



**Response to consultation on possible approaches to fibre cost modelling**

*Non-confidential version*

**June 2016**

# 1 Summary

- 1.1 This paper responds to Ofcom's consultation, dated 9 May 2016, entitled Consultation on Possible Approaches to Fibre Cost Modelling.
- 1.2 The primary task of this modelling exercise should be accurately to estimate the efficient costs which have been incurred by BT in rolling out its FTTC network, and what prices need to be set in order for those costs to be remunerated in full, but without providing BT Group with excessive returns. Inaccuracy could lead to either excessive or insufficient prices for VULA products, harming consumers and distorting investment incentives. The modelling should also be understandable by all market participants, and lead to a predictable price path.
- 1.3 We think that Ofcom's approach could be improved and modified in a number of ways to improve its accuracy and predictability.
- 1.4 Ofcom has proposed a bottom-up approach to modelling fibre costs. Rather than use this approach, TalkTalk considers that Ofcom should instead use a top-down approach, based on BT's actually incurred costs. There are a number of advantages to such an approach:
  - it would align prices with verifiable costs, and therefore increase the accuracy and predictability of regulatory outcomes and reduce the regulatory risk perceived by investors;
  - it would align with the approach used to set prices for other monopoly services in the communications sector thereby aiding stakeholder understanding and confidence;
  - prices are more likely to be set at an efficient level, due to greater accuracy in determining the regulated price cap.
- 1.5 At the same time, there do not appear to be any particular advantages to choosing a bottom-up approach rather than a top-down approach for regulating VULA products. It is worth noting that the main reasons for adopting a bottom-up approach in other cases – for instance, because Ofcom was attempting to model the costs of a hypothetical operator or network – do not apply in this case.
- 1.6 Therefore, given the task facing Ofcom, and the relative strengths and weaknesses of top-down and bottom-up approaches, we think that a top-down approach is more appropriate in this case.
- 1.7 Further, TalkTalk considers that the demand model which is proposed to be used by Ofcom could be improved. It does not model all of the required variables (including connections, migrations, and churn) needed in order to determine demand, and also fails to consider potential migration to successor technologies such as G.fast and FTTP. Ofcom therefore needs to readdress its approach to demand modelling.
- 1.8 The approach to depreciation adopted by Ofcom is also not ideal. FTTC assets are depreciated over a very long time period, well beyond when it is actually likely to be

used in practice.<sup>1</sup> Ofcom should therefore instead consider adopting a depreciation approach which both reflects the likely usage patterns of FTTC, and does not rely so heavily on assumptions which make both assumed past and future cost recovery sensitive to changes. Ofcom should also recognise that some FTTC assets (e.g. e-side fibre) may have value beyond the 40 year period (and so should not be fully depreciated/ recovered over this period or whatever other period is used).

## 2 Bottom-up versus top-down modelling

2.1 At §§3.9-3.16 of its consultation paper, Ofcom sets out that it proposes to use a bottom-up cost model, as opposed to the top-down approach which could alternatively have been used. Ofcom describes the bottom-up approach as follows:

*A bottom-up model estimates how much network equipment is needed for the forecast level of traffic (based on technical assumptions in relation to network capacity and dimensioning algorithms). It then calculates the total cost of this network equipment using evidence of the capital and operating costs of each piece of equipment.*

2.2 Ofcom then goes on, at §3.12, to set out two hypothetical advantages of bottom-up modelling over top-down modelling:

- more accurately to model long-run cost/volume relationships by using network build parameters; and,
- increased transparency.

2.3 TalkTalk considers that these advantages are in this case of limited relevance, and are in any event more than offset by the disadvantages of a bottom-up approach which mean that it is inferior to using a top-down approach. Adopting a top-down approach therefore better meets Ofcom's objectives to promote efficiency, ensure sustainable competition and confer the greatest possible benefit on end users. We expand on our reasoning below.

### 2.1 Advantages of top-down

2.4 **A bottom-up model is more likely than a top-down model to lead to allocative inefficiency.** Using a bottom-up approach places a greater onus on Ofcom accurately to estimate the efficient level of costs, as it is unable to rely on audited accounting data to conduct its estimates. This problem is compounded since other data is likely to be scarce, as there are no other FTTC networks operating in the UK, and cross-border cost estimates are liable to be unrepresentative because of both different network configurations in other countries, different specific costs such as labour costs, and different planning and legal regimes for undertaking civil works. An inaccurate estimation of the efficient cost level will lead to allocative inefficiency.

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<sup>1</sup> In Ofcom's current approach, the depreciation period for assets can exceed the usable lifetime of those assets.

- 2.5 **A bottom-up approach is inconsistent with the approach taken for regulation of MPF and WLR.** Regulatory consistency is an important aim for Ofcom, and the adoption of a bottom-up approach is inconsistent with the approach adopted for the regulation of MPF and WLR products, both of which are based on top-down methodologies. This is important because [§].
- 2.6 **A top-down approach will be more predictable than a bottom-up approach.** The pricing that will result from a top-down approach is reasonably well understood, and can be modelled based on various estimates of BT Openreach's expenditure on rolling out fibre. On the other hand, a bottom-up approach will require estimates of the costs of various network components, which third parties are unlikely to be well placed to determine, along with the network structure, which is equally likely to be rather opaque. TalkTalk also considers that, contrary to Ofcom's assertions, [§].<sup>2</sup> The benefits of bottom-up are not relevant in this case
- 2.7 **Markets where Ofcom has previously adopted bottom-up approaches are significantly different to the VULA market.** Markets where Ofcom has previously adopted bottom-up approaches are oligopoly markets for mobile and fixed call termination, where each operator needs to interconnect with each other operator, and where there are multiple operators which hold SMP. The circumstances in the case of VULA— where BT is a monopoly supplier— are different. Furthermore, in mobile and fixed call termination Ofcom needed to model the costs of a hypothetical operator/network, as there was no single network which was being modelled, whereas in the present case, Ofcom is modelling the costs of an actual network. In such markets, regulation is primarily about encouraging competition to work in an efficient manner. The VULA market over the next regulatory period appears unlikely to be one in which competition is prominent, given the limited competition VULA faces at present, and the long lead times required to undertake scale investment in FTTC or FTTP infrastructure. Therefore, the (valid) reasons for using a bottom-up approach in the case of mobile and fixed termination rates do not appear to apply in the case of VULA.
- 2.8 **Ofcom may in any case come to rely heavily on BT data.** One of the potential advantages of a bottom-up approach is that Ofcom can draw on data sources from multiple operators to identify the most efficient cost structure and improve accuracy. However, this is not relevant in this case since the primary data source Ofcom will be able to use is BT's. There are likely to be difficulties in using data from FTTP network construction for FTTC cost comparisons without making significant amendments, and while BT already owns duct, other CPs are likely to have to engage in their own groundworks. In this instance, the stated advantages of using a bottom-up approach will no longer hold—the approach will effectively be based on BT's costs but without the rigour of top-down regulatory accounting— and the bottom-up approach will have all of the disadvantages of top-down approaches, with none of the advantages. In particular, there is unlikely to be additional accuracy of modelling long-run cost/volume relationships in a situation where Ofcom is primarily or solely

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<sup>2</sup> See [§]

reliant on BT's data, as that additional accuracy relies on Ofcom being able to use multiple relevant data sources.

- 2.9 The problem of a lack of comparable data has been flagged by the National Audit Office in its reviews of whether the cost of the BDUK programme had been efficient. In particular, the NAO found that:
- BT has consistently been able to outperform the 'efficient' cost levels which have been modelled on a bottom up basis through the BDUK programme.<sup>3</sup>
  - Economies of scale mean that the efficient cost level for BT is considerably lower than for other operators.<sup>4</sup> In particular, there have been very large savings in project management costs.<sup>5</sup>
- 2.10 If Ofcom's analysis suffers from similar problems to those found by the NAO, it will either overestimate BT's actual efficient costs when conducting its bottom up modelling exercise, or will become reliant on BT's own data.
- 2.11 **There is likely to be little extra transparency from using a bottom-up approach.** Given that Ofcom is likely to have to rely heavily on BT data regarding the efficient costs of an FTTC network, [X]. TalkTalk notes that at §3.12 of its consultation document, Ofcom states only that '*Bottom-up models are generally more transparent than top-down models. This type of model can usually be published without the need to redact large amounts of confidential information*' [emphases added]. That is, Ofcom does not provide reassurance that in this specific case there will be any additional transparency from using a bottom-up approach.
- 2.12 **Ofcom will in any case have to conduct top-down modelling of FTTC costs.** §§3.38-3.40 details that because of shared infrastructure between FTTC and copper-based products, Ofcom will have to analyse costs on a top-down basis to ensure that there is no over-recovery of actually and efficiently incurred costs. Given that a substantial proportion of FTTC roll-out costs are likely to be common, the additional work required to model all FTTC costs on a top-down basis is likely to be limited.

## 2.2 Summary

- 2.13 Ofcom should therefore model previously incurred costs solely on a top down basis to ensure that BT does not over-recover against the costs that it has incurred in rolling out FTTC. In this case, Ofcom should consider whether BT's costs should be reduced to reflect cases where BT's investment was inefficient. Ofcom does such 'MEA adjustments' in other charge controls – for instance, in the case of Ethernet Ofcom excluded the higher costs of legacy Ethernet technology so that the recovered cost was appropriate for the MEA technology. To the extent that a bottom-up methodology is considered relevant by Ofcom, it should only be as a cross-check to

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<sup>3</sup> NAO (2015), *The Superfast (Rural) Broadband Programme: Update*, at §3.8

<sup>4</sup> NAO, *Op. cit.*, §3.10

<sup>5</sup> NAO, *Op. cit.*, Figure 5.

ensure that BT's top-down spending is not excessive, so that efficiency adjustments can be made to the top-down cost estimates.

- 2.14 The sole potential role that TalkTalk sees as appropriate for a bottom-up approach is in the calculation of cost volume elasticities. This reflects that Ofcom will not have access to a long series of regulatory accounts for FTTC products which would permit CVEs to be calculated on a top-down basis. However, over the longer term as there is sufficient data to calculate CVEs on a top-down basis, Ofcom should do so.

### **3 Other modelling approach issues**

#### **3.0 Scorched node approach**

- 3.1 TalkTalk notes, as set out at §§3.17-3.24 of Ofcom's consultation paper, that Ofcom has chosen to adopt a scorched node approach to operationalise its bottom-up modelling approach. Ofcom's rationale for this (§3.18) is that it would be too complex to adopt a scorched earth approach, and that doing so would risk omitting the migration costs of moving to the new network.
- 3.2 This is a further reason why a top-down approach is superior to a bottom-up approach. By taking a bottom-up, scorched node approach, Ofcom is baking into its cost estimates the inefficiencies of the network structure which has been adopted by BT, removing some of the potential benefits of a bottom-up approach in proxying for fully efficient pricing. Even if there were the possibility of a scorched earth network being more efficient, once migration costs are taken into account, there would be no way of knowing it, since Ofcom will not be modelling this approach. This is likely to limit the potential difference in efficiency between an efficient operator and BT's actual costs, and also means that the model will rely to a greater extent on BT data, as it matches BT's network topology.
- 3.3 However, if Ofcom were to adopt a bottom-up approach (which it should not), a scorched node approach appears to be the most appropriate approach for Ofcom to adopt, for the reasons set out by Ofcom in its consultation paper.

#### **3.1 Geographic coverage**

- 3.4 Ofcom proposes to include in its cost estimates the commercial elements of BT's roll-out, excluding BDUK areas and the Hull area.
- 3.5 TalkTalk considers that this is appropriate given that Ofcom is adopting a bottom-up approach. The most suitable approach to price capping in BDUK areas under a bottom-up approach is to assume that the average cost, net of subsidy, in BDUK areas is the same as the average in commercial roll-out areas, and thus set the price cap in BDUK areas at the same level as in commercial areas.

3.6 However, despite this being the most appropriate approach, such an approach risks over-compensating BT in BDUK areas. Take-up in BDUK areas has been considerably higher than was estimated when BDUK contracts were being let, as demonstrated in the most recent NAO report on the BDUK programme.<sup>6</sup> This is therefore a further reason to adopt a top-down approach to setting a VULA charge control – the whole UK could be modelled and the actual BDUK funding could simply be netted off BT's capex on FTTC, and the remaining regulatory asset base provided with a suitable rate of return.

## 3.2 Timeframe

3.7 TalkTalk considers that Ofcom's proposed start year (§3.31) is appropriate.

3.8 However, a 40 year time horizon for the assessment (§3.34) is inappropriately long. It is unlikely that FTTC will still be an actively used communications product in 2047, let alone at the volumes set out in Ofcom's model, which does not presume any move of customers to a technology beyond FTTC. Ofcom's modelling should not assume that FTTC will be the permanent technology in the UK. Indeed, the next generation replacement for FTTC (G.fast) is already in trials by BT. It risks modelling inaccuracy to model the costs and revenues of products in years when they are unlikely to be used.

3.9 No previous internet technology has lasted close to 40 years as a mass-market product. As an example of how fast internet markets can move, narrowband internet connections in the UK peaked in 2003, but no scale operator any longer offers a narrowband product, with BT, Sky, Virgin and TalkTalk all having withdrawn from the market.

3.10 Ofcom should therefore explicitly adopt an assumption regarding the time period over which FTTC will remain a scale product before being replaced by G.fast, FTTP or some other technology. This will enable the appropriate price for VULA to be calculated more accurately, and avoid the risk that an accelerated depreciation profile will have to be adopted for a declining product to avoid asset stranding. Similarly, it should take into account the extent to which assets which are used for FTTC (for example, e-side fibre) are likely to be reusable in G.fast and FTTP technologies, and could then have some of their costs in later years attributed to these future generations of products.

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<sup>6</sup> NAO, *Op. cit.*, Figure 7.

## 4 Modelling design issues

### 4.0 Demand model

- 4.1 TalkTalk considers that the demand model proposed by Ofcom does not take into account the interrelationships between its various elements, and therefore risks inconsistencies between the various parts of the model.
- 4.2 In particular, Ofcom models connections, migrations and subscribers independently of one another. In reality, these different variables will be linked with one another—the number of connections will feed into the ‘stock’ of subscribers, and the number of subscribers will (with a delay) drive the number of migrations. Ofcom should take account of these interdependencies when constructing its model, as not doing so may lead to errors. In the same way, the (negative) impact of usage of DPA to develop FTTH by other CPs on Openreach FTTC volumes is an assumption in the model, despite comments from Ofcom indicating that one of the goals of VULA pricing will be to ensure that there is provision of FTTP by non-BT operators, pointing to the interdependency of DPA usage and VULA pricing.
- 4.3 It is also important to note that there is an apparent inconsistency between the demand model and the approach to the geographic scope of the modelling set out at §§3.25 *et seq.* While the geographic scope of the modelling is the commercial FTTC footprint, excluding Hull, Ofcom’s process for determining service volumes, as set out in Figure 4.2, appears to be based on national figures. None of the variables in Figure 4.2 seem to be calculated on the basis of the commercial areas only. Furthermore, simplistic ways of obtaining ‘commercial only’ estimates (e.g., assuming that household growth is the same in commercial and BDUK areas) is likely to lead to material errors (because, for example, London is expected to exhibit faster household growth than the rest of the UK over the next few years). Take-up is also likely to differ between commercial and BDUK areas (due to, for example, different demographics, different timing of initial roll-out, and different proportionate Virgin coverage).
- 4.4 Ofcom should therefore amend its demand model, creating interdependencies between the various variables in its “input” sheet to avoid potential inconsistencies. It should also amend its approach such that it only takes into account data on number of households and take-up from commercially viable areas of the UK.

### 4.1 Network build

- 4.5 It should be noted that the network build assumptions are largely required because Ofcom has chosen to adopt a bottom-up, rather than top-down, approach to regulation. The comments in this section are therefore made on the assumption that Ofcom continues to adopt a bottom-up approach, notwithstanding TalkTalk’s view that this is inappropriate.

- 4.6 There are a number of assumptions built into the network dimensioning elements of Ofcom's model which mean that they are not appropriate. For example, as set out in the Cartesian report accompanying Ofcom's consultation document (at §3.22) the FTTC network is dimensioned such that initial cabinets are configured to support up to 30% take-up. This is likely to lead to excessive and inefficient costs; FTTC take-up in the initial roll-out areas already exceeds 30%, and TalkTalk expects that [30%]. It therefore makes no sense to dimension a network on the basis of a take-up which will be exceeded not just in the long-term, but even in the short term. This is particularly the case in later areas of commercial roll-out, where BT would already have known that take-up would likely exceed the estimates of demand in the initial roll-out areas. Ofcom should dimension the network based on the lowest cost network over the long term, taking into account what information BT would reasonably have known at the time each area was rolled out.
- 4.7 It is also worth noting that this approach, adopted '*following input from BT*' appears to conflict with the bottom-up methodology which Ofcom has chosen for its modelling. A bottom-up approach is based on the most efficient structure for the network, whereas constructing FTTC cabinets for 30% take-up appears to be based on BT's internal assumptions. This is not appropriate; rather, Ofcom should set the dimensioning of cabinets based on whatever take-up proportion it considers will lead to the lowest cost per customer over the long-term.
- 4.8 In particular, this approach appears likely to inflate the proportion of 'Type 1' FTTC cabinets within the network.<sup>7</sup> TalkTalk considers that Ofcom should conduct a sensitivity assessment of whether a network solely or primarily using 'Type 2' fibre cabinets would be lower cost over the long run. If so, it should adopt such a network rather than the primarily 'Type 1 cabinet' network currently considered.
- 4.9 In the same way, it appears that the dimensioning algorithm adopted for the network is excessively short-term, as it is based on demand in each year, rather than expected future demand. When considering long-lived network assets such as duct and e-side fibre, this is inappropriate, and is liable to lead to duplication of assets. As with the cabinets, Ofcom should take the approach of long-term cost minimisation, consistent with its proposed bottom-up approach.
- 4.10 Furthermore, Ofcom does not appear appropriately to be taking economies of scope into account in its proposed bottom-up approach. When constructing its FTTC network, BT is likely to have future-proofed its network by building a network which is over-dimensioned for an operator which is only seeking to offer FTTC. For example, when undertaking groundworks, BT may have put in place within a duct more fibres than would be required for FTTC alone, in order to cover for potential future FTTP and leased lines developments. Such costs should not be taken into account when determining the relevant costs to set a price cap for FTTC. However, Ofcom's proposed approach does not appear to take this into account— Ofcom only mentions at §3.15 that it will allocate costs between copper and FTTC products, not that it will also allocate some costs to future products which BT does not yet offer.

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<sup>7</sup> Cartesian report, §§3.23-3.24

This is likely to lead to an overallocation of costs to FTTC products, and excessive short-term prices, along with the potential for double recovery of some costs.

## 4.2 Depreciation

- 4.11 Ofcom's approach to economic depreciation is based on that developed for mobile call termination. The inputs to the depreciation profile are expenditure on the assets over time, utilisation, and the change in input prices over time. These inputs are combined to give an annual capital charge for each asset in each year of the model.
- 4.12 The main problem with this approach is that changes in assumptions at regulatory reviews mean that the assumed cost recovery in the future, and indeed in the past, differ significantly from regulatory period to period. Such an approach fails to give certainty and predictability to market participants. Secondly, it may also lead to an undesirable price path where prices alternately fall and increase.
- 4.13 Ofcom should therefore adopt an approach which results in less price volatility and so provides greater certainty to market participants; in particular, it should avoid the volatility in cost recovery which is a feature of the currently proposed approach. It should also reflect that many FTTC assets (for example, e-side fibre) are likely to be reused for successor technologies and a proportion of their depreciation charge should therefore properly be allocated to these technologies.

## 4.3 Cost of capital

- 4.14 TalkTalk agrees with Ofcom's proposal to revisit the appropriate WACC for FTTC products as part of the 2017 WLA Review.

## 4.4 Service costing

- 4.15 Ofcom has indicated in the documentation covering the model that its model only includes incremental costs.<sup>8</sup> However, backhaul duct and fibre, as well as e-side fibre, are included within the model itself; these costs are fixed and common to a number of different products including both VULA- and ADSL-based access products.
- 4.16 As such, the common elements of these costs should not be included within the model, and the structure of the model should be amended accordingly.

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<sup>8</sup> Cartesian Report, §2.9.