability and take-up of faster broadband speeds could add £17bn to the UK's annual gross value added (GVA) by 2024.⁹⁴ The roll-out of broadband is expected to:

- improve the productivity of businesses that rely on broadband;
- mitigate the widening of the 'digital divide' discussed below and safeguard local employment;
- improve productivity of teleworkers;
- increase labour force participation, particularly from part-time workers;
- increase investment in the construction of broadband infrastructure.⁹⁵

4.3 Specifically, the study found support for the significant benefits of broadband intervention in mitigating the 'digital divide'. As urban areas with high broadband connectivity continue to see improvements in bandwidth, rural areas with poor connectivity become relatively more disadvantaged. Ensuring basic standards and near-universal coverage through rural broadband roll-out initiatives is expected to reduce the widening of the divide, and thereby improve connectivity for all.⁹⁶

4.4 Against this backdrop, the UK government looked at options for funding the final third of premises in the UK that it was believed would not receive superfast broadband coverage without government intervention. The National Broadband Scheme was thus set up to deliver the required investment. The original objectives of the Scheme (as outlined in the Decision) were to:

- provide access to NGA infrastructure capable of delivering superfast broadband speeds to as many homes and businesses as possible in each local authority area in the UK;
- ensure that everyone in the remaining areas in the UK has access to minimum broadband speeds of 2 Mbps.

⁹³ SQW (2013), 'UK Broadband Impact Study', November, p. 3.

⁹⁴ SQW (2013), 'UK Broadband Impact Study', November, p. 2.

⁹⁵ SQW (2013), 'UK Broadband Impact Study', November, pp. 11–12.

⁹⁶ SQW (2013), 'UK Broadband Impact Study', November, p. 4.

- 4.5 For the purposes of the Scheme, superfast broadband is defined as broadband speeds of greater than 24Mbps. This is slower than Ofcom's definition of superfast broadband as speeds of over 30Mbps (as well as the Digital Agenda for Europe's aim of providing speeds of 30Mbps to all European citizens by 2020).
- 4.6 BDUK subsequently identified three distinct phases in the delivery of superfast broadband:⁹⁷
- Phase One: superfast broadband coverage delivered to 90% of UK premises, and minimum basic broadband speeds of 2 Mbps for all of the UK by 2016;
 - Phase Two: superfast broadband coverage delivered to 95% of UK premises by 2017;
 - Phase Three: test options for rolling out superfast broadband past 95% coverage with pilot projects to be completed by March 2016.
- 4.7 This section considers the effectiveness of the aid granted thus far against the UK government's objectives in providing state funding for the roll-out of rural broadband. The section considers the original objectives of the Scheme as set out in the Decision, as well as the more explicit objectives of Phase One and progress towards the longer-term Phase Two objective.
- 4A To what extent have the state aid interventions approved by BDUK helped the UK meet its primary objective of providing NGA infrastructure to as many homes and businesses as possible in relevant final-third areas?**
- 4.8 Relative to the UK government's original timetable, of completion by May 2015, there have been some delays in the roll-out of rural broadband. BDUK has subsequently set a revised timetable for delivery, with 90% of premises receiving superfast broadband coverage by early 2016 and 95% by the end of 2017.
- 4.9 In terms of the effectiveness of the Scheme, Oxera notes the following.
- To date, 57 contracts have received state aid approval for roll-out of superfast broadband. Delivery has now begun for all Phase One projects and a small number of Phase Two projects.
 - As at Q2 2014/15, an additional 1.6m premises have access to BT's fibre broadband network as a result of the National Broadband Scheme. This equates to completion of around one-third of the Scheme and is slightly ahead of target under BDUK's revised timetable.
 - According to the latest Ofcom 'Infrastructure Report', 75% of premises in the UK now have superfast broadband coverage. Take-up of superfast broadband is 21% and the average broadband speed in the UK is 23Mbps.⁹⁸ Table 4.1 provides summary statistics on superfast broadband coverage and average speeds, by area type. These figures were calculated using postcode-level data from Ofcom, and were published by the House of Commons Library.

⁹⁷ Department of Culture, Media and Sport (2014), 'Broadband Delivery UK Guidance', November, available at <https://www.gov.uk/broadband-delivery-uk>, accessed 24 November 2014.

⁹⁸ Ofcom (2014), 'Infrastructure Report 2014: Ofcom's second full analysis of the UK's communications infrastructure', 8 December.

Table 4.1 Coverage and speeds by area type

Area classification	Superfast broadband coverage	Average speed (Mbps)	Number of areas
Rural town and fringe	45%	16.7	3,189
Rural town and fringe in a sparse setting	34%	14.9	197
Rural village and dispersed	17%	8.5	2,490
Rural village and dispersed in a sparse setting	10%	6.8	328
Urban city and town	85%	25.6	15,724
Urban city and town in a sparse setting	38%	14.3	94
Urban major conurbation	90%	27.3	11,523
Urban minor conurbation	85%	25.1	1,208

Source: House of Commons Library (2014), 'Fixed Broadband: Policy and Speeds 2014', SN06643, 17 December, p. 10.

- BDUK has advised Oxera that it believes the universal service commitment will be met by the target date. The condition is a requirement included in all of BDUK's contracts, but we understand that no contracts have started delivery of this element since infill is the final delivery phase of each contract. Oxera has not received statistical information from BDUK regarding progress against the universal service condition (i.e. delivering at least 2Mbps broadband to all premises).⁹⁹
- To date, 13,870 premises have received speeds of over 24Mbps per £1m of BDUK funding.¹⁰⁰

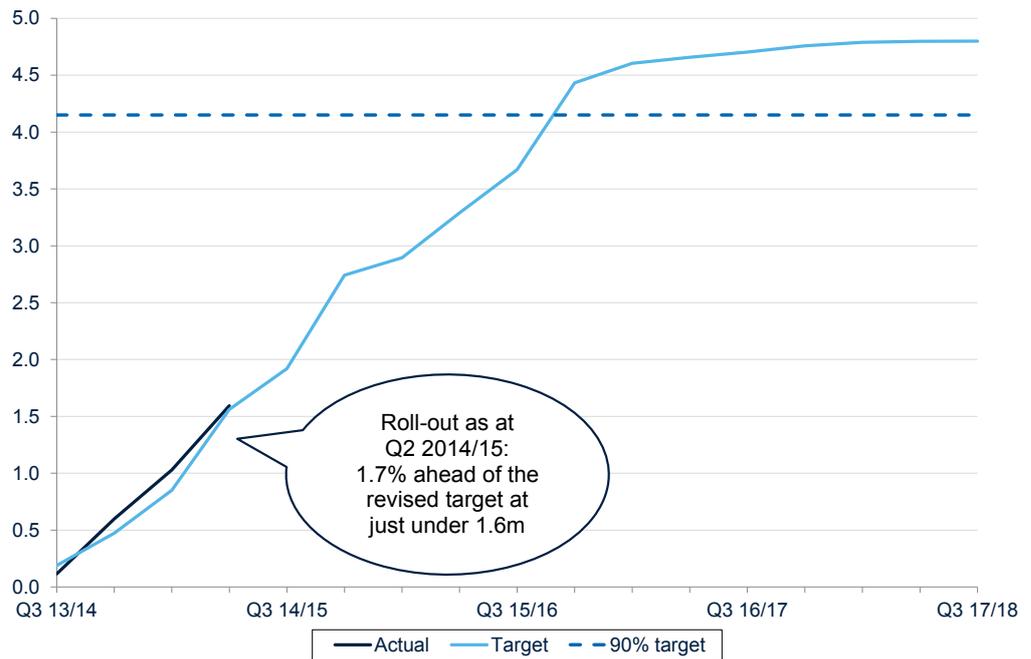
4Ai Coverage

- 4.10 As noted above, the National Broadband Scheme had led an additional 1.6m premises having access to BT's fibre broadband network, as at Q2 2014/15. It is anticipated that the Scheme will lead to NGA coverage at a further 3.2m premises by Q3 2017/18, taking the Scheme's overall coverage to 4.8m premises.
- 4.11 BDUK is on track to deliver its Phase One and Phase Two objectives regarding superfast broadband coverage, although we understand that it is not expecting to meet the universal service condition by 2016. The National Broadband Scheme has already had a material impact on the number of premises receiving superfast broadband coverage and average speeds have risen significantly.

⁹⁹ However, we note that Sean Williams (BT Group Director, Strategy, Policy and Portfolio) recently told the House of Commons Environment, Food and Rural Affairs Select Committee: 'At the moment, we have got probably 97% of premises over 2Mbps, and by 2016 we think that will be about 98.5% of premises.' House of Commons Environment, Food and Rural Affairs Select Committee (2014) 'Oral evidence: Rural Broadband, HC 834', 3 December, p. 2.

¹⁰⁰ Department for Culture, Media and Sport (2014), 'Broadband performance indicators', November.

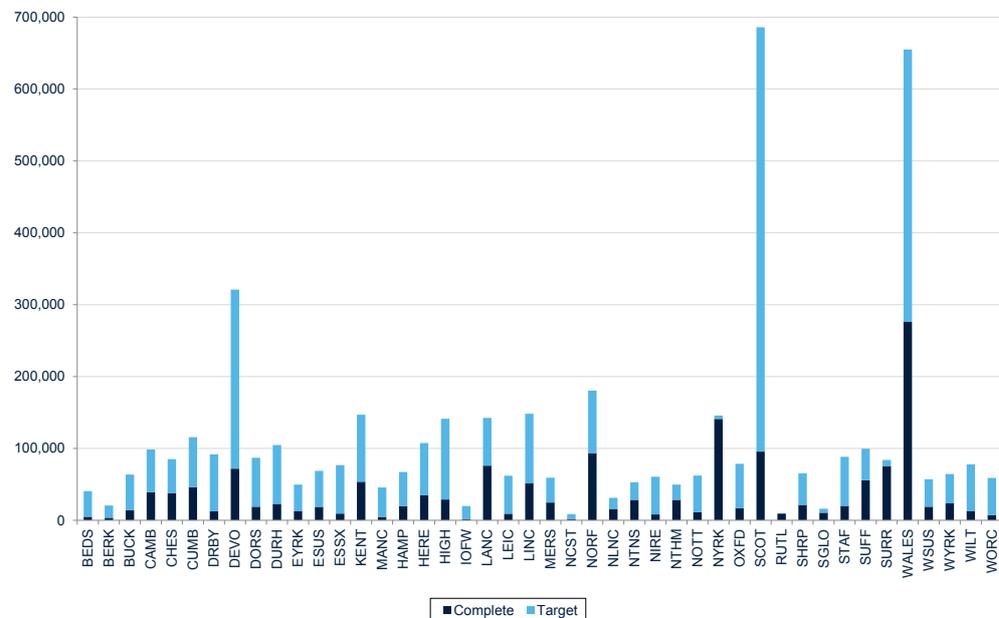
Figure 4.1 Progress in delivering access to fibre broadband networks, aggregate (number of premises covered, m)



Source: Oxera based on information provided by BDUK.

4.12 Figure 4.2 provides a breakdown of the progress in delivery of the Phase One contracts relative to their coverage targets (excluding infill). The Wales project has reached the most premises to date, at just over 275,000 by Q2 2014/15.

Figure 4.2 Progress in delivering broadband coverage, by project



Source: Oxera based on information provided by BDUK.

4Aii Speed

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Figure 4.3 Actual versus contracted speeds across intervention areas

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Source: BDUK.

4Aiii Take-up

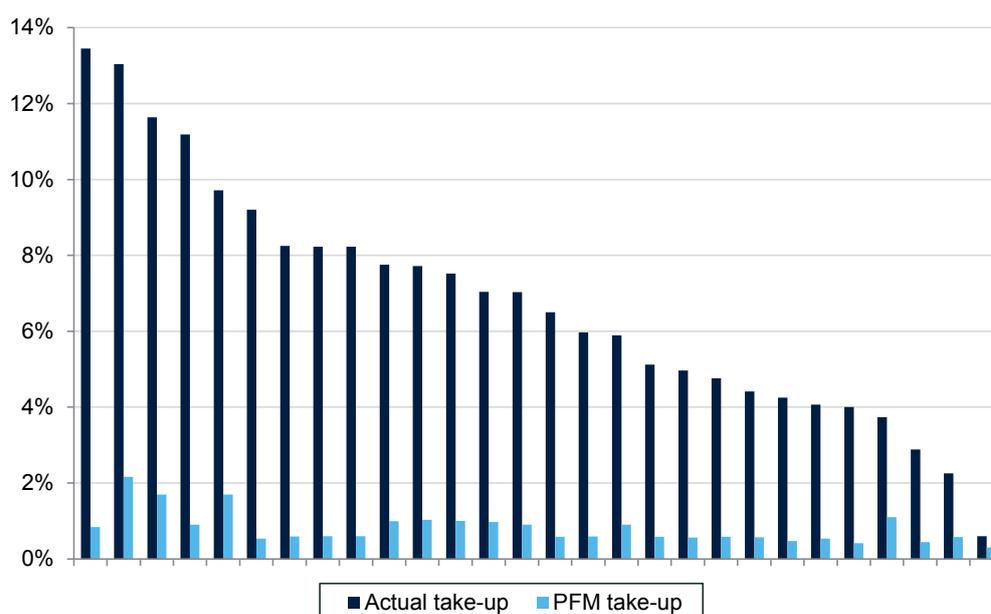
4.13 To date, take-up has been considerably higher than BT modelled in its bids. BT's bids were based on 20% take-up across all intervention areas. The majority of bids were prepared on the basis that 20% take-up was achieved by 2018. In a limited number of cases, however, the bid assumes that 20% take-up is not achieved until 2019. As at Q2 2014/15, overall take-up by premises passed as a result of the Scheme was 8.2% compared with expected take-up of 1.8%.¹⁰¹ This equates to 74,461 customers more than forecast. ✂

✂. It anticipates that the value of the claw-back will continue to grow until the final review date, although this is subject to uncertainty.

4.14 BDUK forecasts take-up trajectories (i.e. the rate at which 20% take-up is likely to be achieved) on a quarterly basis using a straight-line extrapolation of actual take-up. As at Q2 2014/15, the forecast trajectory indicates that 20% take-up will be achieved 10–12 quarters after deployment first starts. However, it is too early to determine whether the accelerated trajectory of take-up indicates that final take-up will exceed 20%.

¹⁰¹ This excludes three local bodies: Surrey, Lancashire and Wales.

Figure 4.4 Outturn take-up relative to bid take-up trajectory



Note: This is a limited dataset that shows take-up figures for 28 local bodies.

Source: BDUK.

4Aiv Costs

4.15 Oxera received strong representations from one stakeholder arguing that it appeared that BT's bids inflated deployment costs. As at Q2 2014/15, the simple mean FTTC cost per cabinet was £25,000, while the median was £21,147.¹⁰² This compares to simple mean and median bid costs of £32,571 and £30,922, respectively. In calculating cabinet costs, BDUK includes the full deployment cost (excluding project management and 'other' capital costs) covered by the contract. This includes any associated fibre spine and exchange equipment. This approach is consistent with that adopted by the NAO in its review of the Scheme.

4.16 Figure 4.5 presents the FTTC cost per cabinet for each of the Phase One projects that are implementing the milestones-to-cash process.¹⁰³

¹⁰² The simple mean FTTC cost per cabinet is not weighted by the number of cabinets in each intervention area.

¹⁰³ This excludes: Cheshire, Cumbria, Herefordshire and Gloucestershire, North Yorkshire, Northern Ireland, Rutland, Surrey, Lancashire and Wales.

Figure 4.5 FTTC cost per cabinet, Q2 2014/15



Note: ✂
✂.

Source: BDUK.

4.17 Figure 4.5 shows the following.

- For the majority of projects, outturn costs to Q2 2014/15 (around a quarter of the way through deployment) have been significantly lower than captured in BT's bids. Bid costs represent the average for the entire contract. In general actual deployment initially focuses on lower cost cabinets with higher cost delivery coming in later phases. As BT deploys more difficult structures in later stages of the interventions, BDUK expects that the average cost per cabinet will continue to increase.

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Variances in average cabinet costs for both bid and actual data reflect the different circumstances in each local body, including differences in the location and condition of existing commercial infrastructure, as well as the location and density of the end-user population.

- Variance in actual cabinet costs between contracts is further influenced by the relative progress of those contracts. As noted above, actual cabinet costs are typically expected to be lower in the early stages of deployment.
- 4.18 Given the current stage of deployment, it is not possible to confidently forecast the outturn FTTC cost per cabinet.
- 4.19 Actual project management costs (which, as noted above, are excluded from cabinet cost analysis) are significantly below the levels projected in BT's bid models. This favourable variance has been attributed to:
- synergies resulting from BT having won multiple contracts. (Bids were modelled on a stand-alone basis, whereas, in reality, a central project management team is now able to manage multiple contracts);
 - the adoption of a standardised and largely automated process across all contracts;
 - actual costs being disallowed that were erroneously assumed to be chargeable in bid models;
 - adoption of a risk-based assurance process reducing the overall level of resource required to support the claim process.

As at Q2 14/15, the reduction in project management costs has contributed £34m to the overall favourable variance observed between actual and bid costs.

4Av Quantitative analysis

- 4.20 The European Commission's state aid evaluation guidelines favour the use of quantitative and econometric techniques to analyse the effectiveness of the provision of aid (relative to a counterfactual in which there is no aid) in incentivising firms to deliver the objectives of the relevant scheme.¹⁰⁴ The aim of using such techniques would be to assess:
- **the incentive effects** of the provision of aid (i.e. the difference in outcomes observed with aid relative to the 'no aid' scenario);
 - **the proportionality of the aid** in terms of whether the aid beneficiaries were granted an amount of aid that was proportionate to the identified market failure.
- 4.21 With regard to the National Broadband Scheme, Oxera has examined the potential to undertake econometric analysis in order to draw conclusions regarding the incentive effects and proportionality of the UK's broadband state aid measure.¹⁰⁵ Ideally, quantitative econometric techniques would be used to address a number of questions, including the following.
- For given broadband investments, is there evidence that the project is only commercially viable as a result of the receipt of state aid (and would not be viable without aid)?

¹⁰⁴ European Commission (2014), 'Common methodology for State aid evaluation', Commission Staff Working Document, 28 May.

¹⁰⁵ 'Econometric analysis' could be undertaken to refer to a wide range of techniques, including generally more practicable tools such as difference-in-difference analysis.

- In general, are there systematic differences in costs and revenues between intervention areas and areas where there has been comparable, commercially funded broadband infrastructure?
- Is there a clear link between the commercial viability of broadband investment and the aid intensity under the BDUK scheme?
- Has the aid beneficiary earned a comparable return on its investment in intervention areas as in non-intervention areas and is there evidence of over-compensation?

4.22 In order to undertake this analysis in the BDUK context, the following information would be required:

- Information on the counterfactual in the form of control group areas that are comparable to the intervention areas but that did not receive aid. These areas need to be comparable in terms of the characteristics that drive investment decisions by broadband infrastructure providers. An appropriate counterfactual group is needed to proxy for the scenario in which no aid were granted in intervention areas.
- Publicly available information concerning sector-wide commercial deployment plans prior to the announcement of state aid funding for rural broadband infrastructure. Such information could helpfully inform whether the provision of aid has had an indirect effect on the investment plans of third parties.
- Publicly available information on the roll-out of infrastructure, speeds and take-up across the intervention and control areas. For example, Ofcom makes specific information available through its market review processes, communications reports and other documentation.¹⁰⁶ This information could be used to compare outcomes in the intervention areas to outcomes in the control group areas.
- Private information from the aid beneficiary on the commercial case for deployments across intervention and control areas (e.g. the aid beneficiary's commercial bid model). This would allow for assessment of whether the categorisation of 'white' areas is consistent with the commercial case for deployment in these areas.¹⁰⁷
- Information on the outturn profitability of BT's activities across intervention and control areas. This information would allow for comparison of the rates of return earned across intervention and non-intervention areas in order to assess whether BT has been over-compensated under the BDUK scheme.¹⁰⁸

4.23 Oxera considers that there are significant issues surrounding the first of these requirements—i.e. the identification of appropriate control group areas—based on publicly available information. Several issues have precluded our ability to identify and gather information on an appropriate control group.

¹⁰⁶ For example, postcode-level data is published alongside Ofcom's Infrastructure Reports. See <http://stakeholders.ofcom.org.uk/market-data-research/market-data/infrastructure/infrastructure-2014/downloads/>

¹⁰⁷ A standard method for assessing the commercial viability of a project is assessment of whether the stream of future cash flows associated with the investment are positive in net present value (NPV) terms. The NPV is calculated using a discount rate that reflects the opportunity cost of capital. When the NPV of a project is positive, this implies that the project has an internal rate of return (IRR) that exceeds the required rate of return, and thus that the project is commercially viable on a risk-adjusted basis.

¹⁰⁸ If BT's returns were found to be systematically higher in intervention areas than in non-intervention areas, this would suggest that BT had been overcompensated.

- The BDUK scheme has been rolled out on a universal basis across eligible 'white' areas in the final third of the UK. BDUK has not administered funding on a random basis (either on a randomised control trial or intermittent basis). Across Phases I and II of the scheme, BDUK has allocated funding at a specific point in time for local and community broadband projects that each cover a range of geotypes.¹⁰⁹ For this reason there is no obvious, readily available, representative control group of untreated individuals in 'white areas' who are similar in characteristic to those who do receive state aid (i.e. there are no final-third white areas of common geotypes which were purposely denied funding). This severely limits the extent to which there are readily comparable areas that have not received aid.
 - By design of the BDUK scheme, broadband is being introduced in areas with sufficiently poor pre-existing coverage ('white areas' and 'white NGA areas'). Comparison to areas outside of the eligibility requirements of the Scheme would imply comparison to areas with different pre-existing economic or topographical factors that make commercial broadband roll-out attractive in the absence of state aid.
 - As reflected in the Commission's decision to restrict aid funding to rural areas, urban white areas (which could be considered as a potential control group) may be systematically different in their cost and revenue characteristics.¹¹⁰
- 4.24 Given the lack of appropriate counterfactual 'white' areas, the best proxy for a control group is likely to be grey areas for which the investment decision was marginal absent aid.
- 4.25 Based on discussions with Ofcom and BDUK, Oxera understands that the primary driver of BT's investment decision in a given area is the topography of the area (for example, the state of the existing BT network and the type of civil works that would be required to extend the network), rather than population density or other demographic metrics which can be identified with public domain data sources.
- 4.26 It is understood that BT's decisions regarding whether commercial investment will be profitable in a given area are made using a proprietary investment model, which takes account of the topography of the area. In order to identify marginal non-intervention areas, the evaluation team would require access to the commercial investment models used by BT and all other credible providers. Based on Oxera's discussions with Ofcom and BDUK, it is therefore highly unlikely that an econometric exercise can identify the 'marginal non-intervention' areas without access to suppliers' proprietary information.
- 4.27 With access to BT's commercial model, it would be necessary to construct an index or ranking of areas by the attractiveness of broadband investment (at the level of individual cabinets). This would allow for identification of the areas for which the decision to make a commercial investment was marginal (i.e. the grey areas that were closest to being classified as white). This is likely to be a complex exercise and would rely on the suppliers' investment models accurately reflecting their final decisions as to whether to invest.

¹⁰⁹ For example, a single local project could encompass urban fringe, suburban, less suburban, dense rural and rural areas.

¹¹⁰ Oxera notes that there are a small number of urban fringe areas in London, Manchester and Birmingham which, in principle, could be eligible for BDUK funding but have yet to receive any. In theory, these areas could act as a control group, but we understand that they are of insufficient number to be representative.

- 4.28 Neither BDUK nor Oxera has had access to BT's commercial investment model and as such this exercise has not been possible as part of this evaluation. For future evaluations it may be possible to conduct this analysis if:¹¹¹
- sufficiently detailed information is available on roll-out, speed and take-up of broadband (this information is already gathered by Ofcom so this should not be a problem in the UK);
 - sufficiently disaggregated information is available on the profitability of the supplier's investments in intervention versus non-intervention areas;
 - the evaluator is granted full access to the supplier's commercial model and the model of any other credible provider.¹¹²
- 4.29 Where it is not possible to access suppliers' commercial investment models, future evaluations could look to compare a sample of intervention areas with a sample of areas for which the supplier identified that the commercial investment decision was marginal, with information on roll-out and profitability in these areas. In this scenario, the evaluator would be required to adopt the assumption that the control sample accurately reflects the supplier's investment decisions (i.e. the supplier is not misrepresenting the viability of commercial investments).¹¹³
- 4.30 Our conclusions on the incentive effects and proportionality of the Scheme from the data sources that are available, are outlined in the remainder of this section and Section 5.
- 4B Was the most effective instrument chosen? Would other instruments or types of intervention have been more appropriate for achieving the UK government's broadband objectives?**
- 4.31 The National Broadband Scheme has been based on a gap-funding model, under which the amount of aid is equal to the difference between the cost of the intervention and the amount that the chosen supplier is willing to invest. For example, if the cost of rolling out broadband in a given intervention area is £100m and the winning supplier is willing to invest £60m, the level of aid would be £40m under the gap-funding model. The Scheme includes within-contract safeguards, such as the milestones-to-cash payment system and the claw-back mechanism.
- 4.32 The milestones-to-cash payment system links supplier payment to the delivery of predefined milestones. The payment system includes processes to ensure that milestones have been achieved before the supplier is paid and that the level of payment claimed is in line with the amount of qualifying capital expenditure incurred. As discussed in section 3.B.ix, the implementation claw-back mechanism restricts the level of funding to the lower of the supplier's actual deployment costs and its forecast level of costs (such that the supplier bears the risk of overspend), while the take-up provision claws back a proportion of revenues where outturn take-up is higher than forecast.

¹¹¹ Depending on the design of future interventions, it may be possible to identify counterfactual white areas, such that the identification of marginal grey areas would not be required. This would, for example, be the case if aid were allocated on a randomised control trial basis.

¹¹² However, such a requirement could have unintended adverse consequences itself—for, example, by discouraging potential suppliers from bidding.

¹¹³ Assuming that the prospective investor is an existing supplier rather than a new entrant.

4.33 This section considers the extent to which the design of the Scheme has been appropriate and effective in delivering the UK government's objectives for the least public funding, or whether a different design could have led to superior outcomes. The section also considers the findings of previous independent reviews of the implementation of the Scheme conducted by the UK NAO and the UK PAC, and provides Oxera's assessment of the Scheme design with specific reference to these earlier findings.¹¹⁴

4.34 As part of this assessment, Oxera has considered the appropriateness of the value-for-money safeguards, the level of transparency, the transfer of risk and intervention size.

4Bi Value-for-money safeguards

4.35 In assessing the appropriateness of the value-for-money safeguards, Oxera considers it important to distinguish between two value-for-money components—namely, whether BDUK has sufficient information and safeguards in place to ensure that:

- the supplier does not receive **excessive compensation** for the costs it incurs;
- the level of costs that the supplier incurs in delivering superfast rural broadband infrastructure is **efficient**.

4.36 In terms of the former, Oxera considers that BDUK's milestone-based payment process and financial controls are sufficiently robust to ensure that the supplier is paid no more than it incurs. Moreover, the experienced professionals of the BDUK team have detailed knowledge and understanding of the supplier they are dealing with (BT), and the processes involved.¹¹⁵

4.37 BT provides invoices for all costs incurred under BDUK contracts, and costs can be recovered only where they are evidenced to a pre-agreed standard.¹¹⁶ The accounting requirements for the costs of delivering BDUK-funded schemes are the same as for BT's commercial business. BDUK has created standardised cost and milestone reporting templates for local bodies to use to ensure that milestones have been reached and the expenditure incurred is permitted capital expenditure. BDUK has also produced cost-comparison reports that analyse differences in the actual costs incurred across intervention areas. These processes have been in place since the inception of the National Broadband Scheme, and Oxera is confident that BT has not been overpaid relative to the costs that it has incurred. We note that a recent Project Assessment Review conducted by the Cabinet Office concluded that:

The value for money modelling work around the Milestones to Cash assurance process for the Superfast Broadband programme was exemplary and

¹¹⁴ The NAO is an independent body that is responsible for auditing central government accounts and scrutinising public spending on behalf of Parliament. The PAC is a select committee of the British House of Commons that examines NAO reports and undertakes inquiries where it has concerns about the value for money delivered by public expenditure.

¹¹⁵ See also National Audit Office (2015), 'The Superfast (Rural) Broadband Programme: update', memorandum for the House of Commons Committee of Public Accounts, January, p. 15, para 3.4.

¹¹⁶ BT is permitted to charge for direct incremental costs only where supported by evidence through copies of invoices, receipts, payroll records and timesheets. Overhead costs (including administration and general management costs) are not allowed. We understand that the level of detail that BT provides to local bodies (in the form of invoices) goes beyond what is provided elsewhere across its commercial and government contract portfolio.

demonstrates clear best practice. It should be shared across Government for any similar delivery programmes.¹¹⁷

4.38 BDUK has taken steps to ensure that BT's deployment of the aid-funded network is efficient.

- The costs that underpin BT's bids for each local project are those that were agreed as part of the competitive procurement process for the national framework.¹¹⁸
- BDUK has sought assurance from BT that the planning, systems and processes that it uses for roll-out of the aid-funded network are the same as for its commercial network, where it has clear, market-driven efficiency incentives. BDUK has carried out an end-to-end review of the key controls and procedures that underpin BT's cost reporting in order to validate that they are robust and confirm that BDUK-funded projects benefit from national supplier prices. BDUK is confident that this is the case and therefore believes that efficiency savings made in BT's commercial operations elsewhere should translate directly into similar efficiencies for the aid-funded network.
- BT bears the full cost of any overspend, such that it has incentives not to overspend relative to forecast.
- BDUK has allowed local bodies to put any clawed-back capital expenditure into reinvestment funds that can subsequently be used to extend the network, thereby giving BT some incentive to deliver efficiently.
- Linking payment to the achievement of milestones provides BT with incentives to deliver on time.
- BDUK has commissioned external consultants to undertake two independent assurance reviews of suppliers' costs.
- In the first review, completed in Q2 2013/14, the consultant concluded that shadow cost modelling suggested that the supplier's capital costs for the Northamptonshire project were in line with market expectations. Moreover, the consultant calculated the internal rate of return of BT's bids to be in the range of 3%–5%, below BT's regulated (nominal, pre-tax) cost of capital.
- The second independent assurance review looked to develop a shadow cost model that could be used to benchmark BT's costs to a hypothetically efficient company.¹¹⁹ Based on a blind costing exercise, the reviewer found evidence that BT's costs are below what would be expected for a hypothetically efficient company. However, the model has been tested only on a small sample of cabinets in a single intervention area. We consider that it is too early to reach generalised conclusions on the efficiency of interventions based on the work undertaken to date. The second independent assurance review will be completed in Q4 2014/15 and has the potential to provide a robust process for cost benchmarking in the future.

4.39 These contractual safeguards and reviews provide some level of assurance that the National Broadband Scheme has promoted efficient delivery, although

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¹¹⁸ Although we note that this is unlikely to provide full protection against gold-plating.

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we do not believe that BDUK is in a position to determine with absolute certainty that the level of costs incurred has been efficient.¹²⁰

- 4.40 The extension of the shadow cost benchmarking exercise to a larger sample of structures across a greater number of interventions (which we understand BDUK intends to do) would provide greater certainty on the efficiency of BT's deployment. In addition, Oxera considers that there may be scope in future to complement the existing value-for-money safeguards with more-targeted efficiency incentives now that BDUK has developed a clearer understanding of BT's costs than it held at the start of the Phase One process.
- 4.41 At the time of initial contracting, there was a considerable information asymmetry between BDUK and BT with regard to the supplier's cost base. This meant that BDUK did not have assurance that BT's bids were priced efficiently (other than that they were the result of a competitive tender process). As such, the use of more explicit efficiency-sharing mechanisms in the contracts for Phase One projects would have had uncertain effects. Such a mechanism could plausibly have given rise to overpayment relative to underlying costs if BT's bid model had proven conservative.
- 4.42 However, BDUK has now considerably developed its understanding of BT's cost base (through the experience observed in Figures 4.4 and 4.5). Oxera considers that, in light of this useful cost benchmarking evidence, there may now be scope to evolve the contractual mechanisms that drive cost efficiency in the Scheme. While the cost claw-back mechanism provides some incentives for BT to reduce costs—in the form of reinvestment in additional network extension and incentives to minimise overheads—it is not immediately apparent how BT might value such an incentive (see section 5.Ai for further discussion). It seems likely that these incentives do not act as a major driver for cost efficiency as they are likely to be significantly diluted relative to the incentives that would typically prevail for a normal, commercial contract.
- 4.43 Oxera therefore considers that, while it was appropriate for BDUK to use 'capped price' contracts for Phase One projects, future schemes should consider the role of cost-efficiency incentives, subject to remaining compliant with state aid rules—specifically the requirement to avoid overcompensation. Any such efficiency-sharing mechanism would need to balance the benefits of stronger efficiency incentives with the risk for suppliers to inflate their bids in order to benefit from 'false' cost reductions relative to the bid.

4Bii Transparency

- 4.44 One of the criticisms levied against the Scheme by some stakeholders is that there has been insufficient transparency over BT's deployment costs, thereby making it difficult for stakeholders to assess whether the Scheme is delivering value for money.
- 4.45 Oxera considers that the issue of transparency—in terms of the information available to BDUK and local bodies in implementing the Scheme—can be split into two phases:

¹²⁰ This was noted in the first independent assurance review, conducted by Grant Thornton: 'we conclude that the Supplier's solution costs (including the Reference Cost Book) do not provide the level of detail and transparency that we require to support detailed assessments of the consistency and cost effectiveness of the Supplier's solution costs for each call-off project.' Grant Thornton (2014), 'Independent Assurance Review of the Broadband Delivery Framework', final report, p. 3.

- the level of transparency over the build-up of BT's bid price at the contracting phase;
 - the level of transparency over BT's outturn costs in the deployment phase.
- 4.46 In terms of the contracting phase, it is important to consider both the transparency of the build-up of bid prices for an individual project and transparency over variations across bids. During the procurement of the framework contract, BT withheld its commercial roll-out model on the grounds of commercial confidentiality and complexity, but submitted a summary reference cost book. BT's initial reference cost book did not meet BDUK's level of required detail, scoring seven out of 20 on the cost-transparency criteria. A minimum score of 8 was required to be eligible for the framework. ✂
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✂.
- 4.47 BDUK accepted BT's concerns and BT was given an opportunity to provide an alternative presentation of its cost drivers to increase its transparency rating. Following this additional clarification, BDUK revised BT's rating and it was able to meet the minimum requirements to achieve a score of 8. The NAO argued that since BDUK was not given access to BT's commercial model, BDUK effectively had to rely on self-certification by BT that it would not charge its costs differently between its commercial and non-commercial projects.¹²¹
- 4.48 Oxera agrees that there were limitations in the data that BDUK had available at the contracting phase in terms of being able to assess whether the build of BT's bid prices was reasonable. While access to the bid model may have helped BDUK to understand the basis on which BT's bids were created, it is not obvious that this would have provided a robust basis for estimating actual likely future costs of the Scheme and the value for money represented by bids. The value-for-money safeguards discussed above also reduce the scope for limited transparency over the build-up of the bid price to result in higher outturn costs.
- 4.49 The NAO argued that non-disclosure agreements within the framework contract prevent local authorities from directly disclosing cost information to one another at the bid stage, thereby reducing the potential for price benchmarking across local authorities.¹²²
- The standard contract between BT and local authorities includes a clause that prevents the local authority from disclosing the costs involved to other local authorities who are negotiating contracts. This means that other local authorities' negotiating positions are weakened by a lack of comparable cost data against which to assess BT's bid.¹²³
- 4.50 BDUK has provided bid comparison reports to each local body at the point of contracting in order to provide assurance that BT's bid price in that area is consistent with its bids made elsewhere. These bid comparison reports provide anonymised data on bid and actual costs across other intervention areas. Therefore, while local bodies have been unable to communicate directly with one another at the contracting phase, BDUK has provided each body with anonymised data on other bodies' costs. The provision of these bid comparison reports has reduced the impact of the non-disclosure agreements

¹²¹ National Audit Office (2013), 'The rural broadband programme', 5 July, p. 29.

¹²² A further criticism made by respondents to this evaluation is that these non-disclosure agreements have prevented taxpayers from understanding how the state funding is being spent.

¹²³ House of Commons, Public Accounts Committee (2013), 'The Rural Broadband Programme', 26 September, p. 6.

on local bodies' ability to compare costs to other projects at the contracting phase. They appear to have been useful for local bodies and have led to identification of a small number of errors in BT bids. The local bodies responding to Oxera's survey indicated that they have supplemented this information with third party expertise to assess value for money.

- 4.51 As such, Oxera considers that local authorities had sufficient (though not complete) information on which to evaluate bids made by BT.
- 4.52 In terms of transparency over outturn costs, Oxera considers that BDUK has as close to full transparency as is reasonably possible. BDUK collects cost data from BT at the level of individual invoices and timesheet information. BDUK's internal value for money team monitors costs on an ongoing basis and has compiled quarterly reviews of actual costs. These quarterly reviews provide information on the differential between BT's forecast and actual costs, and identify trends in BT's expenditure across interventions. Oxera therefore considers that BDUK has implemented robust processes with regard to transparency of outturn costs.
- 4.53 While Oxera considers that local bodies and BDUK have had sufficient transparency to implement the scheme effectively, we note that a wider set of stakeholders (including taxpayers) have raised concerns around transparency in terms of the amount of information that is available in the public domain. Indeed, a number of the direct representations made to the evaluation team have argued that there is insufficient transparency for taxpayers on the cost of each intervention. Oxera understands that this is largely because BT considers information on its deployment costs in individual areas to be commercially sensitive, and the non-disclosure agreements prevent this information from being disclosed.
- 4.54 Given that BT considers cost information to be commercially sensitive, it is not clear how BDUK could have secured additional public reporting at the time of developing the framework contract. However, in the future, client bodies could consider whether there are ways to increase the amount of information that is made available in the public domain.
- 4Biii Risk transfer**
- 4.55 Currently, the risk-sharing arrangements included in the framework contract are asymmetric, with the supplier taking on all downside risk but with little or no potential reward on the upside (particularly in terms of capital costs and take-up).
- 4.56 Oxera considers that these risk-sharing arrangements may:
- favour incumbent providers that have established revenue streams and are better able to bear this risk;
 - create an incentive for the supplier to artificially inflate its forecast deployment cost and artificially deflate its forecast take-up at the bidding stage, in order to minimise the likelihood of costs overruns.¹²⁴
- 4.57 The differentials between forecast and outturn deployment costs and take-up to date (as shown in Figures 4.4 and 4.5) may be considered to provide evidence for this latter perception. That said, the outturn cost versus bid price

¹²⁴ BDUK's value-for-money safeguards, discussed above, are intended to minimise the impact of this behaviour.

performance may be down to a number of factors at this early stage of deployment (e.g. the deployment of lower cost structures first).

- 4.58 BDUK was initially contracting with limited understanding of the costs of network deployment and with a fixed funding allowance. As such, it was not in a position to share upside risk with the supplier or to bear the risk of cost overruns. However, it may be beneficial in future to adopt an alternative approach to risk transfer, while remaining compliant with the relevant state aid legislation.
- 4.59 According to the UK government's own guidance, risk transfer should be based on the principle that risk is borne by the party that is best able to manage it. HM Treasury's Green Book states that:
- the governing principle is that risk should be allocated to whichever party from the public or private sector is best placed to manage it. The optimal allocation of risk, rather than maximising risk transfer, is the objective, and is vital to ensuring that the best solution is found.¹²⁵
- 4.60 Oxera recommends that BDUK consider whether the current framework contract reflects an optimal sharing of risk, particularly as broadband is rolled out to areas that are more remote (where suppliers are likely to be less willing and able to take on all risk). Oxera acknowledges that any alternative risk-transfer arrangements may incentivise behaviour that will need to be carefully considered before such arrangements are introduced.

4Biv Intervention size

- 4.61 Another area of the National Broadband Scheme that has been criticised by some potential suppliers is the size of interventions. BDUK funding was allocated on a regional basis and BDUK has allowed local bodies to lead decision-making around the size of interventions (in terms of geographical coverage). Some local bodies have chosen to procure a supplier jointly (e.g. in Devon and Somerset), but most contracts have been tendered to cover a single county.
- 4.62 As highlighted by Figure 4.2 above, there has been a large degree of variation in the number of premises covered by different interventions. The interventions in Wales and Scotland (excluding the Highlands and Islands) are both targeting more than 650,000 premises. By comparison, interventions in Newcastle and Rutland are targeting fewer than 10,000 premises. Most interventions are in the range of 50,000 to 150,000 premises.
- 4.63 The choice of optimal Scheme size needs to balance several factors, including the following.
- **The transaction costs associated with procuring Schemes.** Having a large number of small Schemes can lead to high transaction costs associated with the tendering and approval processes, as well as ongoing monitoring.
 - **The economies of scale associated with larger Schemes.** As Scheme size increases, there are likely to be economies of scale, which could reduce the overall deployment cost. A larger number of small Schemes may therefore result in higher deployment costs.
 - **The extent to which non-incumbents are able to compete.** Different competitors may favour different Scheme sizes. Smaller providers may not be

¹²⁵ HM Treasury (2011), 'The Green Book: Appraisal and Evaluation in Central Government', p. 83.

able to deliver large Schemes and will have more opportunities to compete if there are a greater number of tenders. Other providers may prefer larger Scheme sizes that give them greater opportunity to recover their fixed costs (e.g. start-up costs) from a single project.

- **The attractiveness of the area to Internet service providers.** In order to make a return on its investment, a new supplier of broadband infrastructure needs to be able to attract sufficient demand from Internet service providers. This is likely to be more difficult for smaller interventions, as was the case with the (non-BDUK) Digital Region project in South Yorkshire.

- 4.64 There has been a large degree of variance in the size of intervention areas under the National Broadband Scheme. However, Oxera has not found clear evidence of a link between the size of the intervention area and the number of bidders competing for the contract. Such an assessment is complicated by the fact that the majority of contracts have been procured under the national procurement framework, on which there has been a single competing supplier. In terms of the non-framework contracts, for which there have been open tender processes, there have never been more than two bidders at the final stages of a tender process, and the number of bidders does not appear to be related to intervention size. There have typically been more bidders for the smaller, community broadband projects.
- 4.65 The decision to devolve decision-making around intervention size and contract design to local bodies is consistent with UK government policy. It is not apparent that any changes to intervention size would have led to a different outcome.

4Bv Aid intensities

- 4.66 Oxera understands that there is nothing in the current mechanism to prevent BT from asking for higher aid intensities. In its 2013 report, the NAO stated that:

The capital cost of the [BDUK] Programme has not varied significantly between the 2011 business case and June 2013, but the percentage contributed by suppliers has been lower than originally anticipated...BT is expected to commit £207m less to the Programme than the Department had modelled in 2011.¹²⁶

- 4.67 At the time of the Decision, BDUK estimated that aid intensities across projects would vary from 53% to 89%, with a national average of 71%. It was noted that the aid intensity could be higher than 89% for very rural areas (including the Highlands and Islands). The outturn (simple) average aid intensity has been around 74%, with a range from 62% for the lowest project (Merseyside) to 95% for the Highlands and Islands.¹²⁷ The range of aid intensities is therefore slightly higher than anticipated at the time of the Decision. The increase in the aid intensity has been driven largely by an increase in funding from local bodies. Due to this increase in funding, the expected total coverage of the Phase One projects has increased.
- 4.68 While the average, outturn aid intensity is higher than the level forecast at the time of the Decision, the difference is small and appears to correspond to a

¹²⁶ National Audit Office (2013), 'The rural broadband programme', 5 July, p. 36, para. 3.17.

¹²⁷ The aid intensity calculations are based on information provided by BDUK. The range discussed here excludes the four community broadband projects that have received Defra funding, which had aid intensities explicitly capped at 50%.

small increase in coverage. Consequently, Oxera does not consider that there have been material issues regarding aid intensity.

4Bvi Detail on roll-out plans

- 4.69 In 2013, the PAC recommended that BDUK make BT coverage information publicly available at a sufficient level of detail to allow other suppliers to continue with plans to reach the remaining UK premises not yet covered by superfast broadband.¹²⁸
- 4.70 A follow-up report published by the PAC in April 2014 argued that there was still insufficient detail and coverage of BT's roll-out plan to allow alternative service providers to prepare for the next round of the broadband roll-out.¹²⁹ PAC advocated the publication of data to the seven-digit postcode-level.
- 4.71 Representations made to the PAC and NAO inquiries, and by stakeholders directly to Oxera, highlight that providers see speed and coverage templates as critical to their business planning, and households wish to understand the likely future broadband speeds in their area.¹³⁰
- 4.72 We note that BDUK has provided evidence that all Phase One projects now have maps or postcode checkers to a seven-digit level as requested by PAC. This was completed by the end of 2014 and means that current and planned coverage can be identified. In addition, DCMS published a national postcode checker which allows interested parties to input their postcode and find out the availability of superfast in their area.¹³¹
- 4.73 To support supplier knowledge of these roll-out plans, BDUK also directed local bodies to share this information with suppliers, and received confirmation from BT that this would not breach confidentiality conditions.
- 4.74 Oxera therefore considers that this issue has been resolved.¹³²

4Bvii Potential alternative models

- 4.75 Box 4.1 below summarises the process through which BDUK developed its intervention model. The gap-funding model was ultimately favoured by BDUK (and local bodies) because it provides budget certainty, transfers risk to the private sector and, in theory, should minimise the amount of subsidy provided.

¹²⁸ House of Commons, Public Accounts Committee (2013), 'The Rural Broadband Programme', 26 September, p. 6.

¹²⁹ House of Commons, Public Accounts Committee (2014), 'The Rural Broadband Programme', 1 April, p. 6.

¹³⁰ For example, one direct representation to Oxera argued that: 'aggressive levels of confidentiality have made rural communities and businesses uncertain about their future, prevented them from investigating alternative solutions and stifled fair, open competition for potential alternative suppliers, financiers and technologies.'

¹³¹ <http://gosuperfastchecker.culture.gov.uk/>

¹³² The NAO reached a similar finding in a recent update to its 2013 report. National Audit Office (2015), 'The Superfast (Rural) Broadband Programme: update', memorandum for the House of Commons Committee of Public Accounts, January, p. 5, para 4.

Box 4.1 Selection of the gap-funding model

BDUK developed its understanding around the design and implementation of the procurement process through five pilot projects in 2011. Three of these pilots initially favoured the investment gap-funding model outright owing to a lower public sector risk. The other two initially favoured a public–private partnership model, but decided to switch to the gap-funding model. Cumbria and Borders initially considered both an investment-gap model and a joint venture-style model, which would allow the public sector to maintain control of assets while transferring operations and maintenance to the supplier. The latter option was rejected due to the higher associated levels of risk.

North Yorkshire considered a public sector-owned supplier model in addition to the gap-funding model, and at the time of the report it was unclear which model would be used, although it is known that they eventually adopted a gap-funding approach. Careful consideration of whether take-up risk would reside with the local body or the supplier was deemed a key lesson from the evaluation of alternative investment models. All broadband projects eventually chose a gap-funding approach because of this issue.

Additional conclusions were drawn surrounding the following.

- **Pre-procurement BDUK approval**—from August 2011 onwards, approval prior to the start of any procurement process by future local bodies;
- **Implementation of procurement based on a single lot**—although Cumbria divided procurement into two area-based lots with multiple bidding options and the right to merge lots. Pilot tests indicated they had little knowledge on how to optimally divide lots for bidding.¹³³ The owners of the pilot projects, as well as bidders, expressed an interest in keeping procurements as large in scale as possible in order to improve the financial viability of investments.
- All the owners of the pilot projects indicated that they adopted a **competitive dialogue** process.
- **Segmentation of procurement** into several stages, such as design, implementation and delivery, but this was later rejected due to issues around the transfer of risk.
- **Technology neutrality** was seen as preferred.
- **Staggering of procurement** to minimise the risk of market overload while keeping in mind BDUK timelines.
- It is important to provide bidders with **market and infrastructure information** including demographics and demand for superfast broadband, current provision of broadband, and location of infrastructure and businesses. Accuracy of data prior to the start of the procurement process was viewed as critical to the success and expediency of the procurement itself. Additionally, local bodies are advised to provide mapping on white, grey and black areas for bidders as opposed to white areas only.
- Local bodies used **non-disclosure agreements** on key datasets provided by BDUK.

Source: DCMS (2011), 'Broadband Delivery Programme Superfast Pilots - Lessons Learnt Report', November.

- 4.76 There is some evidence to suggest that alternative procurement and funding approaches would have led to higher subsidy requirements for an equivalent level of network coverage. Indeed, the South Yorkshire Digital Region project,

¹³³ DCMS (2011), 'Broadband Delivery Programme Superfast Pilots - Lessons Learnt Report', November, section 12.1.2–3.

which used an alternative investment model (and included full open access), ultimately led to very low take-up and a high cost overrun, resulting in its closure on 15 August 2014 (see Box 4.2).

Box 4.2 South Yorkshire Digital Region

Digital Region, launched in 2010, was a non-BDUK project set up to establish a high-speed broadband network in South Yorkshire. The Digital Region project had the aim of making South Yorkshire a UK leader in digital communications. Funded by the European Regional Development Fund, the now-defunct Yorkshire Forward (a regional development agency) and four South Yorkshire local authorities (Sheffield, Barnsley, Doncaster and Rotherham Council), the project cost an estimated £160m and included full open access.

The project provided superfast broadband coverage to 80% of premises in South Yorkshire but suffered a significant operating loss, with only 2.7% of the required 108,000 customers signing up. The failure of the project has been attributed to the combination of poor advertising, a failure to attract any big-name Internet service providers, and BT's development of better connectivity in some of the same areas; with the combination making it financially unviable to keep the project up and running, and it therefore ceased operation on 14 August 2014.¹³⁴

BT has been chosen to supply the Phase Two roll-out for South Yorkshire.

Source: BBC (2013), 'South Yorkshire's Digital Region broadband Scheme to close', available from <http://www.bbc.co.uk/news/uk-england-south-yorkshire-23713493>, accessed 18 December 2014; Digital Region (2013), 'Closure of digital region now offers best deal for public purse', August, available from <http://www.digitalregion.co.uk/closure-of-digital-region-now-offers-best-deal-for-public-purse>, accessed 18 December 2014.

4Bviii Conclusions

4.77 Oxera concludes the following with regard to the appropriateness of the Scheme design.

- BDUK's value-for-money safeguards are sufficiently robust to ensure that the supplier is paid only for costs incurred under clearly defined criteria.
- The design of the Scheme goes some way to ensuring that BT is incentivised to deliver efficiently.
- Oxera considers that there was sufficient transparency for local bodies to assess BT's bids at the contracting phase (with the contractual safeguards reducing the impact of inflated bids) and that there has been full transparency regarding BT's outturn deployment costs.
- The Scheme initially received criticism over the level of detail that was published on future roll-out plans. Oxera understands that this has now been rectified, in line with the recommendations of the UK PAC.
- Overall, Oxera considers that, on the basis of the information available to BDUK at the time of the National Broadband Scheme's notification, the Scheme was designed in an appropriate manner.
- On the basis of the evidence reviewed, there do not appear to be obvious ways in which the Scheme could have been designed differently at that time in order to deliver a lower subsidy requirement for an equivalent level of network coverage, or greater coverage for an equivalent level of subsidy.

¹³⁴ ✂
✂
✂

- Given that BDUK has now developed its knowledge and understanding of BT's costs, there may be scope to evolve the contractual mechanisms that drive cost efficiency (including risk transfer) for future interventions, while avoiding dilution of the existing positive, contract safeguards.

4C Of the different intervention models proposed and cleared by BDUK's NCC, how effective have they been in meeting the UK's primary objective?

- 4.78 As discussed elsewhere, the majority of local projects have used BDUK's standard framework contract, which is based on a gap-funding model. Moreover, where local bodies have chosen to use non-framework contracts, almost all have followed the gap-funding model. We note the failure of the Digital Region project, which was based on a different intervention model. However, this project was not part of the National Broadband Scheme and therefore was neither proposed nor cleared by the NCC.
- 4.79 We note that BDUK is piloting new technical, commercial and operational solutions in order to reach very rural areas, but we understand that these will not be at a suitable stage of development to be considered as part of our analysis.¹³⁵
- 4.80 Given the widespread use of the gap-funding model by local bodies under the BDUK Scheme, there is insufficient evidence with which to assess the difference in effectiveness of different intervention models.

¹³⁵ Broadband Delivery UK (2014), 'State aid consultation: Market Testing Pilot Intervention Areas (First wave)', consultation document, 29 September.

5 Impact of the Scheme on competition and markets

5.1 The final evaluation question relates to the impact of the National Broadband Scheme on incentives, competition and markets.

5A What have the direct and indirect incentive effects been on the broadband infrastructure supplier in receipt of state aid?

5.2 In evaluating the effects of the Scheme, it is necessary to consider both the direct effect on the aid beneficiaries' behaviour in the target market and the indirect effects on third parties' behaviour or secondary markets (e.g. crowding out of investment).

5Ai Direct effects

5.3 In terms of direct effects, there is potential for the Scheme to distort BT's incentives to invest and to achieve efficiencies on capital and operating expenditure. These are considered in turn below. The assessment focuses explicitly on BT, as the primary direct recipient of aid.

Incentives to invest

5.4 The aim of the UK's broadband state aid measure is to induce investment in the final-third areas of the country, in which investment is not deemed commercially viable, at least in the short run.

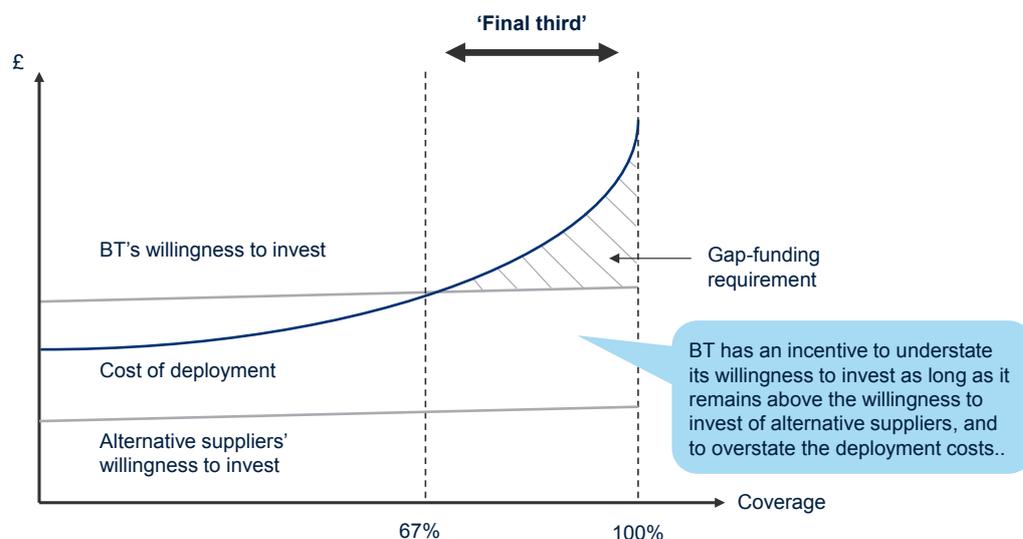
5.5 Compared with a counterfactual scenario in which there is no aid, the impact on incentives of the Scheme is twofold.

- There is a greater level of investment than in the counterfactual scenario. The Scheme has had a clear positive impact on the incentive to invest in 'white' areas. 56 projects are under way in white areas that, assuming they are correctly defined, would otherwise have had insufficient investment. As discussed in section 4.A, the Scheme has led to NGA coverage for an additional 1.6m premises since its inception and the remaining contracts are expected to cover a further 3.3m premises.
- There is earlier investment and deployment of superfast broadband than would otherwise be the case. The Scheme is targeted at areas where there are no private sector plans to roll out basic or superfast broadband in the next three years. Given the estimated impact of investment in superfast broadband on annual GVA (discussed in section 4.A above), the benefits of earlier deployment are likely to vastly outweigh the costs associated with providing aid for projects that might have been commercially funded at some point in the future (more than three years away).¹³⁶

5.6 However, there is also potential that the Scheme has created an incentive for BT to reduce the scope of its commercial investments in order to receive state funding for projects that would still be commercially viable absent the aid. Indeed, the gap-funding model provides BT with strong incentives to understate its willingness to invest in order to secure a higher amount of government subsidy for a given level of coverage (see Figure 5.1 below).

¹³⁶ However, the National Broadband Scheme may also affect whether the private sector makes plans to invest, and hence benefits could be overestimated and the negative impact underestimated.

Figure 5.1 Incentives under the gap-funding model



Source: Oxera, based on discussions with various stakeholders.

- 5.7 As discussed in section 3.Bi, there is some evidence that areas initially classified as non-white due to the expectation of commercial investment are now being included in the roll-out of Phase Two projects. However, BT has not (publicly) announced a reduction in the scope of its commercial investment in superfast broadband and, as far as we aware, intends to deliver the £2.5bn investment that it initially identified.¹³⁷ Moreover, BDUK has provided evidence that some areas originally mapped as white have subsequently been covered by BT's commercial roll-out, suggesting that updates to BT Openreach's modelling have had consequences in both directions.

Incentives to gold-plate

- 5.8 Given that BT is the only supplier and that it recovers its cost plus a required margin, it may have incentives to gold-plate its network. Oxera notes, however, that it has not received any evidence to suggest that BT has gold-plated the network in practice.

Incentives to deliver on time

- 5.9 The framework contract is based on a milestones-based system, with payments to the supplier made only once certain milestones are achieved. This provides the supplier with appropriate incentives to deliver projects on time.

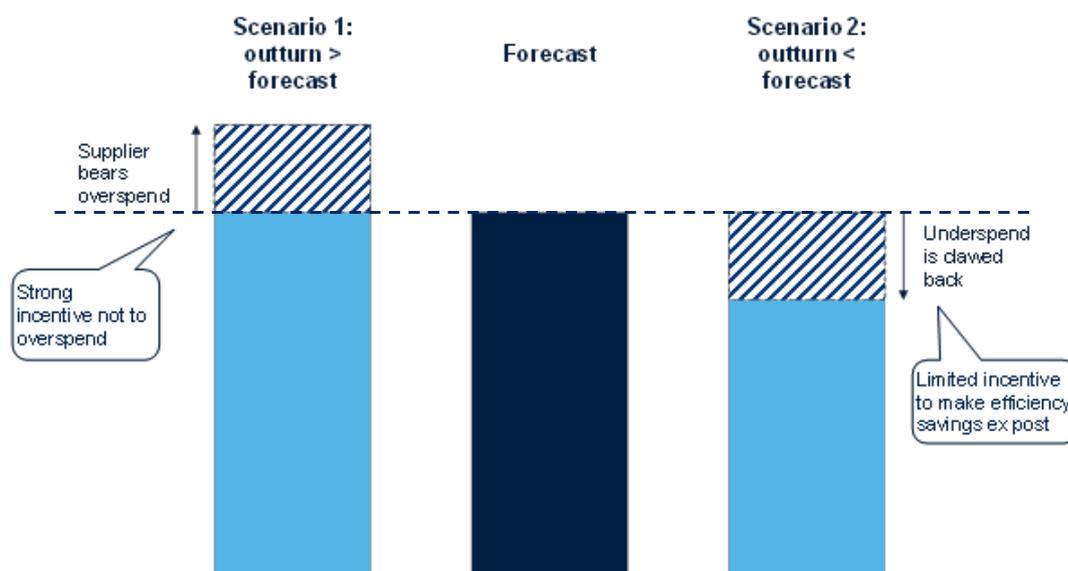
Incentives to make capital efficiencies

- 5.10 Under the milestones-based payment system, the supplier is required to bear any overspend relative to the forecast level. For example, if the supplier forecasts capital costs of £100m and outturn expenditure is £102m, the supplier is required to provide the additional £2m of funding. The supplier therefore faces strong incentives not to exceed its forecast level of expenditure.
- 5.11 However, any reduction in capital expenditure made by the supplier relative to the forecast level is recouped by the local authority through the claw-back

¹³⁷ BT announced in January 2014 that it is planning to invest £50m (in addition to the already identified £2.5bn) in its fibre network. See BT Plc (2014), 'BT to bring more fibre to cities', press release, 24 January.

mechanism. For example, if the supplier forecasts capital costs of £100m and outturn expenditure is £98m, the £2m saving is clawed back and used to reduce the level of subsidy or for further investment in the network. There is likely to be some benefit for the supplier (in the form of additional network coverage) from reinvestment of the cost savings, although this may be limited where the reinvestment effectively replaces future public funding. Since the supplier does not directly benefit from the cost saving in the short term, the claw-back mechanism is likely to dilute the supplier's incentives to make capital efficiency savings post-contract award.

Figure 5.2 The claw-back mechanism



Source: Oxera.

- 5.12 Oxera considers that there could be benefits from introducing efficiency incentive mechanisms (with some sharing of efficiency savings made by the supplier) in future contracts. Such mechanisms are likely to become more feasible as BDUK builds up its knowledge and understanding of the supplier's cost base (and is therefore better able to identify inflated bids).
- 5.13 This could allow BDUK to benefit from private sector innovations and efficiencies which it may be unable to identify itself given the inherent information asymmetry between the supplier(s) and the contracting authority, thereby lowering the overall funding requirement for future interventions.

Incentives to make operating efficiencies

- 5.14 The claw-back mechanism does not cover operating expenditure and thus the supplier benefits fully from any efficiencies it can make on these costs. The supplier should therefore retain strong incentives to make operating cost efficiencies.

5Aii Indirect effects

- 5.15 Indirect effects relate to the impact of the aid on third parties (i.e. those that do not benefit from the aid) or secondary markets.
- 5.16 A commonly cited indirect effect is crowding out of investment by other potential industry participants—i.e. the investment by the aid beneficiary may make it commercially unviable for a competing party to invest in the same

market or geographic area. The National Broadband Scheme could have crowded out investment in a particular area only where it would have been commercially viable for an alternative supplier to make an investment in that area absent the Scheme.

- 5.17 The potential for crowding out in the roll-out of rural broadband should be limited where the mapping process is effective and implementation is restricted to white areas, since this ensures that aid is granted only to areas where there is no potential for competing investment. However, there remains potential for crowding out future investment or investment in competing technologies (e.g. mobile or wireless) and, once the potential for aid is known, there may be a dampening of incentives to make plans for commercial investments.
- 5.18 To the extent that the mapping process (including the OMRs and public consultations) has taken account of the investment plans of all potential suppliers, the impact of crowding out is likely to have been restricted to the minimum possible level, given the information asymmetries and the impact on investment incentives of announcing the potential for aid funding.

5B What have been the positive and negative competitive and trade impacts of BDUK's superfast broadband interventions?

- 5.19 A number of stakeholders have raised concerns about the extent of competition in the implementation of the rural broadband programme, and its potential impact on value for money. The PAC and NAO reports suggested that there were issues at several points in the process (see Box 5.1).

Box 5.1 Competition concerns raised by the National Audit Office and Public Accounts Committee

The NAO and PAC argued the following.

- **Evidence prior to the implementation of the Scheme suggested there would be a lack of competition in the tender process.** BDUK engaged with 16 potential bidders in early 2011. It concluded from a lack of interest that the market was not yet reasonably developed to support effective competition. It noted that there was an expression of willingness to bid by some suppliers and decided to use an open tender process despite its earlier conclusions. BDUK's market analysis in 2011 also acknowledged that BT had a significant competitive advantage in winning bids through economies of scale and scope, a highly optimised supply chain, and an existing service footprint and a large field force.
- **BDUK chose a bidding process with the understanding that it would prioritise transfer of risk over the promotion of competition.** The gap-funding model was one of several frameworks considered by BDUK, but it was chosen by all five local bodies sponsored in BDUK's 2011 pilot programme. The gap-funding model transfers outturn risk to suppliers, and hence favours bidders with established revenue streams. All five pilots chose to use the gap-funding model, and there was no subsequent evaluation of its effect on the competitive tendering process.
- **The framework bidding process did not foster competition, which was intended to be a key safeguard of value for money.** Witnesses to the inquiries complained that the bidding process was difficult and complicated. Specifically, there were complaints that compliance with EU state aid regulations resulted in some bidders dropping out or having to change their technological approach, and that these requirements gave an additional advantage to BT. There were complaints that the framework process did not foster competition and it was noted

that all three tenders that had a non-BT bidder at the final tender stage were non-framework procurements.

- Following the framework procurement process, BDUK chose to forego its option of negotiating bilateral contracts with BT to secure better value for money. In the event that a bidder had won multiple individual contracts, BDUK could reopen negotiations with key suppliers. BDUK chose to forego this option out of concern that it would be required to restart the state aid process and fail to meet its delivery timetable.
- **The wholesale access conditions imposed by the bid winner did not foster competition.** Despite wholesale access requirements, other providers indicated that the price was prohibitively high to allow for them to exploit these requirements.

Note: The views expressed above are those of the NAO and PAC, and should not be interpreted to be those of Oxera.

Source: National Audit Office (2013), 'The rural broadband programme', 5 July; House of Commons, Public Accounts Committee (2013), 'The Rural Broadband Programme', 26 September; House of Commons, Public Accounts Committee (2014), 'The Rural Broadband Programme', 1 April.

5.20 Oxera notes the views expressed in the NAO and PAC reports and notes the potential negative impact of a lack of competition, in terms of the following.

- A lack of competition in the design, build and operation of superfast broadband infrastructure could lead to inflated deployment costs.
- A lack of competition in the provision of superfast broadband could lead to higher prices and less choice for users of superfast broadband services.

In particular, the lack of competing suppliers in local tenders raises a question as to whether BT has now locked in an incumbency advantage that is of future detriment to competition. This issue is not related to BT's actual costs, but rather to rivals' beliefs about whether it is worthwhile to bid against BT:

Incumbency advantages may be more significant for large contracts that leave only one supplier in the market. Once the supplier gains a clear advantage in a market, other companies may stop trying to bid against it. Economies of scale in large contracts may also make it more difficult for new bidders to displace an incumbent.¹³⁸

5.21 However, a number of factors could mitigate the adverse effect on competition in the market.

5.22 First, the broadband roll-out itself is likely to have had little adverse impact on infrastructure competition if there was already limited competition in the market for rural broadband provision. The Decision concluded that there was a weak or non-existent commercial case for superfast broadband roll-out in a large proportion of rural areas in the UK, and that, without the aid, some areas would not see superfast broadband roll-out in the near future.¹³⁹

5.23 Second, there is evidence from the mapping process that regions targeted for aid under the National Broadband Scheme would not have seen competition in the provision of services in the absence of state aid. Aid was targeted at white areas and white NGA areas. Additionally, through the implementation of an OMR and a public consultation, local bodies have determined whether there

¹³⁸ Niels, G., Jenkins, H. and Kavanagh, J. (2011), *Economics for Competition Lawyers*, Oxford University Press, section 3.5.6.

¹³⁹ European Commission (2012), State aid SA. 33671 (2012/N) – United Kingdom, National Broadband Scheme for the UK – Broadband Delivery UK', 20 November, Brussels, C(2012) 8223 final, para. 7.

was any potential for commercial investment for the three years following the publication of the mapping document.

- 5.24 Third, while the Scheme has increased BT's ownership of network assets, these assets have been made available to the market as required by the minimum wholesale access conditions. The limited use of this access suggests that there is currently limited appetite for others to provide broadband services in the intervention areas.
- 5.25 Fourth, given the risks associated with the lack of a competitive market and the design of the framework, the key questions are whether:
- the tendering process imposed sufficient competitive pressure on BT to prevent it from inflating its bids during the procurement process;
 - the contract contained sufficient safeguards to prevent BT from abusing its position post-contract award;
 - the access conditions have supported service-level competition.
- 5.26 The former is largely dependent on whether BT viewed other participants—Fujitsu, in particular—as credible competitors. As discussed above, BT's competitive advantages were well documented. However, BT has argued that at the time of the framework procurement process, it perceived there to be a credible threat of competition from Fujitsu.
- The facts are that Fujitsu, a global public corporation, one and a half time larger than BT Group, with a large field force of communications engineers in the UK (which BT used to contract with), had publicly declared their willingness to invest £2bn in fibre investments in support of the BDUK Scheme... Given the very credible announcements made by Fujitsu at the time it is therefore false to say that there was 'no competition on this programme'... The competition at the outset of the process led BT to accept that the BDUK projects will have a pay-back of about 15 years, considerably longer than its normal commercial investments.¹⁴⁰
- 5.27 Any assessment of whether BT viewed Fujitsu as a credible competitor will inevitably be subjective.¹⁴¹ However, Oxera notes that Fujitsu made public statements regarding its intention to compete for BDUK funding and incurred the sizeable costs associated with competing to be on the national procurement framework. As such, it would not have been unreasonable for BT to have seen Fujitsu as a competitor, and to factor this into its bid for the national framework and initial call-off contracts.
- 5.28 The within-contract safeguards (e.g. the claw-back mechanism, the milestones-based payment system, the independent assurance reviews and BDUK's bid comparison reports) were discussed at length in section 4. We consider that these provide some level of assurance that BT's bids have provided value for money despite the lack of competition in the delivery of infrastructure. As discussed in section 4, BDUK should consider how these safeguards can be further strengthened for future procurements.
- 5.29 The appropriateness of the access conditions was discussed in section 3.C. The minimum access conditions exceed the minimum requirements in non-

¹⁴⁰ BT Group (2013), 'PAC Rural Broadband enquiry: Additional evidence from BT, addressing issues raised in the oral evidence session of 17th July 2013', August, p. 17.

¹⁴¹ We note the above arguments from BT regarding its perception of the competitive pressure, but also that other representations—particularly that received from the Bit Commons—considered there to be evidence to the contrary.

BDUK areas in all instances. Thus, Oxera does not consider that these are likely to have led to any distortion of competition.

- 5.30 Given BDUK's earlier conclusions on BT's competitive advantages, it has always been likely that BT would win a large number of contracts under a gap-funding model. In areas in which BT competed against other suppliers, its cost proposal was considerably cheaper than the competition and, therefore, to award the contract to an alternative supplier would have required a greater level of subsidy or a reduction in the scope of the intervention. One of BDUK's five primary aims was to deliver basic and superfast broadband coverage as efficiently as possible, such that to have chosen alternative suppliers would be inconsistent with the objectives of the Scheme. BDUK's goals did not include a competition objective, except to the extent that competition would foster efficient use of funding.¹⁴²
- 5.31 It is therefore difficult to identify ways in which the procurement process could have been run in order to provide a greater number of suppliers without increasing the required subsidy or reducing the scope of the roll-out programme. The focus of future designs should therefore be on ensuring that, should a single supplier be responsible for delivering a large proportion of the new infrastructure, there are appropriate contractual or regulatory safeguards to prevent it from abusing its position.

¹⁴² Broadband Delivery UK (2011), 'BDUK programme delivery model', September p. 5, section 3.2.

6 Conclusion

6.1 Based on our evaluation of the National Broadband Scheme as implemented to date, and the representations made by various stakeholders, Oxera makes the following conclusions.

- BDUK has been effective in its role as an agency for the Commission under the 'umbrella' state aid clearance. In its role as the NCC, BDUK has established robust processes to ensure that projects are compliant with the requirements of the Decision and the Broadband Guidelines prior to approval. The ex post evaluation has identified a small number of potential compliance issues for which the European Commission has indicated that it requires further information from BDUK (e.g. the definition of speed thresholds).¹⁴³ We understand that BDUK is engaging with the Commission on these issues outside of this evaluation process.
- Despite the lack of upfront clarity over geographical coverage, BDUK has put in place an appropriate two-part test in order to minimise the risk that the Scheme has been extended further than intended by the Decision.
- BDUK has overseen the signing of a large number of local broadband schemes, leading to a significantly greater amount of investment in broadband and extension of coverage in rural areas within the UK than would otherwise have occurred. The realised cost, coverage and average aid intensity appear to be broadly aligned with the expectations at the time of the Decision.
- The fact that BT has become the sole supplier on the framework contract may not, in itself, be an issue in the short term if BT is providing value for money and all other suppliers would offer a higher cost. To this extent, it is not apparent that greater coverage could have been achieved for the same amount of funding via another mechanism or supplier.
- However, the lack of competition for local tenders raises the question as to whether BT has now locked in an incumbency advantage that is of future detriment to competition. This issue relates not only to BT's actual costs, but also to rivals' beliefs about whether it is worthwhile to bid against BT.
- Once the potential for aid is known, there may be a dampening of incentives to make plans for commercial investments. The mapping process implemented by BDUK helps to minimise the potential for crowding out of investment.
- BDUK has put in place a number of contractual safeguards and financial controls that are intended to ensure that the balancing test is met, even with BT acting as the sole supplier.
- Both the National Audit Office and Public Accounts Committee have argued for greater cost transparency in future.
- While Oxera considers that local bodies have had sufficient transparency to implement the scheme effectively, the degree of transparency has been improved by the provision of bid comparison reports to local authorities. The local bodies responding to Oxera's survey indicated that they have

¹⁴³ Namely, the definition of speed thresholds for mapping purposes, the decision not to publish a national infrastructure database, the re-mapping of some grey areas as white for Phase Two projects, and certain project-specific compliance issues.

supplemented this information with third party expertise to assess value for money.

- Oxera observes that there were limitations in the data that BDUK had available at the contracting phase in terms of being able to assess whether the build of BT's bid prices was reasonable. While access to the bid model may have helped BDUK to understand the basis on which BT's bids were created, it is not obvious that this would have provided a robust basis for estimating actual likely future costs of the Scheme and the value for money represented by bids. The value-for-money safeguards reduce the scope for limited transparency over the build-up of the bid price to result in higher outturn costs.
- There has been no formal request for BT's new passive access product (PIA Plus). The immediate-term market structure appears to be based on (active inputs) service-based competition.

6.2 Overall, Oxera considers that, on the basis of the information that was available to BDUK at the time of the National Broadband Scheme's notification, the Scheme was designed in an appropriate manner that was targeted at overcoming the identified market failure. Based on BDUK's experience, Oxera has the following suggestions to BDUK and other Member States about the design of any future interventions.

- Where an incumbent supplier is in a position to win the majority of funding, client bodies should either explicitly consider how to encourage entry by competitors or, where this is not feasible, look to ensure that there are contractual or regulatory safeguards in place, such as those used by BDUK, to prevent the incumbent from inflating its deployment costs. We note that the Commission has previously argued that:

To establish a market price, the tender must give rise to a sufficient level of competition to be qualified as a competitive tender process. In the case of procedures where it is apparent that only one operator is realistically able to submit a credible bid, the tender cannot be deemed competitive and thus cannot be considered to adequately establish the market price for the transaction.¹⁴⁴

- The use of a standard call-off contract has been helpful in securing compliance from local bodies. Even where there is no central procurement framework, national competence centres should consider whether they can publish templates and standardised documents to aid local bodies.
- Member States should put in place robust processes to ensure that providers do not hold back on their commercial investments in order to receive state funding for more projects. There appears to be evidence of local bodies including white areas in Phase Two roll-out plans that BT had previously indicated were planned for its commercial investment and had been classified as grey. We note, however, that there is also evidence of areas initially classified as white subsequently being covered by BT Openreach's commercial roll-out based on updated modelling.
- The current contract design provides the supplier with strong incentives not to overspend, but limited incentive to make further capital savings (as it is paid only for its actual level of expenditure, where this is below the forecast level).

¹⁴⁴ European Commission (2014), 'Draft Commission Notice on the notion of State aid pursuant to Article 107(1) TFEU', p. 27, para. 99.

This approach reflected the information asymmetry at the time of the initial Scheme notification. However, BDUK has now developed its understanding of BT's cost base. Consequently, BDUK could consider whether it would be possible to design future contracts in a way that would provide the supplier with enhanced incentives to secure capital efficiencies (i.e. some form of efficiency-sharing). Any such efficiency-sharing mechanism would need to balance the benefits of stronger efficiency incentives with the risk for suppliers to inflate their bids in order to benefit from 'false' cost reductions relative to the bid.

Author	Document title	Date	Document type
BDUK	State Aid Guidance: Overview of the Scheme and Criteria for use	20 March 2012	Word
BDUK	State Aid Guidance: Open Market Review Template'	July 2014	Word
BDUK	State aid consultation: Market Testing Pilot Intervention Areas (First wave)	28 September	Word
BDUK	State aid consultation: Market Testing Pilot Intervention Areas (Second wave)	4 November	Word
BDUK	Superfast Broadband Programme: Publication of Roll-out Maps— Letter to Local Authority Chief Executives and Devolved Administration Directors	undated	Word
✂	✂	✂	✂
✂	✂	✂	✂
✂	✂	✂	✂
Bit Commons	Questions for EFRA committee on Rural Broadband – November 19th	12 November 2014	Word
Bit Commons	The Bit Commons comments to Oxera on BDUK's compliance with state measure outlined SA.33671	6 December 2014	Word
BT	Cambridge County Council: C10 Commentary, Period ended 31 March 2014	undated	Word
✂	✂	✂	✂
✂	✂	✂	✂
✂	✂	✂	✂
✂	✂	✂	✂
✂	✂	✂	✂
European Commission	A Digital Agenda for Europe	19 May 2010	Word
European Commission	Commission Staff Working Document: Common methodology for State aid evaluation	28 May 2014	Word
European Commission	Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, EU State Aid Modernisation (SAM)	8 May 2012	Word
European Commission	Draft Commission Notice on the notion of State aid pursuant to Article 107(1) TFEU	2014	Word
European Commission	EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks	26 January 2013	Word
European Commission	Provisional supplementary information sheet for the notification of an evaluation plan	July 2014	Word
European Commission	State aid SA.33671 (2012/N)— Unite Kingdom, National Broadband Scheme for the UK— Broadband Delivery UK	20 November 2012	Word

Author	Document title	Date	Document type
European Commission	SA.34915 – United Kingdom – Complaint on the SFBB scheme UK – Request for information	8 June 2012	Word
European Commission	SA.34915 – United Kingdom – Complaint on the Lancashire SFBB Project, UK	30 October 2012	Word
✂	✂	✂	✂
✂	✂	✂	✂
✂	✂	✂	✂
National Audit Office	The rural broadband programme	5 July 2013	Word
National Audit Office	The Superfast (Rural) Broadband Programme: update	January 2015	Word
Public Accounts Committee	The rural broadband programme: Fiftieth Report of Session 2013-14, Volume 1: Report, together with formal minutes	1 April 2014	Word
Public Accounts Committee	Treasury minutes follow-up: (i) Severance payments; (ii) Interpreter services; (iii) Rural broadband, Fiftieth Report of Session 2013-14, Volume II: Oral and written evidence	1 April 2014	Word
Public Accounts Committee	The rural broadband programme: Twenty-fourth Report of Session 2013-14, Volume 1: Report, together with formal minutes and oral evidence	26 September 2013	Word
Public Accounts Committee	The rural broadband programme: Twenty-fourth Report of Session 2013-14, Volume II: Written evidence	26 September 2013	Word
Roger Cashmore	Written Evidence for the Environment, Food and Rural Affairs Committee	November 2014	Word
Shropshire and Marches Campaign for Better Broadband	Environment, Food and Rural Affairs Select Committee Rural broadband and digital-only services Inquiry: Evidence from Shropshire and Marches Campaign for Better Broadband in Rural Areas (SAMCOBRA) with regard to the extent of broadband coverage in remote rural areas.	November 2014	Word
Shropshire and Marches Campaign for Better Broadband	Environment, Food and Rural Affairs Select Committee Rural broadband and digital-only services Inquiry: Evidence from Shropshire and Marches Campaign for Better Broadband in Rural Areas (SAMCOBRA) with regard to the extent of broadband coverage in remote rural areas: Additional Comments	November 2014	Word
Shropshire and Marches Campaign for Better Broadband	Redlake Valley Broadband Survey	December 2014	Word

Author	Document title	Date	Document type
SQW	UK Broadband Impact Study: Baseline Report	January 2014	Word
SQW	UK Broadband Impact Study: Impact Report	November 2013	Word

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A2 Comments received from the European Commission at draft stage

This appendix summarises the actions taken by Oxera in response to the comments raised by the European Commission on our draft report, 'The UK's National Broadband Scheme—an independent ex post evaluation of the UK's broadband state aid measure'.¹⁴⁵

Table A2.1 below outlines the Commission's comments, whether Oxera considers these to be within the scope of the evaluation, and, for comments that are deemed to be out of scope, what further analysis could be undertaken given additional budget.

¹⁴⁵ Oxera (2015), 'The UK's National Broadband Scheme—an independent ex post evaluation of the UK's broadband state aid measure', draft report, prepared for the European Commission, 29 January.

Table A2.1 Comments received from the European Commission at draft report stage

Commission comment	Within scope?	What additional analysis could be undertaken, given additional time and budget?
Provide a list of stakeholders invited to make representations, and copies of stakeholder responses received	Yes	
Conduct a survey of (potential) suppliers and local bodies, providing related materials	Yes	
Discuss data and methodology for econometrics	Yes	See section 4Av
Two lines of analysis could be investigated further: (i) the comparison of subsidised investment and privately funded investment (in comparable market conditions)—e.g. by looking at tender outcomes in eligible and non-eligible, but otherwise similar, areas (ii) the evaluation of the impact of different tender design on the cost efficiency achieved by the supplier during the deployment of the project—e.g. the UK could use (randomly) different tender designs, and the study would compare the cost estimates and the final realised costs across these designs, or the costs that are realised at various milestones	No	See section 4Av
Clarify why Fujitsu, in particular, and others, in general, ceased to bid under the central procurement framework	Yes, in that the survey has been sent to Fujitsu and other suppliers. Insofar as survey responses address this point, the report will incorporate the suppliers' comments	It would be possible to follow up again after the survey
Clarify why firms other than BT did not win any tenders in aided areas, by surveying these firms (10–15 competitors)	Yes. Insofar as survey responses address this point, the report will incorporate the suppliers' comments	It would be possible to follow up again after the survey
Add a section to the report regarding why wholesale access has not been requested, whether this is due to leased lines restriction, and whether restriction is justified	No, as the report already deals with this point, relying primarily on Ofcom analysis. (On the basis of the evidence reviewed, Oxera finds that the Commission's original assessment was valid; namely, that restrictions are proportionate and effective in supporting the target of the intervention—i.e. the identified market failure in the provision of NGA infrastructure.)	The NBS provides for both active and passive access to support the NGA deployment case on the State-funded network. These go beyond the requirements of UK regulation. To understand why passive inputs have not been used the survey could be expanded to ask why the current forms of passive access have not been used to supply NGA service and to ask what, if any changes, would help meet that specific objective. A full cost–benefit analysis of de-restricting wholesale access could be undertaken. At present, the report depends primarily on Ofcom's detailed cost–benefit assessment, which is carried out in the UK legal context rather than with reference to EU state aid rules

Commission comment	Within scope?	What additional analysis could be undertaken, given additional time and budget?
Provide additional details on wholesale access prices, price benchmarking, whether wholesale prices are excessive, how they are set, and how aid is taken into account in price-setting. Examine the impact of unaffordable passive access on active access. Include Ofcom and the UK authorities' positions on wholesale access pricing. Include pricing issues in the survey	No, as the report relies on Ofcom (as the UK telecoms regulator) to set wholesale prices, where regulation is required, in a reasonable way	To address these issues in full would be a separate project, and one which might raise legal issues regarding the interaction between state aid and UK regulation
Provide more detailed market information on new entrants, change of interest in potential bidders, and changes in technology	No, as these are all evolving features of the market and the information is relevant to the question of present and future tenders, not the evaluation of what happened in the past	
In all instances, highlight where information comes from stakeholders or Ofcom	Yes	
Include a table highlighting compliance with the new provisions of the Broadband Guidelines	Yes	
Include description of any challenges raised in national courts regarding allegations of overcharging by BT, including arguments made by claimant(s) and defendant(s) and the current status of the case	No	The Commission is able to undertake this analysis given these are public matters and as such it has access to regulatory consultations and decisions, as well as competition law complaints and findings. It also has access to Ofcom case bulletins ¹⁴⁶ court transcripts, where its regulatory decisions are formally challenged ¹⁴⁷
Include an analysis of whether BDUK's mapping methodology was appropriate with regard to speed thresholds	Yes	
Include a detailed project-by-project assessment of any compliance issues raised	No	This would require extensive analysis of the decisions taken by local bodies, for instance whether a given procurement should have been re-opened due to a change in circumstances. Implied breaches of public procurement law would require legal analysis

Source: Oxera.

¹⁴⁶ See, for example, <http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/>

¹⁴⁷ See, for example, <http://www.catribunal.org.uk/238/Judgments.html>

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