Ensuring transparency when network providers use your money to upgrade their infrastructure

Why the UK Government and Ofcom must strengthen financial reporting requirements to ensure funds are well spent

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Executive Summary

Vodafone UK believes the Government should require network providers such as BT to publish detailed reports when using taxpayers' or third party money to improve privately-owned digital infrastructure. Drawing on extensive research of the BDUK programme, this paper sets out whythis matter is so important, especially given the proposal for a Broadband USO, The Government's proposal to implement a Broadband Universal Service Obligation (USO) kicked on debate about what it would look like, what technology it would use and who would pay for it. It appears to have settled on a proposal to prevent digital exclusion by giving everyone in the UK the right to affordable, basic broadband service of at least 10 Megabits per second (Mbps). If a formal solution is put in place, a USO provider woud be designated and if there is a net cost burden, other telecommunications providers would be required to contribute to these costs. We fundamentally disagree with an industry levy to solve BT's lack of network investment, and indeed when looking at some of the data in this report, we can ask whether BT is not sitting on an already significiant publicly funded nest egg through BDUK surpluses?

We believe Ofcom should specify network provider reporting requirements to ensure there is transparency over how funds allocated to Broadband USO are spent. We came to this conclusion after studying a comparable initiative – Broadband Delivery UK (BDUK), a Government programme launched in 2013 that channelled the public's money to BT to fund network build. Like Broadband USO, BDUK was created to prevent digital exclusion; one of its goals was to provide everyone in the UK with a basic broadband speed of at least 2Mbps. We have attempted to assess BDUK's performance to see if there might be lessons we could apply to the Broadband USO initiative. But because the reporting obligations are limited and non-specific, there is insufficient data to measure performance. As detailed in this paper, even when key figures are available, the numbers are often unaudited and contradictory. As a result, we are unable to answer even the most basic questions, such as:

1. What has been delivered and what was supposed to be delivered?
2. **Where has it been delivered?** Where did BT's commercial roll out end and where did the BDUK programme begin?
3. **What has actually been spent?** We could not find any audited reporting of basic cost performance such as cost per cabinet rolled out, cost per home passed or cost per customer.
4. **Who paid for what? Although BT is responsible for matching part of the BDUK funding received from Central and Local Government, the amount BT contributed has not been formally reported anywhere.**
5. **What type of technology has been deployed?** The type of technology used to deliver the BDUK programme has a significant impact on costs, but we could not find any information on the amount of fibre to the premises (FTTP) roll-out verses fibre to the cabinet (FTTC).

In light of these issues, it is clear that the Government and Ofcom should prioritise transparency in the case of Broadband USO. As a first step, there is a need to understand the basic parameters of the project. Here are some of fundamental questions we must first address:

- What is the scale of the problem that Broadband USO is intending to fix?
- What is the scope of the potential project and what issue will more funding be solving?

Next, it is imperative that Ofcom set out clear, specific reporting requirements for Broadband USO. As described in Section 4 of this paper the network provider should be tasked with reporting on the key performance indicators below by postocde, setting out clear project objectives and providing update reports on progress so far:

- Number of exchanges upgraded/built
- Number of cabinets upgraded/built
- Number of premises passed
- Specific geographic areas rolled out to
- Revenues associated with funded network build

Costs associated with funded network build (e.g. cost per cabinet rolled out to) and information on the project's current status could be presented in a structured table, such as the one that appears in section 3.3.1 of this document. This table would, at minimum, enable funding providers to monitor how the public's money is being spent. This should be available at a sufficiently detailed level and in a format that allows stakeholders to aggregate or review in detailed form.

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1. Introduction

The Government proposes a Broadband Universal Service Obligation (BUSO) giving everyone in the UK a right to affordable, basic broadband service of at least 10 Megabits per second (Mbps). One solution is to appoint a Broadband USO provider who will be charged with providing the servce.

If there is a net cost, the proposal is that there costs should be recovered from the rest of industry. Other telecom providers would contribute to this fund and pass the costs on to customers. On average, funding universal service could increase customer bills by almost £11 a year for standard broadband, or almost £20 a year for superfast broadband.[1]

This is why Vodafone recommends the Government require BT – or whichever network provider is chosen to upgrade the UK's broadband infrastructure – publish regular reports detailing how it is spending its funding. And to ensure there is sufficient financial transparency, Ofcom should set out specific reporting guidelines.

We developed the guidelines in this paper after studying Broadband Delivery UK (BDUK) programme, an earlier Government initiative to ensure everyone in the UK has access to basic broadband. Launched in 2013, BDUK sought to spur private-sector investment in superfast as well as basic broadband. This publicly-funded programme allocated about £1.7bn to BT, the appointed network provider.

Our analysis of BDUK reveals a clear lack of reliable data on even the most basic performance metrics. As a result, it is difficult to say if BDUK has made good use of public money. Our findings highlight the need for the Government and Ofcom to implement a transparent reporting process before launching BUSO. A properly-designed reporting process can help instil public confidence that the funds allocated to BUSO are being well spent. This paper outlines one possible process, and is structured as follows:

- First, we establish the principles of transparent reporting.
- Second, we evaluate current sources of BDUK reporting. to show there is insufficient reliable data to accurately assess BDUK's performance.
- Third, we highlight key issues with publicly available BDUK information, such as the contradictory nature of much of the data.
- Fourth, we outline what a transparent reporting process should include.

Finally, we provide annexes that detail the conflicting nature of currently available information on BDUK's performance. We believe the case for improving the current reporting process is strong, and our hope is this paper will serve as a useful starting point for designing a better, more transparent framework.

1 Ofcom, Achieving decent broadband connectivity for everyone, https://www.ofcom.org.uk/__data/assets/pdf_file/0028/95581/final-report.pdf

2. The elements of transparent reporting

The BUSO initiative could result in third parties funding of an asset – the network – that will be wholly owned by a single commercial entity, likely to be BT. There should be significant public scrutiny over the project, so that funding providers can determine if what is being delivered matches what was planned. Such scrutiny requires a well-planned, transparent reporting system that meets the following objectives:

1. Establishes **good governance**. By good governance we mean establishing a clear framework with prescriptive processes that include the monitoring and reporting of actual progress. The principles underpinning good governance are further outlined below
2. Establishes what the new **gaps in network coverage** are, and how funds will be used to fill them
3. Supports existing **regulation in the wholesale broadband local access sector (WLA)** Ofcom's WLA market review already places reporting obligations on BT for the provision of these services, transparent funded reporting should complement and support this reporting.
4. Serves as a trusted key **information source** that third party investors and other interested parties can draw on to monitor performance

In order to meet these objectives a transparent reporting system should focus on the following areas:

- Monitoring what has actually been **delivered,** during and at the end of the programme.
- Recording and measuring actual costs incurred against planned costs, including details of:
    a. what the **costs** incurred actually are (both aggregated and disaggregated);
    b. **who has contributed** to those costs and what they have actually contributed
    c. how those **costs are recovered** through revenues and funding.
- Evaluating what the **benefits of the funded network** are, what the take-up of funded services has been and how these benefits compare to the costs.

2.1 Transparency is good governance

Good governance requires detailed and accurate reporting of the progress a project is making, not just whether it has been executed. The need for more rigorous reporting is a key lesson to be learned from the BUK project and applies just as much to the BUSO initiative. As we will go on to explain in the next section, it is difficult to measure BDUK's performance because reporting requirements on BDUK are light, and as a result publicly available data is scarce.

For example, whilst figures from the National Audit Office (NAO) and BDUK's own project summary report[2] show that £0.541bn of central government funds have been provided to BT, it is still not clear: (i) what the total funding provided is; (ii) where the service has been delivered; (iii) what the service has actually cost and (iv) who has paid for it.

[2] See Table 4: Basic statistics table

2.2 Outline of a transparent reporting system

A transparent reporting system should report periodically, for example quarterly and in line with the speed of the network build (the faster the roll-out the more frequent reporting should be) and should be able to answer the following questions:

What progress has been made so far?

The network provider's report should set expectations during the programme about the progress of delivery and any updated future plans. For example has the provider changed the number of premises they will roll out to due to build difficulties, are they incurred lower costs than anticipated and thus now forecast to have funding surplus.

Where is the network?

The report should clearly state where the network has been built. rural or urban postcodes, affluent or deprived postcodes? How has it varied from what was planned?

What technology does it use?

The technology used should be reported, as it affects the quality and cost of the deployed network.

What can the network do – what services can be delivered?

The report should explain what the network can do:what services can be delivered, and where they can be delivered.

How much did it cost?

The report should state how much the network build cost, and by what measure – premise, overall, geography, or technology, for example.

Other relevant questions include: who has paid for this investment? Was it a cash payment or network delivered in kind? How does it compare against a base case, such as a commercial investment case? How does it compare against business case assumptions after 1 year, 3 years or 5 years?

What is the take up?

The report should state the take up of the BUSO infrastructure by regional location. It should also answer questions like what are the revenues, and whether we can calculate the benefits of the scheme

Lessons learned from the BDUK programme

The outline above sets out the main elements needed in a transparent reporting system. To help us identify these elements, we used the BDUK programme as a case study. Our assessment of the BDUK programme appears in Section 3 of this report.

3. BDUK's role and performance to date

3.1 The role of BDUK

The BDUK programme, part of the Department for Culture, Media and Sport (DCMS), provided BT with public funding to deliver superfast broadband speeds of 24Mbps or more nationwide. In geographic areas that BT deemed not commercially, the state stepped in to cover the shortfall. BDUK relied on taxpayer contributions from Central Government, Local Government and Devolved Administrations, all channelled into one UK-wide scheme. It is the largest state intervention in the communications sector since the privatisation of BT in the 1980s, comprising £1.7bn[3] in taxpayer funds plus £0.5bn in BT matched funding.

BDUK worked with 50 Local Authorities and Devolved Administrations and the EU to improve the UK's broadband infrastructure. Ofcom also had responsibilities, which included[4] providing support to BDUK and dispute resolution.

BDUK's progress so far

Finding financial and operational metrics on BDUK requires a significant investment of time and effort, because publicly available data is scarce and scattered across multiple sites. Table 1 sets out the metrics we collected from different sources.

Table 1: Aggregated BDUK programme summary data

Specification	Scope
Funds available (sum of subsidy and BT matched funding)	**£2.2bn**
Central government	£780m[5]
Local Government, Devolved Administration ERDF	£900m[6]
Network provider (BT contribution)	£485m[7]
Number of Superfast Households	4.9m[8]
Contracted Broadband speed	>24Mbps
Estimated Cabinets and FTTP connects	25,000 cabinets, 500k FTTP[9]

[3] See table 1
[4] EU State aid measure SA 336671 http://ec.europa.eu/competition/state_aid/cases/243212/243212_1387832_172_1.pdf

[5] UK Next Generation Network Infrastructure Deployment Plan, Paragraph 21(references Phase 1 £530m, and Para 2 references Phase 2 - £250m)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/418567/UK_Next_Generation_Network_Infrastructure_Deployment_Plan_March_15.pdf
[6] BDUK summary report, Table of Projects Tab2, LA/DA funding of £864m contracted for phase 1 and 2 plus a pipe line of £264m.
https://docs.google.com/spreadsheets/d/1Hs00bNsyRV1WoOt-fow3rsNXzpcKg26AsOWvk1bvJRk/edit#gid=1411146266
[7] CMS Select Committee Inquiry spring 2016, contained in submission EWC00097 (table reproduced on page 34 of this report)
[8] Environment, Food and Rural Affairs Committee, DCMS oral evidence to reach 95% by the end of 2017 answer to q412:
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/rural-tourism/oral/49756.pdf
[9] Cabinet estimate calculated 4,300,000 (BDUK project summary report)/200 premises per cabinet passed =25k cabinets, 200 premises passed is estimated from BT press releases e,g Wales 600,000 premises and 3,000 cabinets.

In carrying out this research, we discovered many data sources contained conflicting information, for example when trying to source BT contribution to the BDUK roll-out the NAO reported £358million, whilst BT reported £480million and £900million, the first to a CMS enquiry and the second to the PAC in 2013.[10] Clearly, the processes in place to record, audit and publish even the most basic information are insufficient, And as a result, basic questions remain unanswered, such as:

1. How much funding has been contracted by each source, i.e. central government, local government, and the network provider BT to date?
2. What network investments have been made to date, and where?
3. How much of BDUK's total funds have BT received and spent to date?

Project funding contracted to date

At the time it was launched, BDUK planned to supply funding in two phases:

- Phase 1: Deliver superfast broadband to 90% of the UK by early 2016 and provide universal basic broadband of 2Mbps from December 2015
- Phase 2: Broaden superfast coverage to 95% of the UK by December 2017

So far, Phase 1 and Phase 2 contracts worth £1.52bn of the £1.7bn available have been 'let' to BT, but we have not been able to determine how much of the work has been completed. Several smaller contracts have been let to regional broadband providers Gigaclear and Call Flow, but we will focus on BT contracts, as these represent the majority of the funding provided.

BDUK published the project information shown in table 1 in a spreadsheet they publish as part of their reporting duties, this is shown in table 2.[11] However, the spreadsheet provides high level information only, making it difficult to tell how funds were actually spent. For instance, BDUK documents public sector funding by project, but does not break down costs, services or technology used.

Actual network roll-out progress to date

As of December 2016, central Government has paid out £0.514bn to install 28,000 cabinets and provide 4.3 million customers with the opportunity to receive superfast broadband service of 24Mbps or more. This information should be readily available. However, there is no single source for it:

- Government central funding is set out in a quarterly Broadband Performance indicator report published by DCMS.[12] However, the funding information lacks local government and BT contributions.

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[10] See table 4

[11] BDUK Project Spreadsheet: https://docs.google.com/spreadsheets/d/1Hs00bNsyRV1WoOt-fow3rsNXzpcKg26AsOWvk1bvJRk/edit#gid=1411146266

[12] Broadband Performance Indicator - March 2016: https://www.gov.uk/government/statistics/broadband-performance-indicator-march-2016

- The volume of BDUK cabinets installed is retrievable from the BT wholesale broadband database.[13] However, calculating the total number involves a lengthy manual process of taking screen shots of the BT wholesale cabinet and exchange database.

Actual funds BT received

As part of their quarterly financial releases, BT includes details of the funding it has received in that quarter. This figure does not include the cumulative funding received to date, nor does it include the capex BT has added to the BDUK roll-out.

In the financial year to 31st March 2017, BT received grant funding of £0.160bn,£0.180bn was then added to their deferred grant funding balance sheet, which now totals £0.446bn. BT deferred more subsidy than they received because, as they explain in their financial results announcement excerpted below, more customers signed up for broadband than they expected:[14]

"Our base-case assumption for take-up in BDUK areas has been increased [from 20%] to 39% following our review of the level of customer take-up. Under the terms of the BDUK programme, we have a potential obligation to either re-invest or repay grant funding depending on factors including the level of customer take-up achieved. While we have recognised gross grant funding of £160m (2015/16: £338m) in line with network build in the year, we have also deferred £188m (2015/16: £229m) of the total grant funding to reflect higher take-up levels on a number of contracts. To date we have deferred £446m (Q4 2015/16: £258m) of grant funding."

BT also reported the progress they had made with network roll-out:[15]

"We continue to extend the reach of fibre broadband, through both our commercial investments and the BDUK programmes, as we work towards improving speeds universally. We've passed over 200,000 properties in the quarter and 1.1m in the year, which means our fibre broadband network is now available to more than 26.5m premises."

It is difficult to understand from the above information: (i) how these figures reconcile with those published in BDUK's reports; (ii) what BT has done with the 2016/17 £160 million of public funds they have been gifted – how much of it was spent on laying fibre to the more than 26.5m premises cited; and indeed (iii) why BT now has nearly £0.5bn of 'surplus' public cash.

3.2 Published reports and analysis

Considering the size of BDUK, at £1.7bn, it is surprising how little information or analysis of the project is available in the public domain:

- BDUK publishes two reports on a periodic basis (explained below), but these lack detail, and
- BT provides just the minimum amount of financial information needed to meet its corporate reporting requirements.

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[13] See Annex N – Accessing BT's wholesale system data. Online CodeLook service

[14] BT's financial results Q4 2016; http://www.btplc.com/Sharesandperformance/Quarterlyresults/2016-2017/Q4/Downloads/Newsrelease/q417-release.pdf

[15] BT's financial results Q4 2016; http://www.btplc.com/Sharesandperformance/Quarterlyresults/2016-2017/Q4/Downloads/Newsrelease/q417-release.pdf

A variety of public bodies have attempted to seek further clarity on these reports, including Westminster Select Committees and a number of national audit offices. But none appear to have provided much more in terms of overall information and facts.

BDUK project summary report[16]

One of the two reports BDUK publishes is a project summary, posted on the DCMS website every three months. The report comprises 7 spreadsheets outlining the scope of work being contracted by Local Authorities and Devolved Administrations, but it is unclear how the data is audited.

An example of the report is detailed below. It fails to delineate the funding provided by BT themselves (BT is obliged to provide a percentage of the funding as part of the BDUK contract) and the funding provided by Local Governments (the BDUK subsidy includes funding from both central government and local government.

Furthermore, the table simply includes funding that has been contracted, but offers no other details.

Table 2: Example of the BDUK project summary report

Project	Total BDUK Funding	Total LA Funding	Total Contracted premises	Delivered to Date (December 2016)*
Bedford & Milton Keynes	£6,380,000	£7,830,000	52,906	35,851
Berkshire	£4,654,267	£4,104,500	33,101	22,510
Black Country	£2,891,500	£2,891,500	37,780	27,150
Bucks & Herts	£10,836,586	£11,415,000	87,955	57,070
Cambridgeshire	£8,250,000	£17,750,000	96,620	95,065
Cheshire	£5,818,000	£16,128,198	82,468	73,529
Cornwall	£2,960,000	£2,960,000	8,616	1,805
Cumbria	£19,990,000	£18,798,367	120,065	111,097
Derbyshire	£9,580,000	£9,580,000	94,386	84,940
Devon & Somerset	£47,146,526	£28,938,640	316,593	271,765

The quarterly payments report.[17]

The only other report BDUK publishes concerns payments, and is posted quarterly on the DCMS website. It attempts to show: (i) the accumulated disbursements and cash paid into all 50 BDUK projects; (ii) the total number of premises capable of ordering a higher than 24Mb/s service ; and (iii) a cost per million premises that have been passed to central Government. The text of the report states that the numbers exclude overspill on premises that can already receive superfast service. Like the project summary report, there is no information on how it was audited. It also lacks any data on how much funding local government or BT has provided.

[16] The BDUK project summary report: https://docs.google.com/spreadsheets/d/1Hs00bNsyRV1WoOt-fow3rsNXzpcKg26AsOWvk1bvJRk/edit#gid=1411146266

[17] Broadband Performance Indicator - December 2016: https://www.gov.uk/government/statistics/broadband-performance-indicator-december-2016

Table 3: Example of the quarterly payments report

Cumulative to end of:	Premises with superfast broadband service made available	BDUK funding (£)	Number of premises covered per £million of broadband delivery programme expenditure
December 2012	254	£ 434,735	584
March 2013	16,638	£ 6,767,185	2,459
June 2013	38,343	£ 6,767,185	5,666
September 2013	111,968	£ 10,347,568	10,821
December 2013	273,731	£ 14,182,547	19,301
March 2014	508,801	£ 58,586,408	8,685
June 2014	888,113	£ 72,437,233	12,260
September 2014	1,383,777	£ 99,766,011	13,870
December 2014	1,908,725	£ 252,084,918	7,572
March 2015	2,411,395	£ 301,444,870	7,999
June 2015	2,905,764	£ 331,828,330	8,757
September 2015	3,311,843	£ 372,153,178	8,899
December 2015	3,625,369	£ 406,918,848	8,909
March 2016	3,840,643	£ 476,742,422	8,056
June 2016	4,021,047	£ 492,573,929	8,163
September 2016	4,168,739	£ 497,656,699	8,377
December 2016	4,309,668	£ 513,598,393	8,391

Reach of commercial roll-out[18]

BT provides information on the extent and reach of its commercial superfast broadband roll-out on an ad-hoc basis. This has been included in some quarterly financial releases and in a number of presentations BT's CEO provided to shareholders.

Parliamentary Select Committees[19]

Several Parliamentary Select Committees have investigated the delivery of broadband upgrades by BDUK and BT so far. The Public Accounts Committee convened two formal evidence sessions in July 2013 and March 2014, the Environment, Food and Rural Affairs (ERFA) Select Committee held two sessions as well, and the Culture Media Sport (CMS) Select Committee conducted a year-long investigation that ended in July 2016. These committees focused on examining BT's spend and the actual average cost per cabinet and fibre connection.

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[18] BT's financial Results, page 5, http://btplc.com/Sharesandperformance/Quarterlyresults/2016-2017/Q3/Downloads/Newsrelease/q317-release.pdf

[19] Public Accounts Committee: July 2013, March 2014, https://www.publications.parliament.uk/pa/cm201314/cmselect/cmpubacc/834/834.pdf and January 2015, https://www.publications.parliament.uk/pa/cm201314/cmselect/cmpubacc/834/83402.htm#evidence
CMS Select Committee inquiry - http://www.parliament.uk/business/committees/committees-a-z/commons-select/culture-media-and-sport-committee/inquiries/parliament-2015/establishing-world-class-connectivity-throughout-the-uk-15-16/
EFRA select committee 2014, http://www.parliament.uk/business/committees/committees-a-z/commons-select/environment-food-and-rural-affairs-committee/news/rural-broadband-inquiry-launch/
EFRA select committee 2016
http://www.parliament.uk/business/committees/committees-a-z/commons-select/environment-food-and-rural-affairs-committee/inquiries/parliament-2015/rural-tourism-inquiry-16-17/
EFRA select committee 2014 http://www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/news/rural-broadband-evidence-session/

While these sessions ensure there is some public oversight of the BDUK programme, the detailed financial information we believe is necessary to properly evaluate BDUK's performance has been difficult to come by.

National audit office reports[20]

The National Audit Office has produced two reports in conjunction with the Public Accounts Committee inquiries. These reports examined how well DCMS designed the rural broadband programme and whether it provided value for money. The report noted many areas of concern and areas that require improvement.

Audit office Scotland[21]

Audit Scotland has published two reports, one in February 2015 and one in August 2016, on the progress of Next Generation Access contracts – which promise delivery of broadband infrastructure of at least 30Mbps – with BT. These audits assess whether the Scottish Government has clear plans and arrangements in place to build a superfast broadband network in Scotland. The reports cover: (i) the targets, aims and objectives of the Scottish Government's investment programme in superfast broadband; (ii) the procurement and subsequent contract management of two projects (in the Highlands and Islands and the Rest of Scotland); and (iii) what has been delivered to date and what else is needed. It does not consider the actual costs BT have incurred in building the network, so it is difficult to determine how well BT has performed given budgeted costs.

Public Account Committee for Wales and Audit office Wales[22]

Recognising the substantial public investment involved, and on behalf of the Auditor General for Wales, a team from the Wales Audit Office examined whether the Welsh Government's approach to rolling out broadband infrastructure to households and businesses was likely to deliver its intended benefits. The report was published on 28th May 2015 and made recommendations such as: improve communication about the local rollout of next generation broadband, ensure (BT) reach contractual targets, monitor and support the take-up of next generation broadband. However this report was not prescriptive about how it should be done.

3.3 Where are the gaps?

Despite: (i) BDUK's two reporting requirements to produce quarterly project summary and payments information; (ii) numerous parliamentary select committee sessions; (iii) the information provided in BT's financial accounts; and (iv) various reports and inquiries from various audit offices, there is still a substantial amount of basic information relating to the BDUK programme that remains opaque. Below we set out the main difficulties we experienced when reviewing all the BDUK data in the public domain, and the data we think should be made available.

3.3.1 A basic table summarising the BDUK project's current status

We expected to find a simple summary table showing the current status of the BDUK project. We failed to find it, so we created one ourselves, as illustrated below. The information gaps we found appear in red font.

Table 4: Basic statistics table

[20] The rural broadband programme: https://www.nao.org.uk/wp-content/uploads/2013/07/10177-001-Rural-Broadband_HC-535.pdf: and https://www.nao.org.uk/report/the-rural-broadband-programme-3/

[21] Superfast broadband forScotland - progress update:http://www.audit-scotland.gov.uk/uploads/docs/report/2015/nr_150226_broadband.pdf; http://www.audit-scotland.gov.uk/uploads/docs/report/2016/nr_160818_broadband_update.pdf

[22] Welsh Government investment in next generation broadband infrastructure http://audit.wales/system/files/publications/Broadband_2015_English.pdf

Specification	Scope	Progress to Dec 2016	Sources of data
Funds available	£2.2bn	Not reported	**No audited source: NAO, BDUK, and BT quote inconsistent figures**
Central government	£0.780bn	£0.541bn	BDUK project summary report NAO reports
Local government, EU and Devolved Administrations	£900bn	Not reported	**No definitive source on LA expenditure**
Network provider (BT)	£0.485bn	£0.358bn £0.48bn £0.9bn	**No definitive source**, - Referenced by NAO BT claim to CMS inquiry BT claim to PAC 2013.
Number of Households covered	5.5m	5.5m 4.3m –Phase 1 4.6m–Phase 1 &2	**No definitive source for all customers passed** Oxera report[23] BDUK project summary report. NAO 2013 BDUK to EFRA select committee BT to EFRA select committee
Broadband speed> 24Mbps		4.3m	BDUK project summary report – however this only included 'contracted' not actually delivered.
Funding provided but deferred		£0.446bn Capital Deferral referenced in BT's accounts	BT's financial results

As the table above reveals, so far we have been unable to source any audited information relating to the funding provided from local governments and devolved administrations, or from BT. This means the overall funding of the BDUK network build is unknown. And although we know that central government has contracted funds to cover 4.3 million premises and BT have rolled out about 28,000 cabinets, we have been unable to source any information relating to the number of households currently passed by the BDUK funded network. We consider these parameters basic information and would expect them to be made available in an audited form.

[23] The Oxera report: The purpose of this report was to satisfy the EU that BT had used the State aid funding in a manner that was in keeping with the rules and guidance which were provided. https://www.gov.uk/government/publications/the-uks-national-broadband-scheme-an-independent-evaluation

3.3.2 What has been spent and can we analyse the costs?

We consider the reporting of basic cost performance statistics an important element in monitoring BT's delivery of publicly-funded network build. By basic performance statistics we mean figures such as cost per cabinet rolled out, cost per home passed or cost per customer. In some instances, the information in the public domain is vastly contradictory. For example:

- The National Audit Office estimated cost per cabinet at £20,000.[24]. This figure was derived by performing an audit in a number of locations the NAO believes would be indicative of a 'normal' BDUK area.
- BT, when questioned in public select committees, said the cost per cabinet rolled out was between £26,500 and £27,500.[25]
- Our own calculations lead us to estimate the cost per cabinet at between £55k to £69k. We arrived at this range by using the details BT provided to select committees when asked about their contribution to the BDUK roll-out as well as the funding they have received from local and central governments, which has been reported in BT's quarterly financial releases.[26]

3.3.3 What has been delivered?

To answer this question, we need to know the total size of BT's broadband network. But conflicting public information makes this task very difficult. Our research yielded five different possible sizes for BT's broadband network:

a. In 2011, BT presented to customers a system size of 25 million premises. This figure is used to calculate the initial projected commercial fibre rollout of 10 million premises or 40% passed, which also means that roll-out to 66% of the network equates to 16m premises.[27]

b. In 2015 BDUK used a network size of 30m premises when discussing the Broadband USO. 1% is referred to as 300,000 premises when discussing the final 5% of the network[28].

c. Ofcom's Broadband USO report to the Government, published in December 2016, used a system size of 28.5m premises.[29]

d. In December 2016, Analysis Mason referred to the last 5% of BT's network relating to 1.4 million premises, meaning the total network could cover 28 million premises.[30]

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[24] See Annex A – Calculated cost per cabinet
[25] See annex E – Oral evidence
[26] See Annex A - Calculated cost per cabinet/premise
[27] BT presentation, Next Generation Access - a Strategy for Volume Deployment: http://www.bcs.org/upload/pdf/sfisher-090311.pdf
[28] BDUK oral evidence to EFRA Select Committee March 2015.
[29] Achieving decent broadband connectivity for everyone, https://www.ofcom.org.uk/__data/assets/pdf_file/0028/95581/final-report.pdf
[30] Achieving decent broadband connectivity for everyone, Dec 2016, Analysis Mason report, https://www.ofcom.org.uk/__data/assets/pdf_file/0028/95581/final-report.pdf

e. Ofcom's 2017 Market Review referenced a 66% rollout at 18.5m premises. This implies a system size of 27.7m[31]. Ofcom used this number in their assessment of the length of the regulatory holiday gifted to BT.

Then again, BT claimed in their 2016 Q3 financial results announcement that[32]:

> *We've passed over 26m premises with our superfast fibre broadband network, helping the Government towards its target of bringing fibre broadband to 95% of the country by the end of 2017. And we plan to go even further.*

Considering some of the smaller system sizes estimated above, the area remaining for the Broadband USO to tackle may well be very small indeed.

3.3.4 What has BDUK delivered?

Two factors significantly affect the cost of any funded network build, BDUK or otherwise – existing commercial roll-out plans and future commercial roll-out plans. If BT is already forecasting a commercial roll-out to a particular geographic area, the cost of building out the network should be minimal. But if BT were to reduce its commercial roll-out forecast, then the cost of building out the network would increase.

To identify the cost of additional network build, and therefore the amount of BDUK funding needed, we would need to establish BT's existing and planned commercial roll-outs. However, as summarised below, we have found conflicting information on BT's commercial roll-outs:

a. In 2008, BT announced its initial Next Generation Access (NGA) programme and extended it in subsequent announcements to support a superfast commercial investment of £2.5bn.[33]

b. In 2015, BT announced it had made £3bn worth of investment in NGA, with the scope of the activity to be 40% of premises (which was increased to 66% of premises). The technology mix was forecast to be 75% cabinet based and 25% Fibre to the Premise.[34]

c. In late spring 2016 BT confirmed to the CMS Select Committee Inquiry into Broadband that its commercial investment was split £2.1bn capital and £400m opex.[35]

In 2017, BT's commercial investment - as confirmed by Ofcom in the latest WLA consultation – was stated to be no more than £1.5bn.[36]The lack of clarity on BT's commercial roll-out plans means it is not possible to clarify the costs of expanding the network, or the actual amount of BDUK funding needed to do so. Nor is it possible to establish how large an area BDUK now supplies is in terms of the number of households which would have gone without superfast broadband if not for BDUK funding.

To avoid this problem in future, Ofcom should set out a clear process on reporting commercial roll-out plans. Any changes to the forecast plans should be reviewed and approved by whomever is supplying the funding

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[31] Wholesale Local Access Market Review – Annexes, paragraph A8.20 see footnote 21 https://www.ofcom.org.uk/__data/assets/pdf_file/0035/99638/Annexes1-19.pdf

[32] BT's financial results announcement Q3 2016, http://www.btplc.com/Sharesandperformance/Quarterlyresults/

[33] http://www.insider.co.uk/news/bt-announces-25bn-investment-expand-9883258

[34] Our Charter, Building Britain's Connected Future, Openreach, September 2015, page 10. http://www.btplc.com/Sharesandperformance/Presentations/Presentations/keycompanyannouncements/downloads/OpenreachCharter.pdf

[35] See annex E

[36] Wholesale Local Access Market Review – Annex 8, https://www.ofcom.org.uk/__data/assets/pdf_file/0035/99638/Annexes1-19.pdf

for additional network. This prevents the network provider from changing its commercial forecasts just to maximise the funding it will receive.

3.3.5 Where has it been delivered? (Annex C)

The purpose of providing funding to a network operator to roll-out in areas which are commercially unviable is to extend national coverage, or increase the speed of doing so. It is imperative that the network operator receiving external funds report where network build has been delivered in a transparent manner. This ensures the funding provider can verify the results of its investment.

Network Overbuild

If the network provider uses external funding to build in areas where other operators are present, this would be a waste of public money. We do not know what processes are in place to limit or eliminate overbuild. But it is clear that BDUK money has been used to build network where Virgin Media was or has subsequently built a presence.

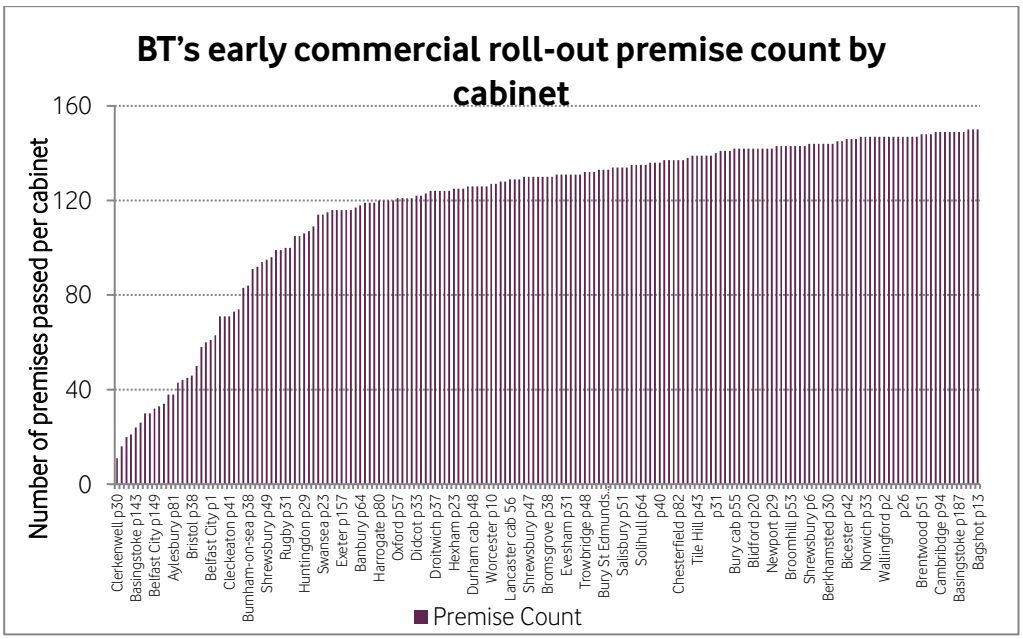
Annex C explains this issue in more detail, setting out the BT exchange areas where Virgin Media also has a network presence. It may be that Virgin Media built its network after BT did so using BDUK funding, a windfall gain for consumers in the area. For example, in Rugeley, Staffordshire, there are BDUK funded cabinets that serve postcodes such as WS15 2AJ, WS15 1EA.These postcodes are also covered by superfast on the Virgin Media network, according to Virgin Media's online checker.

Our analysis appears to show that up to 20% of BDUK funded cabinets could be in locations where Virgin Media serves some of the local customers. In the absence of clearer public data, we cannot know how these cabinets have been treated by the BDUK programme.

Commercial viability and urban in-fill

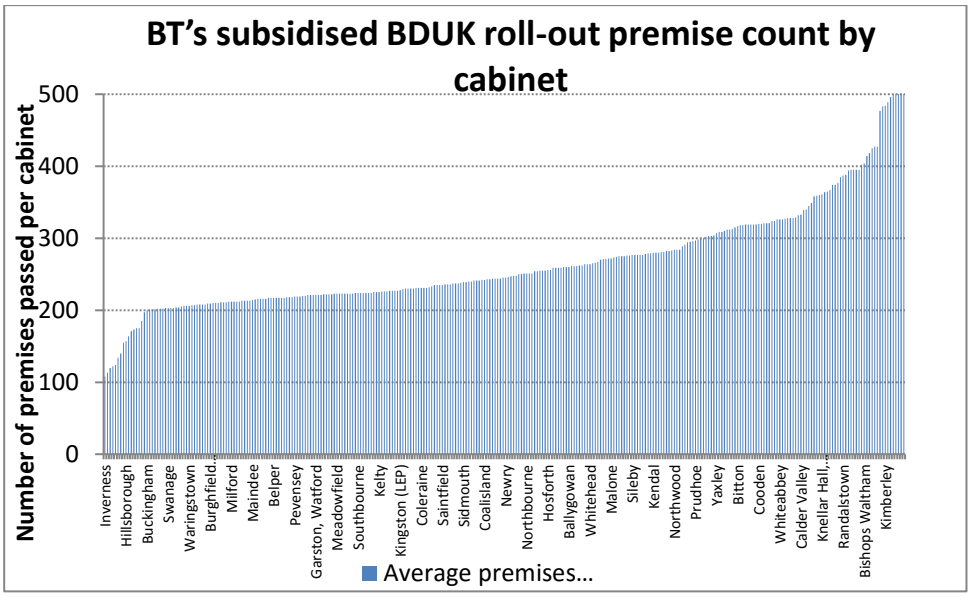
Rolling out superfast broadband to rural areas can be less commercially viable because the population density is too low to achieve economies of scale. In such areas it makes sense that a network provider would rely on public subsidy. But our analysis of BT's commercial and BDUK-funded superfast broadband roll-outs shows BT has used public money to expand its coverage even in well-populated areas. The graph below shows BT's early commercial roll-out by cabinet and by number of premises passed. It shows that BT commercially funded superfast roll-out to cabinets serving fewer than 150 premises, and even cabinets that passed as few as 11 premises.

Graph 1: BT's early commercial roll-out by cabinet by number of premises passed



Graph 1 above establishes that BT commercially rolled-out to cabinets serving fewer than 150 premises in many areas. However, Graph 2 below shows that BT have used BDUK subsidised funds to roll out to many cabinets serving more than 150 premises and to some serving as many as 600 premises. This raises the question as to how BT has defined 'commercial viability'. The data these tables are based on are included in full in annex C.

Graph 2: BT's Subsidies BDUK roll out by cabinet by premises passed



The ambiguity around the definition of 'commercial viability' may well explain some other issues, such as the use of BDUK funds in the urban network roll-out as well. Whilst we do not know the reasons why BDUK funds have been used to fund network roll-out in urban areas, it appears intuitively very unlikely that it is because of the economies of scale and scope issues. One possible reason is that these locations have a higher density of

business customers already buying leased lines, therefore remaining user volumes are lower. It could also be a result of BT's historic and current technology choices, meaning Exchange Only lines are harder to upgrade to VDSL.

Annex C sets out the magnitude of this issue, and the need to have a wider understanding of the economics behind what defines 'commercially viable' superfast broadband roll-out. We recognise that number of homes passed, cost of backhaul and take-up are all factors in assessing the viability of network rollout to any particular location, and that no two locations are alike. However, a high-level analysis of publicly available information shows:

a. BT's early commercially viable superfast broadband roll-out covered the funding of cabinets that passed as few as 11 premises. We detail BT's early commercial roll-out in annex C by county, BT exchange, cabinet name, the premises passed and the commercial programme build phase.

b. In many urban areas BDUK funds have been used to roll-out cabinets that cover high numbers of premises. An example of this is Sefton Park in Liverpool, where 24 cabinets have been commercially rolled out by BT using their own funds, with an average of 442 premises passed per cabinet, and 12 cabinets have been rolled out using BDUK subsidised funding, with an average of 489 premises passed per cabinet.

c. Backhaul costs do not seem to be a significant factor, given that there is no duct length greater than 1000m in these BDUK-funded areas. Under EU State aid funding rules, any duct length greater than 1000m would need to be included in a database published by BT that enabled other operators to see where the duct had been installed and request access to this ducts.[37]

However, importantly under EU State aid measure SA 336671, any urban broadband development projects are subject to a separate State aid notification and are not covered under the current Commission's decision.[38] We are unaware of any such notifications to the Commission. This leads us to question why BDUK funds have been used so extensively in urban areas to fund the roll-out of cabinets covering a large number of premises.

3.3.6 Who paid for what? (Annex C and D)

BT Capital Contribution

The funding for the BDUK programme came from three sources: Central Government, Local Government, and BT themselves. The amount of funding BT has contributed to the BDUK programme has not been formally reported anywhere, and there is no process in place for this to be reported. That said, this issue has been discussed at many select committees, and there are numbers mentioned in audit reports.

In Annex D we set out the information we have been able to source from publicly available information. Although it appears to be agreed by Government, BDUK, and BT that BT should provide £358 million towards the BDUK programme, no evidence, audit, or report has been published or commissioned to confirm this.

The table below draws from BT's presentation to the CMS Select Committee. It reveals what BT has contributed towards the BDUK programme, but the majority of the payment is in the final year and is a forecast.

[37] https://www.openreach.co.uk/orpg/home/products/ductandpoleaccess/ductandpoleaccess.do

[38] http://ec.europa.eu/competition/state_aid/cases/243212/243212_1387832_172_1.pdf

Table 4: BT Openreach's capital expenditure by programme

Openreach capital expenditure spend by programme categorised by technology type £m	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Forecast 2015/16
Ethernet Total	112	124	118	164	177	206	261
Copper Total	464	466	460	444	423	424	500
Fibre Total	128	262	313	360	233	165	217
BDUK/SEP Net	-	2	11	12	56	142	262
Other Total	205	234	175	166	161	146	129
Total	909	1,089	1,077	1,146	1,049	1,083	1,369

Source: BT submission (EWC0097)

The second table BT presented also to the CMS Select Committee also claims it has been paid; the detail on the table includes 'total contracted' and not actual information (EWC 0097 - February 2016)[39].

Table 5: BT Openreach's 'contracted' capital and operational expenditure by programme/nation

Total Contracted (June 15)	Contracts #	Funding £m	BT Capex £m	BT Opex £m	Total Investment £m
Cornwall	1	50	40	20	110
Northern Ireland (DETI)	1	20	10	0	30
BDUK	45	1,180	330	380	1,890
SEP	42	300	60	70	430
Total	89	1,550	440	470	2,460

We believe the above information only adds to the confusion over the exact amount of BT's contribution to the BDUK project to date.

Government claw back scheme

Under BDUK programme rules, BT has to repay the funding providers in situations where the actual spend or performance of the BDUK programme is different from BT's forecast at the time the funding was approved. An example of this concerns the customer 'take-up' assumption, as explained previously. Higher customer take-

[39] http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/culture-media-and-sport-committee/establishing-worldclass-connectivity-throughout-the-uk/written/29397.pdf

up means BT should be able to recover more of its roll-out costs from customer revenue. Consequently, BT would need to return some of its BDUK funding to the Government.

However, available data appears to conflict and sheds little light on the amount of claw back the Government has received from BT. On the one hand, in late 2016 the Government referred to £130m of claw back from BT, drawn from the first two phases of the BDUK programme.[40] On the other hand, in May 2017 BT deferred a total of £446 million onto its balance sheet and reported that this amount relates to BDUK deferred funding. Here's what BT said about it. [41]

"*Our base-case assumption for take-up in BDUK areas remains at 33%. Under the terms of the BDUK programme, we have a potential obligation to either re-invest or repay grant funding depending on factors including the level of customer take-up achieved.*"

There is a significant discrepancy between the £130 million that the Government said could be scoped into further BDUK projects and the £446 million that BT have deferred onto their balance sheet. Furthermore, the numbers appear to change from quarter to quarter. For example, in May 2015, BT Group's CFO said the following about claw backs during an exchange with analysts:[42]

"I don't expect, from where we are now, this is not a number like hundreds of millions of pounds. If we need to do something it may be tens of millions of pounds."

Yet in 2016 BT were deferring BDUK funding at levels in excess of £300 million and currently have nearly £0.5 billion of BDUK cash sitting on their balance sheet. The information we have been able to obtain is detailed in full in Annex D.

3.3.7 What is the value of the network?

The type of technology used to build out a network has a significant impact on costs. Technology used determines the products that consumers can buy and the longevity of the investment. It should therefore be reported to funding providers.

As part of the BDUK programme a certain amount of FTTP was required to be deployed. The NAO reported in 2013 that 20% of total costs would be incurred in delivering FTTP[43]. FTTP has greater benefits in terms of the future speeds, reliably, and quality of the funded network. However, we have not been able to establish from public sources the quantity of FTTP that has been rolled out as part of the BDUK programme, or indeed if 20% of costs were incurred in delivering FTTP.

[40] East Of England £18.9m, Midlands £22.5m, North East England £3.4m, North West England £15.5m, Northern Ireland £2.0m, Scotland £17.8m, South East England £18.4m, South West England £8.8m, Wales £12.7m, Yorkshire and the Humber £13.5m, http://www.ispreview.co.uk/index.php/2016/12/uk-gov-confirm-442m-reinvestment-boost-superfast-broadband-cover.html

[41] BTplc.com, results Q3, Dec 2016 notes on capital expenditure

[42] www.btplc.com q4 2015 transcripts from investor day.

[43] NAO 2013 Figure 11 Page 33 shows 20% of budget allocated to FTTP. https://www.nao.org.uk/wp-content/uploads/2013/07/10177-001-Rural-Broadband_HC-535.pdf

4. Transparency requirements for Broadband USO

In section 2 of this document we set out the elements of a well-planned transparent reporting system.

We now turn to the question of implementation, and how this transparency should apply to any future Broadband USO project.

4.1 What is Broadband USO?

As stated in the Introduction, the UK Government has introduced legislation to allow a Broadband Universal Service Obligation (USO) that would give everyone the right to a decent broadband connection on reasonable request. This is in recognition of the increasing importance of broadband to people's everyday lives.

In March 2016, the Department for Culture, Media and Sport (DCMS) wrote to Ofcom requesting technical advice on the design of the Broadband USO. Ofcom published a call for inputs in April 2016, and then published a consultation in December 2016 to advise Government on how to achieve a decent broadband connection for all. This Ofcom document set out a range of options for Government to consider.

In Ofcom's December 2016 report, the potential cost of funding this Broadband USO was estimated to range from £0.7bn to £2bn depending on the assumptions used, such as the minimum broadband speed requirements.

The current use of the Universal Services Obligation for Telephony is focused on providing access in remote areas. However the lack of superfast broadband is a far more widespread issue from a geographic standpoint. Using publically available information, we estimate that about 3.7 million premises remain which currently lack basic broadband of at least 10Mbps, and of these approximately only 1.5 million, or 40.5%, are in rural areas. Most of the areas that lack basic broadband are urban, which raises the question – why does BT need a subsidy to roll out broadband services in these places?

It is worth bearing in mind of course that our analysis is an estimate based on BT's quoted network size, our analysis of actual BDUK roll-out and information gleaned from publicly available reports. From the data we have been able to obtain, it seems the broadband coverage issue is a complex one and requires further data gathering and analysis.

The first question we need to answer is: ***what problem** is **the Broadband USO trying to fix?*** As explained earlier, BT have not rolled out commercially in some urban areas and so the scale of the 'urban in-fill' problem in the Broadband USO could be significant.[44]

Another question we need to answer is: ***what has caused that the problem the broadband USO is trying to fix?*** In other words, why has BT failed to roll-out broadband more extensively? Our analysis indicates that two factors play a part: BT's incremental changes in i) commercial NGA investment and in ii) its commitment to provide full fibre to the premises (FTTP). BT has instead relied on BDUK public subsidies and cheaper fibre to the cabinet (FTTC) rather than commercially investing in full FTTP. For example, in 2010 BT announced it was planning to extend its NGA investment and roll-out a technology solution that consisted of 75% FTTC and 25% FTTP. However, BT has focussed far more on the cheaper FTTC solution and has invested very little in FTTP. As a report published in 2017 detailed, BT's FTTP network only passed 500,000 million premises, a significant amount of which was subsidised by BDUK and specifically the BDUK roll-out in Cornwall.

[44] a term we use to define small pockets in urban areas that still receive very low broadband speeds despite their geography indicating commercial roll-out to be viable

The table below shows the potential size and split of the network coverage problem that the Broadband USO may be trying to solve.

Table 6: The current remaining coverage gap for Broadband USO

Dec – 2016	Urban - Large and Infill Exchanges	Rural	Source of area size
System Size (Ofcom)	28.5 premises		See footnote 30
BT Commercial (Ofcom)	18.5m		See footnote 32
Intervention area notified to EU (BDUK Oxera report)		5.5m	See Oxera report footnote 24
Remaining Urban challenge	4.5m		System size – BT's commercial roll-out – BDUK intervention area. 28.5 – 18.5 – 5.5 = 4.5m
BDUK premises passed 6.3m of which 4.3m get superfast	2.39m	3.9m	This is estimated using data sourced as described in annex F
Premises still needing an upgrade (DEC 2016)	2.1m	1.6m	Calcuated from figures above: 4.5-2.39 = 2.1m 5.5-3.9 = 1.6m

As both Table 6 above and the Oxera report[45] shows, the size of the rural BDUK intervention area is scoped at 5.5 million premises. The precise split of urban versus rural is not clear-cut, but we have estimated that prior to BDUK, 4.5 million urban premises did not receive a superfast broadband (SFBB) service. Table 6 also shows that of the 6.3 million premises passed by the BDUK funded roll-out - of which 4.3 million are superfast speed - approximately 2.39 million relate to urban areas and 3.9m relate to rural areas. The estimates are based on the bottom up count outlined in Annex F. It is indicative only, and should not be treated as a substitute for a proper reporting of the BDUK programme.

Our calculations leaves the remaining potential Broadband USO area *as 2.1 million urban premises and 1.6 million rural* premises. However, the degree to which BT's commercial roll-out and further BDUK funded roll-out will reduce this problem is difficult to forecast.

As shown in Table 6 above, the remaining rural coverage area Broadband USO may seek to include is approximately 1.6 million. Table 7 below shows the split of these 1.6 million across the nations of the UK.

[45] Oxera report; https://www.gov.uk/government/publications/the-uks-national-broadband-scheme-an-independent-evaluation

Table 7: Split of 1.6 million across the nations of the UK

Nation	Estimated of premise yet to benefit from an upgrade	Published Plans	Status of BT Fibre on Demand	Status of BT's capital contribution
Rural England (see below table)	925,000[46]		Unclear	Unclear
Rest of Scotland[47] (rural)	200,000	Yes, well funded	Unclear	Government is considering commissioning a further audit to examine cost per premise passed
Highlands and Islands[48]	125,000	Yes, well funded		
Wales[49]	200,000	Yes, well funded	Promised in every BT exchange	Government is considering commissioning a further audit to examine cost per premise passed
Northern Ireland[50]	60,000-100,000	Not clear, may need re-allocation of urban funds recovered.	Not supported	Unaudited but BT claim a £30 capex contribution per premise

The network roll-out plans from the Scottish and Welsh governments are ambitious. Scotland has a Super Fast Broadband coverage target of 95% by the end of 2017 with the funds to go much further through to 2022. The Scottish government have already commissioned Audit Scotland to report on this twice and may well consider another report focusing on the possible significant underspend, deferred cash on BT's balance sheet

[46] 1.6m less the devolved nations.
[47] Rest of Scotland = 2.3m premises less BT roll-out of 1.4million less ROD BDUK -608= 300k -100k urban estimate
[48] H&I = 325k premises less BT 44k -less H&I/BDUK -157k
[49] Wales = 1.5m lines less BT 615k- BDUK Wales 689k
[50] Autumn 2016 DFE consultation on areas without superfast.

and BT's capital contribution. The Scottish Futures Trust has also requested that Ofcom review BT's capital contribution to the Scottish project.[51]

In September 2016, the Welsh Public Accounts Committee had been promised Fibre on Demand at every Welsh exchange, while the Audit Wales could only find a BT commitment to pay £26m of capital. We have had more difficulty assessing the status in England from publicly available information and breaking down the estimated 925,000 premises.

The following table relies on BT's original notification of its commercial footprint, the total number of premises (using a system size of 28.5m premises) and the reported coverage added by BDUK. This is, again, an estimate. The purpose of the table is to highlight the different parts of the coverage issue and what needs to be understood before additional funds are assigned.

Table 8 - Last 5% rural – English counties greater than 24,000 premises.

English County contract area	Estimated Premises yet to benefit from an upgrade[52] where >24,000 premises	Status of Broadband Plan	Status of BT's capital contribution (contract area as proportion of £358m[53])	Status of BT Fibre on demand	Proportion of £325m Capital Deferral Owed
Devon and Somerset (316,000[54] premises)	75,000	Phase 1 complete, phase 2 just rewarded	Not reported (£22.7m)	Not visible in the process	£20.5m
Essex (121,000 premises)	87,000	Project in progress	Not reported (£8.7m)	Not visible in the process	£7.5m
Herefordshire and Gloucester (117,000)	59,000	Phase 1 complete, additional phases in progress	Not reported (£8.4m)	Not visible but H&G is reporting 8% FTTP.	£7.3m
Kent and Medway (140,000)	23,400	Phase 2 in progress	Not reported (£10m)	Not visible in the process	£8.7m
Leicestershire (72,000)	34,700		Not reported (£5.2m)	Not Visible in the process	£4.5m

[51] http://www.scottishfuturestrust.org.uk/publications/
[52] Estimates – Premise total (DCLG) – less BT commercial- less BDUK/La delivery to Dec 2016
[53] £358m was identified by NAO in their July 2013 report, with a base of 5m premises.
[54] BDUK Project data.

Northamptonshire (80,209)	46,000	Phase 2 projects in progress.	Not reported (£5.8m)	Not Visible in process	£5.0m
West Yorkshire (86,000)	80,000	Project in progress	Not reported (£6.1m)	Not Visible in process	£5.3m
South Yorkshire (95,000)	61,000	Project in Progress	Not reported (£6.8m)	Not visible in process	£5.9m

Of course, relying on the current level of publicly available information makes the assessment we have performed above very difficult. The Broadband USO should not provide third party funds to a network provider without requiring detailed reporting that allows the problem the USO is trying to solve to be clearly defined and understood.

4.2 What are the parameters of the Broadband USO?

Patchwork roll-out

The Broadband USO will fill in the gaps left by the actual and forecast BDUK programme and BT's own commercial roll-out plans. To date, the scope of BT's commercial network roll-out plans have been discussed and disputed by various select committees and audit processes. Therefore, before commencing another funding programme, we need to understand the actual and forecasted scope of the BDUK and BT commercial network roll-out.

What is the scale of the potential project and what is the scale of the problem?

In recent years, the number of premises that lack download speeds of at least 10Mbps has fallen significantly, from 15% in 2014 to 5% in 2016, according to figures from Ofcom. This equates to approximately 1.5 million rural premises that currently lack a download speed of 10Mbps. However, as discussed above, with (i) further BDUK roll-out; (ii) BT's deferred surplus cash; and (iii) other operators' commercial roll-outs, this number could significantly drop by the time any broadband USO is implemented. We have attempted to identify the possible size and characteristics of the Broadband USO project using publically available information, but we need more comprehensive information from BT and other network operators such as Virgin Media to complete the analysis.

What is the scope of the potential project and what issue will more funding be solving?

We believe transparency of the target areas the Broadband USO funding will be focused on is fundamental to the project. Otherwise, funding could potentially be used to roll-out in areas where BT has strategically decided not to roll-out for commercial reasons. As previously noted, in some business areas BT have not rolled-out superfast services in order to ensure customers procure private circuits or leased business lines from them. This 'urban in-fill' issue could be significant and include 200,000 premises.[55] We consider this an inappropriate use of funding, and this is why we believe transparency on the geographical area to be focused on is critical

[55] Ofcom USO consultation references 200,000 business customers unable to access superfast.

Incremental costs only

Transparency of costing information is key to ensuring third party funding covers *only* the incremental costs of providing universal service. USO guidelines indicate the funding should not include allocated overheads, apportioned shared costs, or any other costs that BT would incur in the normal course of their business.

Sunk network cost allocation

In meeting any broadband USO BT may utilise their existing network. Transparent reporting of costs incurred matters because it allows stakeholders to understand that funding is being spent in the manner intended, rather than to offer cost relief or to cover BT's sunk network costs.

Revenue/benefit offsetting

In calculating the funding required to meet the universal services obligation, the benefits BT receives in delivering the USO funded services requires consideration. The USO funded network will attract incremental revenue from new customers as well as customers receiving an upgraded service. There will be other less tangible benefits which should also be considered and transparently reported on (for example, the increase in brand value associated with the perception of an enhanced network).

4.3 Broadband USO published reports

As this report shows, the accurate monitoring, reporting, and auditing of funded network build is a complex and challenging area. Within the BDUK programme, significant amounts of data has been put in the public domain, but reliable information is scarce.

4.3.1 Network scope: Commercial roll-out and BDUK roll-out

We believe the type of information that would enable any future funding to be accuracy scoped would detail the following by postcode, setting out the planned and achieved progress:

- Number of exchanges
- Number of cabinets
- Number of premises
- Revenues associated with funded network build
- Costs associated with funded network build

4.3.2 Reporting on and defining urban in-fill and rural roll-out

Once the scope and size of the funding area has been determine and reported on, we then consider it important that the actual characteristics of the areas rolled-out to is reported (such as whether it is a rural, remote or urban area).

In terms of reporting on this issue in the future, the only real way to identify this issue is to report the funded network roll-out in a very detailed geographic way, detailing the location of precisely where the funding is to be used and the BT exchange, street cabinet, and premises that are covered by the funded roll-out.

4.3.3 Defining and reporting the summary statistics

As described earlier in this report, a simple table could be used to monitor the efficiency of the operator's performance in using the funding they have received. It could also be used to show the operator's own costs, which they may be proposing to claim back via a funding mechanism.

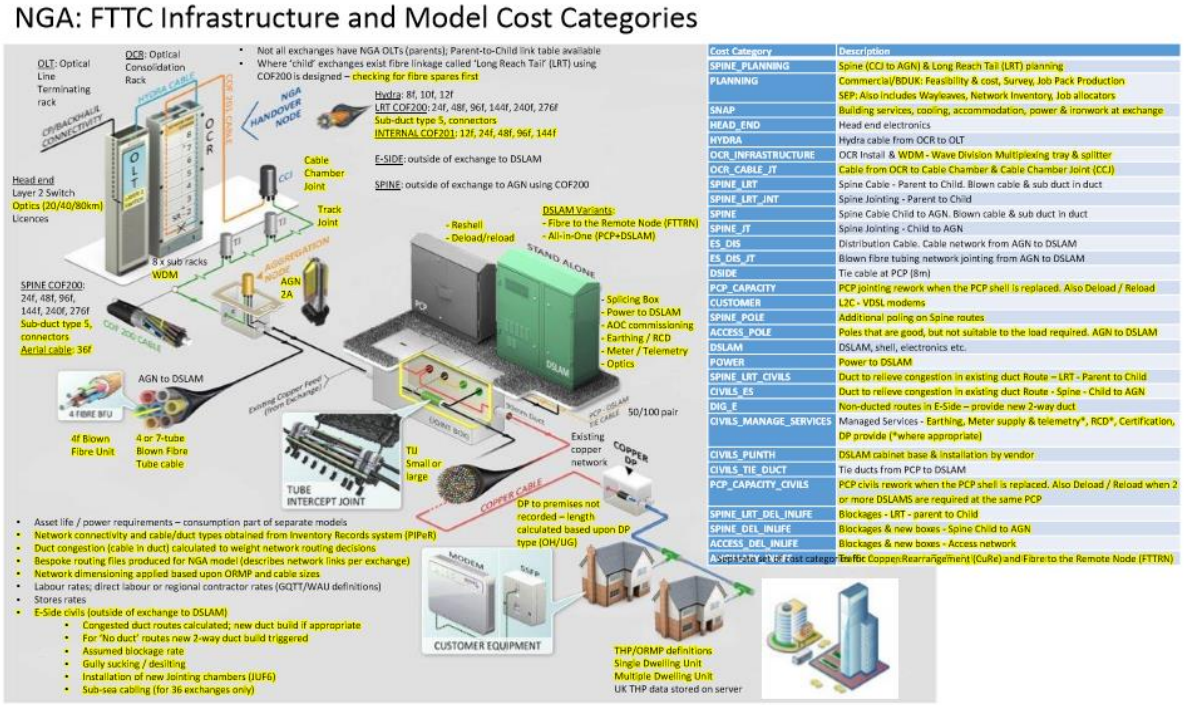
This kind of information would have to be compiled using a transparent and consistent method to ensure the actual performance as measured against the benchmarks are comparable. Potential benchmarks include cost per cabinet rolled out to, or cost per premises passed, but these would require further investigation to establish the metrics that provide the greatest degree of transparency.

4.3.4 Detailed report defining and reporting the allowable costs and associated revenues

A transparent reporting process requires detailed accounting of how the actual costs were incurred. Figure 1 below is taken from BT's response to Ofcom's Fibre modelling consultation and shows the level of cost information BT holds. This is the level of information which will enable true costing transparency.

Figure 1: Detail from Openreach submission to Ofcom on NGA Cost Modelling[56].

Fig 1 – Costs that are missing from the Ofcom model (those highlighted in yellow).



[56] https://www.ofcom.org.uk/__data/assets/pdf_file/0029/83099/openreach.pdf see page 21.

Annex A - Calculated cost per cabinet/premise

The purpose of this annex is to show, using (i) the information BT has given in evidence to select committees; information released into the public domain; and (iii) figures calculated by the national audit office (NAO), that there is a significant discrepancy between the various 'cost per cabinet' figures quoted.

The top down data, which uses the actual amounts BT has spent, when combined with the scale of the actual roll-out as sourced from BDUK reports, shows a significantly higher cost per cabinet than BT has quoted and NAO has audited and reported on.

Using BT's top down actual spend to calculate a cost per cabinet:

The table below uses the following figures:

- BT capital contribution, which is sourced from the evidence provided to the parliamentary select committee, as detailed in Annex E.
- Subsidies BT has received, which is sourced from BT's financial results, as detailed in Annex D.
- The total costs, which are calculated by adding the two rows above.
- The estimated subsidised cabinets installed, which is sourced from the BDUK summary report which details the number of premises passed, and dividing this by 200 (the average number of premises passed by each cabinet).
- A cost per cabinet which is calculated by dividing the estimated number of subsidised cabinets by the total costs, producing a cost per cabinet ranging from £55k to £69k. This is substantially different from the evidence provided by BT, and the NAO's audit findings.

Table 9: Table to show the combination of BDUK payments and BT's claimed contributions to BDUK

	2012/13	2013/14	2014/15	2015/16	Total
BT capital contribution to BDUK	£12m	£56m	£142m	£262m	£460m
Subsidy receipts	Not recorded	£126m	£393m	£289m	£808m
Total Costs		£186m	£534m	£551m	£1.268bn
Estimated subsidised Cabinets installed	783	3,100	9,750	8,000	20,850
Implied cost per subsidised cabinet and fibre path.		**£60,000**	**£55,000**	**£69,000**	**£61,000**

Using the cost per cabinet figures quoted by the NAO and BT in oral evidence:

In addition to calculating the cost per cabinet from the actual top level information, it is possible to source it from two other places;

- The values BT have provided in oral evidence the values (which is presumably from their actual data; and
- The NAO's audit of BT's actual invoices and bills which, for selected areas, provide a cost per cabinet.

BT's oral evidence:

As shown in Annex L – 'Oral evidence: Establishing World-Class Connectivity Throughout the UK, HC 407 Wednesday 9 December 2015' BT has provided oral evidence that the cost per cabinet rolled out to using BDUK funds was £26,500 in phase one and £27,500 in phase two.

"The cost per cabinet completed to date (FTTC only) is currently £26,500. This cost includes:

- *additional exchange equipment*
- *fibre and associated duct work between exchange and the cabinet civils work in preparing the cabinet's plinth and new duct (where necessary)*
- *power connections, which can be extremely variable and expensive*
- *physical fibre cabinet (DSLAM)*
- *Connections to the copper cabinet."*

"Phase 2 is in its earlier days of planning. In the procurement of these contracts, the average cost per cabinet was £27,500.

This is +18% higher as there are more cabinets that require rearranging the current network to achieve the speed requirements. This excludes project and contract management planning and reporting costs. FTTP is not included in the above figures."

National Audit Office:

The NAO has provided cost per cabinet information in the two audits they have carried out[57] these have been derived by the NAO carrying out an audit in a number of locations that they believe would be indicative of the 'normal' BDUK area. These audit processes have indicated a cost per cabinet rolled out to of £20,000.

In its July 2013 report it noted:

"The rural broadband project is moving forward late and without the benefit of strong competition to protect public value. For this we will have to rely on the Department's active use of the controls it has negotiated and strong supervision by Ofcom."

Amyas Morse, head of the National Audit Office, 5 July 2013

and in January 2015 set out that:

[57] See Annex D

"We reported on The Rural Broadband Programme in July 2013. That report looked at the early procurement stages of phase 1 of the Superfast Broadband Programme (the Programme), and the prospect for getting value for money given the adequacy of the Programme's controls and progress so far. The Committee of Public Accounts has since published 2 reports: the first in September 2013 and the second in April 2014. Both reports highlighted concerns over:

- *publishing superfast broadband rollout information;*
- *cost data being available and transparent;*
- *the level of competition secured."*

Annex B – Geographic network build reporting

The purpose of this annex is to identify the need to report on the geographic location where funded network build is rolled out. This annex will show that, using publically available information, it has been very difficult to determine why BT have used BDUK funding in some geographic areas and for some cabinet upgrades and have not done so for others.

Two significant issues emerge: (1) how BT assesses the commercial viability of an exchange area and thus uses BDUK funds, and (2) how BT determined whether an area is already served by another operator.

The data shows;

- BT used BDUK funding in areas that appear commercially viable
- BT overbuild of cable (Virgin Media
- BT commercially rolled out SFBB to cabinets where the economics appeared challenging.

This annex examines the issue of 'urban in-fill'. We use this term to identify the 'gaps' in urban areas where there is no, or limited, superfast roll-out. Examining this issue shows that the data available in the public domain paints a confusing picture and raises the following questions:

(1) How does BT assesses the commercial viability of an exchange area?
Our analysis in this area highlights the need to answer the following questions:

- What are the economies of scale and scope that make commercial fibre roll-out viable? Is it the number of premises passed by the street cabinet? The distance from the BT exchange? Or is it the specific geography of the area?
- What has made some cabinets attached to a BT exchange commercially viable and some cabinets requiring BDUK funding?
- Why are some urban areas that appear to have significant economies of scale not commercially viable and require BDUK funding?

The data shows that BT has commercially funded superfast cabinets that serve as few as 11 premises (Clerkenwell, cabinet p30), and BT has used BDUK subsidies to fund cabinets that service on average 600 premises (BT exchange Wallington).

Establishing a commercially viable benchmark:

To provide perspective to assess the data in this annex, we first detail the benchmark data that was included in BT's initial commercial fibre roll-out plans, as set out in Ofcom's WLA market review:[58]

- The initial commercial investment by BT to roll-out superfast coverage to 18,300 BT cabinets was forecast to cost £1bn.
- This provides a benchmark cost per cabinet of £54,000, and suggests that the average premises passed by a cabinet were 546
- These costs benchmarks are probably higher per cabinet than the subsequent average BT could achieve, due to the fixed central system and other costs included for the initial systems set-up

Economies of scale which have been commercially viable for BT

This following list shows (from BT's early commercial roll-out) the cabinets by exchange area where commercial roll-out was considered viable. What is particularly interesting from the list, is that it appears that cabinets with as few as 11 premises passed were commercially viable back in 2010-2011.

For example in Antrim connected to the Belfast city exchange, three cabinets (p146, p149, and p83) have been commercially funded by BT and only cover between 30 and 32 premises.

Table 10: BT's early commercial roll-out

County	Exchange	Cab no	Premise Count	BT Build Phase
London (examples)	Clerkenwell	p30	11	
Oxfordshire	Carterton	p6	16	7b 2011-12
Antrim	Belfast City	p113	20	7a 2011
Antrim	Belfast City	p2	21	7a 2011
Hampshire	Basingstoke	p143	24	10a 2013
Antrim	Belfast City	p39	26	7a 2011
Solihull	Solihull	p38	30	
Antrim	Belfast City	p146	30	7a 2011
Antrim	Belfast City	p149	32	7a 2011
Antrim	Belfast City	p83	33	7a 2011
Avon (Bristol)	Bristol	p54	34	10b 2013
Oxfordshire	Henley-on-Thames	p14	38	
Buckinghamshire	Aylesbury	p81	38	13b 2015
Berkshire	Bracknell	p56	43	10a 2013
Antrim	Belfast City	p177	44	7a 2011
	Swansea	p107	45	11a 2013-14
Avon (Bristol)	Bristol	p38	46	9b 2012-13

[58] Ofcom, WLA Market review 2017, https://www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-access-market-review

Antrim	Belfast City	p59	50	7a 2011
Avon (Bristol)	Bristol	p39	58	9b 2012-13
London (examples)	Chelsea	p21	60	
Antrim	Belfast City	p1	61	7a 2011
Antrim	Belfast City	p49	63	7a 2011
Shropshire	Shrewsbury	p40	71	17a 2016
Warwickshire	Marton, Rugby	p8	71	
West Yorkshire	Cleckeaton	p41	71	8a 2012
West Yorkshire	Cleckeaton	p50	73	8a 2012
Antrim	Belfast City	p31	74	7a 2011
Antrim	Belfast City	p33	83	7a 2011
Somerset	Burnham-on-sea	p38	84	10a 2013
Antrim	Belfast City	p202	91	7a 2011
Essex	Brentwood	p37	92	10a, 2013
Shropshire	Shrewbury	p9	94	11b 2013-14
Shropshire	Shrewsbury	p49	95	13a 2015
Antrim	Belfast City	p95	96	6b 2011
Oxfordshire	Banbury	p36	99	
West Yorkshire	Cleckeaton	p43	99	8a 2012
Warwickshire	Rugby	p31	100	2013
Antrim	Belfast City	p54	100	7a 2011
South Yorkshire	Barnsley	p126	105	9b 2012-13
London (examples)	Bayswater	p74	105	
Cambridgeshire	Huntingdon	p29	106	9a 2012-13
Wiltshire	Toothill	p23	107	
Lancashire	Lancaster	cab p76	109	Phase 7a 2011-12
Dorset	Bournemouth	p7	114	10a 2013
Derbyshire	Chesterfield	p109	115	5b 2011
Oxfordshire	Abingdon	p47	116	
Avon (rest of)	Bath	p86	116	6a 2011
Devon	Exeter	p157	116	5b 2011
London (examples)	Bayswater	p39	116	
London (examples)	Clerkenwell	p52	116	
Antrim	Belfast City	p200	117	7a 2011
Oxfordshire	Banbury	p64	118	
Warwickshire	Marton, Rugby	p7	119	
Oxfordshire	Oxford	p6	119	
Oxfordshire	Summertown	p30	119	
North Yorkshire	Harrogate	p80	120	14b
Derbyshire	Chesterfield	p20	120	5b 2011
Avon (rest of)	Bath	p75	120	5b 2011

London (examples)	Clerkenwell	p53	120	
Oxfordshire	Oxford	p57	121	
Worestershire	Kidderminster	p71	121	
Northamptonshire	Daventry	p35	121	5b 2011
London (examples)	Chelsea	p37	121	
Oxfordshire	Didcot	p33	122	
Berkshire	Burnham	p14	122	5a 2011
Warwickshire	Nuneaton	p17	123	
Shropshire	Shrewsbury	p48	124	11b 2013-14
Worestershire	Droitwich	p37	124	
Worestershire	St Peters	p31	124	
Wiltshire	Swindon	p151	124	
Perthshire	Perth	p70	124	8a 2012
Northumberland	Hexham	p23	125	10b 2013
North Humberside	Bridlington	p33	125	6b 2011
Wiltshire	Calne	p14	125	
Lancashire	Bury	cab p70	126	Phase 2 2010-11
Durham	Durham	cab p48	126	Phase 3 2010-2011
Nottinghamshire	Worksop	p66	126	6b 2011
Buckinghamshire	Aylesbury	p48	126	4a 2011-12
Fife	Dunfermline	p94	126	4a 2010-11
Worestershire	Worcester	p10	127	
Wiltshire	Trowbridge	p62	127	
Worestershire	Fernhill Heath	p26	128	
Leicestershire	Kirkby Muxloe	p15	128	6b 2011
Lancashire	Lancaster	cab 56	129	Phase 7a 2011-12
Essex	Epping	p22	129	7a 2012
Wiltshire	Swindon	p157	129	
Norfolk	Norwich	p20	130	Phase 7a 2011-12
Shropshire	Shrewsbury	p47	130	7b 2011-12
Oxfordshire	Banbury	p63	130	
Oxfordshire	Kidlington	p11	130	
Oxfordshire	Oxford	p44	130	
Worestershire	Bromsgrove	p38	130	2011
Worestershire	Worester	p60	130	
Tyne and Wear	East Herrington	cab p51	131	Phase 11b 2013-14
Warwickshire	Nuneaton	p78	131	2010
Worestershire	Evesham	p31	131	
Hertfordshire	Berkhamsted	p15	131	10a 2013
Mid Glamorgan	Bridgend	p35	131	5a 2011
Wiltshire	Trowbridge	p48	132	

London (examples)	Colindale	p6	132	
Hertfordshire	Barnet	p94	132	4a2010-11
Northumberland	Hexham	p16	133	8a 2012
Suffolk	Bury St Edmunds	cab p68	133	phase 4b 2010-11
Derbyshire	Chesterfield	p105	133	5b 2011
Oxfordshire	Witney	p31	134	
Worestershire	Droitwich	p6	134	
Wiltshire	Salisbury	p51	134	
West Lothian	Livingston Village	p19	134	4a 2010-11
Cambridgeshire	Huntingdon	p52	135	6a 2011
Warwickshire	Rugby	p24	135	2011
Solihull	Solihull	p64	135	
Antrim	Belfast City	p26	135	7a 2011
Lancashire	Bury	cab p6	136	Phase 6a 2011
Shropshire	Shrewsbury	p11	136	11b 2013-14
Warwickshire	Leamington Spa	p96	137	
Warwickshire	Stratford-upon-Avon	p30	137	
West Yorkshire	Cleckeaton	p30	137	8a 2012
Derbyshire	Chesterfield	p82	137	5b 2011
London (examples)	Chelsea	p44	137	
Cambridgeshire	Huntingdon	p23	138	6a 2011
Suffolk	Bury St Edmunds	cab p34	139	Phase 4b 2010-11
Coventry	Tile Hill	p43	139	2014
Lincolnshire	Boston	p58	139	9b 2013
Hampshire	Basingstoke	p2	139	2 2011
Kent	Biggin Hill	p2	139	6a 2011
West Yorkshire	Cleckeaton	p17	141	8a 2012
London (examples)	Clapton	p25	141	
Berkshire	Bracknell	p94	141	5b2011
Lancashire	Bury	cab p55	142	Phase 8a 2012
Lancashire	Bury	cab p80	142	Phase 2 2010-11
Warwickshire	Nuneaton	p10	142	
South Yorkshire	Broomhill	p8	142	4b 2011
Nottinghamshire	Blidford	p20	142	7b 2011-12
Dorset	Broadstone	p48	142	6b 2011
Devon	Exeter	p12	142	11b 2013-14
London (examples)	Chingford	p38	142	
Isle of Wight	Newport	p29	142	
Staffordshire	Stafford	p85	143	9a 2012-13
Warwickshire	Leamington Spa	p104	143	
Worestershire	Malvern	p42	143	

South Yorkshire	Broomhill	p53	143	4b 2011
Wiltshire	Devizes	p18	143	
London (examples)	Colindale	p25	143	
Isle of Wight	Newport	p22	143	
Shropshire	Shrewsbury	p6	144	7b 2011-12
Oxfordshire	Didcot	p21	144	
Oxfordshire	Kidlington	p21	144	
North Yorkshire	Haxby	p24	144	4b 2010-11
Hertfordshire	Berkhamsted	p30	144	Phase 3 2010-11
Dyfed	Llannelli	p11	144	9b 2012-13
Oxfordshire	Banbury	p33	145	
London (examples)	Covent Garden	p12	145	
Oxfordshire	Bicester	p42	146	p41 -175
North Yorkshire	Harrogate	p87	146	4b 2010-11
London (examples)	Chiswick	p64	146	
Suffolk	Bury St Edmunds	cab p44	147	Phase 4b 2010-11
Norfolk	Norwich	p33	147	Phase 10b 2013
Warwickshire	Leamington Spa	p72	147	
Oxfordshire	Didcot	p20	147	
Oxfordshire	Oxford	p67	147	
Oxfordshire	Wallingford	p2	147	
Worestershire	Droitwich	p21	147	
Derbyshire	Chesterfield	p12	147	5b 2011
Northamptonshire	Hardingstone	p41	147	8a 2012
Dyfed	Llannelli	p82	147	9b 2012-13
Fife	Dunfermline	p84	147	4a 2010-11
Essex	Brentwood	p51	148	Phase 10, 2011-12
West Yorkshire	Cleckeaton	p44	148	8a 2012
Cheshire	Marple, Stockport	cabp34	149	Phase 6b 2011
Cambridgeshire	Cambribdge	p94	149	8a 2012
Oxfordshire	Oxford	p76	149	
Northamptonshire	Daventry	p50	149	5b 2011
Buckinghamshire	Aylesbury	p52	149	6a 2011
Hampshire	Basingstoke	p187	149	Phase 2 2011-12
Dorset	Broadstone	p14	150	6b 2011
Hampshire	Basingstoke	p179	150	Phase 2 2011-12
	Bagshot	p13	150	2010-11
	Bagshot	p33	150	4b 2010-11

Economically non-viable cabinets that require BDUK funding

We have also compiled a database using the method described in annex F to show by exchange area, the cabinets that BT has commercially rolled out to and the cabinets that have been funded using BDUK funds. This database includes 5,614 BT exchanges, and for each exchange it includes all the cabinets rolled out to, either commercially or using BDUK funding.

A summary by region is show below in table 11 and a sample of BT exchanges is shown in table 12.

There are a number of questions that emerge from this data as discussed in the body of this report, for example in Sefton park in Liverpool 24 cabinets have been commercially rolled out by BT using their own funds with an average of 442 premises passed per cabinet, and 12 cabinets have been rolled out using BDUK subsidised funding with an average of 489 premises passed per cabinet. This poses the question as to why some cabinets were commercially viable for BT and why some required BDUK funding?

Table 11: BT exchange showing number of commercial cabinets and the number of subsidised cabinets

	Total Premises	No. of BT Exchanges	BT funded cabinets	Subsidised cabinets	Premises connected to a susidised cabinet*	% of premises Subsidised	% of cabinet subsidised
Total Scotland	2,700,000	1,034	3,577	3,419	766,216	28%	49%
Northern Ireland	800,000	191	1,149	1,860	425,827	53%	62%
Wales	1,500,000	433	1,664	2,849	689,202	46%	63%
England	23,500,000	3,956	40,525	19,903	4,309,795	18%	33%
Total UK	**28,500,000**	**5,614**	**46,915**	**28,031**	**6,191,040**	**22%**	**37%**

**Note: not all premises connected to a cabinet receive a superfast broadband signal, approximately 70% receive superfast broadband speeds*

Table 12: A sample of BT exchanges showing No. of commercial cabinets and the No. of subsidised cabinets

	BT commercial roll-out			BDUK subsidised roll-out		
BT Exchange area	BT Cabinets	Premises Passed	Average premises per cabinet	Subsidised cabs	Premises Passed	Average premises per cabinet
Kendal	38	13,915	366	7	1,959	280
Allerton	7	2,709	387	5	2,482	496
Anfield	33	16,529	501	18	5,048	280
Sefton Park	24	10,610	442	12	5,870	489
Culceth Warrington	9	3,335	371	5	1,564	313
Knutsford	18	6,032	335	5	1,033	217

Astley Bridge Bolton	32	11,906	372	9	3,221	358
Atherton, Manchester	39	17,231	442	10	2,591	259
Blackburn	67	31,015	463	51	9,423	185
Darwen, Lancashire	25	9,691	388	19	3,836	202
Farnworth	45	18,029	401	10	2,079	208
Layton, Blackpool	20	7,953	398	9	2,779	309
South Shore Blackpool	27	10,956	406	21	3,453	164
Redcar	30	12,833	428	7	1,584	226
Beamish Stanley	6	2,342	390	3	946	315
Crook, County Durham	14	5,232	374	9	2,005	223
Meadowfield	10	3,982	398	5	1,116	223

(2) How BT determined whether an area is already served by another operator

There are a number of BT exchanges in large urban areas where Virgin Media generally has a network presents where a large number of the cabinets are BDUK funded. We examine some of these exchanges further in Table 13 below using data sourced from BT Wholesale's online system as described in annex F. Unfortunately it has not been possible from publically available information to specifically identify a postcode by postcode match, however we have done sample checks which have confirmed Virgin Media's presents in these areas. We have included two sample checks we performed under Table 13 below.

This information implies that it is likely that as many as 5,319 subsidised urban cabinets have rolled out where there is potentially already superfast broadband coverage.

This table also shows that BDUK funding has been used in areas where the average number of premises passed by each cabinet is above the 150 indicative guides.

Table 13: Table to show the extent of the BDUK roll-out in large urban exchanges where Virgin media has a significant presence (From BT Wholesale data)

County	Exchange area	No. of Subsidised cabs	Subsidised Premises passed	Average Premises per cab
South Yorkshire	Aftercliffe	76	21455	282
Northamptonshire	Northampton	71	13662	192
Merseyside	Simonswood	68	25004	368
South Yorkshire	Sheffield	64	17246	269
West Midlands	Dudley	56	14682	262

Lanarkshire	Croftfoot, Glasgow	47	12167	259
Lancashire	Marton, Blackpool	47	15656	333
West Midlands	Smethwick	46	9595	209
West Midlands	West Bromwich	46	9887	215
Dunbartonshire	Clydebank	43	11021	256
Lancashire	North Shore, Blackpool	37	12814	346
West Midlands	Blackheath, Warley	36	7788	216
Lancashire	Colne	33	10680	324
Merseyside	Birkenhead	33	7326	222
Staffordshire	Rugeley	33	11988	363
Lanarkshire	Bishopbriggs, Glasgow	32	8330	260
Lancashire	Padiham, Burnley	31	9217	297
Surrey	Oxted	29	6607	228
Avon (Bristol)	Almondsbury	28	6825	244
Cheshire	Poynton, Stockport	27	6551	243
Northamptonshire	Kingsthorpe	27	9285	344
Merseyside	Everton	24	6241	260
Aberdeenshire	Kingswells	23	6490	282
Cornwall	Camborne	22	4947	225
Derbyshire	Clay Cross Chesterfield	22	6652	302
Avon(Bristol)	Yatton	21	5438	259
North Yorkshire	Richmond	21	5791	276
West Glamorgan	Skewen	21	4349	207
West Midlands	Darlaston	21	5614	267
West Yorkshire	Illingworth	21	5414	258
Cambridgeshire	Soham	20	5679	284
Cleveland	Stockton-on-Tees	20	6926	346
Lancahsire	Great Harwood, Blackburn	20	7856	393
Londonderry	Maghera	20	4855	243

North Yorkshire	Knaresborough	20	4833	242
Cambridgeshire	Ramsey, Huntingdon	19	4625	243
Lancashire	Heysham, Morecombe	19	6449	339
Lancashire	Wilpshire, Blackburn	19	4811	253
Nottinghamshire	New Ollerton	19	5996	0
West Yorkshire	Hipperholme	19	5514	290
Cambridgeshire	Trumpington	18	4648	258
Cumbria	Egremont	18	4722	0
Lancashire	Standish, Wigan	17	5447	320
Tyne and Wear	Ryton, Tyne and Wear	17	6234	367
Cambridgeshire	Sawston	16	4654	291
Gloucestershire	Cinderford	16	5308	332
Gloucestershire	Lydney	16	4747	297
Lancashire	Baroldswick	16	5626	352
Lancashire	Platt Bridge, Wigan	16	5915	370
North Yorkshire	Tadcaster	16	4250	266
West Yorkshire	Honley	16	4326	270
Bedfordshire	Oakley	15	4207	280
Cambridgeshire	Waterbeach	15	4122	275
Derbyshire	Clowne, Chesterfield	15	4981	332
Hampshire	Alresford	15	3219	215
Lancashire	Pleasington, Blackburn	15	4679	312
North Yorkshire	Bedale	15	4485	299
Northamptonshire	Towcester	15	5172	345
Nottinghamshire	Southwell	15	4060	0
Surrey	Upper Warlingham	15	5156	344
Cambridgeshire	Cambridge Science Park	14	5309	379
Cambridgeshire	Linton, Cambridge	14	3383	242
Northamptonshire	Thrapston	14	4376	313

Nottinghamshire	Edwinstowe	14	3322	0
Oxfordshire	Kingston Blount	14	3353	240
Staffordshire	Tutbury	14	4949	354
Surrey	Lingfield	14	3566	255
West Yorkshire	South Milford, Leeds	14	4399	314
West Yorkshire	Wetherby	14	3652	261
Aberdeenshire	Cults, Aberdeen	13	3561	274
Cheshire	Sandiway, Northwitch	13	3930	302
Cornwall	Falmouth	13	4029	310
Derbyshire	Horsley	13	4892	376
Derbyshire	Measham	13	4433	341
Durham	Sacriston	13	4853	373
East Sussex	Forrest Row, East Grinstead	13	2883	222
Hampshire	Milford-on-sea	13	3063	236
Isle of Wight	Freshwater	13	4744	365
Surrey	Deepcut	13	3489	268
Surrey	East Horsley	13	3208	247
Tyne and Wear	Felling, Gateshead	13	4483	345
Warwickshire	Bidford-on-Avon	13	2914	224
West Midlands	Wythall	13	3340	257
Wiltshire	Amesbury	13	4338	334
Cambridgeshire	Littleport, Ely	12	4030	336
Derbyshire	Chapel-en-le-Frith, Stockport	12	3760	313
Durham	West Auckland	12	3576	298
Durham	Willington	12	3648	304
East Sussex	Wadhurst	12	2438	203
Gloucestershire	Bishops Cleeve	12	3089	257
Gloucestershire	Tetbury	12	3025	252
Kent	Aylesford	12	2975	248

Lancashire	Carnforth	12	4769	397
Lancashire	Whalley, Blackburn	12	3049	254
Leicestershire	Markfield	12	3416	285
Northamptonshire	Bozeat	12	2872	239
Nottinghamshire	Cotgrave	12	3978	0
Oxfordshire	Rowstock, Didcot	12	3322	277
South Yorkshire	Bentley, Doncaster	12	2907	242
Suffolk	Claydon, Ipswich	12	3377	281
Suffolk	Halesworth, Ipswich	12	3202	267
Surrey	Chobham,	12	2733	228
Surrey	Frensham	12	2632	219
West Glamorgan	Bishopston	12	2441	203
West Sussex	Arundel	12	3056	255
Wiltshire	Wilton	12	2746	229
Cambridgeshire	Buckden	11	2630	239
Cambridgeshire	Harston, Cambridge	11	2519	229
Cleveland	Sedgefield	11	3684	335
Coventry	Wolston	11	2943	268
Derbyshire	Duffield	11	2749	250
Durham	Thornley	11	3238	294
East Sussex	Guestling	11	2447	222
Essex	Marks Tey	11	2216	201
Hampshire	Liphook	11	3337	303
Hampshire	Tidworth	11	2971	270
Kent	New Romney	11	2792	254
Kent	Westerham	11	2848	259
Kent	Wingham	11	2380	216
Lanarkshire	Shotts	11	4525	411
Lancashire	Adlington, Chorley	11	4416	401

Midlothian	Colinton	11	4027	366
Northamptonshire	Byfield	11	2541	231
Oxfordshire	Boars Hill	11	3357	305
Oxfordshire	Wheatley	11	2789	254
Oxfordshire	Woodstock	11	2440	222
South Yorkshire	Epworth	11	2919	265
Staffordshire	Endon	11	3054	278
Surrey	Bramley, Guildford	11	2897	263
West Sussex	Petworth	11	2219	202
Wiltshire	Shrivenham	11	2488	226
Aberdeenshire	Peterculter	10	3375	338
Avon (rest of)	Bleadon	10	3284	328
Bedfordshire	Wilstead	10	3873	387
Berkshire	Pangbourne	10	2458	246
Buckinghamshire	Naphill	10	2562	256
Cornwall	Bude	10	3660	366
Derbyshire	Overseal	10	3598	360
Durham	Sherburn Hill, Durham	10	3000	300
Essex	Burnham-on-Crouch, Essex	10	3114	311
Gloucestershire	Coleford	10	4759	476
Gloucestershire	Newent	10	2561	256
Hampshire	Medstead	10	2497	250
Hertfordshire	Melborn, Royston	10	2848	285
Kent	Dymchurch	10	2884	288
Kent	Meopham	10	2684	268
Lancashire	Earby, Colne	10	3016	302
Leicestershire	Hathern	10	3387	339
Leicestershire	Sapote	10	3402	340
Leicestershire	Uppingham	10	2456	246

Northamptonshire	Brixworth	10	2068	207
Nottinghamshire	Bottesford	10	2233	0
Oxfordshire	Cumnor	10	2838	284
Oxfordshire	Middleton Cheney	10	2534	253
Solihull	Henley-in-arden	10	2300	230
South Yorkshire	Ranskill	10	2297	230
Staffordshire	Armitage Rugeley	10	3158	316
Staffordshire	Ash Bank	10	2766	277
Staffordshire	Audley	10	3677	368
West Midlands	Albrighton	10	2869	287
West Sussex	Birdham	10	2253	225
Wiltshire	Purton	10	2406	241
Cleveland	Middlesborough	9	2822	314
Essex	Brightlingsea, Colchester, Essex	9	3607	401
Isle of Wight	Wooton	9	2509	279
Cleveland	Great Ayton	8	2677	335
Middlesex	Denham	8	2519	315
Northumberland	Dudley	8	2636	330
Essex	Little Clacton	7	2237	320

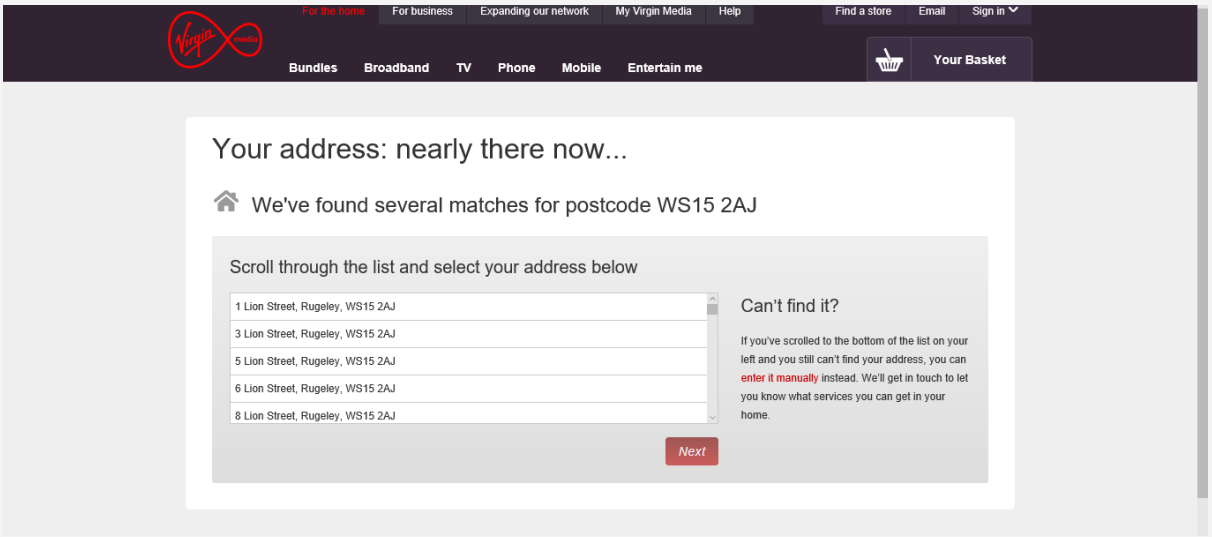
This is a sample to illustrate the scale of the subsidies used in urban areas where it would appear BT's commercial investment would work without subsidy, yet subsidy was diverted from the rural programme while BT's commercial investment seem to reduce.

Sample checks:

Area 1 sample - Rugeley Staffordshire:

Fibre Cabinet	Fibre Status	Phase	Properties Passed	Vendor	Approx Post Code
Cabinet P1	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	255	Huawei	WS15 2AJ
Cabinet P2	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	369	Huawei	WS15 1EA
Cabinet E_3	FTTC doing Design, live due by March 2018	Phase SEP Staffordshire 19b		Huawei	
Cabinet P3	FTTC Available from 1st July 2014	Phase BDUK Staffordshire 12a	536	Huawei	WS15 1AF
Cabinet P4	FTTC Available from 24th July 2014	Phase BDUK Staffordshire 12a	654	Huawei	WS15 2AB
Cabinet P5	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	602	Huawei	WS15 2AU
Cabinet P6	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	654	Huawei	WS15 2AN
Cabinet P7	FTTC Available from 1st July 2014	Phase BDUK Staffordshire 12a	388	Huawei	WS15 1EB
Cabinet P8	FTTC Available from 2nd July 2014	Phase BDUK Staffordshire 12a	312	Huawei	WS15 1BF
Cabinet P9	FTTC Available from 2nd July 2014	Phase BDUK Staffordshire 12a	177	Huawei	WS15 1DZ
Cabinet P10	FTTC Available from 1st July 2014	Phase BDUK Staffordshire 12a	496	Huawei	WS15 1GA
Cabinet P11	FTTC Available from 7th August 2014	Phase BDUK Staffordshire 12a	584	Huawei	WS15 2LZ
Cabinet P12	FTTC Available from 8th July 2014	Phase BDUK Staffordshire 12a	209	Huawei	WS15 2FG
Cabinet P13	FTTC Available from 26th September 2014	Phase BDUK Staffordshire 12a	258	Huawei	WS15 2FE
Cabinet P14	FTTC Available from 30th July 2014	Phase BDUK Staffordshire 12a	365	Huawei	WS15 2PF
Cabinet P15	FTTC Available from 28th June 2014	Phase BDUK Staffordshire 12a	467	Huawei	WS15 1AP
Cabinet P16	FTTC Available from 8th July 2014	Phase BDUK Staffordshire 12a	964	Huawei	WS15 2NJ
Cabinet P17	FTTC Available from 11th July 2014	Phase BDUK Staffordshire 12a	386	Huawei	WS15 2FB
Cabinet P18	FTTC Available from 15th August 2014	Phase BDUK Staffordshire 12a	261	Huawei	WS15 3BH
Cabinet P19	FTTC Available from 9th August 2014	Phase BDUK Staffordshire 12a	266	Huawei	WS15 1BY
Cabinet P20	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	258	Huawei	WS15 1JB
Cabinet P21	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	368	Huawei	WS15 2DZ
Cabinet P22	FTTC Available from 1st July 2014	Phase BDUK Staffordshire 12a	676	Huawei	WS15 1LR
Cabinet P23	FTTC Available from 28th June 2014	Phase BDUK Staffordshire 12a	452	Huawei	WS15 2HU
Cabinet P24	FTTC Available from 8th August 2014	Phase BDUK Staffordshire 12a	90	Huawei	WS15 1EQ
Cabinet P25	FTTC Available from 28th June 2014	Phase BDUK Staffordshire 12a	146	Huawei	WS15 2FR
Cabinet P26	FTTC Available from 8th July 2014	Phase BDUK Staffordshire 12a	164	Huawei	WS15 2GJ
Cabinet P27	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	291	Huawei	WS15 2WA
Cabinet P28	FTTC Available from 1st July 2014	Phase BDUK Staffordshire 12a	383	Huawei	WS15 1BE
Cabinet P29	FTTC Available from 29th June 2014	Phase BDUK Staffordshire 12a	123	Huawei	WS15 1UL

We have taken all of the above postcodes and inserted them into Virgin Media's on line checker and found address matches.

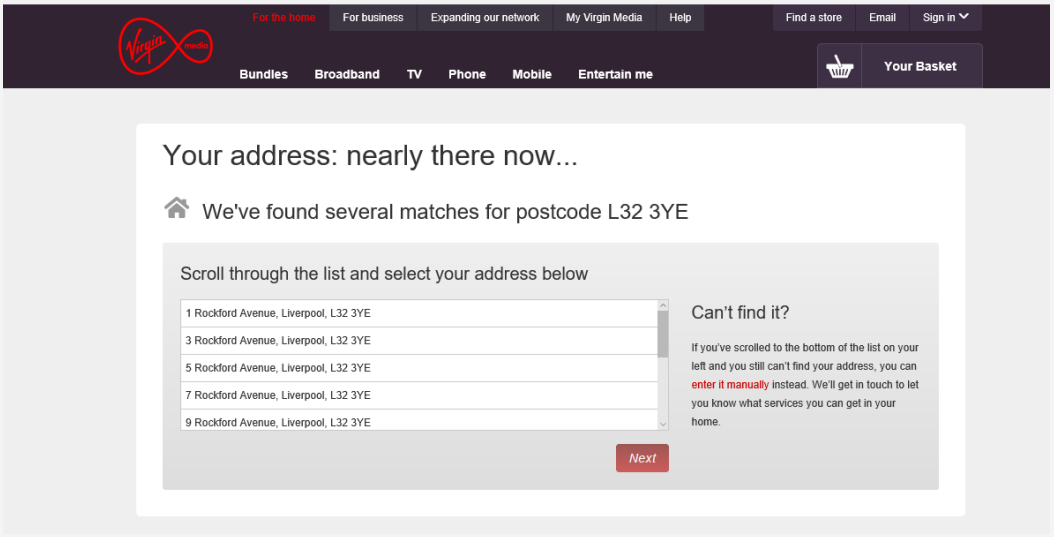


Area 2 sample - Simonswood- Liverpool

The map shows green circles for the general area of each cabinet or exchange link, not the specific location of the cabinet.

Fibre Cabinet	Fibre Status	Phase	Properties Passed	Vendor	Approx Post Code
Cabinet P1	FTTC Available from 18th March 2015	Phase BDUK Liverpool Merseyside 12a	54	Huawei	L33 7SR
Cabinet P2	FTTC Available from 21st January 2015	Phase BDUK Liverpool Merseyside 12a	515	Huawei	L32 3YE
Cabinet P3	FTTC Available from 19th February 2015	Phase BDUK Liverpool Merseyside 13a	571	Huawei	L32 6QD
Cabinet P4	FTTC Available from 24th September 2014	Phase BDUK Liverpool Merseyside 12b	417	Huawei	L32 7QA
Cabinet P5	FTTC Available from 27th June 2014	Phase BDUK Liverpool Merseyside 12a	530	Huawei	L32 3YB
Cabinet P6	FTTC Available from 24th September 2014	Phase BDUK Liverpool Merseyside 12a	531	Huawei	L32 9BA
Cabinet E_7	FTTP from 15th August 2016, FTTP on Demand			Huawei	
Cabinet P7	Fibre Not Available				L33 0XA
Cabinet P8	FTTC Available from 28th August 2014	Phase BDUK Liverpool Merseyside 12a	466	Huawei	L33 0XE
Cabinet P9	FTTC Available from 9th September 2014	Phase BDUK Liverpool Merseyside 12b	571	Huawei	L33 6UL
Cabinet P10	FTTC Available from 2nd July 2014	Phase BDUK Liverpool Merseyside 12a	528	Huawei	L33 6UA
Cabinet P11	FTTC Available from 21st March 2015	Phase BDUK Liverpool Merseyside 12a	322	Huawei	L34 0HE
Cabinet P12	FTTC Available from 26th June 2014	Phase BDUK Liverpool Merseyside 12a	301	Huawei	L11 0AA
Cabinet P13	FTTC Available from 24th September 2014	Phase BDUK Liverpool Merseyside 12a	469	Huawei	L11 0AH
Cabinet P14	Fibre Not Available				L11 0BG
Cabinet P15	FTTC Available from 18th July 2014	Phase BDUK Liverpool Merseyside 12a	322	Huawei	L11 9AU
Cabinet P16	FTTC Available from 11th November 2014	Phase BDUK Liverpool Merseyside 12a	124	Huawei	L33 7HT
Cabinet P17	FTTC Available from 25th September 2014	Phase BDUK Liverpool Merseyside 12a	174	Huawei	L33 3AE
Cabinet P18	FTTC Available from 19th August 2014	Phase BDUK Liverpool Merseyside 12a	657	Huawei	L31 1BQ
Cabinet P19	FTTC Available from 9th October 2014	Phase BDUK Liverpool Merseyside 12a	455	Huawei	L32 1TA
Cabinet P20	FTTC Available from 26th July 2014	Phase BDUK Liverpool Merseyside 12a	501	Huawei	L32 0RU
Cabinet P21	FTTC Available from 22nd August 2014	Phase BDUK Liverpool Merseyside 12a	268	Huawei	L32 0RB
Cabinet P22	FTTC Available from 9th May 2015	Phase BDUK Liverpool Merseyside 12a	189	Huawei	L32 8RE
Cabinet P23	FTTC Available from 25th July 2014	Phase BDUK Liverpool Merseyside 12a	447	Huawei	L33 1TH
Cabinet P24	FTTC Available from 15th March 2015	Phase BDUK Liverpool Merseyside 12a	438	Huawei	L34 0HN
Cabinet P25	FTTC Available from 24th September 2014	Phase BDUK Liverpool Merseyside 12a	83	Huawei	L33 7TS
Cabinet P26	FTTC doing Design, live due by March 2018	Phase BDUK Liverpool Merseyside 18b		Huawei	L33 1DE
Cabinet P27	Fibre Not Available				L11 0AT
Cabinet P28	FTTC Available from 27th June 2014	Phase BDUK Liverpool Merseyside 12a	189	Huawei	L11 0AL
Cabinet P29	FTTC Available from 3rd July 2014	Phase BDUK Liverpool Merseyside 12a	369	Huawei	L11 4AD
Cabinet P30	FTTC Available from 26th February 2015	Phase BDUK Liverpool Merseyside 12a	223	Huawei	L11 9BR

We have taken all of the above postcodes and inserted them into Virgin Media's on line checker and found address matches.



Annex C – What contribution to the BDUK funding programme has BT made?

This annex shows that publically available information does not clearly indicate the degree to which BT has met its obligation to contribute towards the BDUK funding. This annex shows that there is a significant discrepancy between various sources of 'cost per cabinet', provided by BT.

As part of the BDUK funding programme, funding is provided by local government, central government, and BT (as the network provider). The following sources confirm the amount of funding that should be provided by the network provider:

- The National Audit Office report in 2013 in support of the Public Accounts Committee investigation found that BT was expected to make a capital contribution to allowable costs of £358m.

Table 14: Figure 14 below is reproduced from the first NAO and it clearly references the £358m. We also learn that Phase 1 is 4.6m premises and the £358m is calibrated against this volume.

Figure 14

Comparison of capital costs and coverage, outline business case to latest projection

The total cost of the Programme has not varied significantly between the 2011 business case and June 2013, but suppliers are now expected to contribute £207 million less than originally anticipated with the shortfall to be met by local bodies

	Projection in Outline Business Case (November 2011)		Latest Projection (June 2013)		Variance	
	£ million	Percentage of total	£ million	Percentage of total	£ million	As a percentage of amount projected in November 2011
Departmental funding	490	32	490	31	0	0
Local bodies (including European) funding	494	32	730	46	236	48
Total public sector funding	**984**	**64**	**1,220**	**77**	**236**	**24**
Supplier funding	563	36	356	23	-207	-37
Total cost	**1,547**	**100**	**1,576**	**100**	**29**	**2**
Anticipated superfast broadband coverage (percentage)		90		92		

NOTE

1 From the Department's £530 million funding, £462 million has been allocated to local bodies initially and £10 million contributed to the Rural Community Broadband Fund. The remaining £58 million has been assigned as contingency and central BDUK costs. The above table assumes that £28 million of this £58 million is assigned as contingency in line with the Department's business case projection.

Source: National Audit Office analysis of departmental data

The contractual contribution is also referenced by the Oxera report published in March 2015 but in the form of a percentage of the total funding.[59]

[59]Please see page 12, Table 2.1, column 3 which sets out the State aid intensity which provides a proportion of the capital BT was expected to pay: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/428381/The_UK_s_National_Broadband_Scheme_-_an_independent_evaluation.pdf Table 2.1 is on page 12, aid intensity is column 3.

We wanted to determine how much funding had been provided by BT (as the network provider) but we could find no audited reports, just limited unaudited (and conflicting) information provided by BT themselves .

1) This table is a submission from BT to the CMS Select Committee which states that BT has been providing the requisite funding, although the majority of the payment was forecasted to be in the final year.

Openreach capital expenditure spend by programme categorised by technology type £m							
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Forecast 2015/16
Ethernet Total	112	124	118	164	177	206	261
Copper Total	464	466	460	444	423	424	500
Fibre Total	128	262	313	360	233	165	217
BDUK/SEP Net	-	2	11	12	56	142	262
Other Total	205	234	175	166	161	146	129
Total	909	1,089	1,077	1,146	1,049	1,083	1,369

Source: BT submission (EWC0097)

2) This second table from BT[60] also claims BT has been providing the requisite funding, but suggests BT has paid out £485m[61].

Total Contracted (June 15)					
	Contracts #	Funding £m	BT Capex £m	BT Opex £m	Total Investment £m
Cornwall	1	50	40	20	110
Northern Ireland (DETI)	1	20	10	0	30
BDUK	45	1,180	330	380	1,890
SEP	42	300	60	70	430
Total	89	1,550	440	470	2,460

This suggests the sums contracted are to be paid, rather than confirmed that these sums have been paid.

[60] BT submission (EWC 0097 - February 2016): http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/culture-media-and-sport-committee/establishing-worldclass-connectivity-throughout-the-uk/written/29397.pdf

[61] Sum of the Tables row for BDUK/SEP.

Annex D – BDUK claw back and underspend

The purpose of this annex is to compile all of the publically available information relating to the BDUK funding that BT has received and deferred onto its balance sheet. The concept of 'deferred funding' raises two key concerns: (i) the cash benefit that BT has as a result of holding the cash on its balance sheet; and (ii) what BT plans to do with the cash in the future.

This deferred funding could potentially be: (i) returned to Government as part of the clawback mechanism intended to be used in future phases of the BDUK programme; (ii) returned to Government and used elsewhere; or (iii) adjusted by BT and used to meet the current BDUK program. It is very unclear.

Amount deferred as reported by BT

The table below shows: (i) the amounts of BDUK funding BT has been provided with; and (ii) the amounts they have deferred onto their balance sheet, according to BT's last 12 quarterly financial releases. It is worth noting:

- BT receives the 'cash' benefit of this funding when it is sitting on its balance sheet.
- The numbers in the table below are as reported in the financial results, however there is an anomaly in Q2 2016-17, because when the deferral amount of £21m is added to all the other previously announced amounts, it does not add to the reported cumulative amount of £292m[62].

Table 15 - Summary of BT's reported Claw back as per their financial results statements

Year/Quarter	Incremental Capital Deferral as reported	Accumulated Claw back as reported
2013-14 Q2	0	0
2014-15 Q1	0	0
2014-15 Q2	0	0
2014-14 Q3	0	0
2014-15 Q4	£29,000,000	£29,000,000
2015-16 Q1	£100,000,000	£129,000,000

[62] This is from Q2 2016/17 news release '*Our base-case assumption for take-up in BDUK areas remains at 33%. Under the terms of the BDUK programme, we have a potential obligation to either re-invest or repay grant funding depending on factors including the level of customer take-up achieved. While we have recognised gross grant funding of £34m (Q2 2015/16: £90m) in line with network build in the quarter, we have also deferred £21m (Q2 2015/16: £28m) of the total grant funding to reflect higher take-up levels on a number of contracts. To date we have deferred £292m'.*

2015-16 Q2	£28,000,000	£157,000,000
2015-16 Q3	£22,000,000	£179,000,000
2015-16 Q4	£50,000,000	£229,000,000
2016-17 Q1	£12,000,000	£241,000,000
2016-17 Q2	£21,000,000	£292,000,000
2016-17 Q3	£34,000,000	£325,000,000
2016-17 Q4	£121,000,000	£446,000,000

BT has been very inconsistent in terms of reporting the amounts deferred on its balance sheet and potentially being returned to government.

- January 2015; BDUK in evidence to the NAO follow up report[63] were referencing a notional claw back of £990k

  "*After these 7 years, the supplier keeps all the extra wholesale profit from higher than expected take-up. So far, BDUK calculates that it has notionally secured £990k through its claw back provisions*"

- May 2015; during an exchange with analysts at a BT results days, when questioned on claw back BT Group CFO responded. [64]

  "I don't expect, from where we are now, this is not a number like hundreds of millions of pounds. If we need to do something it may be tens of millions of pounds."

- June 2015; the accrual as reported by BT had grown to £129m.[65]

- December 2016; the accrual as reported by BT had grown to £325m[66] as is expected to grow further.

- May 2017: BT's Q4 2016/17 results, BT reported that they received grant funding of £0.160bn and £0.180bn was then added to their deferred grant funding balance sheet, which now totals £0.446bn.

[63] NAO January 2015 – Rural Broadband Update – Para 5.5 page 26 "First, as set out in Part Three, at September 2014 BT had spent 38% less in capital costs than its financial model had assumed it would and it had covered slightly more premises than predicted. Lower costs will allow projects to reach more premises. Second, the rate of take-up of superfast broadband is currently nearly 5 times higher than modelled in the contract assumptions (Figure 7). BDUK predicts that projects will reach the 20% modelled take-up rate after 12 quarters, rather than 20, based on a straight-line extrapolation of results to September 2014. Take-up which is faster than modelled will increase supplier profits, and create clawback for the public sector. If take-up were to continue past the 20% assumed in the contract, as it has already for 2 local bodies, this would also create clawback. For the first 7 years after rollout the public sector shares the benefit of the additional wholesale profit. After these 7 years, the supplier keeps all the extra wholesale profit from higher than expected take-up. So far, BDUK calculates that it has notionally secured £990,000 through its clawback provisions. BDUK and BT believe it is too early to predict whether average take-up will exceed 20% in the longer term, but there are local and national marketing campaigns under way to encourage increased take-up."

[64] www.btplc.com q4 2015 transcripts from investor day.

[65] See table E1 reported clawback

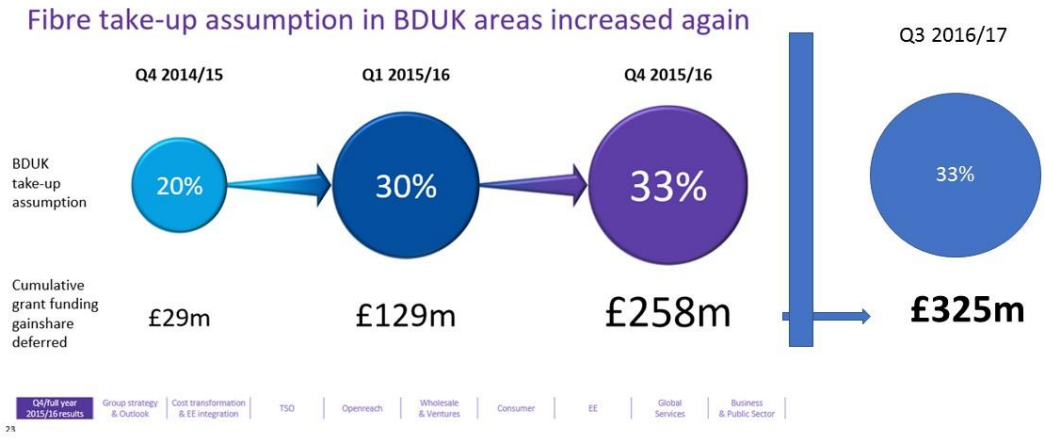
[66] See Figure E1. Also £325m reported in BTplc.com DEC2016 results, see notes on capital expenditure.

BT deferred more subsidy than they received because, as they explain in their financial results announcement below, more customers signed up for broadband than they expected:[67]

"Our base-case assumption for take-up in BDUK areas has been increased [from 20%] to 39% following our review of the level of customer take-up. Under the terms of the BDUK programme, we have a potential obligation to either re-invest or repay grant funding depending on factors including the level of customer take-up achieved. While we have recognised gross grant funding of £160m (2015/16: £338m) in line with network build in the year, we have also deferred £188m (2015/16: £229m) of the total grant funding to reflect higher take-up levels on a number of contracts. To date we have deferred £446m (Q4 2015/16: £258m) of grant funding."

Figure 3 – BT's explanation of its deferral/clawback

On repaying subsidies .. Q42015 BT PLC transcript - In response to Simon Weedon – Citi, BT Tony Chanmugan Then BT CFO states - "..... I don't expect, from where we are now, this is **not a number like hundreds of millions of pounds**. If we need to do something it may be **tens** of millions of pounds.



Amount deferred by BT compared to the governments clawback estimate

In theory, the value of the deferred BDUK cash on BT's balance sheet as reported above should be equal to the value of the clawback estimated by government to be utilised in the next phase of the BDUK programme.

However there is a significant discrepancy within these amounts and that which has been identified to play a role in subsequent BDUK phases. The remainder now identified on BT's balance sheet, which is likely to continue climbing, has not been considered. There is a risk that the money sits in BT's accounts for a prolonged period where it cannot be converted into actual coverage.

[67] BT's financial results Q4 2016; http://www.btplc.com/Sharesandperformance/Quarterlyresults/2016-2017/Q4/Downloads/Newsrelease/q417-release.pdf

The clawback process and further public announcements

1) The BT submission to the CMS Select Committee provides the most complete explanation so far of the clawback mechanism.[68]

The mechanics were described as follows[69];

For example, if public funding has amounted to 70% of the total (representing the public sector sources), then 70% of gain above the forecast is paid into the investment fund for local bodies to spend on more network deployment. The remaining 30% is used by the supplier who will bear the costs of increased take-up, because more capacity has to be built into the network. This contractual principle supports the BT obligation to provide capacity for higher levels of take up on the existing funded infrastructure.

As regards the mechanics of calculation, claw back is calculated by reference to a Project Unit Margin agreed within each of the BDUK contracts individually (the Project Margin). The Project Unit Margin (£ per subscriber) is multiplied by the number of subscribers (000s) in excess of the original subscriber volume forecast to produce the claw back amount (£X, 000) for the contract. This total amount is then shared according to the investment ratio (e.g., the Government contribution is 70% in the example above giving an investment ratio of 0.7, between the re-investment fund (the gain share amount) and the supplier.

The difference between the two figures is simply a matter of timing. Late in June 2015, BT announced an offer for the early release of gain share of £129m based on the projection (made in June 2015) of 30% take-up in BDUK areas and measured on the actual build completed and the claw back value over the contract term.

2) An investor update in September 2015 announced the BT provision of £150m for gain share relating to further build achieved during the quarter and based on the same 30% take-up.

3) The investor update in Dec 2016 stated the claw back was £325m. We think industry would benefit from a worked example. The lower programme costs and the contracting of Phase 2 before Phase 1 was complete might mean the BT required capital contribution portrayed might also need to be deferred.

Further, on Gain share and Underspend we are informed;

In addition to gain share amounts as a result of better than forecast take-up, additional monies to invest in going further than originally planned can occur as a result of cost savings on the project, i.e., the original build can be done cheaper than forecast. This is classed as Underspend and parties, local bodies and BT are contracted to spend up to their original contracted amount resulting in funds to go further than planned. This underspend may be funding that is not drawn down by BT and remains with the local body, or if it has been drawn, will attract interest until utilised for further coverage. The value of underspend on Phase 1 is not confirmed at this time. These values will crystallise as BT completes each local body regional deployments, following LB/BDUK assurance and receipt of certification.

4) We learn Phase 2 contracts (Oct 2014- June 2015) did not use any clawback and the phase 2 take up remained at 20% but was achieved at a quicker rate.

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[68] (EWC 0097)

[69] As per footnote 59 see answer to Q3, page 4 – BT doc EWC 0097)

The following answer also provides additional insight.

3.7 Indicate example patterns of revenue flow from an area with a 30% take-up rate at completion of rollout?

A typical deployment will take two years to complete, during which time the vast majority of the costs of deployment will be incurred (though some expenditure will continue through the contract period). Subscribers are then able to be recruited by all retail CPs (BT, Sky and Talk Talk primarily) once the infrastructure is made available for marketing. Subscription numbers are then expected to increase with time, e.g., to the 30% level specified in the question. The wholesale revenues from the sale of the fibre service to ISPs go towards BT's cost recovery for the fibre investment, such that it repays the original BT share of investment on a 'discounted cash flow' basis. As 30% would be above the forecast take-up in the contract, BT will have received more wholesale revenue than forecast in the original bid and thus gain share will be in operation. . The gain share amount is calculated, according to the contract, at the end of the build phase and recalculated every two years thereafter until the end of the contract, based on the actual take-up at the time in question e.g. if, as in the question take up is at 30% at completion of rollout then additional revenues equivalent to 10% above the forecast rate multiplied by the Project Unit Margin will be made available and this amount is allocated to the reinvestment fund in accordance with the investment ratio. The gain share paid into the re-investment fund represents a return of some of the original public subsidy into the reinvestment fund to enable the original funds to be used to provide further fibre coverage. This gain share amount accumulates in a reinvestment fund held by local BT with interest payable on the amounts in the fund. The contract stipulates that parties will work together to seek to invest it further within the contract period on additional fibre deployment or failing that the local body will recover this fund at the end of the contract period.

It is important that the balance for each of these investment funds and the interest being accrued should be reported upon publicly so any additional funding requests can be calibrated appropriately.

Annex E – Oral evidence

On capital

Oral Select Committee Evidence [70]	Sean Williams (BT) stated that £276m capital has been paid by BT as at September 2015, and he then explains that BT will pay £440m of the allowable costs.[71] Whereas, Chris Townsend (BDUK) stated that he believes BT has contributed some £337m, or a third of the costs.[72]
In response to a written Parliamentary Question 47312 (October 2016)	Nine months later, Minister Hancock stated BDUK had no record of BT's capital contribution. This was in response to a written Parliamentary Question 47312

On cost per premise:

Oral Select Committee Evidence[73]	Sean Williams (BT) confirms a programme expenditure across all subsidised contracts of £2.5bn (including BT capital), and Kim Mears (Openreach) confirms a programme size of 4.8m premises. Both stress that there is a range of average cost per premises passed but Sean Williams notes that the average is confirms about £500 per premise passed[74] Vodafone comment: £2.5bn/5m premises provides an allowable budget of £500 a premise. If we multiply £500 x 200 premises (the average number of premises per cabinet) it creates a budget of £100,000 per cabinet, a number dismissed by BT itself at the 2013 Public Account Committee hearing.

[70] Establishing World-Class Connectivity throughout the UK, HC 407 Wednesday 9 December 2015: http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/culture-media-and-sport-committee/establishing-worldclass-connectivity-throughout-the-uk/oral/25932.pdf

[71] Please see Q189 onwards. There are 9 pages of oral evidence attempting to set out the BT capital contribution.

[72] Please see Q300.

[73] Establishing World-Class Connectivity throughout the UK, HC 407 Wednesday 9 December 2015: http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/culture-media-and-sport-committee/establishing-worldclass-connectivity-throughout-the-uk/oral/25932.pdf

[74] Please see Q237 onwards.

In response to a written Parliamentary Question 47312 (October 2016)	Nine months later, Minister Hancock stated BDUK had no record of BT's capital contribution. This was in response to a written Parliamentary Question 47312
Follow-up written evidence[75]	Sean Williams (BT) confirms a programme expenditure across all subsidised contracts of £2.5bn (including BT capital), and Kim Mears (Openreach) confirms a programme size of 4.8m premises. Both stress that there is a range of average cost per premises passed but Sean Williams notes that the average is confirms about £500 per premise passed[76] Vodafone comment: £2.5bn/5m premises provides an allowable budget of £500 a premise. If we multiply £500 x 200 premises (the average number of premises per cabinet) it creates a budget of £100,000 per cabinet, a number dismissed by BT itself at the 2013 Public Account Committee hearing
Follow-up written evidence[77]	The follow up written evidence on cost per premise is then adjusted. *7.3 BT indicated during the evidence session that average cost of passing a premises was approximately £500 using the broad totals for the programme (see Q237). At this stage in the programme, using the latest actual expenditure figures available, could BT confirm what the average cost is for passing a premises?* *The total Government funded programme (including Cornwall and Northern Ireland) over the lifetime of the signed contracts has a total public funding of £1.550m and BT spend of £910M (set out in more detail in the resulting in a total cost for these contracts of £2.5bn to deliver to 5m premises, i.e., £2.5Bn for 5m premises = £500 per premises. However, this figure includes the costs to BT of operating, running and maintaining the resultant networks over the lifetime of the contract. Thus the actual cost to just build the network is slightly less if we remove these operating costs with a figure of around £400 per premise averaged across the whole public funded build.* *For the BDUK contract builds up to September last year, it has cost £905m to get to c.3.9m premises, i.e., a lower value per premises of around £230 per premises reflecting the focus on lower cost, fast to deploy premises first in the programme. Of the total spend to date on BDUK, BT has contributed £276m with the remaining £629m reclaimed from BDUK.* [Vodafone comment: at £230 per premise passed, the average cost per cabinet is then - £230 x 200 premises = £46,000 – significantly

[75] http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/culture-media-and-sport-committee/establishing-worldclass-connectivity-throughout-the-uk/written/29397.pdf
[76] Please see Q237 onwards.
[77] http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/culture-media-and-sport-committee/establishing-worldclass-connectivity-throughout-the-uk/written/29397.pdf

	more that the written evidence below, which suggests the costs should be no more than £125-£130 a premise passed. The move from oral to written evidence has halved the costs relied upon, yet these are still double the NAO findings, and double what BT relies upon in other written submissions, as outlined below.] *The remaining 1.1m premises to get the overall 5 million current planned total are expected to cost £1bn (or approximately £879 per premises) as we have completed the cheapest premises first. These remaining premises are planned to include a much large percentage of FTTP connections than the current build that will be reflected in the cost.*

Per premise passed and the cost of a cabinet.:

Written Evidence[78]	The cost per cabinet is confirmed in answer to Q2 and Q3. ***2. Could you also please demonstrate what the average cost per cabinet will be for phase 1 of the rural broadband programme. Please set out how this average figure is calculated.*** *The cost per cabinet completed to date (FTTC only) is currently £26,500. This cost includes:* • *additional exchange equipment* • *fibre and associated duct work between exchange and the cabinet civils work in preparing the cabinet's plinth and new duct (where necessary)* • *power connections, which can be extremely variable and expensive* • *physical fibre cabinet (DSLAM)* • *connections to the copper cabinet.* ***3. If there are estimates for the average cost per cabinet for stage 2 at this stage (i.e., the SEP), then please provide that figure as well.*** *Phase 2 is in its earlier days of planning. In the procurement of these contracts, the average cost per cabinet was £27,500.* *This is +18% higher as there are more cabinets that require rearranging the current network to achieve the speed requirements. This excludes project and contract management planning and reporting costs. FTTP is not included in the above figures.* Vodafone comment: The low cost per cabinet and the high budgets available suggest that the claims on BT's capital need to be examined.

[78] http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/culture-media-and-sport-committee/establishing-worldclass-connectivity-throughout-the-uk/written/30597.pdf

Annex F – Accessing BT's wholesale system data- Online CodeLook service

This annex explains how a bottom-up count of BT's FTTC commercially funded cabinets, and subsidised BDUK funded cabinets was conducted. Although this method of extracting data from BT's system is not ideal, it is currently the only way we have been able to source detailed publically available information relating to BT's FTTC roll-out and we think that it is illustrative and raises questions that should be answered.

The code look databases http://www.telecom-tariffs.co.uk/codelook.htm is used by industry and the public to understand who is using number ranges in BT's exchanges. This website uses BT Wholesale data sets provided by BT and made available commercially to a number of operators. Within this BT wholesale- provided data there are details of individual FTTC cabinets and the associated build data which provide an indication of who paid for each BT cabinet. The data includes references to the number of premises which are served or can be served by each cabinet.

The data set used is dated December 2016. The data is not available as a whole to download, as the website consider this data set their asset, therefore compilation of data is reliant on taking screen dumps and scraping the data into excel to re-compile the data.

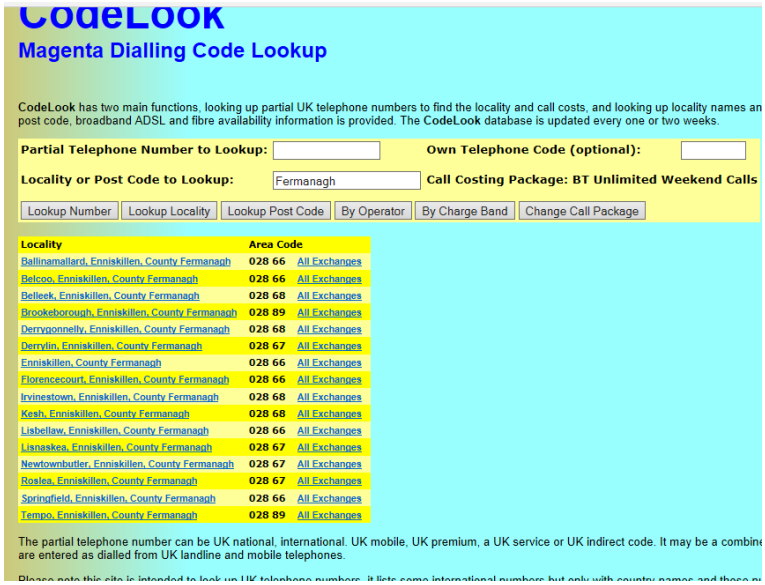
The numbers for BT commercial build within this dataset align closely with the numbers used for BT commercial build highlighted in Annex B[79] where BT's commercial cabinets were counted to be 47,000. Counting BT's cabinets using Code Look suggests a slightly higher number at 49,000. This annex describing the process of counting BT and subsidised cabinets uses the county of Fermanagh as an example, where the cabinet solution has brought great benefit but leaves many excluded[80]. The process is as follows:

- Step 1 - Identify exchanges in a given County - County Fermanagh

  By inputting a county name in the 'locality' field, the website offers back a list of BT exchanges for the county: http://www.telecom-tariffs.co.uk/codelook.htm

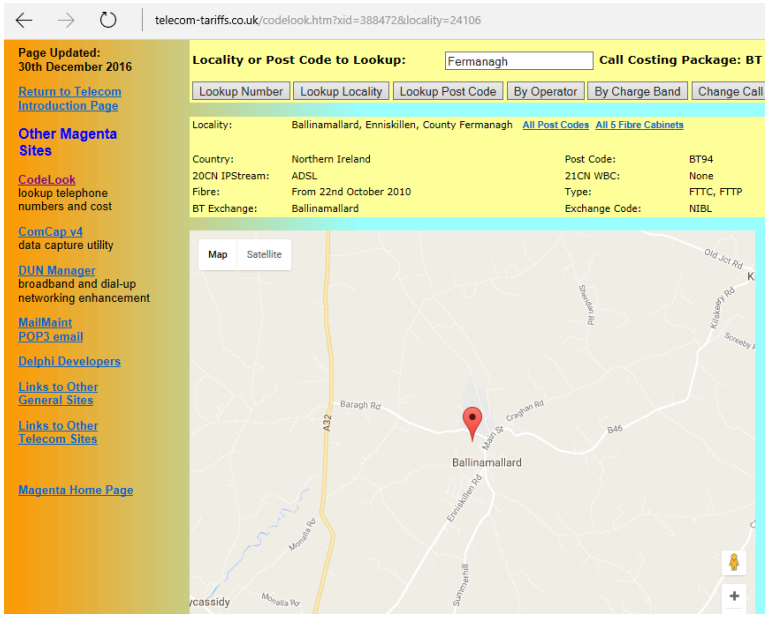
[79] Ofcom WLA market review, Tables from Annex 12 and 13: https://www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-access-market-review

[80] http://www.icban.com/f//Fibre%20at%20a%20Crossroads%20Summary%2029%20June%202016.pdf



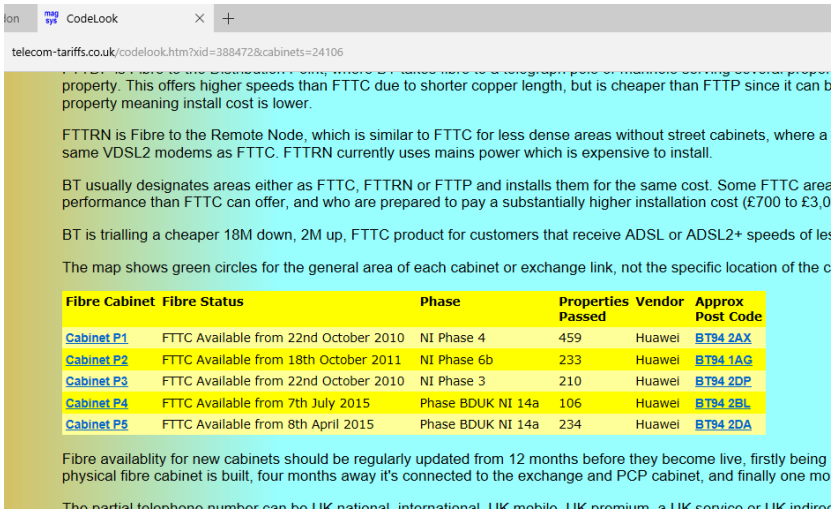
- Step 2 Click on Exchange – Ballinamallard, 5 cabinets are identified

Clicking on the first exchange 'Ballinamallard' then reveals more details about those exchanges including all cabinets associated with that exchange.



- Step 3 – Click on Cabinets

Click on the 'all 5 cabinets' to reveal detail on each cabinet and the properties passed. You can also see the phase of the build and an install date.



CodeLook

telecom-tariffs.co.uk/codelook.htm?xid=388472&cabinets=24106

property. This offers higher speeds than FTTC due to shorter copper length, but is cheaper than FTTP since it can b property meaning install cost is lower.

FTTRN is Fibre to the Remote Node, which is similar to FTTC for less dense areas without street cabinets, where a same VDSL2 modems as FTTC. FTTRN currently uses mains power which is expensive to install.

BT usually designates areas either as FTTC, FTTRN or FTTP and installs them for the same cost. Some FTTC area performance than FTTC can offer, and who are prepared to pay a substantially higher installation cost (£700 to £3,0

BT is trialling a cheaper 18M down, 2M up, FTTC product for customers that receive ADSL or ADSL2+ speeds of les

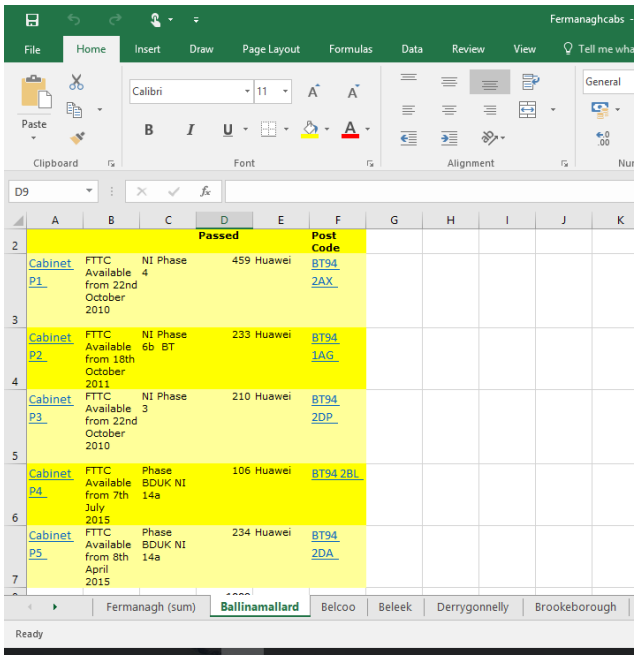
The map shows green circles for the general area of each cabinet or exchange link, not the specific location of the c

Fibre Cabinet	Fibre Status	Phase	Properties Passed	Vendor	Approx Post Code
Cabinet P1	FTTC Available from 22nd October 2010	NI Phase 4	459	Huawei	BT94 2AX
Cabinet P2	FTTC Available from 18th October 2011	NI Phase 6b	233	Huawei	BT94 1AG
Cabinet P3	FTTC Available from 22nd October 2010	NI Phase 3	210	Huawei	BT94 2DP
Cabinet P4	FTTC Available from 7th July 2015	Phase BDUK NI 14a	106	Huawei	BT94 2BL
Cabinet P5	FTTC Available from 8th April 2015	Phase BDUK NI 14a	234	Huawei	BT94 2DA

Fibre availablity for new cabinets should be regularly updated from 12 months before they become live, firstly being physical fibre cabinet is built, four months away it's connected to the exchange and PCP cabinet, and finally one mo

The partial telephone number can be UK national, international, UK mobile, UK premium, a UK service or UK indirec

- Step 4 Paste to excel create a tab for each exchange in the county.



Fermanaghcabs

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D9

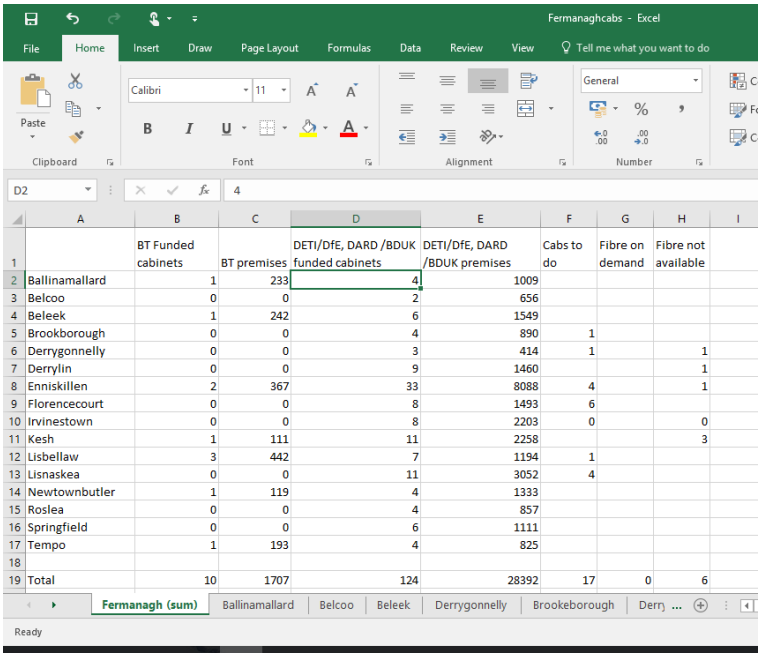
	A	B	C	D	E	F	G	H	I	J	K
2				Passed		Post Code					
3	Cabinet P1	FTTC Available from 22nd October 2010	NI Phase 4	459	Huawei	BT94 2AX					
4	Cabinet P2	FTTC Available from 18th October 2011	NI Phase 6b BT	233	Huawei	BT94 1AG					
5	Cabinet P3	FTTC Available from 22nd October 2010	NI Phase 3	210	Huawei	BT94 2DP					
6	Cabinet P4	FTTC Available from 7th July 2015	Phase BDUK NI 14a	106	Huawei	BT94 2BL					
7	Cabinet P5	FTTC Available from 8th April 2015	Phase BDUK NI 14a	234	Huawei	BT94 2DA					

Fermanagh (sum) Ballinamallard Belcoo Beleek Derrygonnelly Brookeborough

Ready

By simply counting the cabinets and the premises and using pivot tables to count who led the investment, a county summary can be produced where a simple count of BT commercial cabinets and subsidised cabinets are counted. There are also counts for instances of FTTP locations and work scheduled to do.

- Step 5 – County Table for Fermanagh

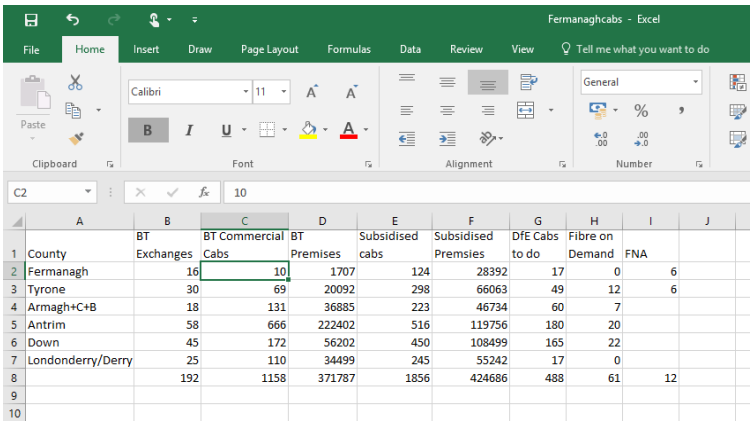


	A	B	C	D	E	F	G	H
1		BT Funded cabinets	BT premises	DETI/DfE, DARD /BDUK funded cabinets	DETI/DfE, DARD /BDUK premises	Cabs to do	Fibre on demand	Fibre not available
2	Ballinamallard	1	233	4	1009			
3	Belcoo	0	0	2	656			
4	Beleek	1	242	6	1549			
5	Brookborough	0	0	4	890	1		
6	Derrygonnelly	0	0	3	414	1		1
7	Derrylin	0	0	9	1460			1
8	Enniskillen	2	367	33	8088	4		1
9	Florencecourt	0	0	8	1493	6		
10	Irvinestown	0	0	8	2203	0		0
11	Kesh	1	111	11	2258			3
12	Lisbellaw	3	442	7	1194	1		
13	Lisnaskea	0	0	11	3052	4		
14	Newtownbutler	1	119	4	1333			
15	Roslea	0	0	4	857			
16	Springfield	0	0	6	1111			
17	Tempo	1	193	4	825			
18								
19	Total	10	1707	124	28392	17	0	6

The counties table is then compiled into a table for the Devolved Nation.

The cabinet level allows you to compare what is commercial investment and what is subsidised investment.

- For complete the NI numbers are then compiled to provide the following representation.



	A	B	C	D	E	F	G	H	I	J
1	County	BT Exchanges	BT Commercial Cabs	BT Premises	Subsidised cabs	Subsidised Premises	DfE Cabs to do	Fibre on Demand	FNA	
2	Fermanagh	16	10	1707	124	28392	17	0	6	
3	Tyrone	30	69	20092	298	66063	49	12	6	
4	Armagh+C+B	18	131	36885	223	46734	60	7		
5	Antrim	58	666	222402	516	119756	180	20		
6	Down	45	172	56202	450	108499	165	22		
7	Londonderry/Derry	25	110	34499	245	55242	17	0		
8		192	1158	371787	1856	424686	488	61	12	
9										
10										

This table shows that BT commercial only roll-out in Northern Ireland amounted to 1,158 cabinets passing less than half of the premises.

The same data is available for all counties and nations across England, Scotland, and Wales.