

Wholesale Local Access Market Review: Draft Statement

Annexes 1-9

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DRAFT STATEMENT

Publication Date: 23 February 2018

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A1. Regulatory framework

- A1.1 This annex provides an overview of the market review process to give some additional context and understanding of the matters discussed in this statement, including the draft legal instruments published in Annex 33.
- A1.2 Market review regulation is technical and complex, and requires us to apply legislation and take into account a number of relevant recommendations and guidelines. This overview identifies some of the key aspects of materials relevant to this market review, but does not purport to give a full and exhaustive account of all materials that we have considered in reaching our decisions on this market.

Market review concept

- A1.3 A market review is a process by which, at regular intervals, we identify relevant markets appropriate to national circumstances and carry out analyses of these markets to determine whether they are effectively competitive. Where an operator has significant market power (SMP) in a market, we impose appropriate remedies, known as SMP obligations or conditions, to address this. We explain the concept of SMP below.
- A1.4 In carrying out this work, we act in our capacity as the sector-specific regulator for the UK communications industries, including telecommunications. Our functions in this regard are to be found in Part 2 of the Act.¹ We exercise those functions within the framework harmonised across the European Union for the regulation of electronic communications by the Member States (known as the CRF), as transposed by the Act. The applicable rules² are contained in a package of five EC Directives, of which two Directives are particularly relevant for present purposes, namely:
- Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (the Framework Directive); and
 - Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (the Access Directive).
- A1.5 The Directives require that NRAs (such as Ofcom) carry out reviews of competition in communications markets to ensure that SMP regulation remains appropriate and proportionate in the light of changing market conditions.
- A1.6 Each market review normally involves three analytical stages, namely:
- the identification and definition of the relevant markets (the market definition procedure);
 - the assessment of competition in each market, in particular whether the relevant market is effectively competitive (the market analysis procedure); and

¹ <http://www.legislation.gov.uk/ukpga/2003/21/contents>.

² The Directives were subsequently amended on 19 December 2009. The amendments have been transposed into the national legislation and applied with effect from 26 May 2011 and any references in this document to the Act should be read accordingly.

- the assessment of appropriate regulatory obligations (the remedies procedure).

A1.7 These stages are normally carried out together.

Market review concept

A1.8 The Act provides that, before making a market power determination³, we must identify *“the markets which in [our] opinion, are the ones which in the circumstances of the United Kingdom are the markets in relation to which it is appropriate to consider whether to make such a determination”* and analyse those markets.

A1.9 The Framework Directive requires that NRAs shall, taking the utmost account of the 2014 EC Recommendation⁴ and SMP Guidelines⁵ published by the EC, define the relevant markets appropriate to national circumstances, in particular relevant geographic markets within their territory, in accordance with the principles of competition law.

A1.10 The 2014 EC Recommendation identifies a set of product and service markets within the electronic communications sector in which ex ante regulation may be warranted. Its purpose is twofold. First, it seeks to achieve harmonisation across the single market by ensuring that the same markets will be subject to a market analysis in all Member States. Second, the 2014 EC Recommendation seeks to provide legal certainty by making market players aware in advance of the markets to be analysed.

A1.11 However, NRAs are able to regulate markets that differ from those identified in the 2014 EC Recommendation where this is justified by national circumstances by demonstrating that three cumulative criteria referred to in the 2014 EC Recommendation (the three-criteria test) are satisfied and where the EC does not raise any objections.

A1.12 The three criteria, which are cumulative, are:

- the presence of high and non-transitory structural, legal or regulatory barriers to entry;
- a market structure which does not tend towards effective competition within the relevant time horizon, having regard to the state of infrastructure-based and other competition behind the barriers to entry; and
- competition law alone is insufficient to adequately address the identified market failure(s).

A1.13 The fact that an NRA identifies the product and service markets listed in the 2014 EC Recommendation or identifies other product and service markets that meet the three-

³ The market power determination concept is used in the Act to refer to a determination that a person has SMP in an identified services market.

⁴ *Commission Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2007/879/EC)*. <http://eurlex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014H0710&from=EN>.

⁵ *Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C165/03)* <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF>

criteria test does not automatically mean that regulation is warranted. Market definition is not an end in itself but rather a means of assessing effective competition.

- A1.14 The relationship between the market definitions identified in this review and those listed in the 2014 EC Recommendation is discussed in relevant parts of this Statement.
- A1.15 The SMP Guidelines make clear that market definition is not a mechanical or abstract process. It requires an analysis of any available evidence of past market behaviour and an overall understanding of the mechanics of a given market sector. As market analysis has to be forward-looking, the SMP Guidelines state that NRAs should determine whether the market is prospectively competitive, and thus whether any lack of effective competition is durable, by taking into account expected or foreseeable market developments over the course of a reasonable period.⁶ The SMP Guidelines clarify that NRAs enjoy discretionary powers which reflect the complexity of all the relevant factors that must be assessed (economic, factual and legal) when identifying the relevant market and assessing whether an undertaking has SMP.
- A1.16 The SMP Guidelines also describe how competition law methodologies may be used by NRAs in their analysis. In particular, there are two dimensions to the definition of a relevant market: the relevant products to be included in the same market and the geographic extent of the market. Ofcom's approach to market definition follows that used by the UK competition authorities, which is in line with the approach adopted by the EC.
- A1.17 While competition law methodologies are used in identifying the relevant markets *ex ante*, the markets identified will not necessarily be identical to markets defined in *ex post* competition law cases, especially as the markets identified *ex ante* are based on an overall forward-looking assessment of the structure and the functioning of the market under examination. Accordingly, the economic analysis carried out for the purpose of this review, including the markets we have identified, is without prejudice to any analysis that may be carried out in relation to any investigation pursuant to the Competition Act 1998⁷ (relating to the application of the Chapter I or II prohibitions or Article 101 or 102 of the Treaty on the Functioning of the European Union⁸) or the Enterprise Act 2002.⁹

Market analysis procedure

Effective competition

- A1.18 The Act requires that we carry out market analyses of identified markets for the purpose of making or reviewing market power determinations. Such analyses are normally to be carried out within two years from the adoption of a revised recommendation on markets, where that recommendation identifies a market not previously notified to the EC, or within

⁶ The SMP Guidelines provide that the actual period used should reflect the specific characteristics of the market and the expected timing for the next review of the relevant market by the NRA.

⁷ <http://www.legislation.gov.uk/ukpga/1998/41/contents>

⁸ Previously Article 81 and Article 82 of the EC Treaty, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:083:FULL:EN:PDF>.

⁹ <http://www.legislation.gov.uk/ukpga/2002/40/contents>

three years from the publication of a previous market power determination relating to that market. Exceptionally, the three-year period may be extended for up to three additional years where the NRA notifies the EC, and it does not object.

A1.19 In carrying out a market analysis, the key issue for an NRA is to determine whether the market in question is effectively competitive. The 27th recital to the Framework Directive clarifies the meaning of that concept:

“[it] is essential that *ex ante* regulatory obligations should only be imposed where there is not effective competition, i.e. in markets where there are one or more undertakings with significant market power, and where national and Community competition law remedies are not sufficient to address the problem”.

A1.20 The definition of SMP is equivalent to the concept of dominance as defined in competition law. In essence, it means that an undertaking in the relevant market is in a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers, and ultimately consumers. The Framework Directive requires that NRAs must carry out their market analysis taking the utmost account of the SMP Guidelines, which emphasise that NRAs should undertake a thorough and overall analysis of the economic characteristics of the relevant market before coming to a conclusion as to the existence of SMP.

A1.21 In that regard, the SMP Guidelines set out, additionally to market shares, a number of criteria that can be used by NRAs to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers, including:

- the overall size of the undertaking;
- control of infrastructure not easily duplicated;
- technological advantages or superiority;
- absence of or low countervailing buying power;
- easy or privileged access to capital markets/financial resources;
- product/services diversification (e.g. bundled products or services);
- economies of scale;
- economies of scope;
- vertical integration;
- highly developed distribution and sales network;
- absence of potential competition; and
- barriers to expansion.¹⁰

A1.22 A dominant position can derive from a combination of these criteria, which when taken separately may not necessarily be determinative.

Sufficiency of competition law

A1.23 As part of our overall forward-looking analysis, we also assess whether competition law by itself (without *ex ante* regulation) is sufficient, within the relevant markets we have

¹⁰ SMP Guidelines, paragraph 78.

defined, to address the competition problems we have identified. We consider this matter in our assessment of the appropriate remedies which, as explained below, are based on the nature of the specific competition problems we identify within the relevant markets as defined. We also note that the SMP Guidelines clarify that, if NRAs designate undertakings as having SMP, they must impose on them one or more regulatory obligations.

- A1.24 In considering this matter, we bear in mind the specific characteristics of the relevant markets we have defined. Generally, the case for *ex ante* regulation is based on the existence of market failures which, by themselves or in combination, mean that the establishment of effective competition might not be possible if the regulator relied solely on *ex post* competition law powers which are not specifically tailored to the sector. Therefore, it may be appropriate for *ex ante* regulation to be used to address such market failures along with any entry barriers that might otherwise prevent effective competition from becoming established within the relevant markets we have defined. By imposing *ex ante* regulation that promotes competition, it may be possible to reduce such regulation over time as markets become more competitive, allowing greater reliance on *ex post* competition law.
- A1.25 *Ex post* competition law is also unlikely in itself to bring about (or promote) effective competition, as it prohibits the abuse of dominance rather than the holding of a dominant position itself. In contrast, *ex ante* regulation is normally aimed at actively promoting the development of competition through attempting to reduce the level of market power (or dominance) in the identified relevant markets, thereby encouraging the establishment of effective competition.
- A1.26 We generally take the view that *ex ante* regulation provides additional legal certainty for the market under review and may also better enable us to intervene in a timely manner. We may also consider that certain obligations are needed as competition law would not remedy the particular market failure, or that the specific clarity and detail of the obligation is required to achieve a particular result.

Remedies procedure

Powers and legal tests

- A1.27 The Framework Directive prescribes what regulatory action NRAs must take depending upon whether or not an identified relevant market has been found effectively competitive. Where a market has been found effectively competitive, NRAs are not allowed to impose SMP obligations and must withdraw such obligations where they already exist. On the other hand, where the market is found not effectively competitive, the NRAs must identify the undertakings with SMP in that market and then impose appropriate obligations.
- A1.28 NRAs have a suite of regulatory tools at their disposal, as reflected in the Act and the Access Directive. Specifically, the Access Directive specifies a number of SMP obligations, including transparency, non-discrimination, accounting separation, access to and use of specific network elements and facilities, price control and cost accounting. When imposing a specific obligation, the NRA will need to demonstrate that the obligation in question is

based on the nature of the problem identified, proportionate and justified in the light of the policy objectives as set out in Article 8 of the Framework Directive.

A1.29 Specifically, for each and every SMP obligation, we explain why it satisfies the requirement in section 47(2) of the Act that the obligation is:

- objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
- not such so as to discriminate unduly against particular persons or against a particular description of persons;
- proportionate to what the condition or modification is intended to achieve; and
- transparent in relation to what is intended to be achieved.

A1.30 Additional legal requirements may also need to be satisfied depending on the SMP obligation in question. For example, in the case of price controls, the NRA's market analysis must indicate that the lack of effective competition means that the Telecoms Provider concerned may sustain prices at an excessively high level or may apply a price squeeze to the detriment of end-users and that the setting of the obligation is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services. In that instance, NRAs must take into account the investment made by the Telecoms Provider and allow it a reasonable rate of return on adequate capital employed, taking into account any risks specific to a particular new investment, as well as ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable competition and maximise consumer benefits. Where an obligation to provide third parties with network access is considered appropriate, NRAs must take into account factors including the feasibility of the network access, the technical and economic viability of creating networks¹¹ that would make the network access unnecessary, the investment of the network operator who is required to provide access¹², and the need to secure effective competition¹³ in the long term.

A1.31 To the extent relevant to this review, we demonstrate the application of these requirements to the SMP obligations in question in the relevant parts of this document. In doing so, we also set our assessment of how, in our opinion, the performance of our general duties under section 3 of the Act will be secured or furthered by our regulatory intervention, and that it is in accordance with the six Community requirements in section 4 of the Act. This is also relevant to our assessment of the likely impact of implementing our decisions.

¹¹ Including the viability of other network access products, whether provided by the dominant provider or another person.

¹² Taking account of any public investment made.

¹³ Including, where it appears to us to be appropriate, economically efficient infrastructure-based competition.

Ofcom's general duties – section 3 of the Act

- A1.32 Under the Act, our principal duty in carrying out functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition.
- A1.33 In doing so, we are required to secure a number of specific objectives and to have regard to a number of matters set out in section 3 of the Act.
- A1.34 In performing our duties, we are also required to have regard to a range of other considerations, as appear to us to be relevant in the circumstances. For the purpose of the NMR, we consider that a number of such considerations are relevant, in particular:
- the desirability of promoting competition in relevant markets; and
 - the desirability of encouraging investment and innovation in relevant markets.
- A1.35 We have also had regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed, as well as in the interest of consumers in respect of choice, price, quality of service and value for money.
- A1.36 Ofcom has, however, a wide measure of discretion in balancing its statutory duties and objectives. In doing so, we take account of all relevant considerations, including responses received during our consultation process, in reaching our conclusions.

European Community requirements for regulation – sections 4 and 4A of the Act and Article 3 of the BEREC Regulation

- A1.37 As noted above, our functions exercised in this review fall under the CRF. As such, section 4 of the Act requires us to act in accordance with the six European Community requirements for regulation. In summary, these six requirements are:
- to promote competition in the provision of electronic communications networks and services, associated facilities and the supply of directories;
 - to contribute to the development of the European internal market;
 - to promote the interests of all persons who are citizens of the EU;
 - to take account of the desirability of Ofcom's carrying out of its functions in a manner which, so far as practicable, does not favour one form of or means of providing electronic communications networks, services or associated facilities over another (i.e. to be technologically neutral);
 - to encourage, to such extent as Ofcom considers appropriate for certain prescribed purposes, the provision of network access and service interoperability, namely securing efficient and sustainable competition, efficient investment and innovation, and the maximum benefit for customers of Telecoms Providers; and
 - to encourage compliance with certain standards in order to facilitate service interoperability and secure freedom of choice for the customers of Telecoms Providers.
- A1.38 We consider that the first, third, fourth and fifth of those requirements are of particular relevance to the matters under review and that no conflict arises in this regard with those

specific objectives in section 3 of the Act that we consider are particularly relevant in this context.

- A1.39 Section 4A of the Act requires Ofcom, in carrying out certain of its functions (including, among others, Ofcom’s functions in relation to market reviews under the CRF) to take due account of applicable recommendations issued by the EC under Article 19(1) of the Framework Directive. Where we decide not to follow such a recommendation, we must notify the EC of that decision and the reasons for it.
- A1.40 Further, Article 3(3) of the Regulation establishing BEREC¹⁴ requires NRAs to take utmost account of any opinion, recommendation, guidelines, advice or regulatory best practice adopted by BEREC.
- A1.41 Accordingly, we have taken due account of the applicable EC recommendations and utmost account of the applicable opinions, recommendations, guidelines, advice and regulatory best practices adopted by BEREC relevant to the matters under consideration in this review.

Impact assessment – section 7 of the Act

- A1.42 The analysis presented in the consultation documents leading to this statement represents an impact assessment, as defined in section 7 of the Act.
- A1.43 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that generally Ofcom has to carry out impact assessments where there is likely to be a significant effect on businesses or the general public, or when there is a major change in Ofcom’s activities. However, as a matter of policy, Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of its policy decisions.¹⁵
- A1.44 Specifically, pursuant to section 7, an impact assessment must set out how, in our opinion, the performance of our general duties (within the meaning of section 3 of the Act) is secured or furthered by or in relation to the regulation we impose.
- A1.45 Ofcom is separately required by statute to assess the potential impact of all our functions, policies, projects and practices on race, disability and gender equality. This assessment is set out in Annex 3.

Regulated entity

- A1.46 The power in the Act to impose an SMP obligation by means of an SMP services condition provides that it is to be applied only to a ‘person’ whom we have determined to be a

¹⁴ Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 establishing the Body of European Regulators of Electronic Communications (BEREC) and the Office (the BEREC Regulation) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0001:0010:EN:PDF>.

¹⁵ For further information about Ofcom’s approach to impact assessments, see the guidelines, *Better policy-making: Ofcom’s approach to impact assessment*, which are on the Ofcom website: http://stakeholders.ofcom.org.uk/binaries/consultations/better-policy-making/Better_Policy_Making.pdf.

person having SMP in a specific market for electronic communications networks, electronic communications services or associated facilities (i.e. the ‘services market’).

- A1.47 The Framework Directive requires that, where an NRA determines that a relevant market is not effectively competitive, it shall identify ‘undertakings’ with SMP in that market and impose appropriate specific regulatory obligations. For the purposes of EU competition law, ‘undertaking’ includes companies within the same corporate group (for example, where a company within that group is not independent in its decision making).¹⁶
- A1.48 We consider it appropriate to prevent a dominant provider to whom an SMP services condition is applied, which is part of a group of companies, exploiting the principle of corporate separation. The dominant provider should not use another member of its group to carry out activities or to fail to comply with a condition, which would otherwise render the dominant provider in breach of its obligations.
- A1.49 To secure that aim, we apply the SMP conditions to the person in relation to which we have made the market power determination in question by reference to the so-called ‘Dominant Provider’, which we define as “[X plc], whose registered company number is [000] and any [X plc] subsidiary or holding company, or any subsidiary of that holding company, all as defined in section 1159 of the Companies Act 2006”.

¹⁶ *Viho v Commission*, Case C-73/95 P [1996] ECR I-5447. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61995CJ0073:EN:PDF>.

A2. General analytical approach to market definition and SMP assessment

A2.1 This annex sets out in general terms the processes that we have followed in defining the market within this review, and how and on what basis we assess whether any operator has SMP in a given market. Sections 3 and 4 set out in more detail how we have applied our analytical approach in the WLA market.

Overview of approach

A2.2 The market review procedure requires us to analyse markets in order to determine whether they are effectively competitive, and then to decide on appropriate remedies if necessary. Before an assessment of competitive conditions is possible it is necessary to define the relevant market.

A2.3 The definition of the relevant market does not simply entail identifying services that resemble each other in some way, but the set of services (and geographical areas) that exercise a sufficiently strong competitive constraint on each other. It therefore has two dimensions:

- the relevant products or services to be included within the market; and
- the geographic extent of the market.

A2.4 It is often practical to define the relevant product market before exploring the geographic dimension of the market.

A2.5 The market definition exercise is not an end in itself, but a means to assessing whether there is effective competition and thus whether there is a need for *ex ante* regulation. It is in this light that we have conducted our market definitions in this review.

2014 EC Recommendation and the three-criteria test

A2.6 As explained in Annex 1, in defining the market for market review purposes, we are required to define relevant markets appropriate to national circumstances in accordance with the principles of competition law. In doing so we have taken due account of the 2014 EC Recommendation, the accompanying Explanatory Note and the EC SMP Guidelines.

A2.7 As explained in Annex 1, the 2014 EC Recommendation identifies a set of product and service markets within the electronic communications sector in which *ex ante* regulation may be warranted. NRAs may also identify markets that differ from those in the 2014 EC Recommendation which may be susceptible to *ex ante* regulation having regard to the three-criteria test.

A2.8 The three-criteria test is related to the assessment of SMP and involves the assessment of similar evidence, but is analytically distinct. The three-criteria test focuses on overall market characteristics and structure, for the sole purpose of identifying those markets that are susceptible to *ex ante* regulation. In contrast, assessment of SMP involves determining

whether an operator active in a market that has been identified as being susceptible to *ex ante* regulation should be made subject to *ex ante* regulation.¹⁷

The time period under review

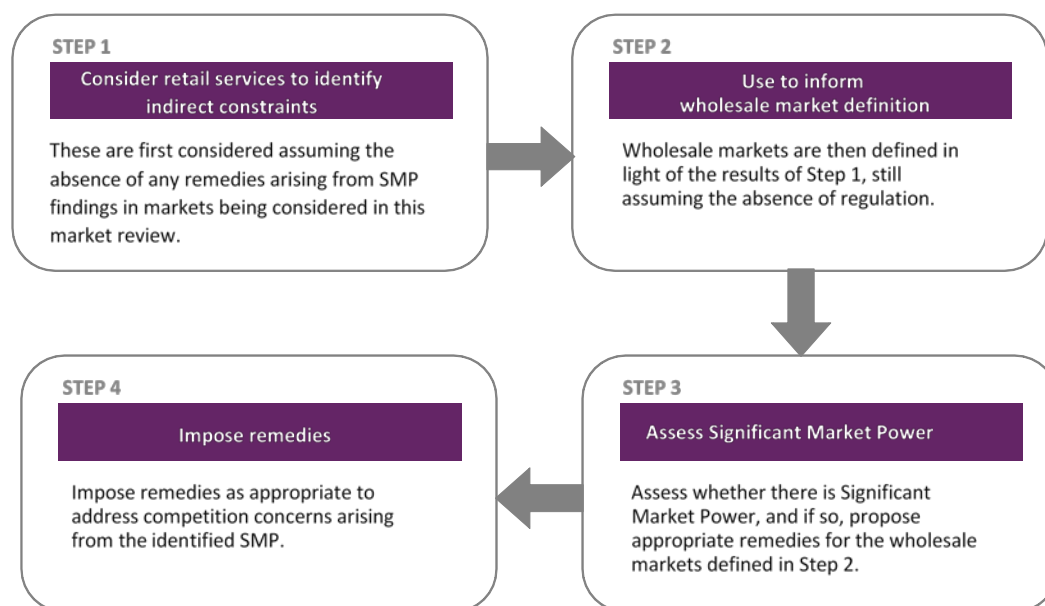
A2.9 Rather than just looking at the current position, market reviews look ahead to how competitive conditions may change in future. Our evaluation of the current market takes into account past developments and evidence, before then considering the foreseeable market changes that we expect to affect its development over the period to March 2021. This forward-looking period reflects the period covered by this market review.

A2.10 The forward look period that we have used does not preclude us reviewing the market before that point should the market develop in a way we have not foreseen, to the extent that it is likely to affect the competitive conditions that are operating.

Market review process

A2.11 The market review process can be characterised as having four stages, which are shown in Figure A2.1 below.

Figure A2.1 Sequencing of market definition, SMP and remedies analysis



Source: Ofcom

A2.12 These steps are explained further in the following sub-sections.

¹⁷ See the Commission Explanatory Note accompanying the 2014 EC Recommendation.

Market definition

- A2.13 The starting point for identifying markets which may be susceptible to *ex ante* regulation is the consideration of retail services from a forward-looking perspective. The wholesale market is defined subsequent to this exercise being carried out. In relevant cases we then consider whether the wholesale market is one in which *ex ante* regulation may be appropriate (if so, we have then formally identified a relevant market).¹⁸
- A2.14 Consideration of retail services is logically prior to wholesale market definition because the demand for the upstream wholesale service is a derived demand, meaning that the level of the demand for the upstream input depends on the demand for the retail service.
- A2.15 This link between the retail and wholesale level means that the range of available substitutes at the downstream (e.g. retail) level will inform the likely range of competitive constraints acting at the upstream (e.g. wholesale) level. This is because a rise in the price of a wholesale service which is passed through to the price retail services may cause retail customers to switch to substitute retail services, reducing demand for the wholesale input. We refer to this as an indirect constraint.
- A2.16 Consequently, the analysis of the retail and wholesale levels of the supply-chain should be regarded as one exercise, the ultimate purpose of which is to define those wholesale markets in the UK where there may be a requirement for the imposition of *ex ante* regulation.¹⁹

Demand-side and supply-side substitution

- A2.17 The boundaries between markets are determined by identifying competitive constraints on the price setting behaviour of firms. There are two main constraints to consider:²⁰
- to what extent it is possible for a customer to substitute other services for those in question in response to a relative price increase (demand-side substitution); and
 - to what extent suppliers can switch, or increase, production to supply the relevant products or services in response to a relative price increase (supply-side substitution).
- A2.18 The hypothetical monopolist test (HMT) is a tool which can be used to identify close demand-side and supply-side substitutes.²¹ In this test, a product is considered to constitute a separate market if the hypothetical monopolist supplier could impose a small but significant non-transitory increase in price (SSNIP) above the competitive level without losing sales to such a degree as to make this price rise unprofitable. If such a price rise would be unprofitable, because consumers would switch to other products or because

¹⁸ See recital 5 and point 2 of the 2014 EC Recommendation.

¹⁹ See, in this respect, recital 7 of the 2014 EC Recommendation which states that “*the starting point for the identification of wholesale markets susceptible to ex ante regulation is the analysis of corresponding retail markets*”. See also section 2.1 of the Explanatory Note to the 2014 EC Recommendation and paragraph 44 of the SMP Guidelines.

²⁰ See paragraph 38 of the SMP Guidelines, which also notes that potential competition also acts as a third source of competitive constraint on an operator’s behaviour, but is taken into account in the SMP assessment.

²¹ SMP Guidelines, paragraph 40.

suppliers of other products would begin to compete with the hypothetical monopolist, then the market definition should be expanded to include the substitute products.

- A2.19 We must first therefore address the issue of which product(s) should form the starting point for the application of the HMT. This starting point can be referred to as the ‘focal product’²², and typically starts from the narrowest potential market definition.²³
- A2.20 Having considered demand-side substitution we then, where relevant, assess supply-side substitution possibilities to consider whether they provide any additional constraints on the pricing behaviour of the hypothetical monopolist which have not been captured by the demand-side analysis. In this assessment, supply-side substitution is considered to be a low-cost form of entry which can take place within a reasonable timeframe (e.g. up to 12 months).
- A2.21 For supply-side substitution to be relevant not only must suppliers be able, in theory, to enter the market quickly and at low cost by virtue of their existing position in the supply of other products or geographic areas, but there must also be an additional competitive constraint arising from such entry into the supply of the service in question.
- A2.22 Therefore, in identifying potential supply-side substitutes, it is important that providers of these services have not already been taken into consideration. There might be suppliers who provide other services but who might also be materially present in the provision of demand-side substitutes to the service for which the hypothetical monopolist has raised its price. Such suppliers are not relevant to supply-side substitution since they supply services already identified as demand-side substitutes. However, the impact of expansion by such suppliers can be taken into account in the assessment of market power.

Relevance of existing regulation – the modified Greenfield approach

- A2.23 When we conduct our analysis we use the modified Greenfield approach.²⁴ This requires us to assess whether markets are effectively competitive from a forward-looking perspective in the absence of any regulation that would result from a finding of SMP. To do otherwise would be circular.
- A2.24 However, it remains appropriate to take into account *ex ante* regulation arising from SMP findings in markets either upstream from, or horizontally related to, the services of interest.

Bundling

- A2.25 A common feature of the retail telecoms sector is the supply of bundles of different services. However, the Explanatory Note explains that the fact that bundling is a trend

²² This reflects the terminology used by the OFT (OFT, *Market definition*, December 2004, OFT403, www.of.gov.uk/shared_of/business_leaflets/ca98_guidelines/oft403.pdf).

²³ Paragraph 3.2 of the OFT Market Definition Guidelines explains that ‘previous experience and common sense will normally indicate the narrowest potential market definition, which will be taken as the starting point for the analysis’.

²⁴ See also Section 2.5 of the Explanatory Note to the 2014 EC Recommendation.

observed at the retail level does not require the definition of retail market(s) for bundles. This is because evidence to date has not indicated that there is a need for *ex ante* regulation of bundles, which may contain a previously regulated input.²⁵

A2.26 The Explanatory Note goes on to explain that what matters in this regard is that:

“NRAs are able to ensure that the vertically integrated SMP operator’s regulated elements of the bundle can be effectively replicated (in terms of both technical and economic replicability) at the retail level, without an implicit extension of regulation to other components which are available under competitive conditions”.

Aggregating markets

A2.27 In certain circumstances, it may also be appropriate to define a product or geographic market by grouping together services despite the absence of demand- and supply-side substitutability.

Homogeneity of competitive conditions

A2.28 Aggregating markets on the basis of the homogeneity of competitive conditions can help streamline the subsequent market power analysis by reducing the need to review multiple markets for products, the provision of which is subject to homogeneous competitive conditions.

A2.29 However, combining products and services based on homogenous competitive conditions, is – by definition – only appropriate where this would not substantively alter any subsequent findings of SMP (relative to defining those markets separately).

A2.30 Our approach also takes into account the SMP Guidelines. In particular, in the context of geographic market analysis, the SMP Guidelines state that:

“According to established case-law, the relevant geographic market comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in which area the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different. [...]”²⁶

A2.31 Hence, subject to the relevant caveats above, where there are products (or geographic areas) where competitive conditions are sufficiently homogeneous, the definition of the relevant market will include all of those products (or geographic areas) within one market.

Common pricing constraints

A2.32 Another factor that is sometimes considered in setting market boundaries is whether there exist common pricing constraints across customers, services or geographic areas (for

²⁵ Explanatory Note to the 2014 EC Recommendation, section 3.2.

²⁶ SMP Guidelines, paragraph 56.

example, areas in which a firm voluntarily offers its services at a uniform price). Where common pricing constraints exist, the products or geographic areas in which they apply could be included within the same relevant market even if demand-side and supply-side substitution is limited (or absent). Failure to consider the existence of a common pricing constraint could lead to unduly narrow markets being defined.

Geographic market

- A2.33 In addition to the product(s) to be included within a market, market definition requires us to specify the geographic extent of the market in which conditions of competition are sufficiently similar.
- A2.34 One approach would be to begin with a narrowly defined geographic area and then consider whether a price increase by a hypothetical monopolist in that area would encourage customers to switch to suppliers located outside the area (demand-side substitution) or telecoms providers outside the area to begin to offer services in the area (supply-side substitution). If demand- and/or supply-side substitution is sufficient to constrain prices, then it is appropriate to expand the geographic market boundary.
- A2.35 We recognise that in certain communications (product) markets, there may be different competitive conditions in different geographic areas. In such a case, we therefore have to consider whether it is appropriate to identify separate geographic markets for some services. Defining separate markets by geographic area may be problematic because, due to the dynamic nature of communications markets, the boundary between areas where there are different competitive pressures may be unstable and change over time.
- A2.36 An alternative approach is to define geographic markets in a broader sense. This involves defining a single geographic market but recognising that this single market has local geographic characteristics. That is to say, recognising that within the single market there are geographic areas where competition is more developed than in other geographic areas. This avoids the difficulties of defining and remedying large numbers of markets and instability in the definition over time. Such an approach may also include the aggregation of markets as discussed above.

Market power assessment

- A2.37 Having identified the relevant product and geographic market(s) and, where relevant having identified the market as susceptible to *ex ante* regulation, we go on to analyse each market in order to assess whether any person or persons have SMP as defined in section 78 of the Act (construed in accordance with Article 14 of the Framework Directive). Section 78 of the Act provides that SMP is defined as being equivalent to the competition law concept of dominance in accordance with Article 14(2) of the Framework Directive which provides:

“An undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an

appreciable extent independently of competitors, customers and ultimately consumers."

A2.38 Further, Article 14(3) of the Framework Directive states that:

"Where an undertaking has significant market power on a specific market, it may also be deemed to have significant market power on a closely related market, where the links between the two markets are such as to allow the market power held in one market to be leveraged into the other market, thereby strengthening the market power of the undertaking."

A2.39 Therefore, in the relevant market, one or more undertakings may be designated as having SMP where that undertaking or undertakings enjoy a position of dominance. Also, an undertaking may be designated as having SMP where it could lever its market power from a closely related market into the relevant market, thereby strengthening its market power.

A2.40 In assessing whether an undertaking has SMP, we take due account of the SMP Guidelines as we are required to do under section 79 of the Act.

The criteria for assessing SMP

A2.41 The SMP Guidelines require NRAs to assess whether competition in a market is effective. This assessment is undertaken through a forward-looking evaluation of the market (i.e. determining whether the market is prospectively competitive), taking into account foreseeable developments and a number of relevant criteria.²⁷

A2.42 Our assessments of SMP are concerned with the prospects for competition over the review period of three years. Ultimately, we want to understand how the markets are likely to develop, and whether competition is likely to be, or become, effective during this review period. Below we set out certain key factors that we are likely to consider when assessing SMP.²⁸

A2.43 Where a market is found to be competitive then no SMP conditions can be imposed. Section 84(4) of the Act requires that any SMP condition in that market, applying to a person by reference to a market power determination made on the basis of an earlier analysis, must be revoked.

Market shares

A2.44 In the SMP Guidelines, the EC discusses market shares as being an indicator of (although not sufficient to establish) market power:

"...Market shares are often used as a proxy for market power. Although a high market share alone is not sufficient to establish the possession of significant market power (dominance), it is unlikely that a firm without a significant share of the relevant market would be in a dominant position. Thus, undertakings with market

²⁷ See, for example, paragraphs 19 and 20, and the opening words of paragraph 75, of the SMP Guidelines.

²⁸ The factors listed in this annex are not intended to be exhaustive and other evidence may be relevant.

shares of no more than 25% are not likely to enjoy a (single) dominant position on the market concerned. In the Commission's decision making practice, single dominance concerns normally arise in the case of undertakings with market shares of over 40%, although the Commission may in some cases have concerns about dominance even with lower market shares, as dominance may occur without the existence of a large market share. According to established case-law, very large market shares — in excess of 50% — are in themselves, save in exceptional circumstances, evidence of the existence of a dominant position...”²⁹

A2.45 Market shares and market share trends provide an indication of how competitive a market has been in the past. If a firm has a persistently high market share, then that in itself gives rise to a presumption of SMP. However, changes in market share are also relevant to our assessment of prospects for competition. For example, a market share trend which shows a decline may suggest that competition will provide an effective constraint within the time period over which the SMP assessment is being conducted, although it does not preclude the finding of SMP.³⁰

Other factors affecting competitive constraints

A2.46 In addition to market shares, the SMP Guidelines set out a number of criteria that can be used by NRAs to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers, including:³¹

- the overall size of the undertaking;
- control of infrastructure not easily duplicated;
- technological advantages or superiority;
- easy or privileged access to capital markets/financial resources;
- product/services diversification (e.g. bundled products or services);
- economies of scale;
- economies of scope;
- vertical integration;
- highly developed distribution and sales network;
- absence of potential competition; and
- barriers to expansion.

A2.47 A dominant position can derive from a combination of these criteria, which when taken separately may not necessarily be determinative.

A2.48 An SMP analysis may also take into account the extent to which products or services within the market are differentiated. The constraint from products or services outside the relevant market may also be a relevant factor.

²⁹ SMP Guidelines, paragraph 75.

³⁰ SMP Guidelines, paragraph 75.

³¹ SMP Guidelines, paragraph 78.

Excessive pricing and profitability

- A2.49 In a competitive market, individual firms should not be able to persistently raise prices above costs and sustain excess profits.
- A2.50 The ability, therefore, to price at a level that keeps profits persistently and significantly above the competitive level is an important indicator of market power. The SMP Guidelines refer to the importance, when assessing market power on an *ex ante* basis, of considering the power of undertakings to raise prices without incurring a significant loss of sales or revenue.³² Factors that may explain excess profits in the short term, such as greater innovation and efficiency, or unexpected changes in demand, should however be considered in interpreting high profit figures.
- A2.51 However, consistently low profits, i.e. profits at or below the cost of capital, cannot be taken as evidence of an absence of market power. It may simply be evidence of inefficiency. For example, if a firm with SMP were to have inefficiently high costs, it may charge a price above the level we would expect to see in a competitive market but this would not result in high profits. In addition, price regulation exists in many of the wholesale markets considered, and therefore low profits may simply be the result of existing regulation rather than a reflection of the underlying competitive conditions.

Barriers to entry and expansion

- A2.52 Entry barriers are important in the assessment of potential competition.³³ The lower entry barriers are, the more likely it is that potential competition will prevent undertakings already within a market from profitably sustaining prices above competitive levels. Moreover, the competitive constraint imposed by potential entrants is not simply about introducing a new product to the market. To be an effective competitive constraint, a new entrant must be able to attain a large enough scale to have a competitive impact on undertakings already in the market. This may entail entry on a small scale, followed by growth. Accordingly, whether there are barriers to expansion is also relevant to an SMP assessment. Many of the factors that may make entry harder might also make it harder for undertakings that have recently entered the market to expand their market shares and hence their competitive impact.
- A2.53 A related factor is the growth in demand in the market. In general, telecoms providers are more willing to invest in a growing market (and less willing in a declining market). As a result, barriers to entry and expansion tend to be less of an impediment to competition in rapidly growing markets.

Countervailing buyer power

A concentrated market need not lead to harmful outcomes if buyers have sufficient countervailing buyer power to curtail the exercise of market power. In general, purchasers may have a degree of

³² SMP Guidelines, paragraph 73.

³³ SMP Guidelines, paragraph 80.

buyer power where they purchase large volumes and can make a credible threat to switch supplier or to meet their requirements through self-supply to a significant degree. It is important to note, however, that the volumes involved must be large enough to make a material difference to the profitability of the current supplier. That is, an individual wholesale customer must represent a significant proportion of the total volume supplied by the relevant telecoms provider.

A3. Equality impact assessment

- A3.1 Ofcom³⁴ is required by statute to assess the potential impact of all our functions, policies, projects and practices on equality.³⁵ An equality impact assessment (EIA) also assists us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity.
- A3.2 Unless we state otherwise in this document, it is not apparent to us that our remedies will have a differential impact on any equality group.
- A3.3 Further, we have not considered it necessary to carry out separate EIAs in relation to race or sex equality or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we anticipate that our regulatory intervention will not have a differential impact on people of different sexes or ethnicities, consumers with protected characteristics in Northern Ireland³⁶ or disabled consumers compared to consumers in general.
- A3.4 We have considered whether the remedies are likely to have an adverse impact on promoting equality. In particular, we have considered whether the remedies are likely to have a different or adverse effect on UK consumers and citizens with respect to the following equality groups: age, disability, sex, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation, and, in Northern Ireland, political opinion and persons with dependants.
- A3.5 The intention behind our approach to regulating the WLA markets is to promote competition to the ultimate benefit of end consumers by, for example, requiring any telecoms provider with Significant Market Power (SMP) to provide access to its network on regulated terms (including charging).
- A3.6 To understand how our decisions may affect equality groups, we have considered how different groups in society engage with communications services. In particular, we conducted market research that enabled us to assess the potential impact of future regulation on certain equality groups, particularly older consumers.³⁷ While our research identifies differences in take-up and use of fixed line services by different groups within society, our regulation is aimed at promoting competition across the range of services that rely on WLA.
- A3.7 We consider that our regulatory intervention will not have a detrimental impact on any defined equality group. Further, we do not propose to carry out separate EIAs in relation to

³⁴ We explain why we undertake an Equality Impact Assessment (EIA) and how we have done it in Volume 1, Section 2 of this statement.

³⁵ Ofcom has a general duty under the 2010 Equality Act to advance equality of opportunity in relation to age, disability, sex, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation.

³⁶ In addition to the characteristics outlined in the 2010 Equality Act, in Northern Ireland consumers who have dependants or hold a particular political opinion are also protected.

³⁷ Ofcom, 2016. *Residential and SME Broadband Research*.

https://www.ofcom.org.uk/_data/assets/pdf_file/0031/99643/Broadband-residential-research.pdf.

race, sex equality or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we anticipate that our regulatory intervention will not have a differential impact on people of different sexes or ethnicities, consumers with protected characteristics in Northern Ireland or on disabled consumers compared to consumers in general.

- A3.8 Rather, we consider that our regulatory intervention will further the aim of advancing equality of opportunity between different groups in society by furthering the interests of all consumers that use retail services reliant on WLA.

A4. Sources of evidence

- A4.1 We have noted throughout this statement the evidence we have relied upon in relation to our findings and how we have relied upon that evidence. This annex lists the main sources of evidence used, including all responses to our consultations and to our formal s.135 notices requesting information.
- A4.2 While this annex lists the main evidence we have relied upon, the list is for convenience only and is not intended to be exhaustive.

Consultation responses

Responses to the May 2016 WLA Consultation

- A4.3 On 9 May 2016, we published a consultation (May 2016 WLA Consultation), to gather stakeholders' views on possible approaches to fibre cost modelling.³⁸
- A4.4 Ten stakeholders provided written responses to this consultation:
- Mr M Chare
 - CityFibre Infrastructure Holdings plc (CityFibre)
 - Openreach
 - Scottish Futures Trust
 - Sky UK Limited (Sky)
 - TalkTalk Telecom Group plc (TalkTalk)
 - The Bit Commons
 - Virgin Media plc (Virgin Media)
 - Vodafone Group plc (Vodafone)
 - [X]
- A4.5 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.³⁹

Responses to the 2016 PIA Consultation

- A4.6 On 6 December 2016, we published a consultation (2016 PIA Consultation), to gather stakeholders' views on initial proposals to develop an effective physical infrastructure access remedy.⁴⁰
- A4.7 27 stakeholders provided written responses to this consultation:
- Arqiva

³⁸ Ofcom, 2016. *Wholesale Local Access Market Review – Consultation on possible approaches to fibre cost modelling*. https://www.ofcom.org.uk/data/assets/pdf_file/0026/82664/Wholesale-Local-Access-Market-Review.pdf.

³⁹ <https://www.ofcom.org.uk/consultations-and-statements/category-3/wholesale-local-access-market-review-fibre-cost-modelling>.

⁴⁰ Ofcom, 2016. *Wholesale Local Access Market Review – Initial proposals to develop an effective PIA remedy*. https://www.ofcom.org.uk/data/assets/pdf_file/0024/95109/Wholesale-Local-Access-Market-Review.pdf.

- Call Flow Solutions Ltd (Call Flow)
- CityFibre
- Colt
- Fermanagh and Omagh District Council
- Flomatik
- Hutchison 3G UK Limited (Three)
- Hyperoptic
- Independent Fibre Networks (BUUK)
- Liquid Telecom
- National Farmers Union
- Ofcom’s Advisory Committee for Scotland
- Openreach
- Ordnance Survey
- Passive Access Group (PAG)
- Scottish Futures Trust
- Sky
- SSE PLC
- TalkTalk
- Virgin Media
- Vodafone
- Welsh Government
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

A4.8 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.⁴¹

Responses to the March 2017 WLA Consultation

A4.9 On 31 March 2017, we published our main WLA consultation (March 2017 WLA Consultation), to gather stakeholders’ views on the work we had undertaken in assessing the state of competition in the wholesale local access markets in the UK and our proposals for regulating these markets in the next WLA market review period.⁴²

A4.10 19 stakeholders provided written responses to this consultation:

- British Telecommunications plc (BT)
- Call Flow Solutions Ltd

⁴¹ <https://www.ofcom.org.uk/consultations-and-statements/category-2/wholesale-local-access-market-review-proposals-PIA>.

⁴² Ofcom, 2017. *Wholesale Local Access Market Review – Consultation on the proposed market, market power determinations and remedies*. <https://www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-access-market-review>.

- CityFibre [It provided a further submission on pricing of >100Mbps services]
- Communication Workers Union (CWU)
- Mr J Geddes
- Irish Central Border Area Network (ICBAN)
- Independent Networks Cooperative Association (INCA)
- Lothian Broadband Networks Limited
- Openreach [It provided three further submissions, on full-fibre investment, efficiency, and the ‘fair bet’ assessment. It also provided three reports, one compiled by Ernst & Young LLP, and two compiled by Oxera Consulting LLP]
- Scottish Futures Trust
- Sky [It also provided a report compiled by Frontier Economics, jointly commissioned with TalkTalk]
- TalkTalk [It provided three further submissions, on Openreach’s migration of BT Retail customers, and on the Oxera reports commissioned by Openreach. It also provided a report compiled by Frontier Economics, jointly commissioned with Sky]
- The Bit Commons
- Three
- Virgin Media
- Vodafone [It provided a further submission on overbuild and targeted pricing]
- WarwickNet
- [X]
- [X]

A4.11 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.⁴³

Responses to the April 2017 DPA Consultation

A4.12 On 20 April 2017, we published a consultation on Openreach’s duct and pole access product, known as Physical Infrastructure Access (PIA) (April 2017 DPA Consultation).⁴⁴

A4.13 22 stakeholders provided written responses to this consultation:

- BT
- BUUK
- Callflow
- CityFibre
- Colt
- Flomatik
- Huawei
- Hyperoptic

⁴³ <https://www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-access-market-review>. The further submissions by CityFibre and Vodafone are available at: <https://www.ofcom.org.uk/consultations-and-statements/category-2/wla-competition-superfast-ultrafast-broadband>.

⁴⁴ Ofcom, 2017. *Wholesale Local Access Market Review – Consultation on Duct and Pole Access remedies*. https://www.ofcom.org.uk/_data/assets/pdf_file/0008/101051/duct-pole-access-remedies-consultation.pdf.

- INCA
- NextGenAccess
- Openreach
- PAG
- Sky
- SSE
- TalkTalk
- Telefonica (O2)
- Three
- Virgin Media
- Vodafone
- WarwickNet
- Zayo
- [X]

A4.14 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.⁴⁵

Responses to the August 2017 DPA Consultation

A4.15 On 1 August 2017, we published a consultation on our pricing proposals for duct and pole access remedies (August 2017 DPA Consultation).⁴⁶

A4.16 12 stakeholders provided written responses to this consultation:

- Arqiva
- BUUK
- CityFibre
- Flomatic
- Hyperoptic
- O2
- Openreach
- PAG
- TalkTalk
- Vodafone
- Zayo
- [X]

A4.17 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.⁴⁷

⁴⁵ <https://www.ofcom.org.uk/consultations-and-statements/category-2/duct-pole-access-remedies>.

⁴⁶ Ofcom, 2017. *WLA Market Review – Consultation on pricing proposals for Duct and Pole Access remedies*. https://www.ofcom.org.uk/_data/assets/pdf_file/0019/105427/consultation-dpa-pricing.pdf.

⁴⁷ <https://www.ofcom.org.uk/consultations-and-statements/category-2/pricing-proposals-duct-pole-access>.

Responses to the September 2017 WLA Consultation

- A4.18 On 14 September 2017, we published a further WLA consultation on our proposed charge control for wholesale standard and superfast broadband.⁴⁸
- A4.19 Seven stakeholders provided written responses to this consultation:
- CityFibre
 - Openreach
 - Sky
 - TalkTalk
 - UK Competitive Telecommunications Association (UKCTA)
 - Virgin Media
 - Vodafone
- A4.20 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.⁴⁹

Responses to the November 2017 Regulatory Financial Reporting Consultation

- A4.21 On 24 November 2017, we published a consultation on a set of draft directions relating to BT's Regulatory Financial Reporting obligations in relation to the Wholesale Local Access and Wholesale Broadband Access markets.⁵⁰
- A4.22 Six stakeholders provided written responses to this consultation:
- BT
 - Sky
 - TalkTalk
 - UKCTA
 - Vodafone
 - [X]
- A4.23 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.⁵¹

⁴⁸ Ofcom, 2017. *Wholesale Local Access Market Review – Further consultation on proposed charge control for wholesale standard and superfast broadband*. https://www.ofcom.org.uk/_data/assets/pdf_file/0023/106448/Proposed-charge-control-for-wholesale-standard-and-superfast-broadband.pdf.

⁴⁹ <https://www.ofcom.org.uk/consultations-and-statements/category-2/wla-market-review-further-consultation-on-charge-control>.

⁵⁰ Ofcom, 2017. *Regulatory Financial Reporting – Consultation on proposed directions to BT arising from the Wholesale Local Access and Wholesale Broadband Access market reviews*.

https://www.ofcom.org.uk/_data/assets/pdf_file/0022/108166/Regulatory-financial-reporting.pdf.

⁵¹ <https://www.ofcom.org.uk/consultations-and-statements/category-2/regulatory-financial-reporting2>.

Responses to the December 2017 WLA Consultation

- A4.24 On 1 December 2017, we published a further WLA consultation on our proposals for non-discrimination for superfast and ultrafast services.⁵²
- A4.25 12 stakeholders provided written responses to this consultation:
- BT
 - CityFibre
 - Gigaclear
 - INCA
 - O2
 - Openreach
 - TalkTalk
 - Three
 - TrueSpeed Communications Limited
 - Vodafone
 - Zayo
 - [redacted]
- A4.26 We have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our website.⁵³

Information gathered using statutory powers

- A4.27 During this market review, we have issued a series of notices under section 135 of the Communications Act 2003 requiring various telecoms providers to provide specified information as set out in the notice. We have set out the information requests below by reference to the part of our statement where we mainly discuss the information received from stakeholders, and by stakeholder.

Volume 1 and related annexes

Notices addressed to and responses received from BT⁵⁴

- A4.28 Notice of 8 October 2015 regarding copper and fibre connections, investment in fibre, wholesale broadband services, and business plan in the Hull area. Response received in four tranches on 22 October, 5 November, 6 November and 25 November 2015. Further information received on 12 November and 15 December 2015.
- A4.29 Notice of 18 December 2015 regarding investment in fibre. Response received in two tranches on 14 January and 21 January 2016.

⁵² Ofcom, 2017. *Wholesale Local Access Market Review – Promoting network competition in superfast and ultrafast broadband*. https://www.ofcom.org.uk/data/assets/pdf_file/0021/108381/consultation-wla-competition-superfast-ultrafast-broadband.pdf.

⁵³ <https://www.ofcom.org.uk/consultations-and-statements/category-2/wla-competition-superfast-ultrafast-broadband>.

⁵⁴ This list includes notices sent to Openreach.

- A4.30 Notice of 6 April 2016 regarding SOR requests. Response received on 27 April 2016.
- A4.31 Notice of 2 June 2016 regarding fibre expenditure. Response received in two tranches on 16 June and 23 June 2016.
- A4.32 Notice of 5 July 2016 regarding BDUK contracts. Response received in two tranches on 12 July and 19 July 2016.
- A4.33 Notice of 18 August 2016 regarding copper and fibre connections, time related charges, service volumes and NGA service costs and revenues. Response received in three tranches on 2 September, 8 September and 16 September 2016. Further information received on 17 October and 27 October 2016.
- A4.34 Notice of 25 August 2016 regarding pricing, take up and promotion of BT's products. Response received in three tranches on 16 September, 23 September and 30 September 2016.
- A4.35 Notice of 8 August 2017 regarding fibre investment. Response received in two tranches on 22 August and 25 August 2017.
- A4.36 Notice of 16 August 2017 regarding broadband take-up, pricing and switching. Response received in two tranches on 18 September and 29 September 2017.
- A4.37 Notice of 5 October 2017 regarding SoR requests. Response received in two tranches on 26 October and 3 November 2017.
- A4.38 Notice of 10 January 2018 regarding fibre investment returns. Response received on 29 January 2018.
- A4.39 Notice of 31 January 2018 regarding Openreach's fibre business case. Response received 7 February 2018.

Notices addressed to and responses received from CityFibre

- A4.40 Notice of 5 February 2016 regarding network infrastructure. Response received in two tranches on 5 March and 12 May 2016.

Notices addressed to and responses received from Connexin

- A4.41 Notice of 17 November 2017 regarding pricing information, customer figures, quality of service and switching. Response received on 28 November 2017.

Notices addressed to and received from Daisy Telecoms Limited (Daisy)

- A4.42 Notice of 14 August 2017 regarding take-up, pricing and switching of broadband products. Response received on 4 September 2017.

Notices addressed to and responses received from EE Limited (EE)

- A4.43 Notice of 16 August 2017 regarding broadband take-up, pricing and switching. Response received in three tranches on 14 September, 18 September and 19 September 2017.

A4.44 Notice of 7 September 2017 regarding EE's 4GEE Wi-Fi service. Response received 28 September 2017.

Notices addressed to and responses received from KCOM Group plc (KCOM)

A4.45 Notice of 23 October 2015 regarding KCOM broadband services both within and outside of the Hull area. Response received on 16 November 2015.

A4.46 Notice of 19 August 2016 regarding broadband services in the Hull area. Response received on 13 September 2016.

Notices addressed to and responses received from Plusnet plc (Plusnet)

A4.47 Notice of 16 August 2017 regarding broadband take-up, pricing and switching. Response received on 14 September 2017.

Notices addressed to and responses received from Pure Broadband

A4.48 Notice of 17 November 2017 regarding pricing information, customer figures, quality of service and switching. Response received on 20 December 2017.

Notices addressed to and responses received from Sky

A4.49 Notice of 5 November 2015 regarding copper and fibre connections, wholesale and retail broadband services, and broadband in the Hull area. Response received in two tranches on 27 November and 4 December 2015.

A4.50 Notice of 14 August 2017 regarding take-up, pricing and switching of broadband products. Response received on 5 September 2017.

Notices addressed to and responses received from TalkTalk

A4.51 Notice of 19 October 2015 regarding copper and fibre connections, wholesale and retail broadband services, and broadband in the Hull area. Response received on 17 November 2015. Further information received from TalkTalk on 11 December and 21 December 2015.

A4.52 Notice of 14 August 2017 regarding take-up, pricing and switching of broadband products. Response received on 5 September 2017.

Notices addressed to and responses received from Three

A4.53 Notice of 18 August 2017 regarding marketing, broadband products, and fixed wireless access. Response received in two tranches on 1 September and 8 September 2017.

A4.54 Notice of 6 November 2017 regarding fixed wireless access. Response received on 16 November 2017.

Notices addressed to and responses received from Virgin Media

A4.55 Notice of 16 October 2015 regarding cable connections and retail broadband services. Response received in two tranches on 2 November and 17 November 2015.

- A4.56 Notice of 24 March 2016 regarding network expansion. Response received on 25 April 2016.
- A4.57 Notice of 16 August 2017 regarding superfast broadband prices and data regarding internal and external upgrades and downgrades. Response received on 8 September 2017.
- A4.58 Notice of 16 August 2017 regarding the effect of VULA regulation on network expansion. Response received on 5 September 2017.

Notices addressed to and responses received from Vodafone

- A4.59 Notice of 14 October 2015 regarding copper and fibre connections, wholesale and retail broadband services, and broadband in the Hull area. Response received on 16 November 2015.
- A4.60 Notice of 14 August 2017 regarding take-up, pricing and switching of broadband products. Response received on 5 September 2017.

Volume 2 and relevant annexes

Notices addressed to and responses received from BT Group

Notices addressed to and responses received from BT

- A4.61 Notice of 7 January 2016 regarding cabinet data and WBA revenues. Response received in three tranches on 28 January, 29 January and 9 February 2016.
- A4.62 Notice of 23 March 2016 regarding volumes. Response received on 27 April 2016.
- A4.63 Notice of 18 August 2016 regarding volumes. Response received in two tranches on 9 September and 7 November 2016.
- A4.64 Notice of 22 September 2017 regarding busy hours. Response received on 23 October 2017.
- A4.65 Notice of 16 January 2018 regarding volumes. Response received on 1 February 2018.

Notices addressed to and responses received from Openreach

- A4.66 1st notice of 11 November 2015 regarding volumes. Response received in five tranches on 3 December and 4 December 2015, and 21 January, 27 February and 26 October 2016.
- A4.67 3rd notice of 29 January 2016 regarding 2014-15 base year data. Response received on 19 February 2016.
- A4.68 5th notice of 27 April 2016 regarding RFS cost adjustments. Response received on 12 May 2016.
- A4.69 6th notice of 20 May 2016 regarding FTTC rollout. Response received in eleven tranches on 13 June, 16 June, 24 June, 27 June, 1 July, 20 July, 29 July, 5 August, 19 August, 31 August and 8 September 2016.

- A4.70 7th notice of 25 May 2016 regarding efficiency and fibre product data. Response received in eleven tranches on 17 June, 24 June, 29 June, 1 July, 22 July, 25 July, 29 July, 5 August, 12 August, 1 September and 16 September 2016.
- A4.71 8th notice of 10 June 2016 regarding fibre costs. Response received in five tranches on 17 June, 4 July, 7 July, 18 July and 5 August 2016.
- A4.72 9th notice of 29 June 2016 regarding QoS engineering costs. Response received in four tranches on 13 July, 18 July, 28 July and 5 August 2016.
- A4.73 10th notice of 23 June 2016 regarding RTU licence costs. Response received on 15 July 2016.
- A4.74 11th notice of 25 July 2016 regarding fibre costs. Response received in two tranches on 8 August 2016.
- A4.75 12th notice of 29 July 2016 regarding copper recovery. Response received in eight tranches on 12 August, 18 August, 25 August, 26 September, 14 October, 16 November and 2 December 2016, and 13 January 2017.
- A4.76 14th notice of 30 August 2016 regarding fibre costs. Response received in ten tranches on 6 September, 13 September, 20 September, 27 September, 29 September, 30 September, 10 October, 13 October, 17 October and 27 October 2016.
- A4.77 15th notice of 25 August 2016 regarding the charge control notification. Response received in four tranches on 16 September, 21 September, 30 September and 4 October 2016.
- A4.78 18th notice of 1 November 2016 regarding copper recovery. Response received in two tranches on 15 November and 29 November 2016
- A4.79 19th notice of 2 November 2016 regarding 2015-16 base data. Response received in nine tranches on 17 November, 21 November, 23 November, 25 November, 28 November, 30 November, 9 December and 30 December 2016, and 26 January 2017.
- A4.80 20th notice of 2 November 2016 regarding efficiency and Cumulo. Response received in 15 tranches on 17 November, 25 November, 30 November, 2 December, 7 December, 9 December, 15 December, 16 December, 20 December and 22 December 2016, and 3 January, 16 January, 18 January, 27 January and 31 January 2017.
- A4.81 22nd notice of 8 December 2016 regarding Cumulo. Response received on 20 December 2016.
- A4.82 23rd notice of 5 January 2017 regarding sales of copper. Response received in three tranches on 13 January, 19 January and 27 January 2017.
- A4.83 24th notice of 8 February 2017 regarding calibration for bottom-up NGA model. Response received in three tranches on 10 February, 20 February and 24 February 2017.
- A4.84 25th notice of 23 February 2017 regarding GEA Optimisation and Repair services. Response received on 6 March 2017.
- A4.85 26th notice of 17 May 2017 regarding efficiency and Cumulo. Response received in two tranches on 31 May and 6 June 2017.

- A4.86 27th notice of 15 June 2017 regarding fibre volumes, GEA optimisation and ISDN fault rates. Response received in five tranches on 6 July, 13 July, 14 July, 15 August and 25 August 2017.
- A4.87 28th notice of 6 July 2017 regarding cost of capital. Response received in three tranches on 3 August, 23 October and 2 November 2017.
- A4.88 29th notice of 31 July 2017 regarding efficiency. Response received in four tranches on 9 August, 18 August, 7 September and 15 September 2017.
- A4.89 31st notice of 17 July 2017 regarding universal broadband coverage (UBC). Response received on 20 July 2017.
- A4.90 32nd notice of 31 July 2017 regarding tie cables. Notice reissued on 14 August 2017. Response received in three tranches on 14 August, 18 August and 28 November 2017.
- A4.91 33rd notice of 31 July 2017 regarding UBC. Response received on 4 August 2017.
- A4.92 34th notice of 16 August 2017 regarding base year data. Response received in twelve tranches on 8 September, 13 September, 27 September, 28 September, 3 October, 4 October, 3 November and 6 November 2017, and 9 January, 23 January, 31 January and 6 February 2018.
- A4.93 35th notice of 17 August 2017 regarding charge control design, pensions and cost of capital. Response received in six tranches on 24 August, 29 August, 1 September, 5 September, 11 September and 20 September 2017.
- A4.94 36th notice of 18 September 2017 regarding NGA Business Case. Response received in six tranches on 2 October, 4 October, 16 October, 18 October, 23 October and 11 December 2017.
- A4.95 38th notice of 9 September 2017 regarding bottom-up model data. Response received in four tranches on 3 October, 17 October and 5 December 2017, and 29 January 2018.
- A4.96 40th notice of 27 October 2017 regarding Cablelink. Response received in two tranches on 10 November and 17 November 2017.
- A4.97 41st notice of 3 November 2017 regarding copper extraction and sales of property. Response received on 17 November 2017.
- A4.98 42nd notice of 7 December 2017 regarding NGA business case. Response received in four tranches on 8 December and 22 December 2017, and 3 January and 5 January 2018.
- A4.99 43rd notice of 14 December 2017 regarding forecasting, operating costs, efficiency, quality of service, copper tonnages, GEA Cablelink and software services. Response received in three tranches on 4 January, 9 January and 7 February 2018.
- A4.100 44th notice of 18 December 2017 regarding volumes, co-mingling, engineering costs, TRCs and SFIs. Response received in three tranches on 5 January, 9 January and 17 January 2018. Further information received on 26 January 2018.
- A4.101 45th notice of 9 January 2018 regarding pensions, restructuring, co-mingling and NGA business case. Response received in four tranches on 17 January, 19 January, 23 January

and 26 January 2018. Further information received on 30 January, 1 February and 2 February 2018.

- A4.102 46th notice of 19 January 2018 regarding Cumulo and tie cables. Response received in two tranches on 23 January and 1 February 2018. Further information received on 9 February 2018.
- A4.103 47th notice of 6 February 2018 regarding FTTP. Response received in two tranches on 9 February and 12 February 2018.
- A4.104 48th notice of 12 February 2018 regarding FTTP. Response received on 14 February 2018.
- A4.105 49th notice of 15 February 2018 regarding TRCs and SFIs. Response received on 16 February 2018.
- A4.106 50th notice of 16 February 2018 regarding pensions. Response received on 20 February 2018.

Notices addressed to and responses received from CityFibre

- A4.107 Notice of 8 November 2017 regarding volumes. Response received on 1 December 2017.

Notices addressed to and responses received from Daisy

- A4.108 Notice of 15 March 2016 regarding volumes. Response received on 14 April 2016.
- A4.109 Notice of 4 August 2016 regarding volumes. Response received on 23 August 2016.

Notices addressed to and responses received from EE

- A4.110 Notice of 15 March 2016 regarding volumes. Response received on 12 April 2016.
- A4.111 Notice of 18 August 2016 regarding volumes. Response received on 8 September 2016.
- A4.112 Notice of 6 February 2018 regarding volumes. Response received on 15 February 2018.

Notices addressed to and responses received from Fujitsu Limited

- A4.113 Notice of 15 March 2016 regarding volumes. Response received on 14 April 2016.
- A4.114 Notice of 4 August 2016 regarding volumes. Response received on 19 August 2016.

Notices addressed to and responses received from Gigaclear

- A4.115 Notice of 8 November 2017 regarding volumes. Response received on 22 November 2017. Further information received on 5 January and 9 January 2018.

Notices addressed to and responses received from Hyperoptic

- A4.116 Notice of 8 November 2017 regarding volumes. Response received in two tranches on 7 December 2017 and 10 January 2018.

Notices addressed to and responses received from KCOM

- A4.117 Notice of 5 August 2016 regarding fibre costs. Response received on 24 August 2016.
- A4.118 Notice of 9 September 2016 regarding fibre costs. Response received on 14 September 2016.

Notices addressed to and responses received from Plusnet

- A4.119 Notice of 15 March 2016 regarding volumes. Response received on 14 April 2016.
- A4.120 Notice of 4 August 2016 regarding volumes. Response received on 25 August 2016.
- A4.121 Notice of 11 January 2018 regarding volumes. Response received on 19 January 2018.

Notices addressed to and responses received from Sky

- A4.122 Notice of 24 March 2016 regarding volumes. Response received on 25 April 2016.
- A4.123 Notice of 5 August 2016 regarding fibre costs. Response received in three tranches on 18 August, 23 August and 1 September 2016.
- A4.124 Notice of 18 October 2017 regarding busy hours. Response received on 6 November 2017.
- A4.125 Notice of 9 January 2018 regarding volumes. Notice reissued on 16 January 2018. Response received in two tranches on 23 January and 31 January 2018.

Notices addressed to and responses received from SSE

- A4.126 Notice of 15 March 2016 regarding volumes. Response received on 14 April 2016.
- A4.127 Notice of 4 August 2016 regarding volumes. Response received on 18 August 2016

Notices addressed to and responses received from TalkTalk

- A4.128 Notice of 24 March 2016 regarding volumes. Response received on 25 April 2016.
- A4.129 Notice of 28 September 2016 regarding fibre costs. Response received on 19 October 2016.
- A4.130 Notice of 4 September 2017 regarding managed install and abortive visit charges. Response received on 11 September 2017.
- A4.131 Notice of 18 October 2017 regarding busy hours. Response received on 8 November 2017.
- A4.132 Notice of 8 November 2017 regarding volumes. Response received in two tranches on 29 November and 1 December 2017.
- A4.133 Notice of 20 December 2017 regarding volumes. Notice reissued on 12 January 2018. Response received in two tranches on 4 January and 23 January 2018.

Notice addressed to and responses received from Virgin Media

- A4.134 Notice of 7 February 2017 regarding volumes. Response received on 2 March 2017.
- A4.135 Notice of 31 July 2017 regarding volumes. Response received on 9 August 2017.

A4.136 Notice of 21 December 2017 regarding Project Lightning. Response received on 17 January 2018.

A4.137 Notice of 16 January 2018 regarding volumes. Response received on 31 January 2018.

Notices addressed to and responses received from Vodafone

A4.138 Notice of 15 March 2016 regarding volumes. Response received on 1 April 2016.

A4.139 Notice of 4 August 2016 regarding volumes. Response received on 25 August 2016.

A4.140 Notice of 8 November 2017 regarding volumes. Response received on 21 November 2017.

A4.141 Notice of 12 January 2018 regarding volumes. Response received on 25 January 2018.

Volume 3 and related annexes

Notices addressed to and responses received from CityFibre

A4.142 Notice of 7 March 2017 regarding cost savings from broadened usage. Response received on 21 March 2017.

A4.143 Notice of 9 October 2017 regarding Southend infrastructure adjustments. Response received on 23 October 2017.

A4.144 Notice of 12 January 2018 regarding modelling. Response received on 29 January 2018.

Notices addressed to and responses received from Flomatik

A4.145 Notice of 9 March 2017 regarding pole survey data. Response received on 13 March 2017.

Notices addressed to and responses received from Hyperoptic

A4.146 Notice of 8 March 2017 regarding duct survey and dark fibre. Response received on 29 March 2017.

Notices addressed to and responses received from Openreach

A4.147 Notice of 1 November 2016 regarding infrastructure discovery system Tool. Response received on 8 November 2016.

A4.148 Notice of 27 January 2017 regarding PIA cost model. Response received on 9 February 2017.

A4.149 Notice of 6 March 2017 regarding process, poles, systems and pricing. Response received in three tranches on 23 March, 30 March and 6 April 2017. Further information received on 11 July 2017.

A4.150 Notice of 12 June 2017 regarding pricing and costs associated with the PIA product. Response received on 26 June 2017.

A4.151 Notice of 16 June 2017 regarding pricing and costs associated with the PIA product. Response received in three tranches on 30 June, 3 July and 7 July 2017.

- A4.152 Notice of 7 July 2017 regarding PIA productisation ancillary activity charges. Response received on 14 July 2017.
- A4.153 Notice of 12 October 2017 pricing, costs and usage compliance associated with the PIA product. Response received in two tranches on 26 October and 2 November 2017.
- A4.154 Notice of 23 October 2017 regarding lead-in and blockage data. Response received on 6 November 2017.
- A4.155 Notice of 30 November 2017 regarding ducted lead-ins and pole lead-ins. Response received on in two tranches on 12 December and 21 December 2017.
- A4.156 Notice of 30 November 2017 regarding duct blockages, poles, pricing and maps. Response received on 21 December 2017.
- A4.157 Notice of 21 December 2017 regarding ducted lead-ins and pole lead-ins. Response received in two tranches on 15 January and 22 January 2018
- A4.158 Notice of 7 February 2018 regarding ducted lead-ins and pole lead-ins. Response received on 12 February 2018.

Notices addressed to and responses received from TalkTalk

- A4.159 Notice of 8 March 2017 regarding pole survey data. Response received on 21 March 2017.
- A4.160 Notice of 4 December 2017 regarding York deployment. Response received on 12 December 2017.

Notices addressed to and responses received from Vodafone

- A4.161 Notice of 8 March 2017 regarding modelling. Response received on 15 March 2017.
- A4.162 Notice of 22 January 2018 regarding modelling. Response received on 29 January 2018.

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- A4.164 Ofcom, December 2016. *Wholesale Local Access Market Review – Initial Proposals to develop and effective PIA remedy.*
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- A4.165 Ofcom, March 2017. *Wholesale Local Access Market Review – Consultation on the proposed market, market power determinations and remedies.*
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- A4.167 Ofcom, August 2017. *Wholesale Local Access Market Review – Recovering the costs of investment in network expansion*. https://www.ofcom.org.uk/_data/assets/pdf_file/0022/105682/Recovering-the-costs-of-investment-in-network-expansion.pdf.
- A4.168 Ofcom, August 2017. *WLA Market Review – Consultation on pricing proposals for Duct and Pole Access remedies*. https://www.ofcom.org.uk/_data/assets/pdf_file/0019/105427/consultation-dpa-pricing.pdf.
- A4.169 Ofcom, September 2017. *Wholesale Local Access Market Review – Further consultation on proposed charge control for wholesale standard and superfast broadband*. https://www.ofcom.org.uk/_data/assets/pdf_file/0023/106448/Proposed-charge-control-for-wholesale-standard-and-superfast-broadband.pdf.
- A4.170 Ofcom, November 2017. *Regulatory Financial Reporting – Consultation on proposed directions to BT arising from the Wholesale Local Access and Wholesale Broadband Access market reviews*. https://www.ofcom.org.uk/_data/assets/pdf_file/0022/108166/Regulatory-financial-reporting.pdf.
- A4.171 Ofcom, December 2017. *Wholesale Local Access Market Review – Promoting network competition in superfast and ultrafast broadband*. https://www.ofcom.org.uk/_data/assets/pdf_file/0021/108381/consultation-wla-competition-superfast-ultrafast-broadband.pdf.
- A4.172 Ofcom, 2017. *MPF Rental at Service Maintenance Level 1 – Proposed direction specifying the fair and reasonable charge that BT may apply for MPF Rental provided at SML1*. https://www.ofcom.org.uk/_data/assets/pdf_file/0031/99751/MPF-SML1-Rental-condoc.pdf.
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- A4.174 Ofcom, 2017. *Clarification to the WLA Market Review further consultation document of 14 September 2017*. https://www.ofcom.org.uk/_data/assets/pdf_file/0019/107434/WLA-market-review-consultation-clarification.pdf.

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- https://www.ofcom.org.uk/_data/assets/pdf_file/0021/53814/broadbandaccessreview.pdf.
- A4.176 Ofcom, 2004. *Review of the wholesale local access market – Explanatory statement and notification.*
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- A4.181 Ofcom, 2012. *Charge control review for LLU and WLR services – statement.*
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- A4.193 Ofcom, 2016. *Business Connectivity Market Review – Review of competition in the provision of leased lines – Statement.* <https://www.ofcom.org.uk/consultations-and-statements/category-1/business-connectivity-market-review-2016>.
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A5. Supporting evidence for market analysis

This annex sets out evidence in support of our market definition. It is split into two sections:

- analysis of demand for broadband services since the last WLA and WBA reviews; and
- analysis of shares of broadband enabled connections on a national basis and in cable areas.

We are intending to make more of this annex non-confidential for our final statement.

Analysis of demand for broadband services since the last WLA and WBA reviews

- A5.1 This annex presents analysis of demand for broadband services since the last WLA and Wholesale Broadband Access (WBA) reviews, and considers how it might develop over the period of this review (i.e. to 2020/21). It supplements our market analysis presented in Volume 1, Section 3 (market definition) and Section 4 (SMP assessment), and also provides some of the market context within which we have decided our VULA price regulation (Volume 1, Section 9).
- A5.2 As explained in Section 3, a range of downstream retail services are provided using local access connectivity (i.e. internet access, TV content services, voice). A hypothetical monopolist of a local access network could offer a variety of services over that connection to the end user's premises. These might be differentiated by the type of service (e.g. standalone telephony, dual-play offering telephony and internet access, or triple-play offering telephony, internet access and TV content services), by the features of the internet access service (e.g. speed, data allowance), or by the customer hardware provided as part of the package (e.g. the router or other equipment).
- A5.3 For the reasons explained in Section 3, our analysis of product market definition is centered on a focal product of copper/fibre connections at a fixed location, and considers the competitive constraints faced by a hypothetical monopolist of this product. However, for completeness and by way of addressing representations received from stakeholders on this matter, we have investigated whether starting with a more narrowly-defined focal product could result in the identification of narrower product markets.⁵⁵ This primarily involves assessing the degree of substitutability between retail packages of standard broadband (SBB)⁵⁶ and superfast broadband (SFBB).⁵⁷ We also assess what the available evidence tells us about substitutability between SFBB services of different speeds.
- A5.4 Separately, we set out our analysis of potential switching away from packages of fixed broadband to broadband services over other access networks, as discussed in Section 3.

March 2017 WLA Consultation position and stakeholder responses

- A5.5 In the March 2017 WLA Consultation, we assessed a range of evidence regarding substitutability between SBB and SFBB. We provisionally concluded that while SFBB is likely to be a stronger constraint on SBB during the review period, SBB is likely to exert a diminishing constraint on SFBB.⁵⁸

⁵⁵ In any event, as we explain in Section 4, our market power assessment is not sensitive to a narrower product market centred on internet access speeds.

⁵⁶ Broadband services with download speeds up to 30 Mbit/s.

⁵⁷ Broadband services providing a minimum 30 Mbit/s download speed.

⁵⁸ March 2017 WLA Consultation, paragraph 3.46.

- A5.6 Furthermore, we anticipated that there will be fairly strong substitutability between SFBB services of different speeds, in the period of this review. We noted in particular BT’s internal documents suggesting customers seem to be sensitive to pricing, and that volume forecasts suggest limited demand for speeds above 40 Mbit/s.⁵⁹
- A5.7 Several stakeholders submitted responses regarding the substitutability between different broadband speeds, in response to our March 2017 WLA and June 2017 WBA Consultations. These are summarised in paragraphs 3.23 to 3.29 (in relation to substitutability between SBB and SFBB), and paragraphs 9.57 to 9.67 (in relation to substitutability between SFBB services of different speeds) of Volume 1.

Revised assessment

- A5.8 As explained in Section 3 and Annex 2, the analytical framework for assessing demand-side substitution for the purposes of market definition involves undertaking the hypothetical monopolist test (HMT). We have used this framework for our revised assessment of substitutability between different broadband speeds. We consider the following sources of evidence can be relevant to the application of the HMT⁶⁰:
- Analysis of switching in response to relative price changes, based on the results of a piece of consumer research we undertook into residential customers’ broadband demand (summer 2017 consumer research⁶¹). We have also compared respondents’ switching responses with an indicative critical loss analysis, to assess the potential profitability of an increase in the price of a given broadband speed.⁶²
 - Updated analysis of the price differentials between different broadband speeds since 2014, compared with wholesale charges over the same period;⁶³
 - How internet usage trends have evolved and the implications for broadband speeds demand, as well as relevant internal documents from providers pertaining to demand for different broadband speeds;⁶⁴ and
 - Updated evidence on consumers’ propensity to downgrade their broadband speed.
- A5.9 For each of these factors, we have taken account of relevant arguments and evidence presented by stakeholders, as well as new evidence gathered since our March 2017 WLA Consultation. We respond to detailed stakeholder arguments, where relevant, when presenting our revised assessments of each factor.
- A5.10 Having assessed these arguments and the evidence in the round, we find that retail packages offering SFBB at a fixed location are likely to constrain the pricing of packages offering SBB at a fixed location. We also consider that retail packages offering SBB would

⁵⁹ March 2017 Consultation, paragraphs 3.47-3.52 and 8.41-8.43.

⁶⁰ We have had regard to relevant sources of evidence outlined in the OFT’s market definition guidelines. See paragraph 3.7, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284423/oft403.pdf

⁶¹ This will be published alongside our final statement.

⁶² See bullet (ii) of OFT market definition guidelines relating to customer interviews, and bullet (vii) relating to critical loss analysis.

⁶³ See bullet (v) of OFT market definition guidelines relating to patterns in price changes.

⁶⁴ See bullet (i) relating to undertakings’ commercial strategies.

be likely to constrain packages offering SFBB based on the available evidence today. However, these constraints appear to be asymmetric in that demand-side substitution from SBB to SFBB would appear greater than from SFBB to SBB, and could diminish in later periods, for example, if migration to SFBB is accompanied by a greater attachment to SFBB.

- A5.11 We also find that “basic” (i.e. around 40 Mbit/s) SFBB packages are likely to provide a constraint on price increases for faster speeds.

Analysis of switching in response to relative price changes

- A5.12 We have estimated by how much the sales of a hypothetical monopolist for particular broadband speeds would have to fall, in order to make a SSNIP unprofitable. The SSNIP, which is generally assumed to be between 5% and 10%, has two opposing effects on a hypothetical monopolist’s profits: a negative profit effect from lower sales, as some consumers will substitute to other products (including other fixed broadband speeds) in response to the price increase; and a positive effect from higher margins on all remaining sales. The monopolist’s “critical loss” threshold is the volume of lost sales that would balance these two effects, such that its profits would be unaffected by a SSNIP.
- A5.13 If the projected loss in sales is lower than this threshold, this suggests that a SSNIP would be profitable. On the other hand, if projected losses exceed the threshold, the SSNIP will be unprofitable and the focal product set is expanded to include the nearest substitute(s), e.g. fixed broadband services of other speeds.
- A5.14 We have not always conducted critical loss analysis in previous market reviews. An analysis of this nature requires reliable information on gross margins and likely demand responses, which is not always available, and the results are often sensitive to the specific assumptions used to estimate these parameters. For instance, in the 2014 Fixed Access Market Review, we said that it is not necessary or appropriate to carry out a quantitative critical loss analysis for the purposes of defining the WLA market under the telecoms framework (and in particular to assess the indirect constraints from cable-based wholesale local access),⁶⁵ partly due to the insufficiency of suitable data. However, we said that this view does not preclude us from carrying out a critical loss analysis where we consider it appropriate to do so and where sufficient data is available.
- A5.15 We also note that the hypothetical monopolist test (HMT) is not designed to capture all the factors that are relevant to the actual pricing decisions that telecoms providers such as BT face. A particular abstraction is the assumption that the hypothetical monopolist is solely active in the supply of the focal product – here, one broadband speed or a subset of broadband speeds – and is not active in the supply of the possible substitute products. However, in practice BT supplies all of the main broadband speeds, as did (and still could) the main other vertically integrated provider of (retail) local access services, Virgin Media. This means that the pricing decisions of the hypothetical monopolist envisaged in a

⁶⁵ Ofcom, 2014. *Fixed Access Market Reviews – Statement*, paragraphs 7.49 to 7.53. https://www.ofcom.org.uk/_data/assets/pdf_file/0032/78863/volume1.pdf.

simplified framework of the SSNIP test will not be the same as those which a real-world supplier of broadband-enabled local access connections would make in practice.

- A5.16 Nevertheless, when considered alongside other sources of evidence, we consider that this exercise can still be used to inform our view on the likely strength of substitutability between different broadband speeds. As far as possible, we have taken account of the above considerations in our interpretation of the results.

Estimation of the critical loss threshold

- A5.17 The critical loss threshold is determined by a hypothetical monopolist's gross margin on the foregone sales that result from a SSNIP; the higher this margin, the bigger the profit impact resulting from a given loss of sales. In simple terms, the gross margin (M) is the difference between the price of a service (P), and the avoidable costs from not supplying that service (C), as a proportion of revenues: $M = (P - C) / P$. Critical loss is then calculated as $L = S / (S + M)$, where S is the hypothetical price increase and M is the gross margin (both expressed as a percentage).

Wholesale or retail SSNIP

- A5.18 In principle, our starting point for the SSNIP analysis is an assessment of whether a hypothetical monopolist at the wholesale level (an "upstream monopolist") could profitably impose a SSNIP over a set of broadband speeds. However, absent regulation of wholesale local access or broadband speeds provided over that connection, competition would be confined to vertically integrated networks. As such, we have considered the SSNIP test from the perspective of an both an upstream monopolist of broadband over local access connections, and also a vertically integrated monopolist.

Hypothetical price increase

- A5.19 EC guidelines provide that, in undertaking a SSNIP analysis, a 5-10% notional price increase is typically considered "small" and "significant". We have focused our analysis on a 10% SSNIP. Our summer 2017 consumer research (discussed in detail below) asked respondents about their likely response to both a 5% or 10% increase in retail prices. However, as set out in more detail below, the observed demand responses to a 5% or 10% price increase in our consumer survey are similar, particularly for SFBB. This means that, in this context, a 10% SSNIP is more likely to be profitable for a hypothetical monopolist than a 5% SSNIP.
- A5.20 For the upstream monopolist, we have assessed the profitability of a 10% SSNIP by using projected demand responses to a 5% increase in retail prices. This assumes full pass-through and a dilution rate of around 50% (from wholesale to retail price increases).⁶⁶

⁶⁶ Based on existing wholesale charges and retail prices, a 50% dilution rate is broadly accurate for SFBB. For SBB, a 10% SSNIP on wholesale prices (inclusive of VAT) with full pass-through is closer to a 3% retail price increase. However, this excludes the wholesale costs of providing any inclusive calls with the broadband package, yet the retail prices we have used sometimes involve an element of inclusive calls. It also excludes any wholesale ancillary fees, even though these may

Gross margin

A5.21 We have based our gross margin estimates for SBB and SFBB on the following considerations and data sources.⁶⁷

Relevant time period

A5.22 The EC's Notice on Market Definition is silent on the exact time horizon of a SSNIP, stating that additional products should be included if they would restrain sufficiently pricing "in the short term".⁶⁸ OFT guidance emphasises substitution within a year,⁶⁹ while FTC/DOJ guidelines refer to a two-year period over which substitution responses take place.⁷⁰

A5.23 In general, we consider that the most relevant time horizon is likely to be that which the hypothetical monopolist would consider when making its pricing decisions. We believe that a relevant reference point here is likely to be the duration of minimum broadband contract terms, as this is the period over which most demand responses might be expected to occur. Given that most broadband contracts tend to include a 12-month or 18-month minimum contract term, it therefore seems reasonable to assess substitution and profitability over a one-year to two-year time period.⁷¹

A5.24 However, we recognise that a hypothetical monopolist might have regard to the longer-term profitability impact of a SSNIP, for instance over the period of average broadband customer lifetimes (discussed below). As such, we have also considered the implications for likely profitability of assuming a longer time horizon.

Scope and nature of services

A5.25 We assume that a hypothetical monopolist supplies SBB services using WLR and SMPF, as this is what the largest provider (BT) predominantly uses, and because we have an understanding of the underlying costs of these inputs. We assume that it supplies SFBB services using WLR and GEA-FTTC, for much the same reasons.

A5.26 We note that several different bandwidths of SFBB services are available. As such, we have calculated a weighted average SFBB margin based on 2017/18 rental volumes for Openreach's current GEA-FTTC bandwidth variants (40/10, 55/10 and 80/20 lines).⁷² [X].

also be recovered through monthly retail charges (rather than exclusively through set-up or connection charges). Therefore, given the margin of error in the data analysis generally, we consider that a dilution rate of around 50% is a reasonable approximation in the circumstances.

⁶⁷ Our estimate of gross margins for faster SFBB services follow the same methodological approach.

⁶⁸ Paragraph 16, [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31997Y1209\(01\)](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31997Y1209(01)).

⁶⁹ Paragraph 3.6, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284423/oft403.pdf.

⁷⁰ <https://www.justice.gov/atr/horizontal-merger-guidelines-0#32>. More recent guidelines (2010) refer to entry being rapid enough to make unprofitable overall the actions causing those effects. See: <https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf>.

⁷¹ In the context of leased lines, the CAT's recent judgement in the appeal of Ofcom's BCMR (paragraphs 312-313) said that evidence on the duration and frequency of renewal of contracts appears relevant. See http://www.catribunal.org.uk/files/1260_BT_Judgment_CAT_25B_101117.pdf

⁷² We have combined 40/2 lines with 40/10 lines for the purpose of weighting GEA volumes because of significant migration away from 40/2 in 2017/18.

Wholesale prices

A5.27 We have used Openreach's list prices for WLR (£7.23 per month), SMPF (£0.21 per month) and GEA-FTTC (£7.40 per month for 40/10, £8.40 per month for 55/10, £9.95 per month for 80/20) rentals.⁷³

Retail prices

A5.28 We have estimated average monthly revenues for dual-play packages of SBB and SFBB, taking account of introductory discounts, across a five-year customer lifetime.⁷⁴ We have done so using Pure Pricing data for the three-month time period between July 2017 and September 2017⁷⁵, as this overlaps with the date of our summer 2017 consumer research (from which we derive the projected loss of sales). We also exclude VAT, as this does not form part of the hypothetical monopolist's gross margin.

A5.29 For SFBB, we have estimated revenues for retail packages offering 38 Mbit/s, 50-52 Mbit/s, and 76 Mbit/s (and higher) speeds respectively, on the basis that these are predominantly supplied using the GEA-FTTC rental variants described in paragraph A5.26 above.

Wholesale costs

A5.30 Wholesale costs are relevant for assessing both upstream and vertically integrated SSNIPs. Specifically, we are interested in the wholesale costs that would be avoided for the volume reduction and time period relevant to assessing the profitability of a 5-10% price increase.

A5.31 We have used information from BT to calculate the long-run incremental cost (LRIC) of the main wholesale services for providing local access connections for fixed broadband, as described above. However, the LRIC of these services is likely to overstate the costs per line that are truly avoidable. First, some LRIC cost components are likely to be fixed and sunk, even in the medium-term (for example, the cost of digging duct and installing copper or fibre is sunk, and even assets that can be re-purposed – such as accommodation – would require time and additional cost to do so). Second, the LRIC of a given service will contain some costs that are only incremental at the service level (i.e. they are incurred as long as there are some volumes for the service increment, so are invariant to a less than full reduction in volumes for this service).

A5.32 It is difficult to identify exactly which components of the LRIC of each service the hypothetical monopolist would be able to avoid, following a loss in sales. Most avoidable costs are likely to relate to the operating costs associated with the maintenance and repair of lines, i.e. the pay-related components of BT's LRICs of these services, although some

⁷³ <https://www.openreach.co.uk/orpg/home/products/pricing/loadPricing.do>. These exclude VAT.

⁷⁴ This is the representative average standard broadband customer lifetime for operators that purchase VULA from BT, that we used in our approach to calculating the VULA margin. See Ofcom, March 2015. *VULA Margin Statement*, paragraph 6.466. https://www.ofcom.org.uk/_data/assets/pdf_file/0015/72420/vula_margin_final_statement.pdf. We note BT's average customer lifetime is longer than 5 years. However, average monthly revenue is very similar whether assessed over five years or much longer horizons, so assuming a longer customer lifetime would not affect the results.

⁷⁵ This captures all broadband offers available online from the following telecoms providers: BT, EE, Plusnet, Sky, TalkTalk, Virgin Media, and Vodafone.

pay-related costs (such as General Management overheads) are likely to be largely fixed with respect to volumes, particularly under a one to two-year time horizon. On the other hand, focusing exclusively on pay-related costs might exclude some non-pay opex costs which would be saved.⁷⁶

A5.33 We have therefore estimated a range for the avoided wholesale costs, as follows:

- No avoided wholesale costs i.e. all costs are fixed with respect to the likely volume reduction from a SSNIP. This is more consistent with a shorter time horizon and smaller volume reductions, but will likely understate avoided costs for longer time horizons.
- Pay-related components of BT's 2017/18 LRICs of these services, as well as other opex included within the GEA-FTTC LRIC ("pay and other opex"). We consider that these costs are more likely to be avoidable for a given volume reduction, in the short to medium term, but they may still include some non-avoidable costs;
- The full service LRIC for 2017/18 i.e. a reduction in volumes allows the hypothetical monopolist to avoid the full LRIC of the service, averaged over all lines on the network. For the reasons set out above, this is likely to overstate the true avoided costs following any reasonable estimate of the volume reduction following a SSNIP or the time horizon relevant for evaluating the profitability of a price increase.

Downstream costs

A5.34 Downstream costs are relevant for assessing a vertically integrated monopolist SSNIP. We have estimated average monthly downstream costs for SBB and SFBB using information obtained from BT on its ongoing downstream costs of supplying SFBB.⁷⁷ These costs are based on a LRIC+ standard and so include a contribution to fixed and common costs that would not be avoided if a portion of SFBB lines was lost. We have excluded the following items from the avoidable retail cost stack on the basis that a significant portion of these costs are likely to be fixed and sunk in the short to medium term: [X].

A5.35 We have not excluded downstream network costs (which relate to backhaul and the core network). To the extent that these costs are also somewhat fixed in the short to medium term, this would lead us to overstate the critical loss thresholds.

A5.36 We assume that the downstream costs incurred in the supply of SBB will be broadly similar to SFBB, though we have adjusted downstream network costs to reflect that average capacity per user will likely be lower for a SBB customer.⁷⁸

Gross margin estimates

A5.37 Figure A5.1 presents gross margins, and equivalent critical loss thresholds, for a 10% SSNIP over SBB and SFBB. We present results separately for a hypothetical upstream monopolist

⁷⁶ There could also be some asset replacement costs, or investment in additional capacity, that would be avoided under the assumption of a longer time horizon, though we consider these are likely to be small.

⁷⁷ This is provided by BT as part of its compliance with the *ex ante* VULA Margin condition. We have used data from July 2017 to September 2017, which overlaps with the period used to estimate retail revenues and projected volume loss.

⁷⁸ See March 2015 VULA Margin Statement, paragraph 6.174, Ofcom.

https://www.ofcom.org.uk/_data/assets/pdf_file/0015/72420/vula_margin_final_statement.pdf.

and vertically integrated monopolist. The critical loss thresholds are relatively low because the hypothetical monopolist’s gross margins are relatively high, which is to be expected in an industry with high fixed and sunk costs.

Figure A5.1: Gross margin and critical loss assumptions for a 10% SSNIP

Relevant margin	Avoided cost assumptions	SBB	SFBB
Upstream monopolist	No avoided wholesale costs		
	(Gross margin)	100%	100%
	(Critical loss threshold)	9%	9%
	Pay and other opex		
	(Gross margin)	[<]%	[<]%
	(Critical loss threshold)	[<]%	[<]%
	Full service upstream LRIC		
	(Gross margin)	[<]%	[<]%
	(Critical loss threshold)	[<]%	[<]%
	Vertically integrated monopolist	Downstream costs only	
(Gross margin)		[<]%	[<]%
(Critical loss threshold)		[<]%	[<]%
Pay and other opex & downstream costs			
(Gross margin)		[<]%	[<]%
(Critical loss threshold)		[<]%	[<]%
Full service LRIC & downstream costs			
(Gross margin)		[<]%	[<]%
(Critical loss threshold)		[<]%	[<]%

Estimation of projected loss in response to a SSNIP

- A5.38 We have projected volumes of lost sales, in response to a SSNIP, using the results of our summer 2017 consumer research. This research directly asked residential consumers⁷⁹ about their anticipated response to an increase in the price of different broadband services. However, the results should be interpreted with caution as they are based on stated responses from consumers to hypothetical scenarios. Some additional limitations of research of this kind are set out in our summary of results (published alongside the final statement).
- A5.39 As part of the research, we split SBB and SFBB respondents into two groups of roughly equal size, and asked them about their likely response to price increases which either reflected a 5% or a 10% increase in the average monthly dual-play broadband contract price.⁸⁰ Respondents were presented with the following options:
- Do nothing (i.e. stay on same service and pay the higher price)
 - Switch to a slower home broadband service (only for SFBB respondents)
 - Switch to a faster home broadband service
 - Give up your fixed broadband connection and switch to a satellite broadband connection
 - Give up your fixed broadband connection and use mobile internet only (e.g. 3G or 4G)
 - Give up the internet altogether
 - Other (please type in)
 - Don't know
- A5.40 Respondents were then asked how certain they were that they would take their chosen action. Finally, for those respondents who said they would switch to a different home broadband service, we asked them to what speed they would most likely move.
- A5.41 The overall proportions of respondents who said they would switch away from the focal product (i.e. projected loss) are summarised in Figures A5.2 and A5.3 below, along with our estimated critical loss thresholds. In calculating these projected loss figures:

⁷⁹ UK adults (aged 16+) who pay for or contribute to the bill for their household's fixed broadband service connection.

⁸⁰ The full summary of results sets out further details about our sample, as well as the questionnaire that respondents answered. We used £1 (5%) and £2.50 (10%) for SBB respondents. For SFBB respondents, we used £1.50 (5%) and £3 (10%) if the respondent took a 38 Mbit/s service, and £2.50 (5%) / £4 (10%) otherwise.

- a) We have only included respondents who were certain or very likely to take action (i.e. we have assumed anyone who said they were “fairly likely” to switch away from the focal product, or didn’t know how likely they would be to switch away, would not actually do so). This is because responses may be subject to inertia bias, which refers to a tendency for survey respondents to overstate their likelihood to take action. In the context of our survey, we consider that there are relevant barriers to taking action in the real world which may not have been fully considered by respondents e.g. effort needed to change broadband service, monetary switching costs (such as connection costs), or possible need to gain agreement from other household members. Focusing only on those who were certain or very likely to take action, following a hypothetical price increase, is one way of accounting for this potential bias.⁸¹
- b) For SFBB respondents, we have excluded respondents who said that they would switch to a faster home broadband service, as well as respondents who said that they would switch to a slower home broadband service that is nevertheless faster than 30 Mbit/s. This is because these options are captured within the focal product (SFBB).
- c) We have removed from the entire sample anyone who said they “Don’t know” what action they would take, and rebased all results. We consider that these respondents’ answers provide limited information about their actual course of action following a SSNIP. Rebased effectively assumes that these respondents will on average behave in the same way as other respondents.⁸²
- d) Furthermore, for SBB respondents, we have calculated a projected loss rate which rebases to remove respondents who previously stated that they are certain or very likely to upgrade their broadband service to SFBB in the next 12 months, absent a price increase. This is because (as set out in paragraph A5.94 below) our survey indicates that around 19% of SBB consumers are certain or very likely to switch to SFBB in the next 12 months, regardless of whether or not a SSNIP is imposed. On a forward looking basis, these consumers are therefore unlikely to fall within a focal product of SBB later into the market review period (i.e. beyond the first year).⁸³
- e) Finally, for an upstream monopolist, we have calculated projected loss rates for a 10% wholesale SSNIP based on a 5% retail price increase, as explained in paragraph A5.20. We note that projected losses to a 5% SSNIP are similar to (albeit lower than) those for a 10% SSNIP, particularly for SFBB.

⁸¹ The Competition Commission / Office of Fair Trading, 2011. *Good practice in the design and presentation of consumer survey evidence in merger inquiries*, paragraphs 3.27-3.28. <https://www.gov.uk/government/publications/mergers-consumer-survey-evidence-design-and-presentation>.

⁸² Respondents who didn’t know what action they would take might be more likely to do nothing, given the presence of inertia bias as discussed above. However, as we are already excluding those who were only fairly likely to take action from the net switching rate, we consider that treating “Don’t Know” respondents in the same way would be unduly conservative.

⁸³ Only six SFBB respondents said that they were certain or very likely to migrate downwards to SBB in the next 12 months, so excluding these respondents from projected loss estimates for a SSNIP over SFBB would have negligible impact.

Figure A5.2: Critical loss and projected loss results for a 10% SSNIP over SBB

Relevant margin	Avoided cost assumptions	Critical loss threshold	Projected loss	
			All SBB respondents	Removing planned upgrades to SFBB
Upstream monopolist	No avoided wholesale costs	9%		
	Pay and other opex	[<]%	[<]%	[<]%
	Full service upstream LRIC	[<]%		
Vertically integrated monopolist	Downstream costs only	[<]%		
	Pay and other opex & downstream costs	[<]%	[<]%	[<]%
	Full service LRIC & downstream costs	[<]%		

Figure A5.3: Critical loss and projected loss results for a 10% SSNIP over SFBB

Relevant margin	Avoided cost assumptions	Critical loss threshold	Projected loss
Upstream monopolist	No avoided wholesale costs	9%	
	Pay and other opex	[<]%	[<]%
	Full service upstream LRIC	[<]%	
Vertically integrated monopolist	Downstream costs only	[<]%	
	Pay and other opex & downstream costs	[<]%	[<]%
	Full service LRIC & downstream costs	[<]%	

Implications

A5.42 [REDACTED].

A5.43 [REDACTED].

Avoided cost assumptions

A5.44 [REDACTED].

The effect of planned upgrades

A5.45 [REDACTED].

A5.46 [REDACTED].⁸⁴

A5.47 [REDACTED].⁸⁵

A5.48 While the precise magnitude of any impact is clearly uncertain, we consider that upgrades are likely to be somewhat price sensitive. Our summer 2017 consumer research found that price was an important reason behind respondents' decision not to upgrade to SFBB (see paragraph A5.96 below). Furthermore, a recent survey of the available literature on the cross-price elasticity of SFBB demand with respect to SBB prices found estimates ranging from 0.66-0.96 (at the lower end) to 3.2 at the upper end, with another estimate within this range (1.2).⁸⁶ Although we are in this context considering an increase in SFBB rather than SBB prices, these estimates are nevertheless consistent with a view that upgrading from SBB to SFBB is sensitive to relative prices, and therefore that an increase in SFBB prices relative to SBB could deter or delay future upgrades.

Use of current prices

A5.49 Current prices may not always be a good benchmark for the competitive level, either at the wholesale or the retail level. This issue is of potential relevance to a SSNIP over SFBB, where VULA prices are not currently subject to cost-based charge controls. It is likely to affect the analysis in two ways: first, it can produce lower critical loss thresholds, by increasing gross margins, and second, it can produce higher projected loss rates if respondents consider more alternatives to be viable substitutes at this elevated price level. The consequence of both impacts is to make a profitable SSNIP less likely than if it is applied to a lower starting price level, meaning that the use of current prices may lead to identifying too wide product markets.

A5.50 We have explored the likely magnitude of the first impact by calculating the impact on critical loss thresholds if the price of all VULA services was equal to our estimate of cost, as

⁸⁴ [REDACTED]

⁸⁵ [REDACTED]

⁸⁶ See C. Cambini, 2015 *Economics aspects of migration to fibre and potential welfare gains and losses from an uplift to copper prices* (Paper Prepared for the New Zealand Commerce Commission).
<https://www.comcom.govt.nz/dmsdocument/13127>.

set out in Volume 2.⁸⁷ [redacted].⁸⁸ The impact on projected loss rates is more difficult to gauge, though we note that demand responses in our survey did not vary significantly between 5% and 10% price increases.

Summary

- A5.51 Based on the results of the consumer survey, it appears that the strength of constraints from demand-side switching between SBB and SFBB are asymmetric. Responses by SBB users to a SSNIP on SBB appear to be [redacted] those of SFBB users to a SSNIP on SFBB.
- A5.52 Nevertheless, for a SSNIP on SFBB, the critical loss analysis suggests that for a reasonable time horizon for considering avoided costs, substitution and planned upgrades, a SSNIP is likely to be unprofitable. However, this is sensitive to the assumed level of avoided costs, and if avoided costs were significantly higher than our preferred assumption, [redacted].

Different SFBB speeds

- A5.53 In its response to our March 2017 WLA Consultation, CityFibre referred to a chain of substitution between SBB and ultrafast products, and said these should be viewed as part of the same market from the point of view of regulation.⁸⁹ On the other hand, Openreach said we should consider excluding nascent ultrafast services from the WLA market definition (though not in the context of weakening price constraints from lower speeds).⁹⁰ Sky said the capacity of SFBB services (including 80/20 GEA) to constrain demand for ultrafast services should not be exaggerated.⁹¹
- A5.54 There are currently very few customers taking very high broadband speeds (e.g. 300 Mbit/s and above), so it is difficult to reliably test SSNIP responses for these services. However, future ultrafast customers are likely to be those who currently take higher SFBB bandwidths (i.e. 50 Mbit/s and above). Our survey therefore asked these respondents about their response to an increase in the price of these services. This allows us to test whether the constraint from SBB and basic SFBB speeds is likely to provide an effective constraint on higher speed services, and whether there might be a break in the chain of substitution between broadband speeds here.
- A5.55 In response to a 10% SSNIP on SFBB services at 50 Mbit/s and above, [redacted]
- A5.56 This is consistent with evidence from [redacted].⁹²

⁸⁷ We assume full pass-through i.e. the vertically integrated monopolist lowers retail prices by the same amount.

⁸⁸ [redacted]

⁸⁹ CityFibre response to March 2017 WLA Consultation, paragraph 4.1.23.

⁹⁰ Openreach response to March 2017 WLA Consultation, paragraph 104.

⁹¹ Sky response to March 2017 WLA Consultation, paragraph 50.

⁹² [redacted]

A5.57 Overall, this implies that if the product market analysis focused on faster broadband speeds, we would not further narrow the focal product used in the previous SSNIP (i.e. over all SFBB).

Figure A5.4: Critical loss and projected loss results for a 10% SSNIP over faster SFBB speeds

Relevant margin	Avoided cost assumptions	Critical loss threshold	Projected loss
Upstream monopolist	No avoided wholesale costs	9%	
	Pay and other opex	[<]%	[<]%
	Full service upstream LRIC	[<]%	
Vertically integrated monopolist	Downstream costs only	[<]%	
	Pay and other opex & downstream costs	[<]%	[<]%
	Full service LRIC & downstream costs	[<]%	

All fixed broadband

A5.58 We have also considered whether we can use a critical loss framework to assess the degree of substitutability between fixed broadband and other broadband access technologies.

A5.59 The gross margin associated with a SSNIP over all fixed broadband is a weighted average of gross margins for SBB and SFBB. [<].

A5.60 However, estimating the demand response to a fixed broadband SSNIP is more difficult, because we did not specifically ask respondents about their response to a SSNIP over all fixed broadband. Therefore, we have sought to infer a range for the likely response to a SSNIP over all fixed broadband services, based on two alternative assumptions:

- No reapportionment: All respondents who state that they would switch between SBB and SFBB, would remain on fixed broadband.
- Full reapportionment: Respondents who state that they would switch between SBB and SFBB are reapportioned across all the other options (including “Don’t Know”).

A5.61 The results of a 10% SSNIP over all fixed broadband lines are summarised in Figure A5.5.

Figure A5.5: Critical loss and projected loss results for a 10% SSNIP for all fixed broadband

Relevant margin	Avoided cost assumptions	Critical loss threshold	Projected loss	
			No reapportionment	Full reapportionment
Upstream monopolist	No avoided wholesale costs	9%	0% - 10%	0% - 10%
	Pay and other opex	[<]%	[<]%	[<]%
	Full service upstream LRIC	[<]%		
Vertically integrated monopolist	Downstream costs only	[<]%	0% - 10%	0% - 10%
	Pay and other opex & downstream costs	[<]%	[<]%	[<]%
	Full service LRIC & downstream costs	[<]%		

Figure A5.6: Breakdown of projected losses by alternatives to fixed broadband

		Mobile	Satellite	Give Up Internet	Other	Total
Percentage of respondents certain or very likely to switch to alternative technologies	Upstream monopolist	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-10% [<]%
	Vertically integrated monopolist	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-10% [<]%
<u>No reapportionment</u>						
Percentage of respondents certain or very likely to switch to alternative technologies	Upstream monopolist	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-10% [<]%
	Vertically integrated monopolist	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-5% [<]%	0%-10% [<]%
<u>Full reapportionment</u>						

A5.62 Figure A5.5 shows [redacted]. More generally, giving up fixed broadband would also typically involve giving up fixed line telephony and, for many consumers (i.e. those on triple-play tariffs), IPTV or cable-TV. In practice, therefore, such consumers would need to consider whether the prices for standalone TV or voice services were within their valuation of these as standalone (rather than bundled) services.

A5.63 The results indicate that a SSNIP over all fixed broadband is very likely to be profitable.

Price differentials

A5.64 Patterns in price changes for services potentially provide useful information on the substitutability of those services. For instance, two services showing the same pattern of price changes, for reasons not connected to costs or general price inflation, would be consistent with these services being close substitutes. Equally, price divergence over time, without significant levels of substitution, would be consistent with the two products being in separate markets.⁹³

SBB and SFBB

A5.65 In the March 2017 WLA Consultation, we said that there is on average a sizeable price premium between SBB and SFBB services and that this differential is likely to be growing overall.⁹⁴

A5.66 Both BT and Virgin Media disagreed that the price differential between SBB and SFBB has increased over time. BT submitted analysis of its own broadband prices and other providers' broadband prices, which it said showed that:⁹⁵

- the differential between the average market price for unlimited SBB and basic SFBB (i.e. up to 38 Mbit/s) fell from £[redacted] in June 2014 to under £[redacted] in April 2017; and
- BT's monthly price differential between its unlimited SBB (17 Mbit/s) and Infinity 1 SFBB products decreased from £[redacted] in June 2014 to £[redacted] in April 2017, while its non-promotional differential decreased from £[redacted] to £[redacted]. This is despite the Infinity 1 download speed increasing from 38 Mbit/s to 52 Mbit/s over this period.

A5.67 Virgin Media noted that, according to our analysis, Sky and TalkTalk's price differential had fallen over time. It also referred to evidence from Ofcom's 2017 Pricing Trends report which showed a falling price differential since 2008, and also since 2014.⁹⁶

A5.68 Our 2017 Pricing Trends report compared the cheapest available SBB and SFBB dual-play packages, so the characteristics of packages were not necessarily identical. Indeed, we noted that part of the reason for the declining price differential was the introduction of

⁹³ See paragraph 3.7 of the OFT's market definition guidelines.

⁹⁴ March 2017 WLA Consultation, paragraphs 3.41-3.43.

⁹⁵ BT response to the March 2017 WLA Consultation, paragraph 2.31 and Annex 2.

⁹⁶ Virgin Media response to the March 2017 WLA Consultation, paragraphs 65-68.

basic fibre packages with limited data allowances.⁹⁷ Nevertheless, in light of stakeholder responses, we have updated and expanded our analysis of the price differential between SBB and SFBB over time. To carry out this analysis, we have used data from Pure Pricing on retail prices for dual-play broadband packages offered online by BT, Virgin Media, EE, Vodafone, Sky, TalkTalk and Plusnet from January 2014 to October 2017.⁹⁸

- A5.69 To calculate price differentials, we have as far as possible followed the methodology that we used to calculate comparable monthly broadband prices in our 2014 WBA Statement.⁹⁹ This means that average prices include any promotional discounts. However, we have not included certain one-off charges (e.g. installation, kit and delivery) as this data was not available for the duration of our time period. We have also excluded any line rental saver payment options. Finally, we have used an average monthly price over the length of the minimum contract term of each package, rather than using a 24-month time horizon for all packages. While these adjustments may affect the level of prices, we consider that they are unlikely to materially alter the pattern of relative SBB and SFBB prices.
- A5.70 Figure A5.7 presents the price differential over time for the average of all SBB and SFBB package prices.¹⁰⁰ Average prices appear to track each other reasonably closely, with a correlation coefficient of 0.58.¹⁰¹ The differential remained broadly flat for much of the period, but declined during 2017 (mainly due to an increase in SBB prices) to £8.70 by October 2017. The October 2017 differential is slightly lower than Openreach's monthly charges for GEA 40/10 and 80/20 rentals (£8.88 and £11.94 respectively, inclusive of VAT),¹⁰² which suggests that the price differential has fallen below the wholesale charge differential having previously been at around the level of the differential.

⁹⁷ Ofcom, 2017. *Pricing trends for communications services in the UK*, pages 34-35.

https://www.ofcom.org.uk/_data/assets/pdf_file/0028/98605/Pricing-report-2017.pdf.

⁹⁸ Data was not available for May 2014 and July 2015. For these months, we have assumed that prices were equal to the preceding month.

⁹⁹ Ofcom, 2014. *Wholesale Broadband Access Market Review Final Statement*, paragraphs, A5.27-A5.33.

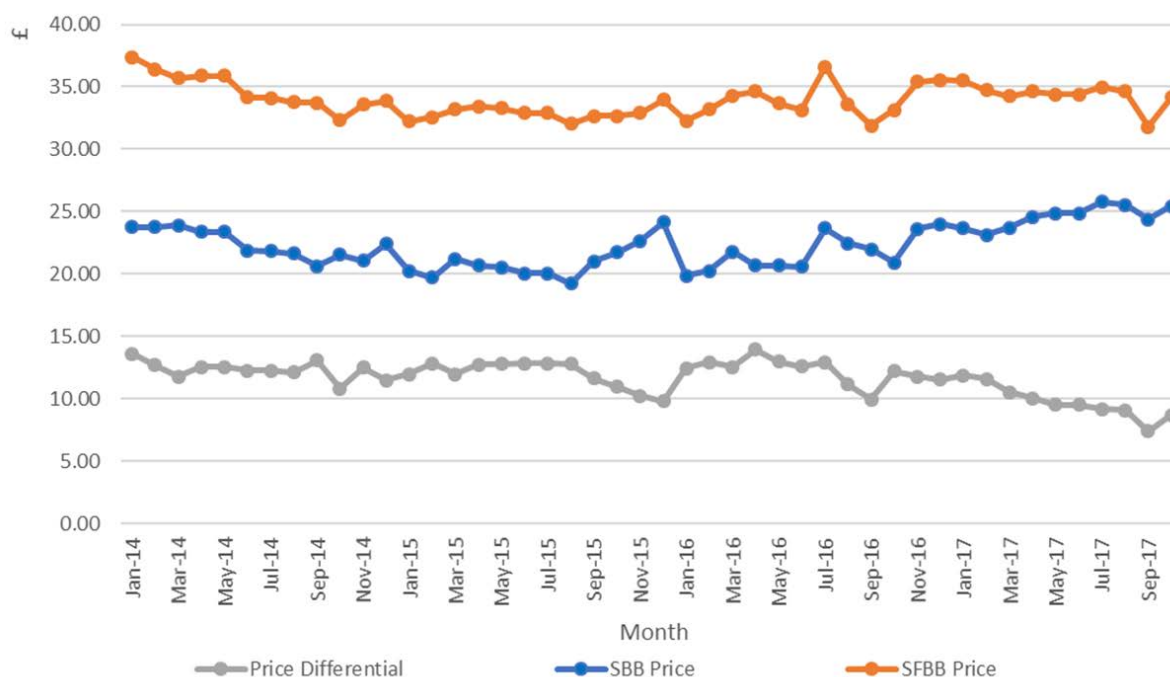
https://www.ofcom.org.uk/_data/assets/pdf_file/0027/63675/statement_annexes.pdf.

¹⁰⁰ This is calculated for each month by first calculating the average of all SBB (SFBB) packages offered by a telecoms provider, and then calculating the straight average of these average SBB (SFBB) prices. The price differential is the difference between these straight averages.

¹⁰¹ This is significant at the 1% level.

¹⁰² <https://www.openreach.co.uk/org/home/products/pricing/loadProductPriceDetails.do?data=0RlviN9gWGKtCdDGaQ8IFObCjmFDJOVDZEidKC%2F1wh1Z6rNZujnCs99NbIKJZPD9hXYmijxH6wrCQm97GZMyQ%3D%3D> (accessed 1 February 2018)

Figure A5.7: Average retail price differential (including VAT) for SBB and SFBB, January 2014 to October 2017



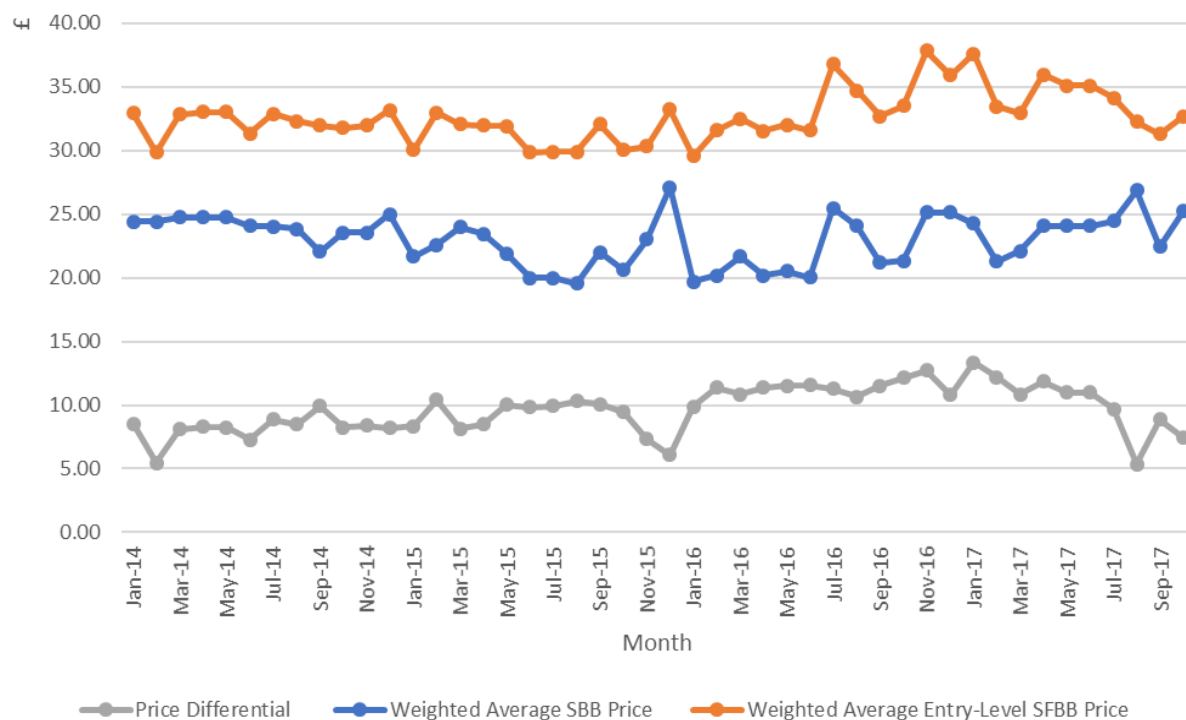
Source: Ofcom based on Pure Pricing data

A5.71 We have also calculated a share-weighted differential, which focuses exclusively on a comparison of the average price of SBB packages with unlimited data, against the average price of each telecoms provider's basic SFBB package (i.e. their cheapest dual-play package with unlimited data and a download speed equal to or exceeding 30 Mbit/s).¹⁰³ The share-weighted price differential shows no clear upwards or downwards trend over the three-year period, increasing slightly up to the end of 2016 before declining during 2017 such that the share-weighted differential in October 2017 (£7.42) is lower than the wholesale charge differential faced by a retail provider for the majority of basic SFBB packages, compared to SBB (£8.88 per month for GEA 40/10 rentals, inclusive of VAT). Furthermore, the correlation coefficient between prices remains fairly high at 0.56.¹⁰⁴

¹⁰³ We have weighted providers' prices according to their shares of SBB and, separately, SFBB. The available data on shares of connections at this level of granularity was only available for BT (including Plusnet connections), Sky, TalkTalk, EE and Virgin Media. As a result, we have excluded Vodafone and Plusnet prices. We have also assigned zero weight to Virgin Media for SBB prices, as they do not have a SBB product listed between January 2014 and October 2017.

¹⁰⁴ This is significant at the 1% level.

Figure A5.8: Average share-weighted retail price differential (including VAT) for SBB and SFBB, January 2014 to October 2017



Source: Ofcom based on Pure Pricing data; Ofcom/operator data

A5.72 Overall, our revised analysis of price differentials suggests that:

- a) There is reasonable correlation between average SBB and SFBB prices.
- b) While there remains a differential between average prices, this is to be expected when considering differentiated products. The differential has been broadly stable, although has fallen slightly over the last year and could now be below the difference in wholesale charges for SBB and SFBB.
- c) Furthermore, the size of the retail price differential (at around £5 to £10 per month) is not that large relative to a 10% retail SSNIP (at around £2.50 for SBB packages and £3-4 for SFBB packages). Consumers may be more likely to respond to a SSNIP by substituting from one product to another, than they would if the SSNIP was a small proportion of the differential between those products.

A5.73 We consider that these observations are consistent with there being a degree of substitutability between SBB and SFBB, such that the availability of SBB continues to exercise a constraint on SFBB prices.

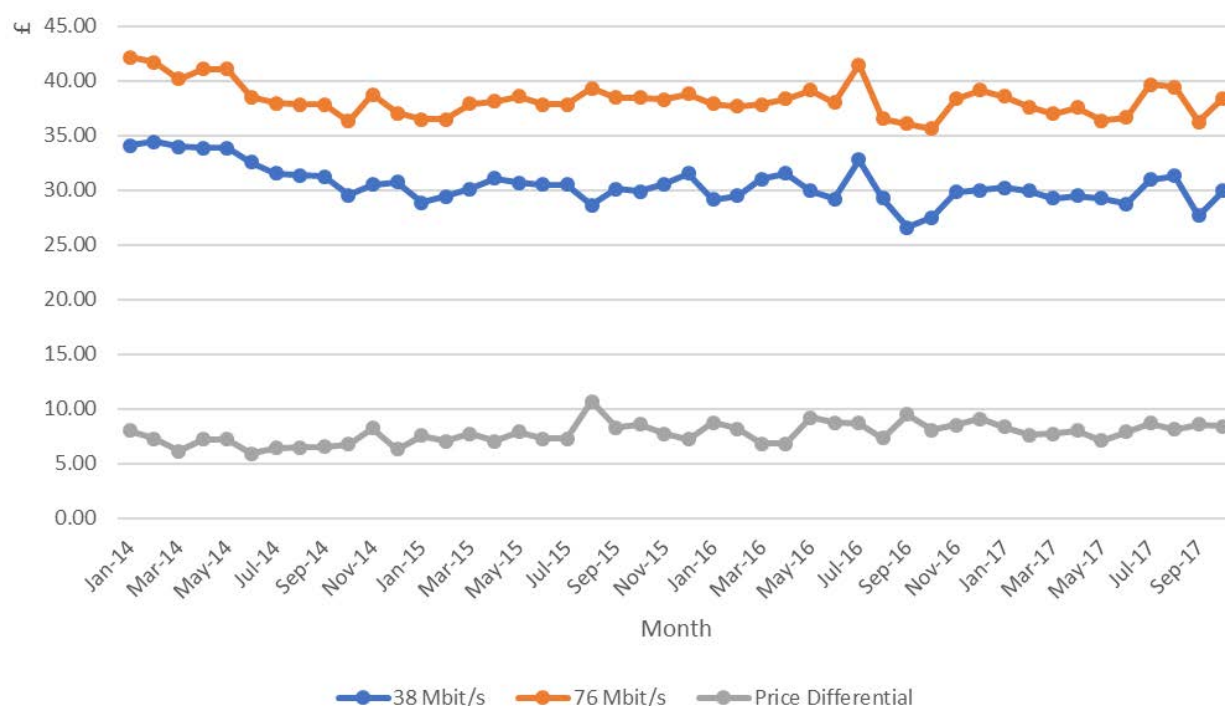
Different SFBB speeds

A5.74 We have also considered the price differential between SFBB services of different speeds. As set out in Figure A5.9, we find that average prices for 76 Mbit/s tracked 38 Mbit/s package prices more closely than for SBB and SFBB, with the two price series producing a

correlation coefficient of 0.83.¹⁰⁵ The price differential has remained broadly constant at around £8 on average with limited variation around this. However, this differential is higher than the wholesale charge differential (£3.06 per month, including VAT), in contrast to the differential between SBB and SFBB retail prices which is closer to the wholesale charge differential.

A5.75 We consider the price correlation for these different SFBB speeds is consistent with substitutability. The differential has remained broadly flat, suggesting little change in the strength of such substitutability over this period.

Figure A5.9: Average retail price differential (including VAT) for SFBB packages by speed, January 2014 to October 2017¹⁰⁶



Source: Ofcom based on Pure Pricing data

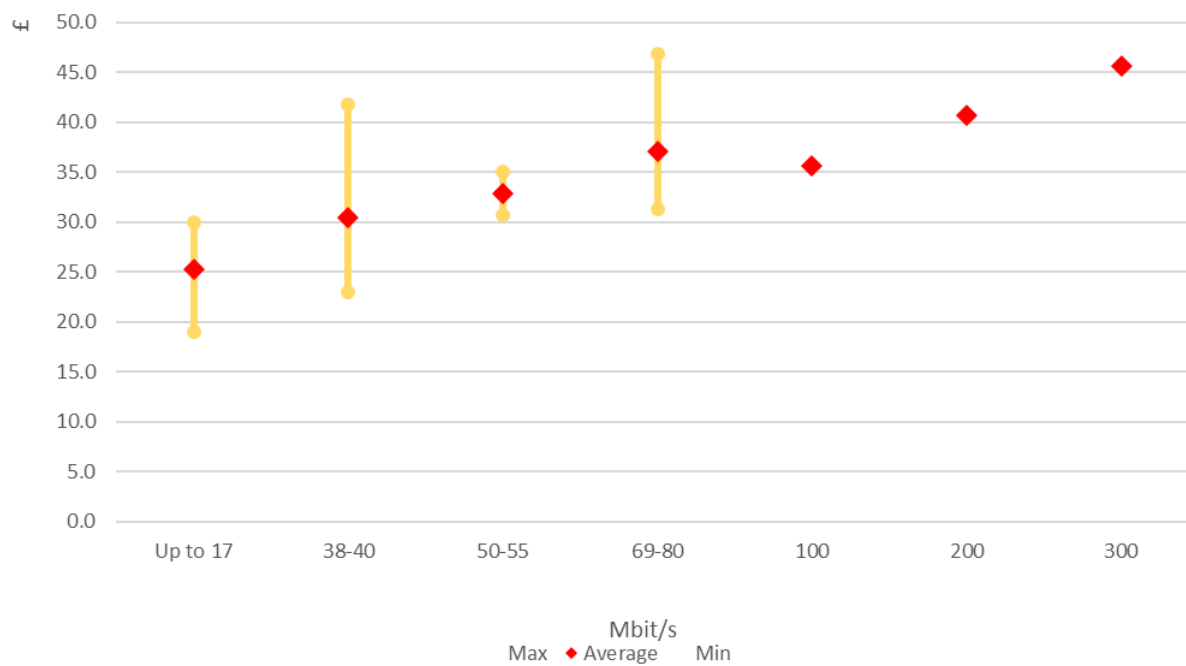
A5.76 Finally, we note that, while there are clearly price premia for faster speeds on average, there are nevertheless significant overlaps between different providers’ retail prices. As shown in Figure A5.10, the minimum price for each broadband speed is lower than the maximum price for the bandwidth immediately lower (up to 100 Mbit/s, after which we do not have a range of tariffs to compare). These overlapping price bands indicate that headline download speed is not the only package characteristic that is valued by customers i.e. that, for a given price, customers are prepared to trade off lower speeds for other broadband package features, such as a higher data allowance, call usage, perceived quality

¹⁰⁵ This is significant at the 1% level.

¹⁰⁶ This chart does not include any Virgin Media packages as they don’t offer 38 Mbit/s or 76 Mbit/s speeds. For a comparison of average prices for packages with any speed between 30 Mbit/s and 55 Mbit/s, against prices for packages with any speed between 56 Mbit/s and 100 Mbit/s, the price differential is also broadly constant. We have not calculated a share-weighted differential as we do not have reliable data on shares of each speed category for the whole period.

of service, etc. It also suggests that some consumers have had the opportunity to upgrade their broadband speed at no extra price by switching packages. These factors make it more likely that an increase in the price of broadband services of a given speed would trigger a demand response at the retail level.

Figure A5.10: Distribution of retail prices for broadband packages by speed, October 2017



Source: Ofcom based on Pure Pricing data

Usage trends and implications for demand

A5.77 Evidence of migration between retail packages offering different broadband speeds can provide an indication of the relative substitutability of these services in response to a SSNIP, if accompanied by changes in relative prices. For example, if there was an increase in the price of SBB relative to SFBB, we might expect a price-induced substitution to compound any secular (i.e. not price-driven) increase in demand for SFBB. Alternatively, if growth in demand for packages offering SFBB is accompanied by a period of broadly stable relative prices, this would suggest that willingness to pay for SFBB has increased.

SBB and SFBB

A5.78 In our March 2017 WLA Consultation, we said that increasing demand for SFBB is underpinned by increasing bandwidth usage, including those in multi-user households, which is likely to continue to increase substantially throughout this review period. We also noted evidence from BT which suggests that even low bandwidth demand households may need speeds nearing SFBB in future.¹⁰⁷

¹⁰⁷ March 2017 WLA Consultation, paragraph 3.28-3.29.

A5.79 In response to the March 2017 WLA Consultation, Openreach and Virgin Media said that we had overestimated demand for SFBB services over the review period.

A5.80 We have set out the detail of our revised forecasts of fibre volumes, over the review period, in Annex 10 of Volume 2. In this section, we address other comments relating to the reasons for, and implications of, consumers' take-up and usage of SFBB services.

Usage and data consumption

A5.81 Openreach noted that Ofcom's 2016 CMR shows the most popular internet activities are still general browsing, sending emails, online shopping and social networking. Furthermore, it said that the changes in reported usage within these categories has been minimal since 2013, and do not justify a different conclusion to that reached in the 2014 WBA statement where we said that none of the top activities required SFBB.¹⁰⁸

A5.82 We recognise that the most popular internet activities, as well as the proportion of households engaging in these activities, has remained broadly stable.¹⁰⁹ However, this doesn't account for growth in simultaneous internet usage, which is an important driver of bandwidth demand. Overall data usage over fixed connections has grown considerably in that period and has continued to grow since our March 2017 WLA Consultation, with median data use per residential connection almost 50% higher in 2017 than in 2016.¹¹⁰ It is also expected to continue increasing in future, as a 2016 Communication Chambers report for BT states.¹¹¹

A5.83 Openreach and Virgin Media also said we had not established there is a link between data consumption and higher download speeds. They made the following points:¹¹²

- Virgin Media said the data we presented in Figure 3.5 of the March 2017 WLA Consultation exhibited a very low R² value (0.04) for lines of 10 Mbit/s and above, and also that comparable data for 2015 shows a different picture. BT said that, if the high data usage at 40 Mbit/s (which appears to be an outlier) is excluded, the relationship is unclear after average download speeds exceed 25 Mbit/s.
- Both Openreach and Virgin Media said we had not explained why average data use for SBB lines could not increase further, without the need to upgrade to SFBB speeds. In particular, they cited evidence from the 2016 Ofcom Connected Nations report which showed that usage growth rates per premise in 2016 were highest for speed brackets below 30 Mbit/s i.e. data usage on non-SFBB lines was growing faster than on SFBB lines.

¹⁰⁸ Openreach response to the March 2017 WLA Consultation, paragraph 337.

¹⁰⁹ Communications Market Report 2017, Figure 5.20.

¹¹⁰ 84 GB compared to 57 GB. Based on Ofcom analysis. Average data use increased to 190 GB from 143 GB. See Ofcom, *Connected Nations Report 2017*, Figure 19.

¹¹¹ An analysis of FTTP's role in UK connectivity: The evidence for a targeted approach, Communications Chambers, page 6: http://static1.1.sqspcdn.com/static/f/1321365/27318459/1478201664463/BT_RK_Report_2016.pdf?token=9lfzW%2Bsfpuab3LLnBzfuzp52M%2Fw%3D.

¹¹² Openreach response to the March 2017 WLA Consultation, paragraphs 343-347. Virgin Media response to the March 2017 WLA Consultation, paragraphs 61 to 64.

- Openreach cited the 2016 report by Communications Chambers which found that increased data usage was not in itself a strong indicator of a need for higher bandwidths, given ample spare network capacity. Openreach also said that the impact of the growth of high quality content applications on growing bandwidth demand will be offset by compression technologies, and by the trend towards accessing the internet via mobile devices (which are designed to require less bandwidth).

A5.84 We recognise that the relationship between data consumption and download speeds is not straightforward. As shown in our 2017 Connected Nations report,¹¹³ consumers can increase their data consumption without necessarily requiring faster download speeds. Furthermore, higher data use may itself be partly driven by download speeds (e.g. via apps which automatically adjust the quality of content based on connection speeds), rather than the other way around.

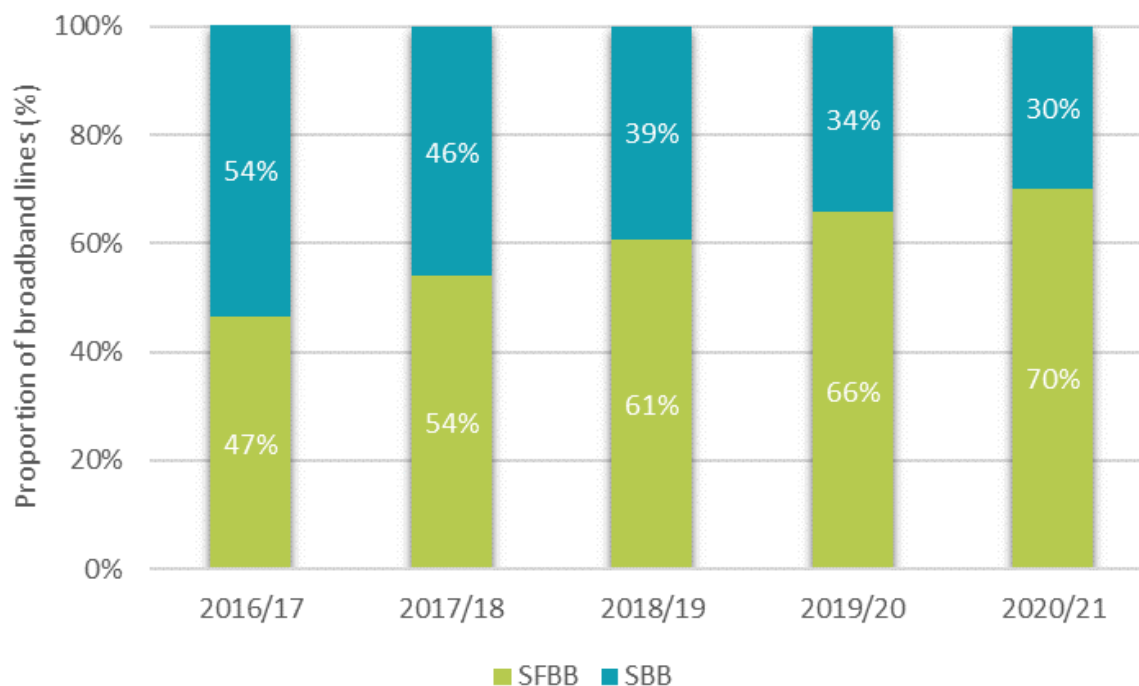
A5.85 However, given the growth in data use observed in recent years and the expected continued growth, we still consider that SBB connections are more likely to hit the limits of acceptable performance over time, for certain households and/or businesses. While households may be able to consume additional data by “stretching out” consumption across the day, this will not always be possible (e.g. due to working or care arrangements) and so higher data usage will affect peak busy hour requirements for some households, particularly those with multiple persons. This is more likely to feed through to demand for faster bandwidths.

A5.86 We do not consider that growth in mobile-based internet access will significantly mitigate this, as it has occurred in addition to (rather than instead of) increasing fixed broadband data usage. While compression technologies have a role to play in mitigating further increases in bandwidth demand, their impact is uncertain.

A5.87 Overall, we still consider that increasing data usage over time is likely to be reflected in higher bandwidth demand from retail broadband packages, meaning more households are likely to require SFBB speeds to accommodate their usage in future. This is reflected in our volume projections in Figure A5.11 below, which are explained more fully in Annex 10.

¹¹³ Figure 20, Ofcom, Connected Nations Report 2017.

Figure A5.11 Ofcom forecasts of SFBB take-up as a proportion of all broadband lines



Source: Ofcom forecast based on Openreach and Virgin Media data

Bandwidth forecasts research

A5.88 Openreach said that the bandwidth demand research for BT that we quoted in our March consultation was one of a range of forecasts, with other forecasts indicating that only 10% of users would require more than 33 Mbit/s by 2018. Openreach said that BT has since carried out further analysis which distinguishes between what it describes as “brittle” demand (i.e. bandwidth below which consumers would experience a service degradation) and “soft” or “adaptable” demand (e.g. a software update download such that the customer does not have an immediate and significant degradation of service experience). Openreach said its research suggests that brittle monthly peak bandwidth demand is unlikely to exceed [30].¹¹⁴

A5.89 However, as shown in Ofcom’s 2017 Home Broadband Performance report, this is often not achievable with ADSL connections, particularly during busy times of the day. In contrast, even average minimum download speeds for “up to 38 Mbit/s” FTTC connections are much higher than [30]Mbit/s.¹¹⁵ This means that a SFBB connection would allow consumers to more reliably satisfy demand requirements which BT describes as “brittle”. It

¹¹⁴ Openreach response to March 2017 WLA Consultation, paragraphs 338-342.

¹¹⁵ 30.3 Mbit/s in November 2016. See Figure 11, Ofcom, 2017. *Home Broadband Performance, The performance of fixed-line broadband delivered to UK residential consumers.*

https://www.ofcom.org.uk/_data/assets/pdf_file/0015/100761/UK-home-broadband-performance,-November-2016-Technical-report.pdf.

would also provide further upside protection for households against a faster-than-expected increase in brittle bandwidth demand in the short-term (i.e. within their contract period).¹¹⁶

A5.90 In this context, we noted in our March 2017 WLA Consultation that around a quarter of customers on SBB cannot receive more than 5 Mbit/s. This is consistent with BT’s analysis of demand, [redacted].¹¹⁷

Consumer research

A5.91 Openreach said our own consumer research shows satisfaction with broadband speeds is very high for both SBB (82%) and SFBB (90%), and there is no material difference between these satisfaction levels.¹¹⁸

A5.92 We recognise that our consumer research, which was conducted in 2015, shows most consumers on SBB generally consider their speed to be sufficient for their household. However, as we would expect most respondents who did not consider SBB to be sufficient at a given point in time to have upgraded to SFBB, we consider an 8% difference at to this point in time to be material. Furthermore, our more recent summer 2017 consumer research shows a wider difference than our original research, with 68% of SBB respondents saying that their speed was sufficient, compared with 82%-87% of SFBB respondents (Figure A5.12 below).

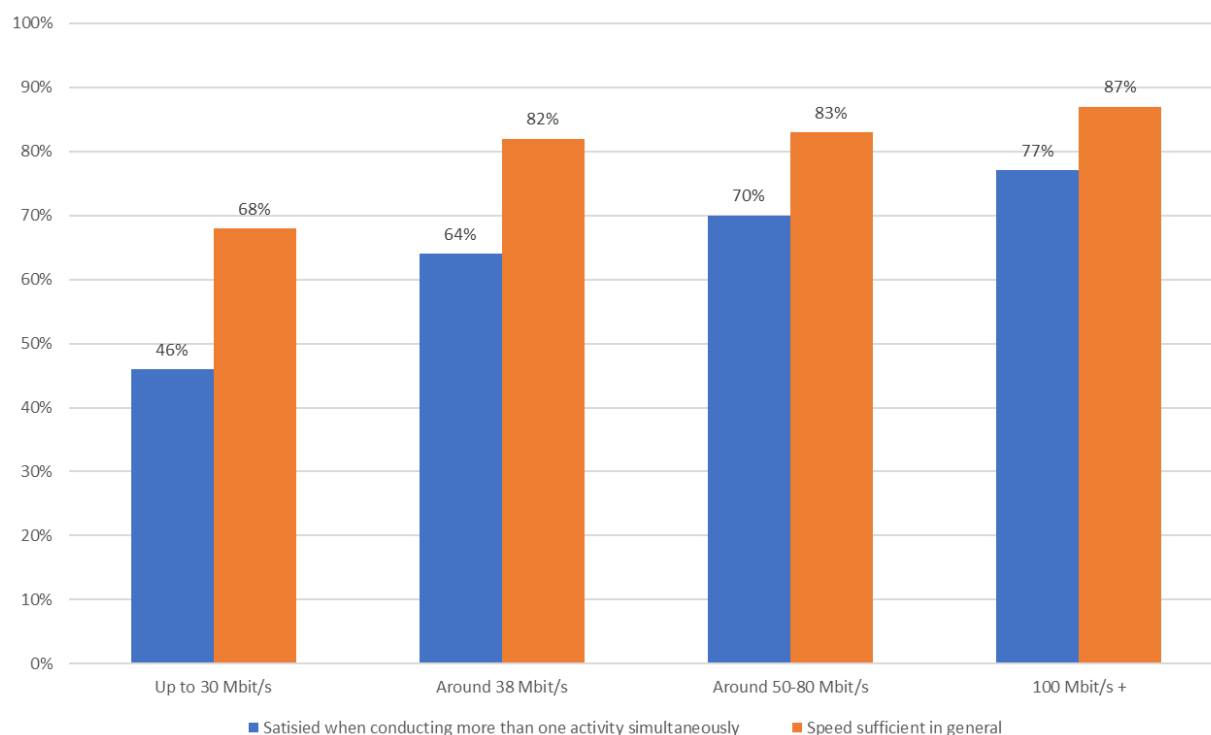
A5.93 Focusing on simultaneous use of broadband, our more recent research showed that a clear majority of respondents said they used their broadband service for several tasks simultaneously (89% in total, with 52% saying they did so every day).¹¹⁹ For these occasions, SBB consumers were even less satisfied with their connection (46%) compared to SFBB customers (64% - 77%, with an average of 70%).

¹¹⁶ Furthermore, BT’s own analysis also shows around [redacted]% of households will have a “soft demand” for 26 Mbit/s by 2020, which is significantly more than the headline download speed that is advertised by most current SBB offers.

¹¹⁷ BT response dated 18 September 2017 to 4th WLA/WBA s135 request. [redacted].

¹¹⁸ March 2017 WLA Consultation, paragraph 3.30; Openreach response to March 2017 WLA Consultation, paragraphs 348-349

¹¹⁹ This question related to any simultaneous tasks, rather than just high bandwidth tasks. To the extent that low bandwidths tasks can be conducted simultaneously, we would expect this to be reflected in satisfaction levels.

Figure A5.12: Residential consumers' experience of home broadband¹²⁰

A5.94 Our summer 2017 consumer research also directly asked respondents whether they were likely to change the speed of their service in the next 12 months. 19% of SBB respondents said that they were certain or very likely to do so.¹²¹

A5.95 We have also obtained information from [redacted] pertaining to market research that they have undertaken in relation to consumers' underlying broadband preferences:

- [redacted] commissioned an online survey exploring residential consumer preferences for broadband speeds.¹²² When respondents were asked what broadband speed they would choose when choosing a new contract, 27% of [redacted] customers / 14% of other providers' customers said they would choose a SBB speed. This indicates that a minority of customers see SBB as their preferred broadband speed, though, as respondents weren't presented with any price points, it is difficult to know what assumptions they were making about relative prices when answering.
- BT commissioned research to inform its planned G.Fast rollout.¹²³ As part of this research, [redacted]% of BT customers / [redacted]% of other providers' customers said that up to 20 Mbit/s is sufficient to enable them to do everything they want to do.

¹²⁰ Summer 2017 consumer research, to be published with our final statement.

¹²¹ Summer 2017 consumer research, to be published with our final statement. We note this is a higher growth rate than we have forecast in Figure A5.11 above for 2017/18 to 2018/19, as it implies that the SFBB base would grow to around 63% by 2018/19. However, Figure A5.11 is based on a smoothed long-term trend to 2020/21, for the purposes of our cost modelling. As such, it is not directly comparable to an estimate of migration over a shorter time horizon (i.e. 12 months).

¹²² [redacted]. The survey was conducted in August 2017 and covered 2,043 respondents.

¹²³ [redacted]. The survey covered 2,000 respondents.

- [redacted] commissioned research for [redacted] into broadband speeds. When asked about broadband speed requirements, 67% of respondents said 20 Mbit/s or below was “too low”, while 24% said that up to 20 Mbit/s is “ideal”.¹²⁴

A5.96 When asked specifically about future upgrading plans:

- Around 5% of existing SBB customers in [redacted] research said they were very likely to upgrade to fibre in the next 12 months. This is lower than the proportion of respondents to our summer 2017 consumer research who said they were certain to or very likely to upgrade (19%). Among respondents who are not intending to upgrade, the major reason for not upgrading in [redacted] research (46%) was price, ahead of “I am satisfied with my current speed” (34%). This was also the case in our summer 2017 consumer research (29% of respondents).
- In a piece of conjoint research undertaken by BT, [redacted]% of copper customers said they are looking to upgrade to fibre – [redacted].¹²⁵

A5.97 Taken in the round, these evidence sources indicate that there remains a group of broadband consumers – around one-quarter to one-third – who appear unlikely to need more than SBB. This is consistent with our own SFBB take-up forecasts shown in Figure A5.11 above, which indicate around 30% of broadband lines being on SBB by 2021. However, there is also a significant group of SBB customers who want, and are likely, to upgrade to SFBB at current prices. There is also likely to be another group who would upgrade if the price differential between SBB and SFBB was lower.

Willingness to pay for faster speeds

A5.98 BT said [redacted] this suggests that broadband speeds across the entire spectrum compete effectively with each other and consumers’ decisions may be driven more by other bundle elements than by line speed.¹²⁶

A5.99 Openreach noted our consumer research that we cited in the March 2017 WLA Consultation, which showed that 62% of customers considered price a main factor when choosing broadband providers, compared to 35% who considered speed a main factor. Openreach said this research, as well as BT Consumer’s own research, shows broadband customers are highly price sensitive.¹²⁷

A5.100 Both our consumer research and BT’s research related to the importance of different attributes specifically when switching provider. Given that most suppliers offer a similar set of broadband speeds, but at different prices, we do not consider it to be particularly surprising that price was the most important factor in determining this specific decision. As we said in our March 2017 WLA Consultation, the fact that some customers consider price

¹²⁴[redacted]. The survey was conducted in May 2017 and covered 1,003 respondents.

¹²⁵[redacted]. The survey covered 2,000 respondents.

¹²⁶ BT response to March 2017 WLA Consultation, page 2.33.

¹²⁷ Paragraph 359-360, Openreach response to March 2017 WLA Consultation. The research cited was a Jigsaw report published alongside our consultation on Automatic Compensation, Slide 18, March 2017, https://www.ofcom.org.uk/_data/assets/pdf_file/0026/98711/automatic-compensation-jigsaw-report.pdf.

is more important than speed does not contradict the fact that speed is also important, and that many customers are willing to pay a premium for SFBB.¹²⁸

- A5.101 Nevertheless, we agree that price is an important determinant of consumers' broadband decisions, as are other package attributes. For example, 30% of respondents in our consumer research considered reliability to be a main factor in this decision, while 29% cited the inclusion of bundled services. Reliability and price also came out above broadband speed in some consumer research undertaken by [X] on the attributes which contribute most to making a particular broadband offer the most superior product on the market.¹²⁹ This indicates that providers could compete with faster broadband services on other elements of the overall package, particularly if the price of faster services increased.
- A5.102 Finally, we note that BT's conjoint research found that [X]% of respondents did not know their broadband speed.¹³⁰ In [X] and in our summer 2017 consumer research, around 35% of respondents did not know their speed.¹³¹ This suggests that awareness of actual broadband speeds is generally low. Meanwhile, [X]'s research found that only 15% of respondents were able to name the measure that ISPs use to advertise download speed (i.e. Mbit/s).¹³² However, 86% of respondents to the survey said they had heard of "Mbit/s" when prompted.
- A5.103 Overall, we consider that the research evidence on consumers' willingness to pay for broadband speed suggests consumers consider the speed of their service to be important, and place value on it. However, broadband speed is clearly not all that matters (as marketing materials also show) and consumers' choice of broadband package is also influenced by other attributes.

Role of providers in migrations

- A5.104 Openreach said that upgrading customers are "pushed" by marketing more than being "pulled" by the attractions of higher speeds, and said that recent fibre take-up has been driven by Sky and TalkTalk marketing fibre more strongly. Openreach noted our 2016 Connected Nations report which stated that providers may need to consider new approaches for attracting customers to SFBB, including articulating its benefits more clearly and lowering prices further.¹³³ However, while marketing activity may have increased recently, we consider consumers must still make an active choice to respond to this, which presumably reflects that they have some incremental value for faster speeds.
- A5.105 BT and Virgin Media also noted that SFBB take-up has been driven in part by automatic upgrades. Virgin Media said that such provider-led migration can hardly be taken as evidence that consumers are showing a significant preference for SFBB.¹³⁴

¹²⁸ In this respect, we note that [X].

¹²⁹ [X]

¹³⁰ [X]

¹³¹ Summer 2017 consumer research, to be published with our final statement.

¹³² [X]

¹³³ Openreach response to the March 2017 WLA Consultation, paragraphs 357-358.

¹³⁴ Virgin Media response to the March 2017 WLA Consultation, paragraph 57-58. [X].

- A5.106 We agree that consumers whose speed was automatically upgraded might have no willingness to pay for faster speeds, and would therefore be more willing to switch back to SBB if SFBB was more expensive. However, Virgin Media is the only provider we are aware of which has automatically upgraded its SBB customers en masse to SFBB, between March 2012 and mid-2013. Virgin Media highlighted a free fibre upgrade for all Sky Sports customers in 2016, but Sky’s data on upgrades and downgrades only showed around [X] being automatically upgraded to fibre at this time, compared to around [X] customers upgrading themselves over the same period.¹³⁵
- A5.107 We also consider that some households who may not have been willing to pay any more for SFBB when they were upgraded, may subsequently place some value on the faster speeds they receive.¹³⁶ Indeed, this is likely to be one reason why providers who have adopted this strategy have done so. If so, while provider-led migrations might initially increase average responsiveness to a rise in the relative price of SFBB, in the longer term this may not be true to the same extent.
- A5.108 In any case, as set out above, various pieces of consumer research reveal a significant group of consumers who actively want to upgrade to SFBB soon, and would therefore be willing to pay extra for these faster speeds.

Different SFBB speeds

- A5.109 We have updated our forecast volumes of GEA rentals (i.e. wholesale broadband services used to supply SFBB) during the review period, as set out in Figure A5.13. These forecasts have been developed for our charge control modelling (see Annex 10 of Volume 2), and use updated information from telecoms providers.

Figure A5.13: Ofcom forecasts of Openreach GEA lines by bandwidth

Million lines	Internal			External			Total		
	18/19	19/20	20/21	18/19	19/20	20/21	18/19	19/20	20/21
18/2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
40/2	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
40/10	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
55/10	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]
80/20	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]

Source: Ofcom forecasts

¹³⁵ Sky response to Question 5 of WBA-WLA s135 dated 5th September 2017.

¹³⁶ One reason for this would be if SFBB exhibited the properties of an experience good. That is, a good for which consumers can only ascertain the true value after consuming it. This would be consistent not only with an outward shift in demand, but also a change in the elasticity of demand (i.e. for demand to become more price inelastic).

- A5.110 Our updated forecasts for external lines suggest that most GEA lines purchased from Openreach by telecoms providers other than BT will continue to be for the 40/10 service (approximately [38]%, compared with our forecast of 80% in our March 2017 WLA Consultation).
- A5.111 Since our consultation, BT Consumer has upgraded SFBB subscribers whose line can support faster speeds to a headline download speed of 76 Mbit/s, which uses BT's GEA 80/20 service.¹³⁷ This is reflected in our internal forecasts, and means that more than [38]% of BT's fibre subscribers are forecast to be on an 80/20 service by 2020/21. As discussed above, we consider these subscribers are on average likely to have a lower incremental willingness to pay for faster SFBB speeds than those who upgraded themselves, and may therefore be more willing to switch back to slower services if relative prices increased, or for other features of a broadband package.
- A5.112 Overall, we project that higher bandwidths will become more important over the forthcoming review period, and somewhat more so than we thought to be the case in our March 2017 WLA Consultation. However, our GEA rental forecasts show that we can still expect a large proportion of retail subscribers to take a 40/10 service by 2020/21.

Consumer research

- A5.113 We have assessed the implications for demand for different SFBB services from the available evidence from our summer 2017 consumer research.
- From Figure A5.12 above, it can be seen that there is limited variation in the proportion of respondents who considered different SFBB services to be sufficient for their needs (82% for those on 38 Mbit/s, compared to 83% for those on 50-80 Mbit/s services, and 87% for those on 100Mbit/s+ services). On the other hand, satisfaction levels were higher for those on faster SFBB services when focusing on periods when the household is conducting multiple activities simultaneously (64% for 38 Mbit/s, compared to 70% for 50-80 Mbit/s services and 77% for 100Mbit/s+ services).
 - Among respondents currently taking around a 38 Mbit/s service, 10% said they were certain or very likely to upgrade the speed of their service in the next 12 months (8% moving to 52 Mbit/s or 76 Mbit/s specifically). Among non-BT customers, 9% stated that they were certain or very likely to upgrade (8% moving to 52 Mbit/s or 76 Mbit/s).
- A5.114 Overall, this indicates that some customers are likely to derive value from faster SFBB services, and so would be willing to pay a premium for these services. This will drive demand for higher bandwidths over the review period. As set out in Figure A5.13, we are forecasting growth in higher bandwidths, and the consumer research appears to be consistent with this.

¹³⁷ See http://bt.custhelp.com/app/answers/detail/a_id/56165/~/questions-about-the-bt-infinity-1-speed-upgrade [accessed 21 February 2018].

A5.115 We have also considered the market research undertaken by telecoms providers. The same pieces of research discussed in paragraph A5.95, which date from 2017 (and, in the case of [X], 2016), show that:

- 40% of all [X] respondents / 32% of all other providers' respondents across all speeds said they would choose 38 Mbit/s, compared with 33% / 53% selecting 76 Mbit/s respectively¹³⁸;
- in BT's research, around [X]% of respondents across all speeds said that a download speed of 50 Mbit/s or less enables them to do everything they might want to do¹³⁹; and
- in [X]'s research, 71% of respondents across all speeds said that more than 50 Mbit/s is "too high". The modal "ideal" speed, selected by 28% of respondents, was 20-50 Mbit/s, and the next most popular was 50-100 Mbit/s.¹⁴⁰

A5.116 As before, it is difficult to infer the strength of demand for different bandwidths from this evidence as it is unclear what assumptions (if any) respondents were making about relative prices when answering this question. Nonetheless, it suggests that there is likely to be a significant level of demand for basic SFBB speeds.

Business research

A5.117 We also received some internal documents from [X] and Virgin Media focusing on business customers:

- In a May 2016 update on [X] noted that 25% of businesses say they require a fibre connection faster than they currently have.¹⁴¹ Likewise, a May 2016 paper to [X] stated that 66% of businesses say they need the internet to be a lot faster or a little faster in the next two years. However, it also said that [X].¹⁴²
- Virgin Media offers the fastest available broadband speed for all its business packages. This strategy is discussed in a document from Virgin Media in which it states: [X].¹⁴³

A5.118 Overall, it is not clear from this evidence that demand for faster SFBB speeds will be stronger for businesses than residential consumers, over the review period.

Propensity to downgrade

A5.119 If consumers consider that one broadband package is a substitute for a package with a faster broadband service, we would expect to find evidence of willingness to downgrade broadband speed as well as upgrade it. Limited evidence of downgrading speed would be consistent with a view that the strength of the constraint from SBB on SFBB is diminishing if the relative price of SFBB had increased over that period.

¹³⁸ [X]. The survey was conducted in August 2017 and covered 2,043 respondents.

¹³⁹ [X]. The survey covered 2,000 respondents.

¹⁴⁰ [X]. The survey was conducted in May 2017 and covered 1,003 respondents.

¹⁴¹ [X]

¹⁴² [X]

¹⁴³ Virgin Media response to WBA-WLA s135 dated 5th September 2017. [X]

SBB and SFBB

A5.120 In the March 2017 WLA Consultation, we presented survey evidence which we said shows that existing SFBB customers rarely downgrade from SFBB to SBB.¹⁴⁴

- Virgin Media noted that this research was conducted in November 2015 and said that, to be a downgrader at this point in time, a respondent would need to have already upgraded to SFBB, served out their contract, and then had a reasonable period to downgrade. It said that, if we allow for an 18-month contract term for SFBB and also allow 12 months for a subsequent decision to downgrade, our 2% estimate of residential downgrades for SFBB actually constitutes 13% of people who had SFBB in May 2013 (and who therefore had the opportunity to downgrade from SFBB to SBB by November 2015), which is a far more material proportion.¹⁴⁵ We do not necessarily agree that the relevant base of potential downgraders is SFBB subscribers who were outside an 18-month minimum contract term by at least a year. This excludes subscribers, such as those on shorter contracts or those just outside their minimum term, who were free to downgrade at no cost. Subscribers within their minimum term could also downgrade, albeit possibly incurring an exit fee. In any case, the downgrading rate is still significantly less than the proportion of customers upgrading in the last two years (roughly 29% of all SBB consumers two years ago).¹⁴⁶
- Openreach referred to some BT research from October to December 2016 which found that [3<] % of all customers who have switched have downgraded from SFBB to a SBB service. Openreach suggested this data suggests a significantly higher rate of downgrading than Ofcom’s 2015 survey.¹⁴⁷ However, our 2% estimate of residential downgrades for SFBB was expressed as a proportion of *all* respondents, and is equivalent to around 9% of respondents who had switched. BT’s estimate thus suggests that downgrading constitutes a lower proportion of switches than our survey implies. Furthermore, a separate piece of research undertaken by BT in 2016 found that just [3<] % of fibre customers are likely to downgrade to copper when they next switch provider.¹⁴⁸
- We also asked about previous switching behaviour in our summer 2017 consumer research. Just 3% of SBB respondents (and 4% of all respondents) had downgraded their broadband in the last 12 months, against 29% of all respondents upgrading their speed. Among those who had not changed speed, just 1% had considered downgrading.¹⁴⁹

¹⁴⁴ March 2017 WLA Consultation, paragraphs 3.34-3.35.

¹⁴⁵ Virgin Media response to the March 2017 WLA Consultation, paragraph 74.

¹⁴⁶ At the end of 2013 there were 17 million SBB lines (see 2014 Ofcom Communications Market Report). The research found that 20% of respondents had upgraded in the last two years. 20% of all fixed broadband connections in November 2015 is roughly 5 million i.e. c.29% of SBB lines at the end of 2013. Moreover, the data on within-provider migrations below, which adjusts for relative base sizes, finds limited evidence of downgrading.

¹⁴⁷ Openreach response to the March 2017 WLA Consultation, paragraph 361.

¹⁴⁸ BT Response dated 18 September 2017 to 4th WLA/WBA s135 notice. [3<]. The survey covered 2,000 respondents.

¹⁴⁹ Summer 2017 consumer research, to be published with our final statement.

- A5.121 Overall, based on the available consumer research evidence, we remain of the view that there has been limited downgrading, particularly from SFBB to SBB.
- A5.122 In March 2017, we also presented actual data on “within-provider” upgrading and downgrading (i.e. customers of one telecoms provider upgrading or downgrading to a different package with that same provider) for July to September 2015. We said this showed that SBB customers are far more likely to upgrade than SFBB customers are to downgrade.
- A5.123 We have since obtained more recent data on within-provider upgrades and downgrades for 2016/17, which is presented in Figure A5.14 below. As far as possible, we have excluded provider-led migrations (i.e. instances where consumers’ speed was automatically upgraded by their provider) as we are more interested in the extent to which consumers are themselves willing to substitute between different bandwidths. This new data is broadly consistent with the data presented in March 2017, as it shows that less than 1% of providers’ SFBB subscriber base downgraded to SBB on average, per quarter. This is substantially less for each provider than the proportion of SBB customers upgrading.

Figure A5.14: Average quarterly upgrades and downgrades between SBB and SFBB, residential customers, 2016/17

	Upgrades from SBB to SFBB (% of SBB base)	Downgrades from SFBB to SBB (% of SFBB base)	Ratio of upgrade / downgrade proportions
BT	[<]%	[<]%	[<]
EE	[<]%	[<]%	[<]
Sky	[<]%	[<]%	[<]
TalkTalk	[<]%	[<]%	[<]

Source: BT, EE, Sky, TalkTalk¹⁵⁰

- A5.124 Information about inter-provider switches is more limited and only two providers held relevant data:
- Evidence from [<] leavers survey shows that 28% of SFBB broadband leavers downgraded to ADSL (i.e. SBB) when switching away, during Q3 2016.¹⁵¹ [<].
 - Information from [<] joiners survey shows that 62% of new customers coming from a fibre product, take a SBB package.

¹⁵⁰ Sky and TalkTalk responses to WBA-WLA s.135 notice dated 5 September 2017. EE response to WBA-WLA s.135 notice dated 14 September 2017. BT Response dated 29 September 2017 to 4th WLA/WBA s.135 notice. Proportions have been calculated as the number of customers upgrading or downgrading away from a given speed per quarter, as a proportion of the number of customers taking that service at the end of the previous quarter.

¹⁵¹[<]. 13% said “Don’t know”.

- A5.125 Compared to within-provider migrations, this indicates that a higher proportion of existing SFBB customers switching between providers are willing to downgrade their broadband speed. This might be because there is greater scope when switching providers to trade off faster speeds against other broadband package characteristics (e.g. pay-TV). In the case of [redacted].
- A5.126 We recognise that evidence on upgrading and downgrading does not constitute conclusive evidence of substitutability between SFBB and SBB because what matters for an analysis of substitution for market definition is relative price changes. To this end, Virgin Media said that any evidence of a low propensity to downgrade needs to be seen in the context of a falling price premium, which would mean there is limited reason to switch to a lower speed. It said that “the question is not whether there is material switching now, but rather whether there would be if [the] SFBB premium rose appreciably”.¹⁵² As set out above, the differential between SBB and SFBB prices has been broadly flat over the last three years and while the differential may have reduced in the last year or so, most of the downgrading and upgrading data referred to above predates this.

Different SFBB speeds

- A5.127 We have also considered the extent of upgrading and downgrading between SFBB services of different speeds, as set out in Figure A5.15. As with movements from SBB to SFBB, this suggests there is a broadly a greater propensity to upgrade than downgrade, albeit not as strongly as was the case for upgrading and downgrading between SBB to SFBB.

Figure A5.15: Average quarterly upgrades and downgrades between basic and faster SFBB services, residential customers, 2016/17

	Upgrades from basic to faster SFBB (% of basic SFBB base)	Downgrades from faster to basic SFBB (% of faster SFBB base)	Ratio of upgrade / downgrade proportions
EE	[redacted]%	[redacted]%	[redacted]
Sky	[redacted]%	[redacted]%	[redacted]
Virgin Media	[redacted]%	[redacted]%	[redacted]

Source: EE, Sky, Virgin Media. For Sky and EE, basic fibre is 38 Mbit/s and faster fibre is 76 Mbit/s. For Virgin Media, basic fibre is 50 Mbit/s and faster fibre covers a range of speeds up to 300 Mbit/s¹⁵³

- A5.128 Information about inter-provider switches is more limited. Only [redacted] was able to provide information on the type of broadband package from which new joiners switched. However,

¹⁵² Paragraph 71, Virgin Media response to March 2017 WLA consultation.

¹⁵³ Sky and Virgin Media responses to WBA-WLA s135 notice dated 5 September 2017. EE response to WBA-WLA s135 dated 14th September 2017. TalkTalk’s data did not distinguish between customers on different fibre-based services. BT provided data but we do not consider it to be informative. Specifically, [redacted].

it could only categorise new joiners into SBB or SFBB broadband customers, rather than identifying the specific SFBB speed from which they were moving.

A5.129 We also note that Virgin removed its 50 Mbit/s SFBB offering in April 2017, just after the period covered by the data above, but reintroduced it in July 2017. [§].¹⁵⁴

A5.130 Taken in the round, this data suggests that while consumers are generally more likely to upgrade than downgrade the speed of their SFBB package, consumers on packages with faster speeds are willing to consider moving back to basic SFBB speeds. However, as set out above, the price differential between SFBB tariffs of different speeds appears broadly flat, meaning that it is difficult to infer much about the extent of substitution from faster to slower SFBB services if, in future, the price of higher speed packages rose in relative terms.

A5.131 In this context, we note that our summer 2017 consumer research provides some insight into the motivations for changing speed. As part of this research, we asked respondents about previous switching behaviour. Across all residential SFBB consumers, as described in paragraph A5.120 above, only 4% of respondents had downgraded their speed of service in the last 12 months. Among those on a 50-80 Mbit/s service who had upgraded their speed in the last 12 months, the most common reason for doing so was a need for a faster service (36% of respondents), but the second most common reason was “*For a cheaper price / deal*” (30%). This is consistent with the finding of overlapping price bands, as shown in Figure A5.10 above, and suggests that a substantial proportion of customers on faster bandwidths would consider downgrading to a package with a 38 Mbit/s (or similar) speed, if the price of their existing service increased.

Summary of implications

A5.132 We have assessed a range of different evidence sources on the degree of substitutability between different broadband speeds.

A5.133 For SBB and SFBB, the main implications are as follows:

- We project that there will be continued high take-up of SFBB, with SFBB accounting for around 70% of broadband lines by the end of the review period. This reflects increasing household demand for bandwidth, and positive willingness to pay for faster speeds.
- Our indicative critical loss analysis suggests that substitution from SFBB to SBB is weaker than the substitution from SBB to SFBB in response to a relative price increase. Nevertheless, for a reasonable time horizon, a SSNIP over SFBB is likely to induce enough loss of sales (mainly substitution to SBB or deferred upgrades to SFBB) to make it unprofitable. However, this is sensitive to the assumptions used, and in particular if avoided costs were significantly higher than our preferred assumption, [§].
- There has also been limited downgrading from SFBB to SBB, particularly when focusing on inter-provider migrations. This could be consistent with SBB being a weaker substitute for SFBB users, although this evidence is against a backdrop of broadly flat SFBB prices and, if anything, a falling premium relative to SBB of late. If the premium

¹⁵⁴ [§]

for SFBB were instead to increase in future we could potentially see more downgrading from SFBB to SBB, but we cannot be certain of this.

- A5.134 Overall, the evidence indicates that retail packages offering SFBB at a fixed location are likely to constrain the pricing of packages offering SBB at a fixed location. We also consider that retail packages offering SBB would be likely to constrain packages offering SFBB based on the available evidence today. However, these constraints appear to be asymmetric in that demand-side substitution from SBB to SFBB would appear greater than from SFBB to SBB, and could diminish in later periods, for example, if the migration to SFBB is accompanied by a greater attachment to SFBB.
- A5.135 Taking the range of evidence and analysis in the round, if we were to define a product market based on broadband speeds, rather than one based on local access connections, our judgement is that the evidence today points to a single market for SBB and SFBB.
- A5.136 In relation to the profitability of a SSNIP over all fixed line broadband packages, we consider that the evidence is consistent with substitution to other forms of internet access being insufficient to constrain the profitability of SSNIP on fixed line broadband. This implies that the product market would be no wider than fixed line broadband (i.e. over copper/fibre or cable connections).
- A5.137 For different SFBB services of different speeds, we conclude as follows:
- While there will be continued growth in demand for higher bandwidths over this review period, we still expect a large proportion of fibre subscribers to take a 40/10 service by 2020/21.
 - While consumers are generally more likely to upgrade than downgrade the speed of their package, this is against a background of a broadly flat differential between retail packages of different SFBB speeds over the last review period.
 - Our consumer research indicates that some consumers taking retail packages with faster SFBB speeds would switch away from these services to alternatives, including basic SFBB speeds, if the price of these services increased. This is likely to be sufficient to constrain a SSNIP for a hypothetical monopolist of faster SFBB packages.
- A5.138 Taken in the round, we consider that the degree of substitutability between retail packages offering basic SFBB services, and packages offering faster SFBB services, is such that basic SFBB services are likely to provide a constraint on retail price increases for faster SFBB speeds.
- A5.139 More generally, we recognise that retail packages offering different broadband speeds may not be perfect substitutes, even if we consider the constraints sufficiently strong that services of different speeds are likely to comprise a single market. However, as explained in Section 3, retail competition is driven by bundles with many dimensions of differentiation. For example, broadband tariffs alone are differentiated not only on speed but on usage (e.g. whether limited or unlimited monthly usage). Broadband is also sold with many other services over the local access connection, which provides further opportunities for differentiation. Therefore, even if a price increase for a particular broadband speed were not constrained by other speeds, the price of such a bundle could still be constrained by a

lower priced bundle at a lower speed if other elements of that slower speed bundle were found to be better value by consumers.

- A5.140 In any case, as explained in Section 3, it remains the case that a local access network can be used to deliver the full range of speeds within the capacity of that network. This is the reason why, in Section 3, we have defined a focal product based on local access at a fixed location, consistent with the 2014 EC Recommendation. We have preferred to recognise the economies of scope (and opportunity for leverage into different downstream services) inherent in control of local access through a definition of the focal product centred on the underlying connection to premises, rather than a focal product based on a specific internet access speed offered over the connection.
- A5.141 Finally, because of these economies of scope stemming from control of local access, it also follows that a hypothetical monopolist of packages offering a single broadband speed at a fixed location would face the threat of supply-side substitution (or at least entry or expansion) if another local access network was present offering different speeds.

Analysis of shares of broadband enabled connections on a national basis and in cable areas

A5.142 In our market power analysis in this statement (Volume 1, Section 4), we present WLA shares of connections on a national basis as well as on a sub-national basis, specifically to show differences between cable and non-cable areas. We also forecast WLA connections by provider to 2020/21 on both a national and a sub-national basis.

A5.143 This annex sets out:

- how we gathered the data underlying our calculations and the basis on which we calculated the ranges presented;
- how we processed and interpreted the data;
- how we have measured “cable areas” for the purposes of our assessment; and
- our detailed current and forecast shares of connections, both nationally and in subnational geographic areas.

Recap of the results of our analysis

A5.144 In our market power assessment in Section 4, we set out the following estimates and forecasts for Openreach’s and Virgin Media’s share of broadband enabled connections in cable areas in a number of scenarios.¹⁵⁵

Table A5.16: BT’s share of broadband enabled lines¹⁵⁶

Scenario	Broadband product segment	Geographic area	BT share 2017/18 ¹⁵⁷	BT share 2020/21
1	All copper, fibre and cable connections ¹⁵⁸	National	80%	77%

¹⁵⁵ We looked at shares of broadband enabled connections, rather than all connections (including voice only and ISDN) because data was more readily available on the basis of broadband connections. As noted in Section 4, any measure based on broadband enabled connections will somewhat understate BT’s share of all local access connections underpinning retail fixed lines.

¹⁵⁶ Also figure 4.3 in Section 4

¹⁵⁷ Shares in the UK excluding the Hull Area are consistent with charge control modelling assumptions and relate to 2017/18. Other shares are derived from data collected for Ofcom’s publication “Connected Nations” report and relate to 2017.

¹⁵⁸ The figures presented will slightly understate BT’s share of all access connections. This is because, as noted below, BT’s local access connections also support voice only and ISDN lines of which BT has a relatively high share. We use shares based on broadband lines here for simplicity and consistency with shares for product segments defined by broadband speed.

Scenario	Broadband product segment	Geographic area	BT share 2017/18 ¹⁵⁷	BT share 2020/21
2	All copper, fibre and cable connections	Cable areas	[X] [60%-70%]	[X] [60-70%]
3	All copper, fibre and cable connections	Non-cable areas	Close to 100%	Close to 100%
4	Fibre and cable connections only	National	63%	68%
5	Fibre and cable connections only	Cable areas	[X] [35-45%]	[X] [45-55%]
6	Fibre and cable connections only	Non-cable areas	Close to 100%	Close to 100%

Source: Ofcom analysis using data collected for Connected Nations 2017

- A5.145 The 2017/18 share of connections for each geographic area (including national shares) were calculated using data collected for Ofcom’s Connected Nations 2017 report and data collected for the WLA charge control. The 2020/21 shares are projected using this data and applying forecast assumptions consistent with those used in the WLA charge control cost modelling (see Volume 2, Section 4 and Annex 10).
- A5.146 When looking at sub-national shares of connections, these shares are sensitive to the boundary of the sub-national areas and, specifically, how we count premises covered by local access networks in order to calculate the coverage of the cable network. For the shares of broadband enabled connections in cable areas, the range shown in Table A5.16 above reflects three possible definitions of “cable areas”. We explain these three possible definitions below.

Source of the data

- A5.147 In preparing our Connected Nations report, we collect data from telecoms providers on a range of metrics, including their coverage and take-up. Data relating to coverage was collected from telecoms providers with a reference date of May 2017, while data relating to the performance of a line (such as the speed of the active broadband service) relates to June 2017.
- A5.148 The dataset that we have used to conduct this analysis includes data on the number of premises in each BT exchange area, the coverage of BT, Virgin Media and Competitive

Networks¹⁵⁹, and take-up of broadband on the BT Openreach local access network¹⁶⁰, as well as on the Virgin Media network and the Competitive Networks.

A5.149 The data collected as part of our Connected Nations report matches downstream provider data on customers to local access network provider data on premises served. We have aggregated this data to a BT exchange level for the reasons set out later in this section.

Definition of cable areas

A5.150 Virgin Media’s cable network covers almost half of UK premises and serves just over 5 million customers nationally.¹⁶¹ In order to analyse the extent to which BT’s share both of (a) all broadband and (b) fibre or cable broadband (including FTTC, G.fast, FTTP and cable services) varies within cable areas, we need to first define cable areas for the purposes of this analysis.

The local exchange area as the relevant geographic unit

A5.151 In order to undertake this analysis, we first must choose the relevant geographic unit on which to analyse shares of broadband enabled access connections. For BT, the natural unit is the local exchange area. However, since the cable footprint does not align exactly with BT exchange areas, the proportion of consumers within a given BT exchange area that Virgin Media covers (and therefore the proportion of consumers who can receive services from Virgin Media) will vary, as Virgin Media may cover none, some, or all of an exchange area.

A5.152 An alternative approach would be to find every single premise that can be served by the cable network and calculate shares of connections based on the proportion of these premises that are actually served by BT, Virgin Media or Competitive networks.

A5.153 However, such an approach is likely to be disproportionately granular and misses the reality that competing networks can expand to reach new premises within easy reach of existing aggregation nodes (which in the case of the BT and Virgin Media networks we are considering could be the head-end for the cable network, or the cabinet or local exchange for BT), as we explain in Section 3.¹⁶²

A5.154 We have therefore adopted an approach of measuring coverage by focusing on local exchange areas, specifically those of the BT network. Alternatively, we could look at areas covered by the “head-end” of the cable network (approximately the cable network equivalent of the local exchange). We have chosen not to do so because the purpose of this analysis is to ascertain whether conditions of competition could be sufficiently

¹⁵⁹ By Competitive Networks, we mean several smaller alternative network operators whose coverage and take-up is aggregated together in this analysis. The networks included in this analysis are CityFibre, Gigaclear, Hyperoptic and B4RN.

¹⁶⁰ Openreach fibre in our analysis includes FTTC, G.fast and FTTP.

¹⁶¹ Liberty Global, *Third Quarter 2017 Fixed Income Release*, page 37. <http://www.libertyglobal.com/pdf/fixed-income/virgin-media-Fixed-Income-Release-Q3-2017-FINAL.pdf>. Virgin Media’s coverage has also increased slightly since the Connected Nations data was collected due to its Project Lightning expansion.

¹⁶² Volume 1, Section 3, paragraphs 3.138-3.139.

different between areas where BT faces little or no local access network competition and those where it faces more. Moreover, we have more reliable data on BT local exchanges, and analysis of competition between geographic areas has followed this approach in our WBA market reviews since 2008 (including the approach proposed in the 2017 WBA consultation).

- A5.155 To define which BT local exchanges to analyse as part of our consideration of cable areas, we must choose a threshold that Virgin Media can cover for a BT local exchange to be defined as a cable area for the purposes of this analysis.

Choice of threshold levels

- A5.156 In order to meaningfully assess whether the presence of the cable network has a significant impact on BT's share of broadband over local access connections in the areas where it is present, there must be a sufficient proportion of consumers in that exchange area who can choose cable-based broadband. If Virgin Media's cable network only covers a very small proportion of consumers in an exchange area, then even if Virgin Media wins all of those customers, it would have a very small impact on BT's share of broadband-enabled connections in that area.
- A5.157 In order to identify an appropriate threshold, we face a trade-off between, (a) ensuring sufficient "presence" of the cable network; and (b) not taking this to the limit of requiring that close to 100% of premises within the local exchange have existing (or readily activated) cable connection.¹⁶³ Failure to ensure sufficient coverage means we might overstate potential competitive pressure, yet requiring complete coverage risks understating potential competitive pressure within that BT exchange area.
- A5.158 There is, therefore, a balance to be struck. In previous WBA reviews, we have considered the cable network as present in an exchange area where it can serve 65% of premises in that exchange area. This is consistent with our approach in the 2008, 2010 and 2014 WBA Statements and is the proposed approach in the 2017 WBA Consultation.¹⁶⁴
- A5.159 Because we face the same trade-offs in in this review, we have used the same 65% cable threshold in our analysis of BT local exchange areas. We have also considered two sensitivities – a higher threshold of 80% and a lower threshold of 50%. A comparison of the different level of thresholds is set out below:

Table A5.17: Comparison of the different potential thresholds for defining "cable areas"

Characteristic of these exchange areas	50% threshold	65% threshold	80% threshold
Proportion of all broadband enabled fixed access connections	55%	43%	21%

¹⁶³ Readily activated connections would include those previously in-use, but not currently "live", or premises within reach of a cable network street cabinet.

¹⁶⁴ 2017 WBA consultation, paragraph 4.50.

Characteristic of these exchange areas	50% threshold	65% threshold	80% threshold
Proportion of Virgin Media's customer base	[X](>90)%	[X](70-80)%	[X](40-50)%
Proportion of Virgin Media's total national premises passed	[X](>90)%	[X](70-80)%	[X](40-50)%
Overall proportion of customers in these exchanges who can receive Virgin Media services	[X](70-80)%	[X](70-80)%	[X](80-90)%

- A5.160 A higher threshold increases the number of customers within each exchange area that can receive Virgin Media services, but this in turn excludes more exchanges and therefore decreases the proportion of both national broadband connections and the proportion of Virgin Media's customer base in the chosen exchange areas.
- A5.161 In particular, the 80% threshold results in only 21% of broadband connections being within reach of the cable network, despite the fact that the cable network is able to serve almost half of premises nationally. We therefore do not believe that it is appropriate to include a higher threshold than this in our analysis.
- A5.162 The 50% threshold includes a significant proportion of Virgin Media's customer base [X] (more than 90)%, and [X] (70-80)% of customers in these exchange areas are able to receive broadband services from Virgin Media. [X] (Over 90)% of the premises that Virgin Media is able to serve nationally are in these exchange areas. We therefore think that considering a threshold below this level would give us little benefit in our sensitivity analysis and would include some local exchange areas where BT would always be the largest provider of connections even if the cable network successfully acquired 100% of connections within its network reach.
- A5.163 Between these two levels, we consider that a 65% threshold strikes the right balance. It also yields a proportion of the national customer base that could be reached which is broadly compatible with the current extent of reported cable coverage (of almost one-half).
- A5.164 We therefore think that, while any choice of threshold is a compromise, a range of thresholds between 50-80%, with a base case of 65%, is appropriate for our subnational analysis of shares of broadband enabled connections.

Calculating current shares of connections

- A5.165 Using data gathered for our Connected Nations report, we calculated national shares of broadband enabled connections for BT, Virgin Media, and Competitive Networks. We then calculated three sets of sub-national shares, including only those BT local exchanges where Virgin Media's cable network is able to serve 50%, 65% and 80% of premises respectively.

However, before calculating shares of broadband-enabled connections both nationally and in selected sub-national geographic areas, we made some adjustments to the source data as described below.

Adjustments made to the data

A5.166 First, we excluded a very small number of local exchanges where, for those exchanges, the data contained errors or showed that exchange as containing zero premises. These constitute a very small fraction of both exchanges (<0.5%) and of total lines and premises (<0.1%), and their inclusion would not materially affect our calculations.

A5.167 We then made adjustments to the data in order to bring the number of broadband connections of each provider in line with the current figures used in our cost model projections for the charge control, and to avoid the omission of connections which exist but are either not present or not matched to a specific exchange in the raw dataset underpinning our Connected Nations analysis.¹⁶⁵ This uplift is required to take into account certain factors that are the primary causes of the dataset from Connected Nations giving total volumes that are lower than the data that has been used to inform our cost modelling for this statement. These factors are:

- **Unmatched take-up from Connected Nations:** in the case of Openreach, a small proportion of lines cannot be matched to specific premises served by downstream providers. When including these lines, the Openreach volumes from Connected Nations are similar to those in our cost modelling.¹⁶⁶ However, where lines cannot be matched, they are not allocated to specific premises in our raw dataset and therefore are not initially included in the lines allocated to specific exchanges. We have added these lines back into the dataset as an uplift across all exchange areas.
- **Issues with some Competitive Networks figures leading to inflated take-up data:** some of the Competitive networks volumes information collected for the Connected Nations report conflate coverage and take-up. We have therefore adjusted the volumes figures for Competitive Networks to account for this.¹⁶⁷
- **Premises in excluded exchanges:** we add back in the very small number of lines that were excluded due to data issues, for example exchange areas containing a few active broadband lines but no premises.

¹⁶⁵ These figures are based on recent actual information from telecoms providers including Openreach and Virgin Media.

¹⁶⁶ Of the 19.5m premises that take a broadband connection over the Openreach network (as measured by Connected Nations 2017), around 2.5m cannot be matched to specific premises. The difference between total broadband take-up on the Openreach network from the raw dataset underpinning our Connected Nations analysis and from the data used to inform our WLA cost model volumes is below 5% of total Openreach broadband lines (around 1m lines, including both copper and fibre lines).

¹⁶⁷ For our charge control, we have resolved this issue and accordingly find a lower level of take-up for the affected Competitive Networks.

- **Timing differences:** some of the difference in take-up will be due to timing differences between the collection of the Connected Nations 2017 data and the figures used in our WLA cost modelling.¹⁶⁸

- A5.168 The size of the uplift varies between the four types of line (Openreach copper, Openreach fibre¹⁶⁹, Virgin Media lines and Competitive network lines), as some factors are specific to particular types of line.¹⁷⁰
- A5.169 We have then applied uplifts to each of the four types of lines before calculating market shares for each exchange area. In order to simplify the analysis, we have applied a uniform uplift across exchange areas (except those exchange areas where the uplift would take the number of active lines above the number of premises in that exchange area).¹⁷¹
- A5.170 We recognise that this assumption may lead to shares of broadband enabled connections for individual exchanges that are not completely accurate, as the uplift may understate or overstate the true number of connections in that exchange area. However, in the absence of more detailed information or any reason to believe that data collection issues or timing differences will lead to a systemically higher proportion of mismatched addresses in some exchange areas rather than others, we consider that the application of a uniform uplift across all exchanges is likely to provide us with an accurate picture of shares of broadband enabled connections on both a national scale and in sufficiently large subnational areas.

Results of our analysis

- A5.171 Once the appropriate uplifts are applied to the data, we then calculated shares of broadband enabled local access connections both nationally and in the subnational areas defined by the chosen cable area thresholds.
- A5.172 To do this, we first calculate the Virgin Media coverage in each exchange area, and for each scenario only include exchanges where Virgin Media meets the required coverage threshold (in the national scenario, we include all exchanges). For the relevant set of exchanges in each scenario, we then divide the total take-up for each type of line by the total take-up of all lines in those exchanges.
- A5.173 The results do not include voice-only lines or ISDN lines¹⁷² – given BT’s high share of lines in these services, BT’s share of all WLA connections would be slightly higher than its share of all broadband calculated in our analysis and set out below:

¹⁶⁸ The charge control takes a weighted average of volumes over the 2017/18 financial year, whereas the Connected Nations data is from May and June 2017.

¹⁶⁹ Including FTTC, G.Fast and FTTP lines.

¹⁷⁰ The uplifts are: Competitive networks: [X<]

¹⁷¹ This accounts for a very small number of exchanges, and the uplift is applied to >99% of exchange areas.

¹⁷² We have also not taken into account voice-only and ISDN lines in our uplifts.

Table A5.18: Shares of all broadband enabled connections – 2017/18

Scenario	BT	Virgin Media	Competitive Networks	Total
National	[X]%	[X]%	[X]%	100%
Exchanges with >50% Virgin Media coverage	[X]%	[X]%	[X]%	100%
Exchanges with >65% Virgin Media coverage	[X]%	[X]%	[X]%	100%
Exchanges with >80% Virgin Media coverage	[X]%	[X]%	[X]%	100%

A5.174 While we have defined the product market as wholesale local access at a fixed location (and not on the basis of the broadband speed dimension of product differentiation – see Section 3), given stakeholder interest in the issue, we have also analysed shares of connections currently actively delivering SFBB (proxied by fibre and cable connections). Using the same methods as above, but excluding ADSL enabled connections on the BT Openreach network, we found the following shares for SFBB lines:

Table A5.19: Shares of fibre and cable broadband – 2017/18

Scenario	BT	Virgin Media	Competitive networks	Total
National	[X]%	[X]%	[X]%	100%
Exchanges with >50% Virgin Media coverage	[X]%	[X]%	[X]%	100%
Exchanges with >65% Virgin Media coverage	[X]%	[X]%	[X]%	100%
Exchanges with >80% Virgin Media coverage	[X]%	[X]%	[X]%	100%

Forecasting shares of connections

A5.175 In our analysis above, we have estimated the current share of both broadband enabled connections and shares of SFBB lines for the 2017/18 financial year. However, we have also considered how these shares are likely to change over the course of the review period.

- A5.176 To do this, we first forecast the shares of all broadband enabled connections (and, separately, of fibre and cable broadband connections) using forecasts from our WLA cost model. We then estimated the extent of changes in shares of connections in cable areas.
- A5.177 We assume that the rate of migration on the Openreach network from copper to fibre is the same in cable areas as nationally, as it is unlikely that consumers in different geographic areas will have a very significantly different willingness to pay for higher speeds, and SFBB is actively promoted nationally.
- A5.178 To determine whether this is an appropriate assumption, we have analysed whether there is a significant difference between the proportion of Openreach’s customer base on fibre broadband nationally and in cable areas. We find that, within cable areas, only a slightly lower proportion of Openreach’s base of broadband enabled connections is on fibre broadband relative to the national picture (around 2% less) and relative to non-cable areas (around [X] % less).
- A5.179 Given the similarity in the proportion of Openreach customers on fibre broadband across geographic areas, we consider it reasonable to assume that the rate of migration of Openreach’s customers from copper-based services to fibre-based services will be the same in cable areas as we have projected on a national basis as part of our cost modelling for the charge control.
- A5.180 In forecasting shares of connections, we have also taken into account planned rollout by Virgin Media, which effectively increases the size of cable areas (as there will be more BT exchange areas where Virgin Media has coverage over a specified threshold). We also make the simplifying assumptions that, over the review period, the proportion of broadband enabled cable connections that fall within exchanges which meet a particular coverage threshold is the same in 2020/21 as in 2017/18 (e.g. [X] (over 90)% of cable connections will fall in exchanges where Virgin Media has at least 50% coverage), and that the proportion of Virgin Media’s customer base that falls within each of these subnational areas will remain the same.
- A5.181 While changes in the number of broadband connections nationally, as well as the expansion of cable areas due to expansion under Project Lightning, has some impact on shares of connections, we find that shares of all broadband connections in 2020/21 are likely to [X] current shares:

Table A5.20: Shares of all broadband connections – 2020/21

Scenario	BT	Virgin Media	Competitive networks	Total
National	[X]%	[X]%	[X]%	100%
Exchanges with >50% Virgin Media coverage	[X]%	[X]%	[X]%	100%

Scenario	BT	Virgin Media	Competitive networks	Total
Exchanges with >65% Virgin Media coverage	[X]%	[X]%	[X]%	100%
Exchanges with >80% Virgin Media coverage	[X]%	[X]%	[X]%	100%

A5.182 In contrast to the shares of all broadband connections, the shares of fibre and cable broadband enabled connections are likely to change significantly over the course of this review period with the migration of consumers from copper broadband. Our forecasts of shares by the end of the review period are below:

Table A5.21: Shares of fibre and cable broadband – 2020/21

Scenario	BT	Virgin Media	Competitive networks	Total
National	[X]%	[X]%	[X]%	100%
Exchanges with >50% Virgin Media coverage	[X]%	[X]%	[X]%	100%
Exchanges with >65% Virgin Media coverage	[X]%	[X]%	[X]%	100%
Exchanges with >80% Virgin Media coverage	[X]%	[X]%	[X]%	100%

A5.183 While BT's share of all broadband connections is likely to [X] on these projections (see Figure A5.3 and A5.5), a sizeable proportion of connections on the BT Openreach network will migrate from SBB to SFBB over the review period.

A5.184 Given that the broadband customer bases of both Virgin Media and Competitive Networks are already served using cable and fibre (respectively), and that we forecast the volume of broadband connections on the Openreach network (i.e. both copper and fibre) to [X] over the review period, the migration of retail customers from SBB to SFBB will lead to an increase in BT's share of fibre and cable broadband connections both nationally and in subnational geographic areas. Nationally, we forecast BT's share of SFBB to increase from [X]% to [X]%, while in cable areas we expect BT's share of SFBB to increase from around [X]% to around [X]% by the end of the review period.¹⁷³

¹⁷³ See Figures A5.19 and A5.21.

A6. Assessment of the fair bet for past VULA investments

- A6.1 This annex sets out the reasoning behind our judgement that BT has had a fair opportunity to make a return on its investment in fibre to the cabinet (FTTC) and that our charge control for 40/10 VULA is consistent with the fair bet principle.
- A6.2 To inform our judgement, we have reviewed the consultation responses and also collected additional evidence from Openreach on the actual performance of its FTTC investments.
- A6.3 We have considered the framework proposed by Openreach for evaluating whether the fair bet has been met. We refer to this as the ‘Oxera framework’, as it is developed in a report on behalf of Openreach by the economic consultancy Oxera. In our view, the approach presented by Oxera is one useful and legitimate way of evaluating the fair bet. However, we disagree with some of the assumptions Oxera used when applying its framework. We explain below that using appropriate assumptions, the Oxera framework shows that Openreach has had a fair bet. In particular, important inputs are the level of actual returns and the relevant cost of capital. We find that:
- a) Our estimate of Openreach’s actual cumulative return on its FTTC investment since 2008/09 is around 15%. This is significantly higher than the 12% we estimated in our March consultation and the [3<] that Openreach refers to in its response.
 - b) A cost of capital of 11% (on a pre-tax nominal basis) is appropriate for using in the fair bet assessment.
- A6.4 Using these inputs, and applying the Oxera framework, our assessment is that we have provided Openreach with a fair bet on its FTTC investment.
- A6.5 We also consider the period of time over which we have allowed BT pricing flexibility, and hence the ability to earn returns above its cost of capital, is a useful reference point for assessing the fair bet. This is around 10 years from when BT began its FTTC investment in 2008/09. It is before the end of the expected discounted payback period for the base case scenario in BT’s original 2008 Board paper.¹⁷⁴ This is not a concern per se because we are setting a charge control that allows a return on capital employed, which means BT will be given the opportunity to recover the undepreciated value of its original investment after a charge control is imposed. Our judgement is that regulating after around 10 years of pricing flexibility also points to BT having had a fair bet.
- A6.6 We also explain that our assessment is likely to understate the extent to which the fair bet has been met for various reasons. For example, the original base case in the 2008 Board paper, which we consider in our assessment, understated the benefits of FTTC because it did not take into account the additional benefits to Openreach arising from its FTTC

¹⁷⁴ BT, June 2008. *NGA Strategy, Financial Summary*, page 4. BT response to the 1st Joint Wholesale Broadband Access and Wholesale Local Access Market Review s.135 notice, question 2.1, dated 22 October 2015.

investments in terms of avoiding significant loss of lines and associated revenue to Openreach's main competitor with its own local access network, Virgin Media.

A6.7 The rest of this annex is structured as follows:

- we first explain what we mean by the fair bet, why it is important for preserving investment incentives and our guiding principle in assessing whether BT has had a fair bet;
- we summarise the position set out in the March 2017 WLA Consultation;
- we summarise stakeholder responses;
- we describe different approaches for evaluating the fair bet and explain the relevance of Openreach's actual returns;
- we describe Openreach's estimate of its actual returns, and how we have assessed this, explaining why we reach such a different view to Openreach;
- we evaluate the appropriate cost of capital to apply to BT's investment;
- we apply the Oxera framework to evaluate whether BT has had a fair bet;
- we discuss the duration of the period of pricing flexibility and evidence on BT's expected payback on its FTTC investment, and its implications for the fair bet;
- we describe why our assessment is likely to understate the extent to which BT has had a fair bet; and
- we present our overall judgement that our charge control is consistent with providing BT with a fair bet on its FTTC investment.

The importance of ensuring BT has had a fair bet

A6.8 In developing our approach to pricing remedies for this review period, we sought to preserve the investment incentives faced by BT. As part of this, we want to ensure that BT has had a "fair bet" on its risky investments.¹⁷⁵

A6.9 An investment is a "fair bet" if, at the time of investment, the expected return is equal to the cost of capital. At the time of the investment, BT faced some risk that it would not be able to make a reasonable return on its FTTC investments (e.g. if demand for higher speeds had taken longer to materialise). To compensate, the fair bet requires that BT be given the opportunity to make higher returns in the event of a more favourable outcome.

A6.10 It is important to provide sufficient potential for BT to earn more than the cost of capital when the investment goes well to compensate for the losses BT could incur if the investment goes badly. Otherwise, BT would not have an incentive to make risky investments, and consumers would not have the benefits of its investment.

A6.11 Our guiding principle in assessing whether BT has had a fair bet has been to consider whether, at the time BT took the decision to invest in FTTC, it would have gone ahead with the investment if it had understood the approach to regulation we are now adopting. As

¹⁷⁵ Although we did not use the fair bet terminology, we set out equivalent principles in our March 2009 Statement, see Section 8, 'Delivering super-fast broadband in the UK: Promoting investment and competition'.
https://www.ofcom.org.uk/_data/assets/pdf_file/0018/59121/statement.pdf.

we cannot precisely understand now what investors perceived about the risks they faced at the time the investment was made, the fair bet is a matter of judgement in light of the evidence now before us.

March 2017 WLA Consultation

- A6.12 In the March 2017 WLA Consultation, we set out our provisional judgement that we had provided BT a fair opportunity to make a return on its original risky investment.¹⁷⁶ In reaching that provisional judgement we considered:¹⁷⁷
- how much time had elapsed compared to the expected payback period at the time the investment was committed;
 - the perceived riskiness of the initial investment;
 - the performance of the investment against initial expectations; and
 - the level of returns.
- A6.13 We set out that we believed BT would have expected payback on the first tranche¹⁷⁸ of its FTTC investment to occur within the period spanned by this market review, and that setting a charge control at expected payback should in general be sufficient to ensure a fair bet.¹⁷⁹ Further, we considered that to the extent the charge control subsequently allows a return on undepreciated assets, setting a charge control at the point of payback could be considered generous to BT.¹⁸⁰
- A6.14 We recognised that BT had invested substantial amounts in its FTTC network and that at the time the initial investment was committed, uncertainty surrounding the costs and demand for superfast services meant that there was a risk that the project may have failed to recover its cost of capital. However, we said this risk was mitigated by BT's ability to stagger each investment tranche and assess if conditions were favourable.¹⁸¹
- A6.15 We noted that BT's investment had outperformed initial expectations in several important areas: capex was less than expected, and both take-up and rental charges were higher than expected. We set out that if we did not impose a charge control during this review period, our estimate of Openreach's Internal Rate of Return (IRR) on its commercial investment in FTTC would exceed 15%, but our proposals would bring this down to under 12%.¹⁸² We made this assessment based on our bottom-up charge control model.

¹⁷⁶ March 2017 WLA Consultation, paragraph 8.23.

¹⁷⁷ March 2017 WLA Consultation, paragraph 8.19.

¹⁷⁸ BT announced its first major tranche of investment in SFBB in July 2008, with a plan to deliver fibre to 10 million homes – around 40% of UK premises - by 2012. BT, 31 July 2008. *Financial Results first quarter to June 30 2008*, page 1.

<https://www.btplc.com/News/ResultsPDF/q108release.pdf>.

¹⁷⁹ March 2017 WLA Consultation, paragraph A8.13.

¹⁸⁰ March 2017 WLA Consultation, paragraph 8.20.

¹⁸¹ March 2017 WLA Consultation, paragraph 8.21.

¹⁸² March 2017 WLA Consultation, paragraph 8.22.

Stakeholder responses

- A6.16 Stakeholders supported the principle of providing BT with a fair bet, but differed in their views of whether our proposals provided BT with a fair bet. Some respondents, including Sky, TalkTalk, and Vodafone, argued we had provided BT with a fair bet, while Openreach and Virgin Media disagreed.
- A6.17 Sky argued, “the fair bet is now over with BT making a more-than-adequate return on its investment in FTTC”.¹⁸³ Sky argued that while there was clearly some investment risk, particularly around likely take-up, the risk of the investment was mitigated by a number of factors including the “modest” level of the investment.¹⁸⁴
- A6.18 TalkTalk argued that we should impose a starting charge adjustment for the 40/10 GEA rental price cap, and that the glidepath we proposed was not necessary to provide BT with a fair bet. TalkTalk said this on the basis that BT’s returns were likely to be greater than the 12% we calculated.¹⁸⁵ TalkTalk argued that the consumer harm from not regulating VULA was “in excess of £1 billion”, and so we should require strong evidence BT had not been provided with a fair bet for us to take the decision not to regulate VULA.¹⁸⁶ TalkTalk argued BT’s initial response to the March 2017 WLA Consultation did not contain such strong evidence.
- A6.19 Vodafone argued the risk of BT’s investment was limited as it could find no evidence Openreach’s capital expenditure increased significantly over the period 2009 to 2015.¹⁸⁷
- A6.20 Virgin Media argued our analysis of the fair bet was “incomplete and flawed”. Virgin Media argued it was inappropriate for us to assess the fair bet based on the performance of the investment against initial expectations, as this was “akin to judging whether the odds on a horse at the Grand National were fair, based on the hindsight that it was in fact first past the post”.¹⁸⁸
- A6.21 Openreach submitted a business case showing it had earned returns of around [X]¹⁸⁹ on its fibre investments, below Openreach’s cost of capital, and not providing for a fair bet.¹⁹⁰ It submitted a report from Oxera (which we refer to as “Oxera 1”) which proposed a way of assessing the fair bet from returns, cost of capital, and the expected distribution of returns.¹⁹¹ BT Group submitted a response making many of the same arguments.¹⁹² Openreach subsequently submitted a further report from Oxera (which we refer to as

¹⁸³ Sky response to the March 2017 WLA Consultation, paragraph 16.

¹⁸⁴ Sky response to the March 2017 WLA Consultation, paragraph A1.50.

¹⁸⁵ TalkTalk response to the March 2017 WLA Consultation, section 7.4.

¹⁸⁶ TalkTalk response to Oxera paper on the fair bet, September 2017, paragraph 1.2

https://www.ofcom.org.uk/_data/assets/pdf_file/0023/107474/TalkTalk-Oxera-fair-bet-WACC-proposals.pdf.

¹⁸⁷ Vodafone response to the 2017 March WLA Consultation, paragraphs 8.1 to 8.4.

¹⁸⁸ Virgin Media response to the March 2017 WLA Consultation, paragraph 88.

¹⁸⁹ Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 10.

¹⁹⁰ Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 26.

¹⁹¹ Oxera, June 2017. *Does Ofcom’s approach in the WLA market review honour the fair bet principle? (Oxera 1)*

https://www.ofcom.org.uk/_data/assets/pdf_file/0016/105019/Openreach-vol-1-annex-3-Oxera-report.pdf.

¹⁹² BT Group response to the March 2017 WLA Consultation.

“Oxera 2”), assessing the distribution of BT’s FTTC returns.¹⁹³ This supplementary report reached the same conclusions as Oxera 1, and argued regulation which capped returns below 15% would likely be inconsistent with the fair bet.¹⁹⁴

A6.22 Various stakeholders gave differing views on how we should include BT investments in the BDUK areas, which we describe from paragraph A6.51 below.

Approaches to evaluating the fair bet and the relevance of Openreach’s actual returns

A6.23 Ofcom’s approach to providing for the fair bet has been to refrain from capping wholesale FTTC prices, allowing an extended period in which BT could capitalise on the upside should demand prove strong. While this general approach was described in previous regulatory reviews, Ofcom did not spell out at the time how long this period should be, or precisely how Ofcom would evaluate at future reviews whether a fair bet had been provided for or not.

A6.24 In the March 2017 WLA Consultation, we said performance against expectations and, in particular, the level of returns, provides a useful indicator of whether it may be appropriate to set charge controls.¹⁹⁵ We considered this relevant, because, for example, if the investment was underperforming expectations, we could be less likely to consider a charge control appropriate.

A6.25 In its response, Virgin Media said that it is inappropriate to consider the actual performance of the investment, as the actual return does not tell us about the expected returns when the investment was made.

A6.26 We think that it is reasonable to take high actual returns as an indicator that the fair bet is more likely to have been met. However, we agree with Virgin Media that ideally the assessment should reflect the up-front distributions of risks faced, and we have considered various ways of explicitly taking account of the up-front risks.

A6.27 We consider there might have been different ways of implementing the fair bet principle at the time of the investment. One approach, consistent with Virgin Media’s comments, might be to ignore actual returns completely and simply regulate after a period of time. The length of that period would be determined so as to be consistent with the fair bet principle.¹⁹⁶

A6.28 A variation on this approach might be to pay some regard to the actual return, with regulation slightly earlier than that fixed period if actual returns were extremely high, and

¹⁹³ Oxera, October 2017. *Assessing the anticipated shape and distribution of BT’s FTTC returns (Oxera 2)* https://www.ofcom.org.uk/_data/assets/pdf_file/0009/111402/BT-commissioned-Oxera-report-assessing-the-anticipated-shape-and-distribution-of-BTs-FTTC-returns.pdf.

¹⁹⁴ Oxera 2, page 11.

¹⁹⁵ March 2017 WLA Consultation, paragraph A8.8.

¹⁹⁶ With this approach to implementing the fair bet principle, charges could be regulated even when the investment has not gone well and the company has earned a return below the relevant cost of capital. This could be the case if demand for higher speeds materialised later than expected and the investment in FTTC was too early to allow a sufficient return.

slightly later if actual returns were not performing so well. For example, there might be regulation after a fixed period only if actual returns were above the cost of capital. So even if the fair bet were interpreted largely in terms of the duration of the period of pricing flexibility, actual returns can still have a role in assessing the fair bet.

- A6.29 The Oxera framework sets out another approach to the fair bet. The Oxera framework involves regulation capping the actual return on the investment to a particular level, with that level being determined to ensure that the investment was profitable at the outset given the risks faced. We describe the Oxera framework in more detail below. The level of actual returns is critical to whether price regulation is appropriate with the Oxera framework. We consider the Oxera framework, submitted by Openreach, to be one way of formalising the considerations described in the March 2017 WLA Consultation, including performance against expectations, and riskiness of the initial investment.
- A6.30 Recognising we did not state how we would implement the fair bet principle at the time the investment was made, we consider the Oxera framework offers a useful and legitimate way of evaluating the fair bet. We have therefore carefully assessed whether the fair bet is met using the Oxera framework.

Assessment of Openreach's actual returns

- A6.31 Below we briefly describe how Openreach has estimated its actual return, then set out how we have estimated it. We also explain the main reasons why these two figures are so different. Finally, we summarise the various assumptions we have made in estimating Openreach's actual return that will tend to understate it somewhat.

Openreach's estimate of its actual return

- A6.32 Openreach and Oxera argue that the fair bet is not met under Oxera's framework. In contrast to Openreach, our conclusion is that the fair bet is met under the Oxera framework. One key reason for the difference in view is to do with the assessment of Openreach's actual return, which is a key factor in the Oxera framework.
- A6.33 In its consultation response of June 2017, Openreach submitted a business case for its commercial FTTC and FTTP investments, which we refer as the June 2017 Fibre Business Plan. This plan shows Openreach's actual investments and cashflows to 2016/17, and a projection of future investments and cashflows from 2017/18 to 2028/29. For revenues in the period 2018/19 to 2020/21 it assumes the base case proposals from our March 2017 WLA Consultation. The analysis separates Openreach's "commercial" investments and its "BDUK" investments.¹⁹⁷

¹⁹⁷ The "BDUK" investments are those for which Openreach has received Government subsidy, as they would otherwise be loss-making. The "commercial" investments are those for which Openreach has not received any subsidy, and represent the majority of its FTTC investments.

A6.34 Openreach argued its June 2017 Fibre Business Plan shows a return of less than [3<] % for its commercial fibre investments over the period from 2008/09 to 2028/29 based on the charge control proposals in our March 2017 WLA Consultation, and even less for its investment in BDUK areas.¹⁹⁸ Openreach argued its business case shows that it has not yet achieved discounted payback¹⁹⁹ and does not expect to do so on its investments across commercial and BDUK areas at current fibre prices (i.e. even without any charge control) until 2020/21.²⁰⁰ Openreach concludes, “it is reasonable to assume the BT Board would not have supported Openreach undertaking the commercial fibre investment in 2008 on the basis of projected risky 20 year returns of c. [3<] %”.²⁰¹ Openreach argued this was evidence it had not been provided a fair bet on its investment.

Our estimate of Openreach’s FTTC return

A6.35 Our starting point for the assessment of Openreach’s actual return is the same as Openreach used, namely the June 2017 Fibre Business Plan. However, we have made a number of adjustments to arrive at a more reliable basis for evaluating Openreach’s actual returns on its commercial FTTC investment. We describe these adjustments and the reasons for them below:

- a) Our approach to the time period for the assessment and the use of a terminal value at the end of 2018/19, rather than long run projections of future cashflows, to evaluate the return;
- b) Why we do not consider Openreach’s past FTTP investments and future FTTP plans are relevant to our assessment of the fair bet on FTTC;
- c) How we have removed the data attributable to the FTTP investments, so as to isolate the FTTC costs and revenues in the June 2017 Fibre Business Plan;
- d) How we have treated, for our assessment of the fair bet, our decision to set charge controls that recover common costs from fibre as well as copper from 2018/19;
- e) Why we consider that Openreach’s BDUK investments are not relevant to the fair bet assessment; and
- f) We then show that our estimate of the cumulative rate of return that results from the above is around 15%.

Time period for assessment and use of a terminal value

A6.36 Openreach’s June 2017 Fibre Business Plan presents cashflow forecasts to 2028/29 and Openreach’s estimate of its rate of return considering cashflows over this entire period. We do not consider this reliable for assessing whether or not we have provided Openreach with a fair bet on its investment in FTTC. This is because the assessment depends to a

¹⁹⁸ Openreach response to the March 2017 WLA Consultation, Confidential Openreach fibre business case, 21 June 2017.

¹⁹⁹ By discounted payback we mean the period that ends when the cumulative discounted cashflows turn positive.

²⁰⁰ Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 284.

²⁰¹ Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 287.

considerable extent on long term forecasts of costs and revenues, when those forecasts are highly sensitive to volume forecasts and future assumptions of FTTC prices. Rather, we prefer to use an approach based largely on actual cashflows, which derives future cashflows based on a terminal value.

- A6.37 We have set a charge control that adjusts charges for 40/10 VULA services so as to reflect our forecast of costs from the start of 2019/20. We have therefore considered cashflows up to 2018/19 and have then included a terminal value to reflect the value of the undepreciated assets at the end of March 2019. As the charge control we have set uses a glidepath to adjust Openreach's revenues to be in line with costs, this approach ensures that we include the value Openreach obtains from this glidepath in 2018/19 in our assessment of the fair bet.
- A6.38 This approach uses outturn cashflows for the period 2008/09 to 2016/17, and requires forecasts for the two years 2017/18 and 2018/19.
- A6.39 The terminal value we have used for the end of March 2019 is based on the undepreciated FTTC asset value in our charge control modelling of VULA,²⁰² as this is the value on which we would expect to allow a return in the future. We assume that future regulation is expected to allow Openreach to recover this asset value. We consider this is the best estimate of the value that investors could expect to obtain from the FTTC assets if they sold their stake in Openreach at that point in time, and hence is the appropriate value to use in the calculation of the cumulative rate of return.

Openreach's past FTTP investments not relevant to the fair bet for FTTC

- A6.40 As well as FTTC investment, Openreach has made some modest FTTP investments. These are dominated by FTTP to new premises (greenfield sites).²⁰³ We are requiring Openreach to provide its 40/10 FTTP service at the charge controlled price to these premises, as the consumers at these premises do not have the option of purchasing a service that uses 40/10 service over FTTC, as explained in Section 9 of Volume 1.
- A6.41 We do not consider FTTP investment to new premises to be very risky investment, just as we did not previously consider copper connections to new premises to be very risky investments. As we set out in Annex 14, we consider that the costs we include in the

²⁰² As discussed below, we are only interested in FTTC assets. We have therefore made a downward adjustment to the asset value in our charge control model to reflect that our model is based on a hypothetical assumption that Openreach's FTTP lines are all FTTC lines. This means that the asset value in the charge control model is too high as a measure of the actual asset value for FTTC lines, as it assumes more FTTC lines than actually exist. We have adjusted down the asset value from our charge control model by the ratio of (a) Openreach's forecast of the actual number of FTTC lines at the end of 2018/19 in its June 2017 Fibre Business Plan to (b) the number of fibre lines in our charge control model at the end of 2018/19. We have used Openreach's forecasts for FTTC lines, as opposed to our forecasts for FTTC lines, to be consistent with the rest of the June 2017 Fibre Business Plan.

²⁰³ Openreach response to the 36th Wholesale Local Access Charge Control s.135 notice, question 19, dated 23 October 2017.

We recognise that on 1 February 2018 Openreach announced its more ambitious "Fibre First" plans for FTTP deployment, <https://www.homeandbusiness.openreach.co.uk/news/fibrefirst>. These new plans do involve deploying FTTP to premises that are already served with FTTC. As described in Section 9 of Volume 1, we are not imposing a charge control on BT's 40/10 GEA-FTTP service to premises where a 40/10 FTTC service is offered.

charge control are sufficient to allow for an appropriate return on these FTTP investments. We therefore do not consider Openreach's past FTTP investment relevant to our assessment of the fair bet on its FTTC investment and have excluded it from our analysis. We explain how we have done this below.

Isolating FTTC costs and revenues in Openreach's June 2017 Fibre Business Plan

- A6.42 In a s.135 notice, we asked Openreach to split its costs and revenues relating to commercial fibre access between FTTP and FTTC for its actual results up to 2016/17, and for the forecasts in the June 2017 Fibre Business Plan. Openreach responded that while most costs and revenues could be entirely allocated to FTTP or FTTC, "... some costs and revenues were not driven by a split between FTTP and FTTC and therefore a split was unavailable."²⁰⁴
- A6.43 For the costs where it is not certain how they should be split between FTTC and FTTP, we have allocated them to FTTC in their entirety. This will understate Openreach's actual FTTC return as some of these costs will relate to FTTP.
- A6.44 For the allocation of ancillary revenues related to FTTP and FTTC, we allocated these between FTTP and FTTC based on the relative share of rental, connection, and cease revenues that were specific to FTTP and FTTC in each year.
- A6.45 In terms of the treatment of copper revenue gains and losses in the June 2017 Fibre Business Plan, we have allocated these all to FTTC. This is consistent with our assumption that all the FTTP investment in Openreach's June 2017 Fibre Business Plan is to new premises, where there is no copper line. The copper revenue gains occur when a fibre connection wins back a customer onto the Openreach network, and there is therefore some copper revenue as well as the fibre revenue. The copper revenue losses relate to the SMPF revenues lost when a customer upgrades to fibre.

Our treatment of the common cost reallocation from copper to fibre from 2018/19

- A6.46 Previous charge controls for copper services have been set assuming a hypothetical ongoing copper network without FTTC.²⁰⁵ However, in setting the copper and 40/10 VULA services charge controls in this review we have recovered some common costs from VULA services rather than recovering all from copper services. As explained in Section 2 of Volume 2, we have allocated common costs between LLU, WFAEL and VULA services on an equi-proportionate mark-up (EPMU) basis. This has the effect of reducing the copper charge control and increasing the 40/10 VULA charge control compared to if all common costs were recovered from copper services.

²⁰⁴ Openreach response to the 36th Wholesale Local Access Charge Control s.135 notice, question 27, dated 2 October 2017.

²⁰⁵ In the 2014 Fixed Asset Market Review, the MPF and WLR charge controls were based on a hypothetical on-going copper access network, with all incremental fibre costs excluded. See paragraph 1.12 and 3.66, https://www.ofcom.org.uk/_data/assets/pdf_file/0032/78836/volume2.pdf.

- A6.47 We have reflected this change in our modelling of Openreach’s expected return on its FTTC investment by increasing FTTC costs in 2018/19 by the amount of common costs that are assumed to be recovered from FTTC in our charge control modelling. While our charge control model assumes some common costs are recovered from FTTP lines, in our assessment of the fair bet we have assumed common costs are recovered wholly by FTTC lines.
- A6.48 Openreach adopts the same approach to this common cost allocation in its June 2017 Fibre Business Plan, adding these costs in from 2018/19 onwards. We have replaced Openreach’s assumed allocation of common costs with the figures calculated in our charge control modelling. The difference is small and would not affect our assessment of the fair bet.
- A6.49 Our treatment of this common cost allocation means that the estimate of Openreach’s actual return we calculate is probably an underestimate. This is because Openreach’s return in 2018/19 is understated. This is because the copper and 40/10 VULA charge controls use a glidepath during 2018/19, so as to adjust to costs by 2019/20.²⁰⁶ This means that the reduction in copper charges (due to common costs being re-allocated to VULA) will only be partly reflected in lower copper revenues during 2018/19. Despite this, we have included all of the common cost re-allocated to VULA in the costs for 2018/19.

Openreach’s BDUK investments is not relevant to fair bet assessment

- A6.50 In the March 2017 WLA Consultation, we considered Openreach’s commercial (i.e. the non-BDUK) investment relevant to our assessment of Openreach’s returns. We did not include BT’s non-commercial investment related to BDUK, for which it received state subsidies.
- A6.51 Openreach argued that alongside its commercial plans, it had entered a number of contracts to supply superfast broadband as part of the BDUK programme in areas which would otherwise be loss-making. It argued we had not taken into account the impact of our proposals on BDUK areas.²⁰⁷
- A6.52 Other respondents also argued that we should include BT’s BDUK investments in our assessment of the fair bet. Vodafone²⁰⁸, Bit Commons²⁰⁹, and [S<] ²¹⁰ suggested that taking BDUK investments into account would increase the likelihood that the fair bet was met. These respondents had a different perspective to Openreach: Openreach argued that including BDUK would reduce returns and the likelihood that the fair bet was met.

²⁰⁶ The MPF rental price is above LRIC+ costs in 2018/19. The cost subsequently increases in 2019/20.

²⁰⁷ Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 281.

²⁰⁸ Vodafone argued that including set up costs that would not subsequently have increased as coverage was increased, means the unit cost we use to appraise the fair bet would be too high. Further, Vodafone argued that excluding the BDUK coverage area risks including costs in our assessment that are already funded by Government subsidies. See Vodafone’s response, paragraphs 8.2-8.9 and 10.2.

²⁰⁹ Bit Commons response, page 3.

²¹⁰ [S<]

- A6.53 The BDUK contracts were subject to negotiation and agreement between BT and the relevant local authorities (who were supported by the BDUK unit within the Department for Digital, Culture, Media and Sport). As they involved state funding, we consider that these negotiations and resulting contracts should have dealt with the risks BT faced with its BDUK investments. This is consistent with the contracts having mechanisms dealing with some risks explicitly. For example, the contracts were predicated on take-up of 20% and involve a claw-back mechanism if take-up rose above 20%, such that BT is required to return some of the public subsidy over the period of the contract during take-up remains above 20%.²¹¹ The agreements also have an “underspend clawback” mechanism which compares the actual network build costs with that in BT’s estimated bid, which requires BT to return any underspend to local authorities.²¹² Furthermore, BT’s BDUK investments happened later than its commercial investments, when there was more information on the demand for FTTC based services and on the costs of provision.²¹³ As the BDUK contracts involve large amounts of public money, they have been subject to scrutiny by various bodies.²¹⁴
- A6.54 The risks BT faces with BDUK investments were therefore very different to BT’s investment in the commercial area, and were the outcome of its negotiation with local authorities. We consider that BT should have considered and taken account of the risks involved with its investment in the BDUK areas in its negotiations and contracts with local authorities, including taking account of possible future charge controls on VULA. We therefore do not consider the BDUK areas are relevant to our consideration of the fair bet for the commercial FTTC investments, and so have only considered the returns on BT’s FTTC commercial investment.
- A6.55 In any case, we have considered whether the costs of deploying FTTC in BDUK areas are similar to those in commercial areas, once government subsidies are taken in to account. In Annex 14 we show that the unit costs differences between the commercial and BDUK areas are less than 1%, once government subsidies are taken into account.

Conclusion on Openreach’s actual return on its FTTC investment

- A6.56 Table A6.1 below shows Openreach’s actual cashflows for 2008/09 to 2016/17 and forecasts for 2017/18 and 2018/19 relating to FTTC in the commercial area, calculated as

²¹¹ For a discussion on the appropriateness of the 20% level, see the Paragraph 4.12 of the National Audit Office’s July 2013 report, *The rural broadband programme*, https://www.nao.org.uk/wp-content/uploads/2013/07/10177-001-Rural-Broadband_HC-535.pdf.

²¹² See paragraph 16 of *Establishing worldclass connectivity throughout the UK*, Culture, Media and Sport Committee report, 13 July 2016, <https://publications.parliament.uk/pa/cm201617/cmselect/cmcmums/147/147.pdf>.

²¹³ Openreach’s BDUK investments started in 2011/12, three years after its commercial investments, although even by the end of 2012/13 cumulative gross capex (i.e. gross of government subsidies) was only £[><], and it was not until 2013/14 that cumulative gross capex exceeded £[><].

²¹⁴ National Audit Office, January 2015. *The Superfast (Rural) Broadband Programme: update*, <https://www.nao.org.uk/wp-content/uploads/2015/01/The-Superfast-Rural-Broadband-Programme-update.pdf>.

The Public Accounts Committee has also produced various reports related to BDUK, including <http://www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/news/rural-broadband-report-publication/> [accessed 20 February 2017].

discussed above. It also shows the terminal value at the end of 2018/19. The cumulative rate of return that results from these is around 15%.

Table A6.1 – Openreach’s FTTC cashflows in the commercial area

	Actuals						Forecasts				
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
Revenues			[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]
Operating costs			[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]
Capital costs	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]
Total costs	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]
Terminal value at end 2018/19											[<] ²¹⁵
Total cashflow	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]	[<]
Cumulative rate of return	[<]										

Main reasons for differences between our estimate of Openreach’s return and Openreach’s estimate

A6.57 This cumulative return of around 15% that we calculate can be compared with the return of [<]%^²¹⁶ that Openreach refers to in its consultation response. Openreach’s figure reflects its return on its June 2017 Fibre Business Plan over the period 2008/09 to 2028/29, with no terminal value.

A6.58 The main reason for the large difference in these two estimates is that Openreach’s figure relates to FTTP as well as FTTC, combined with Openreach not including a terminal value. Openreach’s June 2017 Fibre Business Plan assumes a large amount of FTTP investment in every year from around 2017/18 onwards, but does not assume any terminal value for this in 2028/29. It assumes more than £[<] of FTTP investments between now and 2028/29.²¹⁷ Clearly the FTTP investment in the last few years of this 20-year plan will not be able to

²¹⁵ In practice, because the cashflows are assumed mid-year, half the terminal value of £[<] enters at the end of 2018/19 and half in 2020/21. To present this in the table above, we have generated a single terminal value to enter in 2018/19 by assuming half of the [<] enters in 2018/19, and half in 2019/19, discounted by the IRR of [<]%.
²¹⁶ Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 10.
²¹⁷ In the period to the end of 2017/18, there was material FTTP investment (around c10% of commercial capex). Around half of that capex occurs in 2017/18.

earn a return if the revenues are only considered in those few years, despite these assets being expected to last for many years. For example, Openreach's June 2017 Fibre Business Plan includes almost £[<] of FTTP capex in the final year of the assessment, which is assumed to have no value beyond any additional revenues enabled in that year. This materially depresses Openreach's calculation of its return on the combined FTTC and FTTP cashflows.

A6.59 That the inclusion of FTTP without a terminal value is the key difference can be seen by taking Openreach's June 2017 Fibre Business Plan and simply removing the FTTP specific revenues and costs from that plan, without any other adjustments. If we do this, and consider the period from 2008/09 to 2028/29 with no terminal value, the return over the period as a whole would be around [<]%, which is close to our estimate.²¹⁸

Our calculation of Openreach's return is an underestimate

A6.60 Our estimate of Openreach's return is likely to be an underestimate because:

- a) We have allocated some costs to FTTC which may relate to FTTP rather than FTTC, as discussed in paragraph A6.43 above;
- b) We are likely to have understated Openreach's return in 2018/19 because of the way we have treated the glidepath and the re-allocation of common costs from copper to fibre in this charge control, as discussed in paragraph A6.49 above;²¹⁹
- c) For 2017/18 and 2018/19, we used Openreach's estimates of FTTC cashflows.²²⁰ The revenues for 2018/19 were based on the base case charge control proposals in our March 2017 WLA Consultation. The final 40/10 VULA rental charge control we have set is around 4% higher than the base case proposal in the March 2017 WLA Consultation, and hence we will understate revenues in 2018/19 in estimating Openreach's FTTC return.²²¹

²¹⁸ Another reason why our estimate may be slightly higher than Openreach's is that Openreach's revenues in 2019/20 are understated because Openreach's assessment is based on the lower charge control in the March 2017 WLA Consultation rather than our final charge control. We also do not know what assumptions Openreach has made in forecasting revenue beyond the current market review period.

²¹⁹ For example, if we assume only two thirds of common costs are allocated to fibre in 2018/19 it increases Openreach's cumulative return by around half a percentage point.

²²⁰ We verified that the actual monthly revenues for 2017/18 were in line with the monthly forecasts part way through the year.

²²¹ If we assumed there were no impact on volumes, then the higher charge control would increase revenues such that Openreach's return over the period as a whole would increase by 0.2 percentage points. However, it is possible that volumes may be slightly lower with the higher prices, so we have not made this adjustment.

Cost of capital relevant to BT’s fibre access investment

March 2017 WLA Consultation

- A6.61 In the March 2017 WLA Consultation we said that we consider that an investment is a “fair bet” if, at the time of investment, the expected return is equal to the cost of capital.²²² We estimated that if we were to continue to allow pricing flexibility across VULA services and then impose a cost based charge control in 2020/21, Openreach’s IRR on its fibre access investment over 20 years (including the period subject to a cost based charge control) was “well above BT’s cost of capital”.²²³ However, we did not explicitly set out the BT cost of capital we were referencing.
- A6.62 Below we consider stakeholder comments about the relevant cost of capital from the time of investment, before discussing our own analysis.

Stakeholder comments

- A6.63 Openreach argued that a fair bet requires that investors, at project inception, have the opportunity to earn at least the project-specific cost of capital, on an expected basis. This means that in the face of *ex ante* downside risks, upside outcomes should not be truncated to the point where the initial investment decision would not have been taken.²²⁴ Openreach commissioned Oxera to calculate a project specific cost of capital to assess whether the fair bet had been met.
- A6.64 Oxera said that the relevant cost of capital for assessing the fair bet is the project specific cost of capital for fibre access at the time of the original investment, and not the forward-looking cost of capital of 9.4% that Ofcom proposed to apply in the March 2017 WLA Consultation.²²⁵ Oxera considered that the project-specific cost of capital for fibre access at the time of the original investment was between 11.4% to 12.8%, arguing that an estimate towards the top end of this range would be appropriate.²²⁶
- A6.65 Oxera’s upper bound was informed by an asset beta estimate of 0.92 which was derived from a backwards extrapolation using two data points:
- The Rest of BT (RoBT) asset beta from our 2014 FAMR Statement (0.83); and
 - the Other UK Telecoms asset beta from the March 2017 WLA Consultation (0.75).²²⁷
- A6.66 Oxera said that this approach is reasonable because Ofcom has recognised that the riskiness of fibre access has reduced over time and therefore the asset beta for fibre access in 2009 must have been higher than the implied fibre access asset beta from our 2014

²²² March 2017 WLA Consultation, paragraph A8.4.

²²³ March 2017 WLA Consultation, paragraph A8.23.

²²⁴ Openreach response to the March 2017 WLA Consultation, Volume 1 paragraph 32 Page 11.

²²⁵ Oxera 1, page 2.

²²⁶ Oxera 1, Page 2.

²²⁷ Where 0.92 equals 0.83/ (0.75/0.83).

FAMR decision.²²⁸ Oxera also quoted Ofcom’s 2007 Future Broadband document that said “the risk profile of investments changes over time, with later tranches of investment potentially being lower risk than initial investments. Therefore, any estimation of risk needs to vary over time”.²²⁹ Oxera combined its asset beta of 0.92 with other parameters from our 2009 LLU Statement²³⁰ to calculate a pre-tax nominal cost of capital of 12.8%.²³¹

- A6.67 Openreach said that Oxera had cross-checked its asset beta estimate of 0.92 with reference to the difference between the Openreach asset beta and implied fibre access asset betas in Ofcom documents published in 2009, 2014 and 2017.²³² Openreach said that a fibre access asset beta of 0.92 gives a spread over the Openreach asset beta of 0.38 which looks “conservative given that the spread will be wider in the early years of the fibre access project due to the higher systematic risks at this stage compared to copper which exhibits a more stable risk profile.”²³³
- A6.68 Oxera’s lower cost of capital estimate of 11.4% was derived by value-weighting (using the capex profile from Ofcom’s consultation model) the cost of capital of 9.4% proposed in the March 2017 WLA Consultation and Oxera’s estimate of the cost of capital of 12.8%.²³⁴
- A6.69 Openreach argued that it has been standard practice in BT to calculate the period over which a project reaches payback using a standard commercial discount rate as this allows simple comparisons between projects i.e. longer payback dates will generally be perceived as entailing more risk for shareholder funds and offering less attractive investment options.²³⁵ BT’s internal papers indicate that it assessed the initial fibre access investment case by applying a discount rate of 10% to Openreach cash flows and 11.4% to cash flows associated with the rest of BT.²³⁶ Openreach said that “both of these rates were the standard commercial discount rates applied at that time across all BT projects [and] the use of these standard discount rates did not imply that if the fibre investment generated an IRR of 10% at the Openreach level and 11.4% at the downstream level, this would have (or should have) been sufficient for the investment to proceed”.²³⁷ Openreach said that “BT’s standard corporate discount rate was used as one of many indicators to assess the relative profitability and strategic fit of the fibre access project against other potential uses of the capital” and argued that “there is therefore no direct relationship between Oxera’s

²²⁸ Oxera 1, Page 23.

²²⁹ Ofcom, September 2007. *Future broadband: Policy approach to next generation access*, paragraph 5.18
https://www.ofcom.org.uk/data/assets/pdf_file/0023/47750/future_broadband_nga.pdf.

²³⁰ https://www.ofcom.org.uk/data/assets/pdf_file/0018/53730/statement.pdf.

²³¹ Oxera 1, page 24.

²³² Openreach, October 2017. *Wholesale Local Access Market Review: further submission on Ofcom’s assessment of the fair bet* (Openreach Fair Bet Submission), paragraph 85.

²³³ Openreach Fair Bet Submission, paragraph 85.

²³⁴ Oxera 1, page 24.

²³⁵ Openreach Fair Bet Submission, paragraph 86.

²³⁶ BT, 2008. *High level business model* for board paper.

²³⁷ Openreach Fair Bet Submission, paragraph 87.

estimated project specific cost of capital and the 10% discount rate included in BT’s board papers”.²³⁸

- A6.70 Virgin Media made a similar point, arguing that very often a company will have a standard investment hurdle rate that is applied to all investments, independent of risk. Virgin Media argued it is simply impractical to generate a new discount rate for each project to reflect its specific risk.²³⁹
- A6.71 Openreach also argued that it would not be appropriate to apply the RoBT asset beta of 0.68 from Ofcom’s 2009 LLU Statement (which supported a RoBT cost of capital of 11.0%) because this would have “captured the systematic risk for all parts of the business other than the copper access business within Openreach. This would have represented an average of new, mid-life and mature projects and activities, none of which has been shown by Ofcom to be, in principle, comparable in the systematic risk profile to the fibre access investment at project inception”.²⁴⁰ Openreach adds that applying the RoBT asset beta of 0.68 to fibre access in 2009 implies that systematic risk is increasing over time, which is counter intuitive.²⁴¹
- A6.72 TalkTalk responded to Oxera’s submission and argued that Oxera’s fibre access asset beta estimate of 0.92 is unreliable.²⁴² TalkTalk said that Oxera linearly extrapolates a fibre access asset beta for 2009 using the Other UK telecoms asset beta from the March 2017 consultation and the RoBT asset beta from the 2014 FAMR Statement despite the 2014 FAMR Statement not estimating an asset beta for Other UK telecoms.²⁴³ TalkTalk said this means the 0.83 RoBT asset beta from the 2014 FAMR Statement is dominated by the risks of BT Retail and BT Global Services and is likely to have been an overestimate of the asset beta for fibre access in 2014.²⁴⁴ TalkTalk adds that there is no evidence presented by Oxera that this extrapolation approach is likely to lead to a good estimate of the asset beta at the time of the original investment.²⁴⁵
- A6.73 TalkTalk also argued that Oxera’s lower bound for the cost of capital (which was based, in part, on our proposed cost of capital for Other UK Telecoms) was excessive because our proposed value for the Other UK telecoms cost of capital was excessive.²⁴⁶ We have responded to TalkTalk’s comments regarding the cost of capital for Other UK Telecoms in Annex 20.

Our reasoning and decisions

- A6.74 In considering the risk associated with BT’s investment in fibre access, we need to distinguish between specific risk and systematic risk. Both would contribute to a higher

²³⁸ Openreach Fair Bet Submission, paragraph 91.

²³⁹ Virgin Media Submission, paragraph 99.

²⁴⁰ Openreach Fair Bet Submission, paragraph 73.

²⁴¹ Openreach Fair Bet Submission, paragraph 82.

²⁴² TalkTalk response to the Oxera paper on the fair bet, September 2017, page 12.

²⁴³ TalkTalk response to the Oxera paper on the fair bet, September 2017, page 12.

²⁴⁴ TalkTalk response to the Oxera paper on the fair bet, September 2017, page 12.

²⁴⁵ TalkTalk response to the Oxera paper on the fair bet, September 2017, page 12.

²⁴⁶ TalkTalk response to the Oxera paper on the fair bet, September 2017, page 2.

overall risk for investment in fibre access, but we need to be careful to avoid double counting these risks.

- A6.75 In identifying a benchmark cost of capital for investment appraisal, we are concerned with identifying systematic risk and not specific risk. Specific risk forms the basis of our wider assessment of the fair bet in this annex. Systematic risk is measured by the “beta” of the project and in theory exists independently of specific risk. In practice, distinguishing between the two is not straightforward, but any estimate of a project-specific cost of capital should, in principle, only be concerned with systematic risk.
- A6.76 As to when that assessment of systematic risk is made, we agree with Oxera that the relevant cost of capital to use in assessing the fair bet would be that associated with fibre access at the time of the original investment rather than the forward-looking cost of capital determined in this review (see Annex 20).
- A6.77 As explained further below, we consider that a suitable benchmark cost of capital is around 11.0% (on a pre-tax nominal basis). This is consistent with our regulatory decisions around the time of BT’s initial fibre access investment and is compatible with the discount rates used by BT at the time of 10% and 11.4%.
- A6.78 A theoretically attractive approach to estimating the cost of capital for the purposes of the fair bet is to identify a fibre access specific cost of capital at the time of the initial investment. However, this approach is not possible because there were no “pure play” fibre access comparator companies at the time on which we could base our analysis.²⁴⁷ Therefore, we have considered the following options which would allow us to estimate a suitable benchmark cost of capital against which to evaluate BT’s initial investment in fibre access:
- a) Regulatory decisions around the time of the decision to invest; and
 - b) BT’s own internal documents at the time of the decision.
- A6.79 Below we consider the cost of capital implied by these two options before commenting on Oxera’s proposed approach.

Regulatory decisions around the time of the decision to invest

- A6.80 As explained in Annex 20 we only regulate part of BT’s business and BT Group comprises many different lines of business, many of which will have different systematic risk profiles.
- A6.81 In recognition of this, and with a desire to identify a better estimate of systematic risk facing BT’s largest regulated business, we have since 2005 disaggregated the access line business operated by Openreach from the BT Group cost of capital. In 2005 we distinguished between the Openreach copper access business (considered to be lower systematic risk) and the rest of BT (RoBT – comprising various usage services such as voice

²⁴⁷ As noted in Annex 20, there are also no pure play fibre access comparator companies today that we can use to determine a fibre access-specific cost of capital.

and broadband over access lines as well as other, quite different, lines of business such as the ICT services offered to large corporate customers).

A6.82 We subsequently (in 2016) further disaggregated the BT Group cost of capital between Openreach copper access (defined as before), BT’s other UK telecoms business (“Other UK telecoms” – comprising voice services, broadband access and leased lines) and the remainder of BT Group (now a smaller RoBT comprising mainly its ICT operations).

A6.83 The cost of capital for each of the regulatory decisions since the first disaggregation of the BT Group cost of capital in 2005 is summarised in Table A6.2 below.

Table A6.2: Ofcom Cost of capital decisions, on a pre-tax nominal basis

Decision	BT Group	Openreach copper access	Other UK telecoms	RoBT
2005	10.9%	10.0%		11.4%
2009	10.6%	10.1%		11.0%
2011	9.2%	8.8%		9.7%
2013	9.3%	8.8%		9.9%
2014	10.0%	8.6%		10.8%
2016	9.9%	8.8%	9.8%	12.4%
2018	9.3%	7.9%	8.9%	12.9%

Source: Ofcom²⁴⁸

A6.84 In our 2005 Statement, we estimated a pre-tax nominal cost of capital of 10.9% for BT Group, 11.4% for the Rest of BT (RoBT), and 10.0% for Openreach copper access. The RoBT cost of capital then captured the systematic risk of BT’s non-copper access activities and, by implication, would have included the contribution to systematic risk associated with fibre access – to the extent that investors had any expectations around fibre access investment by BT at that time.²⁴⁹

²⁴⁸ 2005: Ofcom’s approach to risk in the assessment of the cost of capital, 18 August 2005,

https://www.ofcom.org.uk/data/assets/pdf_file/0021/41970/final.pdf;

2009: A new pricing framework for Openreach, 22 May 2009, <https://www.ofcom.org.uk/consultations-and-statements/category-1/openreachframework> Table A8.1;

2011: WBA charge control, 20 July 2011, https://www.ofcom.org.uk/data/assets/pdf_file/0024/36942/statement.pdf;

2013: Business Connectivity Market Review, 28 March 2013, <https://www.ofcom.org.uk/consultations-and-statements/category-2/business-connectivity-mr>;

2014: Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30, 26 June 2014, <https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/narrowband-broadband-fixed/fixed-access-market-reviews-2014/statement>

2016: Business Connectivity Market review, 28 April 2016, <https://www.ofcom.org.uk/consultations-and-statements/category-1/business-connectivity-market-review-2016>.

2018: Annex 20 of this statement on cost of capital.

²⁴⁹ We note that no announcement around fibre access investment had been made by BT at that stage, although BT’s plans for its next generation network (NGN) had been announced and were expected to amount to significant capital expenditure from 2004/05. See Ofcom *Next Generation Networks, Future arrangements for access and interconnection*, 13

- A6.85 An arguably more pertinent decision (since it drew on financial market information overlapping BT's decision and announcement to undertake fibre access investment) is the 2009 Statement. In that, we estimated a pre-tax nominal cost of capital of 10.6% for BT Group, 11.0% for the RoBT and 10.1% for Openreach copper access. Given BT had announced its investment in fibre access by this time, and begun to incur capex, we would expect this RoBT rate to include the contribution to systematic risk from BT's fibre activities alongside its other services (except for copper access). The beta estimates relied upon to inform the 2009 decision were estimated over 1 year, 2 year and 5 year periods.²⁵⁰ On this basis, the period just before and during BT's initial announcement and operational trials for fibre was captured.
- A6.86 Based on these previous regulatory decisions for the RoBT rate, we consider that a cost of capital around 11% (on a pre-tax nominal basis) represents a reasonable benchmark for systematic risk against which to evaluate BT's returns on its initial fibre access investment. Whilst the use of the RoBT rate implies that the fibre access investment was of similar risk to the average activity within the RoBT, this may not be an unreasonable approximation given that the RoBT included, on the one-hand, BT's then mature fixed voice and ADSL broadband services (which we would expect to be somewhat riskier than the Openreach copper access connections themselves); and, on the other-hand, BT's riskier still ICT services to large corporate customers.²⁵¹ Since the investment in fibre access was primarily as an overlay to the existing copper access network (and by early 2008 demand for broadband services was maturing²⁵²), it seems likely that the systematic risk from services over fibre was likely to be closer to that of pre-existing voice and internet access services than that of entirely different lines of business.²⁵³

BT's own internal documents at the time of the decision

- A6.87 As noted above, BT's internal papers indicate that it assessed the initial fibre investment case by applying a discount rate of 10% to Openreach cash flows and 11.4% to cash flows associated with the rest of BT.
- A6.88 The argument for evaluating the fair bet with these rates as a benchmark discount rate is that they were actually used by BT when it assessed the initial investment. While Openreach argues that these were "standard commercial discount rates" rather than project-specific costs of capital, it is nevertheless the case that these were the discount

January 2015 at https://www.ofcom.org.uk/_data/assets/pdf_file/0019/25471/ngn.pdf and BT's news release from 9 June 2004, <https://www2.trustnet.com/Investments/Article.aspx?id=200406090700205620Z>.

²⁵⁰ The share price data analysed was up to 11 March 2009, see paragraph A8.59, 2009 Statement.

²⁵¹ As shown in the table above, the RoBT cost of capital in 2009 was 0.9 percentage points higher than the Openreach copper access cost of capital (11.0% as against 10.1% for Openreach copper access). The 2009 RoBT asset beta was 0.68 and for Openreach copper access was 0.55.

²⁵² Figure 1.2 of 2008 Communications Market Report indicates that by early 2008 broadband penetration was 58%. Report available here: <http://webarchive.nationalarchives.gov.uk/20160704222231/http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/cmr08/context/>.

²⁵³ Note here that we make a clear distinction between systematic risk and specific risk. Even if the systematic risk of fibre access was not significantly greater than that of the then current generation access services, we recognise that the specific risk was higher with this new investment – which is the focus of the rest of this annex.

rates used in the evaluation that was presented to the BT Board. While BT’s managers may have adopted some element of ‘rule of thumb’ when it came to presenting these investments to the BT Board, we would expect further material to have been submitted if that rule of thumb did not appropriately reflect the risks associated with, or the returns required on, the fibre access investment. Accordingly, we consider that these rates provide another potential benchmark for the cost of capital associated with this investment.

A6.89 Moreover, the discount rates of 10% and 11.4% used by BT are the same as the costs of capital determined in our 2005 Statement for Openreach and the RoBT respectively, as explained above. Accordingly, the rates used by BT for its investment appraisal were consistent with our own evaluation of the cost of capital a few years before BT’s decision to invest.

Oxera’s estimate of a fibre access specific cost of capital

A6.90 Because a pure play fibre access comparator is not identified, a proxy cost of capital could be built up from a separate fibre access asset beta estimate combined with other cost of capital parameters from around the time of the initial investment. However, such an asset beta would need to reflect contemporaneous financial market conditions, and absent a pure play fibre access comparator involves considerable approximation and the exercise of judgment.

A6.91 Because a pure play fibre access comparator is not available, Oxera estimates an asset beta for 2009 by reference to asset betas associated with the RoBT from our 2014 statement (0.83) and the asset beta for Other UK telecoms from our March 2017 WLA Consultation (0.75). Table A6.3 below shows our estimates of the asset betas for BT Group, Openreach copper access, the RoBT and Other UK telecoms asset betas from previous regulatory statements.

Table A6.3: Asset betas used in Ofcom cost of capital decisions

Decision	BT Group	Openreach copper access	Other UK telecoms	RoBT
2005	0.72	0.59		0.80
2009	0.61	0.55		0.68
2011	0.53	0.48		0.58
2013	0.67	0.60		0.74
2014	0.72	0.50		0.83
2016	0.72	0.55	0.70	
2018*	0.78	0.59	0.73	

*Note that the March 2017 WLA Consultation proposed asset betas of 0.76 for BT Group, 0.55 for Openreach and 0.75 for Other UK telecoms (which incorporated fibre access). Oxera used the 0.75 asset beta for Other UK telecoms in its extrapolation.

Source: as per Table A6.2 above

- A6.92 Oxera estimates a fibre access asset beta of 0.92 by extrapolating the asset betas used in our 2014 Statement and our March 2017 Consultation. However, if the RoBT asset beta represents an appropriate estimate of a fibre access asset beta in 2014, it is not clear why a backwards extrapolation is needed given we already have an estimate of the RoBT asset beta from the time of BT's initial investment from the near-contemporaneous statement in 2009 (or that from a few years before in 2005).
- A6.93 We do not consider that Oxera's extrapolation approach gives a robust estimate of the fibre access asset beta in 2009 because it is based on only two data points taken from regulatory decisions that used different approaches to disaggregating the BT Group asset beta (i.e. a two-way disaggregation in 2014 and a three-way disaggregation in the March 2017 WLA Consultation).
- A6.94 We do not consider that this is a valid approach to derive a fibre access specific asset beta for 2008/09. The main reason for the slope of the line derived by Oxera in estimating a 2009 fibre access asset beta of 0.92 is the change in our disaggregation approach rather than a change in the systematic risk associated with fibre access. If Oxera's approach was adopted, it should at least use data points that have been estimated on a consistent basis. Although a three-way disaggregation of the BT Group asset beta was not undertaken in 2014, the fact that the Other UK telecoms asset betas in 2016 and 2018 were similar to the BT Group asset betas²⁵⁴ indicates that an Other UK telecoms asset beta in 2014 may have been around 0.7 (i.e. similar to the 2014 BT Group asset beta) on a three-way basis. This would imply a much flatter trend in the asset beta and would not suggest a fibre access asset beta in 2009 as high as Oxera claims.
- A6.95 Further, Oxera's approach does not take into account that any BT fibre access asset beta would be part of the wider BT Group asset beta and the BT Group asset beta has fluctuated over time. As shown in the table above, the 2009 BT Group asset beta of 0.61 was lower than in 2005 (when it was 0.72) and for each year since the 2013 Statement (0.67 or above). This difference could be the result of several factors, at least some of which would affect all parts of BT.²⁵⁵ In our view, any attempt to estimate a 2009 fibre access asset beta should take account of contemporaneous financial market conditions.

Conclusion on the cost of capital

- A6.96 Without a pure play comparator (i.e. a listed fibre access-only business) against which to benchmark the cost of capital for BT's original fibre access investment, it is necessary to exercise judgment on the best available proxies or benchmarks to be applied at the time of that initial investment.

²⁵⁴ In 2016 the Other UK telecoms asset beta of 0.70 was 97% of the BT Group asset beta of 0.72 and in 2018 the Other UK telecoms asset beta of 0.73 is 94% of the BT Group asset beta of 0.78.

²⁵⁵ For example, one factor could be the relative volatility of BT Group's returns compared to the market (i.e. the FTSE All Share). Since 2009, the volatility of BT Group's returns and market returns have reduced, but the volatility of market returns has fallen proportionately more. This means that the relative volatility of BT's returns has increased, and this can result in a higher equity beta, from which the asset beta is derived.

- A6.97 We consider that the rates implied by the disaggregated cost of capital decision in our contemporaneous statements form a reasonable benchmark, in particular the 2009 decision given its use of data overlapping the time of BT's initial investment decision. The rates used in BT's own investment case at the time also provide a useful reference in assessing the reasonableness of the contemporaneous regulatory benchmarks.
- A6.98 On this basis, we consider that a cost of capital around 11% (on a pre-tax nominal basis) represents suitable benchmark.

Evaluating the fair bet using the Oxera framework

Introduction

- A6.99 In this sub-section we consider the framework proposed by Openreach for evaluating whether the fair bet has been met. We refer to this as the 'Oxera framework', as it is developed in a report by Oxera for Openreach. We consider this is one useful and legitimate way of evaluating the fair bet. However, we disagree with the assumptions Oxera has used when applying this framework. Using our judgement as to the appropriate inputs to the Oxera framework, our assessment is that Openreach has had a fair bet.
- A6.100 This sub-section is structured as follows:
- We first describe the Oxera framework and how it can be used to assess whether Openreach has had a fair bet.
 - We then summarise the findings in the first report from Oxera discussing the fair bet (which we call 'Oxera 1'). This report made an assessment of whether Openreach had had a fair bet based on Oxera's assessment of the cost of capital (discussed above) and Oxera's initial assumptions about the shape and distribution of what returns would be in the absence of regulation. It concludes that if Openreach had earned a return less than 15%, then price regulation would run the risk of breaching the fair bet principle.
 - We also summarise a submission by TalkTalk which set out its views on Oxera 1. This argues that Oxera overestimates how much of the capital expenditure was committed in 2008 and that Oxera's assumed distribution of returns is not founded in evidence.
 - We summarise a second report from Oxera (which we call 'Oxera 2') which aimed to inform the shape and distribution of returns based on BT's contemporaneous documents. This concludes, like Oxera 1, that capping project returns at less than 15.0% would be likely to breach the fair bet principle.
 - Finally, we set out our assessment of the fair bet using the Oxera framework, based on what we consider a suitable benchmark for the cost of capital and Openreach's actual returns. We conclude that Openreach has had a fair bet when assessed under the Oxera framework proposed by Openreach.

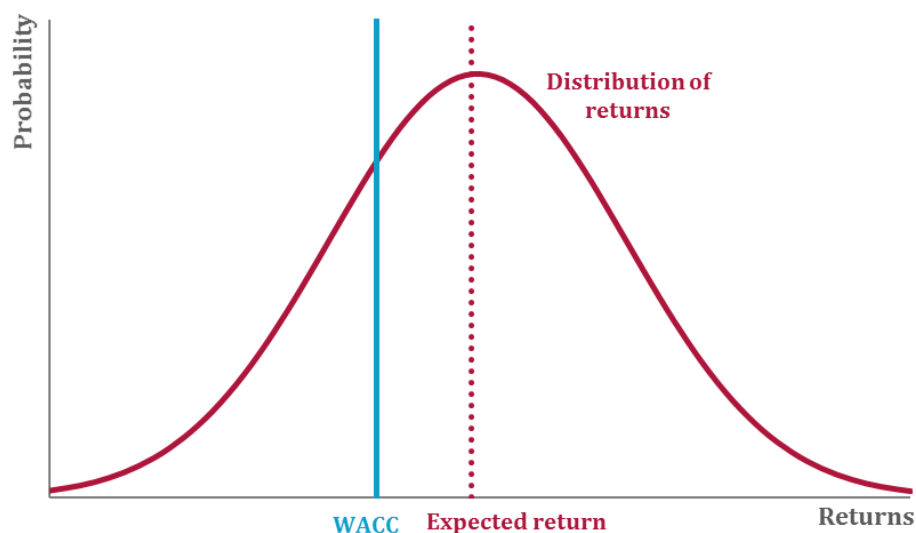
The Oxera framework for providing a fair bet

- A6.101 Returns significantly in excess of the relevant cost of capital provide one indication that it is more likely we have provided Openreach with a fair bet. However, as we stated in our

March consultation, a full evaluation of whether the fair bet is met requires more explicit appreciation of the risks faced at the time of making the investment. In its response to our consultation, Openreach provided a report from Oxera (Oxera 1) that provided a methodological framework that brought estimates of the *ex ante* risks faced explicitly into the evaluation, which we refer to as the Oxera framework.²⁵⁶

A6.102 The Oxera framework starts by assuming the probability distribution of returns that BT would obtain on its fibre investments if there were no regulation. This is illustrated by Figure A6.1 below.

Figure A6.1: Unregulated returns



A6.103 In Figure A6.1, the red line represents the *ex ante* distribution of possible returns - assuming returns are never curtailed by regulation. Under this distribution, Openreach faced the potential for very high returns in some scenarios, and low returns in others. The expected return is shown by the vertical dashed red line. The spread of the possible returns can be thought of as the perceived riskiness of the initial investment. A narrow spread of possible returns could be perceived a less risky project, and a wide spread of possible returns could be perceived as a riskier project. Because the expected return is above the cost of capital (shown by the blue line labelled WACC, or weighted average cost of capital), the investment would be expected to have a positive net present value.

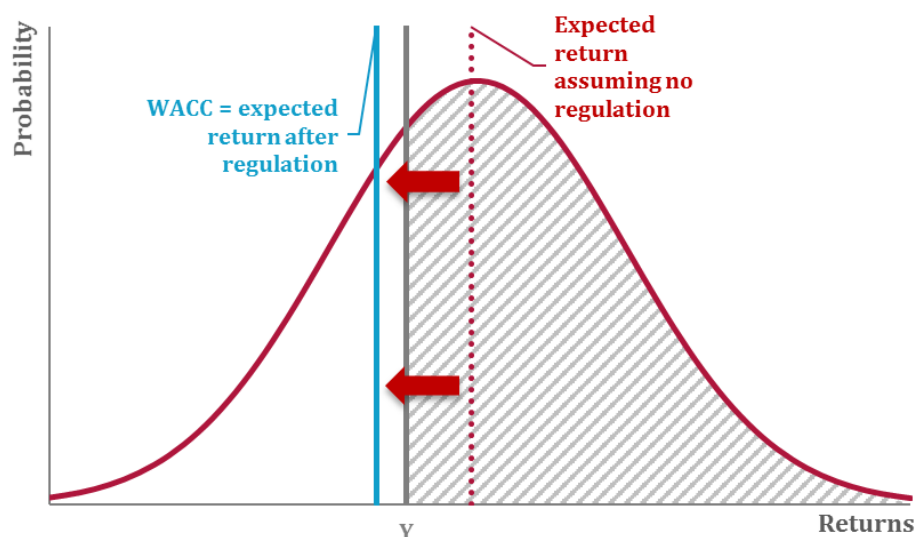
A6.104 Oxera then hypothesises that the regulator intervenes to regulate prices once returns reach a particular level. This price regulation will truncate returns at that particular level (i.e. make unavailable previously achievable returns available on the right hand side of the distribution). As a result, the expected return is shifted to the left.

A6.105 Figure A6.2 illustrates this process. In the diagram, the regulator is assumed to intervene and cap returns at level “Y”. The returns that would have been higher than Y absent regulation – the shaded area – are now constrained to Y. This reduces the *ex ante* expected

²⁵⁶ Oxera 1, pages 4 to 10.

return below the level that would have prevailed if no regulation was applied. In the illustration below, the revised expected return is equal to the cost of capital, and is shown by the vertical blue line.²⁵⁷

Figure A6.2: Oxera’s framework for defining ‘Y’



A6.106 The Oxera framework identifies the critical level of the threshold at which price regulation can truncate returns so the *ex ante* expected IRR is equal to WACC, i.e. still providing for a fair bet. Oxera defines this critical level of returns as ‘Y’.²⁵⁸ Oxera explains that regulation which had the effect of capping returns below this threshold would have reduced the *ex ante* expected return below the cost of capital and therefore cannot be considered as providing for a fair bet.

A6.107 If actual returns are at or above the critical level Y, then under the Oxera framework the fair bet is satisfied.

Calibrating the Oxera framework – ‘Oxera 1’

A6.108 To apply the Oxera framework, the following three parameters need to be identified:

- the project-specific cost of capital;
- the expected IRR over the lifetime of the project (assuming no regulation);²⁵⁹ and
- the shape of the distribution of IRRs around the expected IRR.

A6.109 Oxera 1 has two scenarios for the project-specific WACC:

²⁵⁷ In Figure A6.2, Y is only a small distance above the project-specific WACC because there is a high probability of a return of Y. This is because all the returns in the shaded area without regulation have a return of Y with regulation. The high probability of Y combined with the low probability of a low return give a weighted expected return equal to the project-specific WACC.

²⁵⁸ Oxera 1, page 8.

²⁵⁹ Oxera calculates the expected IRR as the mean of all the possible IRRs, so it is a probability weighted IRR.

- a) Scenario 1 in which the optionality associated with the capex was low, and all fibre investments over the next two decades were effectively committed in 2008. Oxera considered the relevant WACC in Scenario 1 was 12.8%.
- b) Scenario 2 which assumes there is some discretion and optionality in BT's capex profile, and hence that more recent (and lower) cost of capital estimates are relevant for determining the weighted average cost of capital for the investment. In Scenario 2, Oxera assumes all investments taking place from the start of this market review are independent from previous investments and could have been stopped if the investment had underperformed. In Scenario 2, Oxera considered the relevant WACC was 11.4%.²⁶⁰

A6.110 Despite having these two scenarios for the cost of capital, Oxera 1 does not actually use the lower 11.4% cost of capital estimate in its assessment. It only presents one result assuming a cost of capital of 12.1% (the mid-point of its range), all the remaining scenarios assume a cost of capital of 12.8%.

A6.111 Oxera 1 considers the expected 20-year IRR for BT's fibre investments based on the model²⁶¹ supporting BT's 2008 business plan²⁶² as the expected project returns, assuming no regulation. This has a return of 13.8% for BT Group and 14.4% for Openreach.

A6.112 Oxera 1 assumes in the absence of regulation the distribution of returns follows a normal distribution, centred around the expected lifetime returns, with a standard deviation in the range of 2.0% to 5.0%. Oxera considers this to be a reasonable approximation of a plausible range of outcomes for this investment, citing its visual inspection of the distribution of return spreads for PFI projects which "would suggest a standard deviation of around 3%".²⁶³ While Oxera 1 suggests the standard deviation of returns could be around 3% (or as low as 2%), it only presents scenarios where the distribution of returns has a standard deviation of 3.5% and 5.0%.

A6.113 Based on these inputs, Table A6.4 below shows the estimated levels of the critical thresholds 'Y' identified in Oxera 1.

²⁶⁰ Oxera 1, page 11.

²⁶¹ BT, "10b_Interact_High Level Business Model – Version for Paper 6". BT response to the 7th Wholesale Local Access Market Review s.135 notice, question 7, dated 22 August 2017.

²⁶² BT, June 2008. *NGA Strategy*.

²⁶³ Oxera 1, page 19.

Table A6.4 – Critical thresholds identified in Oxera 1

Project-specific WACC	12.1%	12.8%	12.8%	12.8%	12.8%
Expected returns	14.1%	14.4%	13.8%	14.4%	13.8%
Standard deviation	3.5%	3.5%	3.5%	5.0%	5.0%
Critical threshold ‘Y’	13.0%	14.0%	14.7%	15.2%	16.3%

A6.114 On the basis of this evidence (i.e. the values of ‘Y’ in the table above), Oxera 1 concludes that price regulation that had the effect of capping returns at an internal rate of return of less than 15% runs the risk of breaching the fair bet principle.²⁶⁴

TalkTalk’s response to Oxera 1

A6.115 TalkTalk provided a response to Oxera 1. As we discuss in Annex 20, TalkTalk argued the WACC we determined (which applies affects the cost of capital in Oxera 1’s Scenario 2) was too high.

A6.116 Further, TalkTalk argued that the WACC used in the Oxera framework should be weighted by the capital originally committed, which it argued was lower than assumed in Oxera 1.

A6.117 TalkTalk explains²⁶⁵:

- Oxera’s Scenario 1 assumes that, as of 2008, 100% of the total capital expenditure on FTTC rollout to 66% of the UK was fully committed, and a fair return should be calculated on the entire rollout.
- Oxera’s Scenario 2, on the other hand, assumes that as of 2008, all expenditure until 2017 was fully committed, but that investments from April 2017 onwards could still be varied by BT from that point and thus the risk on post 2017 investments should be calculated based on 2017 knowledge of costs and demand.

A6.118 TalkTalk argues both of these scenarios overstate the capital committed, and contradict public statements by BT. It cites a statement by BT’s CEO in May 2010 stating that expansion to two-thirds of premises would occur only if conditions were favourable.²⁶⁶

A6.119 Further, TalkTalk argues that by dimensioning its network for only 30% take-up, reflecting a conservative view of the long-run demand for superfast broadband, BT substantially de-risked the project. Where take-up exceeds 30%, BT will therefore need to construct additional FTTC cabinets– or enlarge existing cabinets – to cover the excess customers. TalkTalk argues this shows the implausibility of Oxera's scenarios, as all the capex would

²⁶⁴ Oxera 1, page 2.

²⁶⁵ TalkTalk response to the Oxera paper on the fair bet, September 2017, paragraphs 2.1-2.17.

²⁶⁶ TalkTalk response to the Oxera paper on the fair bet, September 2017, paragraph 2.9.

not have been undertaken if demand for FTTC had been low, and so was not committed in 2008.

- A6.120 TalkTalk also argued that Oxera’s distribution of returns (assumed normal with a standard deviation between 3.5% and 5%) was not founded in evidence. TalkTalk explained that this assumption is crucial as if returns are negatively skewed (so that the right-hand tail of the distribution is shorter than the left-hand tail) then regulating GEA may be of very little importance to the expected returns from the project, as little of the upside of the distribution is truncated by regulation.²⁶⁷
- A6.121 TalkTalk argued that there were good reasons to think that the distribution of returns for BT’s first tranche of FTTC investments may have been negatively skewed. In particular, it noted BT dimensioned its network to be able to cope with 30% or lower take-up, naturally truncating the right-hand side of the distribution as in the case of unexpectedly strong demand, BT would be unable to fulfil that demand. TalkTalk argues this implies that a normal distribution is unlikely to be a good assumption for the appropriate distribution of returns, undermining Oxera’s calculations.

Further submission from Oxera on the distribution of returns – ‘Oxera 2’

- A6.122 Openreach submitted a second report from Oxera considering the fair bet (Oxera 2). The aim of this supplementary report was to inform the shape and distribution of returns of the FTTC investment based on contemporaneous evidence. Oxera informed its analysis by considering BT’s 2008 FTTC business plan model and the contemporaneous evidence contained in BT’s 2008 business plan regarding the key factors affecting project returns.²⁶⁸
- A6.123 Oxera 2 argues that both the BT Group and the Openreach IRR are highly sensitive to the Openreach and BT Retail ‘pricing premium’ over copper access that FTTC could have commanded, with the Openreach pricing premium in particular having the largest impact on returns.²⁶⁹ Oxera argues that other factors, such as the ‘take-up rate’ and ‘capex/opex costs’, are also important, but are not as significant as the pricing premium, which is measured as the premium that can be charged by Openreach for FTTC compared to the SMPF price.
- A6.124 Oxera 2 focuses on exploring how the shape of the distribution of BT Group’s IRR is affected by the potential range of scenarios and the variability of only the Openreach pricing premium. Oxera argues that modelling the cumulative impact of other parameters, such as the “BT Retail pricing premium and take-up rate, would increase the potential range of outcomes and widen the distribution of returns” (i.e. including other factors would act to increase the standard deviation of returns).²⁷⁰ Oxera explains that this is because for any given level of the Openreach pricing premium, there is also uncertainty

²⁶⁷ TalkTalk response to the Oxera paper on the fair bet, September 2017, paragraphs 5.1 to 5.9.

²⁶⁸ When Oxera refer to BT’s ‘2008 business plan’ it means BT’s original board paper, *NGA Strategy*, and the underlying model. BT response to Q4 of the 9th WLA s135 dated 29 January 2018.

²⁶⁹ Oxera 2, page 1.

²⁷⁰ Oxera 2, page 2.

around the level of take-up that could be achieved or the mark-up that could be applied above the Openreach price at the retail level. The range of possible outcomes would therefore widen if these factors were also taken into account.²⁷¹ Oxera concludes that its analysis therefore tends to understate the width of the distribution of returns.

A6.125 The Oxera 2 analysis proceeds in three steps:

- First, Oxera estimated distributions of the pricing premium around the base case for the Openreach pricing premium. Oxera indicates these distributions are informed by contemporaneous evidence.²⁷² (We set out our assessment of these pricing premium distributions below).
- Second, for each distribution of the Openreach price premium identified in stage 1, Oxera then ran 10,000 Monte Carlo simulations selecting the value of the pricing premium parameter at random from the distribution identified in stage 1.
- Third, based on the distribution of IRRs obtained from stage 2, Oxera then estimated the critical level of capped returns that equated the expected return to the cost of capital (with all scenarios assuming the higher end of the range for cost of capital identified earlier, i.e. 12.8%).

A6.126 Oxera 2 presented four main price premium distributions: two normal distributions, and two positively skewed distributions.²⁷³ The results are presented in Table A6.5 below.

Table A6.5 – Summary of scenarios presented in Oxera 2

Openreach pricing premium assumption	BT Group E(IRR) without cap	Cap that would reduce BT Group E(IRR) to 12.8%
Normal distributions		
Mean = £5.0, sd = £1.0	13.7%	14.8%
Mean = £5.0, sd = £1.5	13.6%	17.0%
Positively skewed distributions		
Mode = £5 Min = £0, Max = £12	14.5%	18.2%
Mode = £5, Min = £0, Max = £20	19.0%	16.6%

²⁷¹ Oxera 2, footnote 2.

²⁷² Oxera 2, pages 1, 3, 5, 10, 11 and footnote 11.

²⁷³ In addition, Oxera also showed results for two other skewed distributions (one with a mode of £5, minimum of £0 and maximum of £58, and the other with a mode of £5, minimum of £2.1 and maximum of £10). Oxera said that these were not credible scenarios, but showed them because they were what was necessary in order to generate threshold values of 15% (when using Oxera's estimate of the cost of capital). We have not shown them, as Oxera did not consider them credible scenarios.

A6.127 On the basis of this evidence (the critical returns in Table A6.5 above), Oxera draws the same conclusion as in Oxera 1— i.e. Oxera submits that capping project returns at less than 15.0% would be likely to breach the fair bet principle.²⁷⁴

Our assessment of the fair bet using the Oxera framework

A6.128 Having described the Oxera framework and the submissions relating to it, we now set out our assessment of whether Openreach has had a fair bet using the Oxera framework. This is structured as follows:

- We first recalculate the analysis in Oxera 1 and Oxera 2 using our own view of a suitable benchmark for the cost of capital. The resulting critical thresholds are well below our assessment of Openreach’s actual return, implying Openreach has had a fair bet.
- Second, we discuss the price premium distributions assumed in Oxera 2, and show that some are unduly pessimistic.
- Third, we provide a further sensitivity assuming a wider distribution of returns than Oxera 1 considered. This distribution is wider than that implied by the most plausible price premium distribution in Oxera 2.
- Finally, we conclude that, using the Oxera framework, we have provided Openreach with a fair bet on its FTTC investment.

Adjustment of critical threshold in Oxera 1 and Oxera 2 using our cost of capital

A6.129 To recap, Oxera 1 estimates the “critical threshold” – the ceiling on the actual IRR earned that is consistent with having a fair bet in the Oxera framework. Oxera does this based on expected IRRs provided to it by BT, to which Oxera applies assumptions as to the standard deviation in the IRR (it uses 3.5% and 5%).²⁷⁵ Oxera 2 adopts a more complex approach, that seeks to build up a distribution of the IRR based on assumptions as to the distribution of risk around the price premia (on sales that are external to BT – i.e. do not include BT’s retail divisions) that Openreach would earn on FTTC. Oxera 2 also considers the possibility of positively skewed distributions. Oxera 2 confirms the position reached in Oxera 1, that capping returns at less than 15.0% would be likely to breach the fair bet principle.²⁷⁶

A6.130 We have recreated the analysis in both Oxera 1 and Oxera 2, but instead of using Oxera’s cost of capital assumptions 12.1% to 12.8%, we have used 11%, which we consider to be suitable for the evaluation. As a sensitivity we have also used a higher cost of capital of 11.4%. We set out in detail above our reasons why we consider 11.0% to be a suitable figure for the cost of capital for BT’s fibre access investments.

A6.131 To apply the Oxera framework, we ideally want to compare actual returns and critical thresholds that relate to the same investment. Our 15% estimate of the actual IRR relates to Openreach’s returns for the whole of the investments over the period from 2008/09 to

²⁷⁴ Oxera 2, page 11.

²⁷⁵ BT response dated 22 August 2017 to the 7th WLA s135, question 8.

²⁷⁶ Oxera 2, page 11.

2018/19 (excluding the BDUK investments). However, the critical thresholds in Tables A6.6 and A6.7 are derived from the variability in the return of only the initial tranche I investment. We nevertheless believe it is reasonable to compare the actual return for the total investments with critical thresholds that relate only to tranche I. This is because if we had been able to derive critical thresholds for the whole of BT's investments over the period from 2008/09 to 2018/19, we believe they would not be higher than the critical thresholds estimated for tranche I alone.²⁷⁷

A6.132 Tables A6.6 and A6.7 below show the key outputs from Oxera 1 and Oxera 2 recalculated using the 11% cost of capital (and the 11.4% sensitivity).

Table A6.6 – Oxera 1 critical thresholds, after adjusting cost of capital

	Ofcom's costs of capital estimate		Ofcom's costs of capital sensitivity	
	Openreach expected return	BT Group expected return	Openreach expected return	BT Group expected return
Benchmark cost of capital	11.0%	11.0%	11.4%	11.4%
Expected returns	14.4%	13.8%	14.4%	13.8%
Standard deviation	5.0%	5.0%	5.0%	5.0%
Critical threshold 'γ'	12.0%	12.4%	12.6%	13.0%

²⁷⁷ Openreach's later investments in FTTC (including increased coverage and increased cabinet capacity within the existing footprint) were not committed in 2008, but when the risks were lower. Consumers' demand for higher speeds grew over time, and there was much better information on price premium, take-up and costs. Openreach would not have expected to be made worse off by these later investments. In our judgement estimating a critical threshold based on BT's initial commitment, with an option to expand coverage and cabinet capacity if the investment went well would result in a critical threshold no higher than that based only on the riskier tranche I alone.

Table A6.7 – Oxera 2 critical thresholds, after adjusting cost of capital

Openreach pricing premium assumption	BT Group E(IRR) without cap ²⁷⁸	Cap that would reduce BT Group E(IRR) to 11%	Cap that would reduce BT Group E(IRR) to 11.4%
Normal distributions			
Mean = £5, sd = £1	13.7%	11.6%	12.2%
Mean = £5, sd = £1.5	13.6%	12.8%	13.5%
Positively skewed distributions			
Mode = £5 Min = £0, Max = £12	14.5%	14.1%	14.9%
Mode = £5, Min = £0, Max = £20	18.8%	13.8%	14.4%

A6.133 Our estimates show that the scenario in Oxera 2 that assumes that the risk distribution is normally distributed with a standard deviation of price premium of £1 gives very similar results to Oxera 1 with a standard deviation of returns of 5%. That is, based on a cost of capital of 11.0%, the critical thresholds implied by Oxera 1 range from 12.0% to 12.4%, compared to critical threshold implied in Oxera 2 of 12.2%. Using a lower standard deviation in our assessment of the critical threshold identified by Oxera 1 would imply a lower threshold.²⁷⁹

A6.134 The critical thresholds for the wider normal and positively skewed distributions in Oxera 2 are somewhat higher, but as we discuss later we do not think these are informative for the evaluation.

A6.135 Our estimate of Openreach's FTTC return at 15% is substantially above the thresholds identified in Oxera 1 (12.0% and 12.4%)²⁸⁰ and the normally distributed Oxera 2 scenarios (11.6% and 12.8%)²⁸¹ when we use the 11% cost of capital. The 15% is significantly higher than the critical thresholds also when we apply our 11.4% cost of capital sensitivity. Even the positively skewed distributions, which as we discuss below we do not consider to be informative, give critical thresholds that are similar to our estimate of Openreach's return of 15%, so they too would be consistent with the fair bet. This means that once the

²⁷⁸ To recalculate the Oxera 2 results using our estimate of the cost of capital, we have followed the same procedure as Oxera used, as described in A6.65. This involved generating the distribution of returns from 10,000 random simulations from the price premium distribution. We note that our expected returns differ slightly in some cases from the analysis presented by Oxera. This is because the distribution of returns is generated from random simulations.

²⁷⁹ For example, assuming a standard deviation of 2.0% (the lower end of Oxera's range), implies a critical threshold of only 11.04% (i.e. fractionally above the cost of capital). Oxera 1 assumes in the absence of regulation the distribution of returns follows a normal distribution, centred around the expected lifetime returns, with a standard deviation in the range of 2.0% to 5.0%. Oxera 1, page 19.

²⁸⁰ Depending on if the critical threshold is derived from the distribution of Openreach or BT Group returns.

²⁸¹ Depending on if the assumed distribution of incremental revenue has a standard deviation of £1.0. or £1.50.

analysis in Oxera 1 and Oxera 2 has been adjusted for our figure for the cost of capital, the results indicate Openreach has had a fair bet.

A6.136 We consider that this analysis indicates that the 15% IRR that Openreach can now expect to generate from its commercial FTTC investments is both well above the relevant 11% cost of capital, and also well above the threshold returns necessary to support a fair bet under Oxera's approach.

A6.137 We now discuss two specific points arising in the Oxera 2 analysis: (i) the assumptions concerning the FTTC price premia in Oxera 2, which in some scenarios we show to be unduly pessimistic and (ii) we provide a further sensitivity assuming that the price variations assumed in Oxera 2 apply to all Openreach sales, not (as Oxera 2 assumes) solely external sales.

Evidence on the FTTC price premium

A6.138 The Oxera 1 framework relied on assumptions as to standard deviation of the IRR for the investments. Oxera 2 provided further analysis of the *ex ante* distribution of risk faced, focusing on potential variation in the price premium that BT would be able to charge on FTTC services. Oxera 2 builds a distribution of the *ex ante* risk faced by BT by explicitly modelling the impact that variations in the price premium on FTTC would have on the distribution of IRR earned. While this approach entails explicit modelling of the implications of variations in the price premia, we consider that some of Oxera 2's scenarios imply an unduly pessimistic risk profile for the price premium, as we explain in this section.

A6.139 Recall that Oxera 2 adopts the following price premia distributions:²⁸²

- a) Normal distribution for price premium, with mean = £5/month, and standard deviation of +/- £1. This implies a 16% probability that the price premium on external sales would be less than £4.
- b) Normal distribution for price premium, with mean = £5/month, and standard deviation of +/- £1.50. Here there is a 25% probability that the price premium on external sales would be less than £4.
- c) Positively skewed distribution²⁸³ for price premium, with mode = £5/month, max = £12, minimum = £0. In this distribution, there is a 30% probability that the price premium on external sales would be less than £4.

²⁸² The Oxera 2 framework applies the variation in price premia based on external sales only. Below we provide a sensitivity that relaxes this assumption.

²⁸³ The positively skewed distributions that Oxera uses imply more extreme results for even lower price premia than £4. We can illustrate this by considering the probability of price premia below £2. Oxera's normal and wider normal distributions imply respectively 0.1% and 2.3% probability of Openreach premia below £2.0. In contrast, Oxera's mild and strong skewed distributions imply 6.7% and 8.1% probability of prices below £2.0 respectively. The particular skewed distributions that Oxera assumes is the beta-PERT distribution. Oxera notes that this can be generated with just three parameters: min, max, and mode, but it also involves various other implicit assumptions about the nature of the shape of the distribution. Despite offering more potential for high prices compared to the normal distributions assumed by Oxera, the beta-PERT distribution significantly raises the probability of very low prices. The increased probability of very low prices can have a material impact on the critical values. Because of the high probability of very low prices implicit in Oxera's skewed distributions, we do not find them plausible.

- d) Positively skewed distribution for price premium, with mode = £5/month, max = £20, minimum = £0. In this distribution, there is a 26% probability that the price premium on external sales would be less than £4.

A6.140 We have reviewed a range of evidence as to the likelihood of these lower price premia arising. In our view this evidence does not support probability distributions that entail a high likelihood of a price premium below £4, for the following reasons:

- a) Contemporary evidence suggested a sizeable retail premium. The closest comparator at the time to Openreach's FTTC service was Virgin Media's 50 Mbit/s service, which BT's 2008 Board paper reported as having a retail price premium of £[redacted] over standard broadband, and its 20 Mbit/s service had a £[redacted] retail premium.²⁸⁴ An annex to the 2008 Board paper considered international experience on fibre deployments, and said: [redacted] Accordingly, the 2008 BT Board paper suggests that very low retail price premia were unlikely, suggesting a range for a retail premium in the early period of the investment of £[redacted] to £[redacted] per month.
- b) The FTTC price was expected to grow over time. The modelling done at the time by BT, and the modelling we are doing now, assumes a single figure for incremental revenue over time. This might be thought of as a weighted average for the incremental revenue over time. In the modelling that went alongside BT's 2008 Board paper the same figure for incremental revenue was used for a 20-year period. Even in 2008, there was clearly an expectation that demand for higher speed services would increase in the future, even if there was uncertainty over how quickly this would come about. At the time, it was reasonable to assume either that the price would rise over time or, if the price remained relatively low, that take-up would grow beyond the assumed maximum in BT's 2008 Board paper of 20%. BT's board minutes from the time noted that, while it was not known how quickly higher demand for higher speeds would grow, [redacted].²⁸⁵ We consider that, even when assessed in 2008, the probability that the incremental revenue would remain at a low level for many years after the investment was made would have seemed very low.
- c) A price premium of £4 is only a little above the [redacted] which was [redacted]. In evaluating the premium for FTTC, BT's 2008 Board paper assumes that there is £[redacted] of lost SMPF revenue associated with each FTTC sale.²⁸⁶ So, in the scenario where the FTTC price is £[redacted], the incremental revenue from each line only £[redacted]. This may understate the incremental revenue as not all lines that might have been expected to take FTTC would involve losing SMPF revenue. To the extent MPF lines take FTTC, all £[redacted] of the FTTC price may be incremental.

²⁸⁴ Virgin Media has subsequently gone on to concentrate on providing higher speed services. It automatically upgraded its standard broadband customers en masse to superfast broadband between March 2012 and mid-2013.

²⁸⁵ BT Board minutes from 30 June 2008.

²⁸⁶ BT, June 2008. *NGA Strategy*, Financial Summary, page 4. BT response to the 1st Joint Wholesale Broadband Access and Wholesale Local Access Market Review s135, question 2.1, dated 22 October 2015.

d) Openreach's actual launch price in 2009 for FTTC was £6.90, involving incremental revenue for Openreach of £[X] if the approach in BT's 2008 Board paper is adopted which deducts £[X] from the price for lost SMPF revenue associated with each FTTC sale.²⁸⁷

A6.141 We therefore do not consider that the Oxera 2 distributions that imply a 25% or more probability of a price premium below £4 to be plausible. We consider that the most plausible price premium distribution of those considered by Oxera 2 is +/- £1, although with a 16% probability of the price premium being below £4 we consider that this is also somewhat pessimistic as to the pricing risks faced.

A6.142 We recognise that the Oxera 2 framework only applies these price variations to Openreach's external sales, which dampens the impact of overstating the risks of low price premia when it comes to evaluating the distribution of the IRRs. Due to this limitation, the actual variation in the IRRs looks reasonable, comparable to the higher end of the estimates in Oxera 1. However, we now undertake a final sensitivity check, in which we apply the variation in the price premia to all Openreach sales. For that purpose, we focus on the scenario in Oxera 2 which assumes a normal distribution, with mean £5 and standard deviation +/- £1, for the reasons given above.

Additional sensitivity to test assessment of fair bet using Oxera framework

A6.143 If the price premia distribution is assumed to be normally distributed with mean £5 and standard deviation +/- £1 (as explained in the previous section) and this variation is assumed to apply to all Openreach sales (not just external sales, as in Oxera 2), the standard deviation in the corresponding distribution for the IRR is around 6%.²⁸⁸

A6.144 By way of further sensitivity, we have considered a 7.5% standard deviation in the rate of return, higher than even the 5% considered in Oxera 1. This is greater than the 6% standard deviation associated with the variation of +/- £1 applied to all Openreach sales (internal and external), so allows for that scenario to apply, and also for some degree of additional risk not captured in the scenarios considered so far.²⁸⁹

²⁸⁷ This £[X] is calculated based on the £82.80 annual price (or £6.90 a month) less the SMPF monthly price of £[X]. Openreach has subsequently launched higher speed, higher price variants of FTTC, pushing the average price premium higher.

²⁸⁸ We calculated this by generating a distribution of Openreach pricing premium assuming a mean of £5.0 and a standard deviation of £1. Similar to Oxera, we then ran 10,000 Monte Carlo simulations selecting the value of the pricing premium at random from the distribution we had generated and recording the resultant impact on the Openreach IRR. We then calculated the standard deviation of on the distribution of IRRs obtained from the previous step.

²⁸⁹ We consider that the focus in Oxera 2 on the price premium alone is a limitation. It could overstate or understate the actual risk distribution faced. It might understate the risk if, as Oxera 2 argues, the assumptions on the price premium risk were well specified and BT also faced other risk (e.g. volume, cost). Alternatively, the focus solely on price variation might over-state the risk, for example because we would expect an inverse relationship between price and take-up, with the lower the price for FTTC, the higher the take-up, and vice versa. While Openreach may have initially dimensioned its cabinets for a modest level of take-up, it subsequently upgraded these cabinets to increase capacity. While there are costs to upgrading cabinets, the incremental cost will be significantly less than the average cost. There was therefore up-side potential in terms of serving more premises than the FTTC investment was initially dimensioned for.

A6.145 Table A6.8 below shows the critical threshold ‘Y’ needed for the Oxera framework based on returns following a normal distribution with standard deviations of 5.0% and 7.5%, and using a suitable benchmark for the cost of capital. Our calculations assume the same mean for the ex-ante distribution of Openreach’s returns as Oxera, namely the returns in the base case presented in the 2008 Board paper, which has incremental revenue of £5 per month, and a mean return of 14.4%.²⁹⁰

Table A6.8: Critical thresholds based on standard deviations of 5.0% and 7.5%

Standard deviation	Ofcom’s cost of capital estimate		Ofcom’s cost of capital sensitivity	
	5.0%	7.5%	5.0%	7.5%
Benchmark cost of capital	11.0%	11.0%	11.4%	11.4%
Expected Return	14.4%	14.4%	14.4%	14.4%
Critical threshold ‘Y’	12.0%	13.6%	12.6%	14.4%

A6.146 Our estimate of Openreach’s return at around 15% is above all the critical thresholds in the table above. This provides further confidence that our charge control is consistent with Openreach having had a fair bet when assessed with the Oxera framework.

Our conclusion on the fair bet under the Oxera framework

A6.147 While it is not possible to know for sure what the appropriate distribution of *ex ante* returns should be, under a wide range of reasonable assumptions, Openreach has had a fair bet according to the Oxera framework.

A6.148 Further, as we describe from paragraph A6.172 below, the figure we use of 15% for Openreach’s actual return is likely to be too low, and the way we have applied the Oxera framework is likely to understate when the fair bet is met.

Duration of period of pricing flexibility and payback period

March 2017 WLA Consultation

A6.149 In our March 2017 WLA Consultation, we explained that we had allowed BT flexibility in setting VULA prices since it announced plans to invest in a fibre access network in July 2008. After reviewing the evidence of BT’s expectations when it committed investment to FTTC, we considered that BT would have expected discounted payback on the first tranche of its FTTC investment to occur within the period spanned by this review (2018/19 to 2020/21). We concluded that setting a cost-based charge control at, or after, the original expected discounted payback period for an investment should be sufficient to ensure a fair

²⁹⁰ Openreach response dated 22 August 2017 to question 8 of the 7th Wholesale Local Access MR s.135 notice.

bet, and to the extent that the charge control subsequently allows a return on undepreciated assets, setting a charge control at the point of payback would be generous to BT.²⁹¹

Stakeholder comments

Expected payback later than Ofcom assumed

- A6.150 Openreach questioned our evidence suggesting it expected payback on its FTTC investments in the period spanned by this market review. Openreach argued the original 2008 Board paper shows payback was forecast to be in 2021/22, a year outside the period under review.²⁹² Openreach also argued the reference to a [3<] year payback date for FTTC investments contained in a presentation to Ofcom in the summer of 2008 was not intended to present a view of internal expectations on payback. Rather, it presented a highly simplified view of what price premium could be required to deliver a potentially acceptable return on a significant upfront investment.²⁹³
- A6.151 Openreach argued that because payback dates were based on BT's standard corporate discount rate, not on a project-specific cost of capital for its fibre investments, the payback dates shown in its internal documents do not reflect its expectations of payback. It argues discounting at the appropriate project-specific cost of capital would extend the payback.²⁹⁴ Virgin Media made a similar point, arguing that it is common practice to appraise investments with a standard investment hurdle rate.

Payback is insufficient for a fair bet

- A6.152 Virgin Media argued that we were wrong to assert that the fair bet becomes irrelevant after expected payback.²⁹⁵ Virgin Media argues that because regulation can create negative NPV scenarios after payback, we need to allow for positive returns after expected payback to ensure that the overall expected NPV of the investment is at least zero.
- A6.153 Openreach also disagreed with our judgement that regulating at payback was consistent with providing it with a fair bet.
- A6.154 BT argued if it had known that price regulation would be imposed at the point of expected payback, it may well have chosen not to go ahead with its investment, given the risks associated with the FTTC investment. BT argued that it is impossible to know whether regulating from expected payback will result in an NPV of at least zero without an analysis of the level of returns associated with different scenarios.²⁹⁶

²⁹¹ March 2017 WLA Consultation, Volume 1, paragraph 8.20.

²⁹² Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 267.

²⁹³ Openreach, October 2017. *Wholesale Local Access Market Review: further submission on Ofcom's assessment of the fair bet*, paragraph 11.

²⁹⁴ Openreach supplementary fair bet submission, paragraph 54.

²⁹⁵ Virgin Media response to the March 2017 WLA Consultation, paragraphs 90-95.

²⁹⁶ BT letter, *Assessing the fair bet*, 27 November 2017, page 2.

https://www.ofcom.org.uk/_data/assets/pdf_file/0010/111403/BT-fair-bet-letter-to-Ofcom.pdf.

Payback should be considered for whole investment

- A6.155 Openreach argued that any payback used to assess its fair bet should be on its whole investment. First, it argued that following its public announcement in 2008, its ability to change its plans was prevented by, among other things, the signalling effects to investors of its strategic direction. It argued it was therefore limited in its ability to scale back its investment if demand had not materialised. Second, it argued the plan to extend its rollout to reach 66% of the country was not based on evidence about the success of the plan to serve 40%. It argued that it is not correct to present the investments as falling into two discrete tranches with lower risks associated with the plan to rollout from 40% to 66% of the country. Openreach argues that the bulk (over 80%) of FTTC build capex was spent before take-up had reached 10%. Openreach therefore does not accept that the risks were capable of being mitigated in the early years of investment to any material extent.²⁹⁷
- A6.156 Virgin Media also argued that as future tranches of investment carried some risk, even if that risk was diminished, it was inappropriate of us to conclude that because we were around the expected payback date of the first tranche of investment, BT had been provided with a fair bet.²⁹⁸

Our reasoning and decisions

- A6.157 As we discussed from paragraph A6.23 above, while capping actual returns (as with the Oxera framework) is one way of implementing the fair bet, another way would be to have regard to the duration of the period over which there has been pricing flexibility. One version of such an approach might aim to determine a period of time over which pricing flexibility would be allowed, that was consistent with the fair bet principle during which there would be no regulation regardless of the performance of the investment. One reference point for considering the appropriate period of time might be the expected payback period of the discounted cashflows of the investment.

Payback in initial plan later than we assumed in consultation

- A6.158 As argued by Openreach, we accept that the model underpinning the 2008 Board paper shows payback was forecast to be in 2021/22, a year outside the period under review.²⁹⁹ We note that if a cost of capital of 11.0% were used instead of BT's standard corporate discount rate, the payback date in the 2008 Board paper could be extended. However, we consider it more appropriate to consider the payback period shown in the business plan.

Payback period not necessary for fair bet

- A6.159 Consistent with comments made by Openreach and Virgin Media, we recognise that the expected payback period of a central scenario in the business plan may not be the same as the probability weighted payback of different scenarios when regulation is considered.

²⁹⁷ Openreach supplementary fair bet submission, paragraphs 61-64.

²⁹⁸ Virgin Media response to the March 2017 WLA Consultation, paragraphs 106-110.

²⁹⁹ Openreach response to the March 2017 WLA Consultation, Volume 1, paragraph 267.

Refraining from regulation for the expected payback of a central scenario may not necessarily satisfy the fair bet. This is because it may not take account of the impact of regulation in situations where the investment performed worse than expected. In other words, the probability weighted payback period when regulation is considered could be longer than the payback period of a central scenario which assumed no regulation.

A6.160 However, as we said in the March 2017 WLA Consultation, when we regulate we are still allowing a return on undepreciated FTTC assets. This means that it is not necessary for the fair bet assessment to be predicated on Openreach having had an expectation that it will recover all of its investment before there is regulation. Rather, this method of implementing the fair bet would entail determining the duration of a period that gives an expectation of earning at least the relevant cost of capital, factoring in that when regulation starts it will allow a return on undepreciated assets. This means that a period shorter than the payback period of a central scenario that assumes no regulation could be consistent with allowing Openreach a fair bet. So while the model underpinning the 2008 Board paper shows expected payback was forecast to be in 2021/22, this does not necessarily mean that this is the relevant period for providing a fair bet, given that we are allowing a return on the undepreciated FTTC assets.

A6.161 In practice, the value of the undepreciated FTTC assets is likely to be considerable. In our assessment of Openreach's returns in Table A6.1 above, the value of the undepreciated FTTC assets that we forecast for March 2019 is around £[X], relative to total relevant capital expenditure over the period to 2018/19 (excluding connection costs) of £[X]. Moreover, provided the charge control bites, then this value of the undepreciated assets would not be lower if demand had not turned out to be as strong as it has. Without taking account of the value of these undepreciated FTTC assets, Openreach's return on investment over the period 2008/09 to 2018/19 would fall from around 15% to around [X]%. We recognise that the undepreciated assets at the end of 2018/19 are not all from the first tranche of investment relating to the 2008 Board paper, but reflect all FTTC investments over the period to the end of 2018/19. We are not able to precisely determine the value of the undepreciated assets relating to the first tranche at March 2019, but a sizeable proportion of the total will relate to it. Given the significance of the undepreciated FTTC assets, the duration of a fixed period before there was regulation that would be consistent with the fair bet could be materially shorter than the payback period.

A6.162 Moreover, even if we were implementing the fair bet primarily by reference to the duration of time, some account could still be taken of actual performance. If the investment were performing very well, regulation could occur somewhat earlier than it otherwise would. Conversely, if the investment were performing poorly, regulation could occur later or not at all.

Only payback period for initial investment relevant

A6.163 We disagree with Openreach's argument that it was unable to change its plans following its announcement in 2008. We set out below our view that:

- a) The investment was not all committed in 2008; and

b) Later investments were lower risk.

- A6.164 There are a number of factors suggesting the investment was not all committed in 2008. First, in our judgement, Openreach had at least some flexibility following its announcement to roll out to 10m homes. The 2008 Board paper notes a timeline including: industry consultation, operational trial ([X] homes enabled), and early market deployment ([X] homes enabled).³⁰⁰ Following these programme phases, national deployment starts in 2010 and indicates 7-10 million of homes enabled. The evidence therefore indicates that if early indicators suggested the investment would underperform, Openreach could have had the ability to scale back its announced plans even for the first tranche.
- A6.165 Second, in our judgement, Openreach did not make a commitment to expand coverage to two-thirds of the country at the time of the initial announcement. The 2008 Board paper presented indicative financials under different scenarios and based on planned fibre coverage of 40% of the UK.³⁰¹ If BT had been committing capital to rollout beyond 40% of the country at this stage, in our judgement the Board paper would have indicated this. Further, when it announced its intention to expand coverage to two-thirds of the country in May 2010, BT said it would only do so “... if investment conditions are favourable ...”.³⁰² This implies at least some optionality to continue with its expansion of coverage to two-thirds of the country even after the 2010 announcement, let alone back in 2008.
- A6.166 Third, as well as planning to expand its geographic coverage for FTTC in 2010, over time Openreach also decided to invest in increasing the capacity of existing cabinets in areas where it had already rolled out FTTC. This investment was clearly not committed in June 2008 and was only made because the original investment had gone so well with such high take-up that it was worth expanding capacity in the existing coverage area. These investments to expand the capacity of existing cabinets as demand grew were clearly much lower risk than when the original decision was made in 2008, and the charge control allows Openreach to earn the relevant cost of capital on these lower risk investments.
- A6.167 By imposing a charge control, we are limiting the period of pricing flexibility for later investments as well as the first tranche which was discussed in the 2008 Board paper. However, we consider that the risks fell substantially over time, as consumers’ demand for higher speeds grew over time, and as there was better information on price premium, take-up and costs. For example, just six weeks after its announcement to expand coverage, in a call to investors in 2010 when asked about statistics for take-up, BT’s CEO said “... it’s very early days yet but we’re pleased with customer reaction.”³⁰³ This suggests that by the time BT made the decision to expand its footprint to two-thirds of the country, demand risk was at least partly diminished. Consumers increasing demand for higher speeds is also reflected in the higher speed products that Openreach introduced over time, with higher

³⁰⁰ BT, June 2008. *NGA Strategy*. Timetable.

³⁰¹ BT response to 1st joint WLA and WBA s.135 notice, Q 2.1 dated 22 October 2015.

³⁰² BT, 13 May 2010. *BT 2010 Annual Report*, page 7, <https://www.btplc.com/News/ResultsPDF/q410release.pdf>.

³⁰³ BT, 30 June 2010. BT Q1 Results Conference Call, page 14.

<https://www.btplc.com/Sharesandperformance/downloads/Financialpresentations/q110transcript.pdf>.

prices. At launch in mid-2009 there was only the 40/2 Mbit/s service. The 40/10 service was then introduced in September 2011 and the 80/20 service in April 2012, with the 80/20 service in particular involving a substantially higher price than the original 40/2 service. Investments in incremental capacity within the existing footprint were particularly unlikely to be risky, and these represent around 16% of total relevant capital expenditure over the period to 2018/19 (excluding connection costs).³⁰⁴

Conclusion on period of pricing flexibility and payback period

- A6.168 We recognise that we are regulating VULA charges before the end of the expected discounted payback period in Openreach's original 2008 Board paper. This can be consistent with the fair bet because we are allowing a return on undepreciated assets when we regulate.
- A6.169 Moreover, even if we were implementing the fair bet primarily by reference to the duration of time allowed for pricing flexibility, some account could still be taken of actual performance. If the investment were performing very well and returns were extremely high, regulation could occur somewhat earlier than it otherwise would. Conversely, if the investment were performing poorly, regulation could occur later or not at all. For example, one approach would be to regulate after a fixed period but only if actual returns were above the cost of capital. Such an approach would have a shorter fixed period to achieve a fair bet than if no account were taken of actual returns.³⁰⁵
- A6.170 Given that we did not specify the duration of time allowed for pricing flexibility at the time the investment was made, we consider it reasonable to take some account of actual performance. Openreach's FTTC investment has gone very well, with a return well above the relevant cost of capital.
- A6.171 Given that: (a) Openreach began investing in FTTC in 2008/09 around 10 years ago; (b) our approach to regulation allows a return on undepreciated assets; and (c) the investment has been very successful, we believe that considering the period of elapsed time points to Openreach having had a fair bet.

Our assessment of the fair bet is conservative

- A6.172 Our assessment of whether Openreach has had a fair bet is conservative for the following reasons.
- A6.173 First, the counterfactual used for all the scenarios in the 2008 Board paper assumed copper revenues were steady. We have reflected this in our use of the base case scenario from the 2008 Board paper in our assessment of the Oxera framework (which has a return of 14.4%). In reality, BT was concerned that if it did not invest in fibre, it could lose market share to Virgin Media, which it said was deploying DOCSIS 3.0 in its network and offering a

³⁰⁴ Ofcom calculations based on Openreach's June 2017 Fibre Business Plan.

³⁰⁵ This is because a shorter fixed period before regulation if the investment goes well would be compensated by a longer period before regulation if the investment does not go well.

50 Mbit/s product to 70% of its footprint in 2008.³⁰⁶ The June 2008 Board paper is explicit about this, saying “This scenario (i.e. the base case scenario which generates a 14.4% return) is modelled versus the status quo, which trends and market insight show us will not be the case.” The Board paper considered that if Openreach does not invest in fibre, then in a worst case assessment it could lose [X]% of broadband customers to Virgin Media in the areas that Virgin Media serves, with an approximate in-year impact to BT Group profit of £[X]. Using a counterfactual that involved large lost profit if BT did not invest would significantly increase the expected return from the investment and hence reduce the critical thresholds implied by the Oxera framework.

A6.174 Second, our calculation of Openreach’s actual return on its FTTC investment is also likely to be understated even when compared to a counterfactual of broadly constant copper revenues, as discussed in paragraph A6.60 above.³⁰⁷ For example, we have understated Openreach’s return in 2018/19 because of the way we have treated the re-allocation of common costs from copper to fibre in this charge control, and for 2018/19 we used Openreach’s forecasts of FTTC revenue rather than actuals, even though this reflected the base case charge control proposals of our March 2017 WLA Consultation, which were lower than the charge control we have actually set.

A6.175 Third, the investment was not all committed in 2008/09. As described from paragraph A6.163 above, there were incremental decisions over time in how much to invest. As the Oxera framework is concerned with the rate of return on the initial investment, it does not adequately capture that Openreach could increase the *amount* it invests if the initial investment was going well. This is what happened with FTTC, with Openreach expanding coverage (from 40% to 66%) and the capacity of cabinets because the investment was going well. This increased BT’s total investment to £2.5bn³⁰⁸, compared its initially announced £1.5bn.³⁰⁹ Focusing only on the rate of return does not adequately capture this upside potential if the investment goes well.

Overall judgement that Openreach has had a fair bet

A6.176 Given our assessment of the Oxera framework, the duration of time that BT has had pricing flexibility, and the ways in which our assessment is likely to be conservative, we are confident in our judgement that we have provided BT with a fair bet on its FTTC investment. In our view, had a rational investor known how we would assess the fair bet, it

³⁰⁶ While we have never considered Virgin Media to be a sufficient constraint on Openreach to prevent Openreach having SMP, we recognise that Virgin Media provides some constraint on Openreach. BT was clearly concerned about this risk, and so it is relevant when considering the question “would BT have gone ahead, if it knew at the time, how we are regulating now?”.

³⁰⁷ We also believe this represents a conservative estimate of the performance of BT’s investment because the analysis assumes no impact on the profits from services other than VULA whereas the decision to invest may have likely considered the impact of the investment on the profits of services other than VULA.

³⁰⁸ BT, 13 May 2010. *Financial Results, Final results for the fourth quarter and year to 31 March 2010*, page 2, <https://www.btplc.com/News/ResultsPDF/q410release.pdf>.

³⁰⁹ BT, 31 July 2008. *Financial Results, First quarter to June 30 2008*, page 6, <https://www.btplc.com/News/ResultsPDF/q108release.pdf>.

would have seen this investment as a profitable opportunity, and would not have been deterred from investing by our approach to regulation.

A7. Additional comments raised by stakeholders

A7.1 This annex addresses some additional points made by stakeholders in response to the March 2017 WLA Consultation. The majority of points made by stakeholders are addressed throughout Volume 1. Some additional points made by stakeholders in relation to market definition and SMP assessment are addressed in Annex 5. Further points made by stakeholders in relation to the fair bet for past VULA investment are addressed in Annex 6.

Section 6: General Remedies

Stakeholder responses to the March 2017 WLA Consultation

Requirement to publish a Reference Offer

A7.2 Vodafone argued that several assumptions which were the basis for the Supreme Court's decision on the ladders of investment judgement³¹⁰ were incorrect. Vodafone claimed that it was wrong to assume that the terms of BT's RO for voice services were freely negotiated in a competitive market and that the terms were unchallenged. Vodafone also argued that the negotiation position of BT relative to other telecoms providers remains very unequal, and therefore the SMP Conditions should:

- a) stop BT from unilaterally increasing prices for services not subject to a charge control or a basis of charges;
- b) reserve Ofcom's right to determine contractual terms in BT's RO where there is no agreement with industry; and
- c) stop BT from raising prices of services subject only to a fair and reasonable charges obligation, without telecoms providers' consent.³¹¹

A7.3 In respect of Vodafone's proposed further amendments to the SMP Conditions, we do not believe these are required. If a service is not subject to a charge control or a basis of charges obligation, then it is still subject to the obligation for charges to be set on a fair and reasonable basis. Telecoms providers can raise with Ofcom cases where they do not consider that any charges are set in line with this obligation. In relation to the contractual terms of the RO, in the event there is no satisfactory agreement between BT and other telecoms providers, Ofcom has the power (through the SMP conditions) to direct BT to make amendments to the RO.³¹² Finally, in relation to requiring telecoms providers to consent to increasing charges, we think it unlikely that telecoms providers would agree to

³¹⁰ British Telecommunications Plc v Telefónica O2 UK Ltd & Anor [2014] UKSC 42. https://www.supremecourt.uk/decided-cases/docs/UKSC_2012_0204_Judgment.pdf.

³¹¹ Vodafone response to the March 2017 WLA Consultation, Annex 1, pages 5-6.

³¹² We have previously used this power in 2008 through amending the SLAs and SLGs Openreach provided to telecoms providers in the WLA, WLR and Wholesale Leased Lines markets.

BT raising its prices where they're are subject to a fair and reasonable charging obligation. Therefore, such a condition would be an obstacle to pricing flexibility and efficiency, as the refusal of telecoms providers to allow BT to raise its prices would lead to prices becoming permanently fixed.

Requirement to notify charges, terms and conditions

- A7.4 Vodafone argued that there was nothing in the proposed SMP Conditions 8 and 9 to stop BT from unilaterally amending the terms and conditions of contracts for regulated services, other than giving notice.³¹³
- A7.5 We believe that, as BT is always subject to supplying its services on fair and reasonable terms and conditions, on a non-discrimination basis (and EOI in general) and is subject to a pricing remedy (a fair and reasonable charging obligation or a charge control), there is no reason to restrict its ability to update terms and conditions. A telecoms provider could raise its concerns to us if felt that BT's amendments of its terms and conditions were unfair.

Other comments

- A7.6 Scottish Futures Trust (SFT) agreed with our proposed general remedies, but also stated that:
- a) The general remedies “need to be considered in the context of overall regulatory remedies in relation to the full end user experience and Quality of Service”. SFT requested clarification on the interaction of the multiple remedies that address end-to-end user experience.³¹⁴
 - b) The WLA market, and other markets and products, would benefit from an asset and condition register from Openreach, and this information should be easily available to further investment decisions.³¹⁵
- A7.7 With regard to SFT's first point, our main focus in this market review concerns the most upstream market in the value chain. It is at this level that we impose remedies, if and where necessary, to promote competition downstream. Overall, we have considered all remedies in the WLA market together, to impose the least burdensome regulation necessary to address our competition concerns. This takes into account the general, specific access, pricing, QoS and DPA remedies. As per the European regulatory framework under which we review markets, we take into account the impact of these remedies in downstream markets that are dependent on WLA.
- A7.8 On the second point raised by SFT, we are not minded to introduce an asset and condition register. Openreach is required to provide sufficient details regarding its network to enable competing telecoms providers to make use of services provided in the WLA market (such

³¹³ Vodafone response to the March 2017 WLA Consultation, Annex 1, paragraph 9.

³¹⁴ Scottish Futures Trust response to the March 2017 WLA Consultation, page 5.

³¹⁵ Scottish Futures Trust response to the March 2017 WLA Consultation, page 5.

as LLU and VULA), allowing them to take investment decisions about their planned rollouts. The remedies in this document, across general, specific access and pricing remedies, are designed to address our competition concerns.

- A7.9 As outlined in Volume 3, as part of our DPA remedy, we are requiring Openreach to provide access to information relating to its physical infrastructure via a database. Where information exists, the database will include an estimate of spare capacity in Openreach's ducts. We consider that having improved access to Openreach's network records will further competition in providing greater FTTP rollout and that the additional step suggested by SFT of an asset and condition register would be unnecessary and disproportionate.

Section 7: Specific Access Remedies

Stakeholder responses to the March 2017 WLA Consultation

Removing the obligation to provide SMPF

- A7.10 Stakeholders raised various specific examples of cases where SMPF may still play a significant role in the WLA market in order to argue that the special access remedy for SMPF should not be removed. In addition to the points discussed in Section 7 of Volume 1, stakeholders raised the following concerns:
- a) Sky stated that number porting will not be possible for some customers if they switch from SMPF to MPF.³¹⁶
 - b) Lothian Broadband argued that it relies on SMPF in order to compete with BT in rural areas by offering a broadband-only service with VoIP. Lothian Broadband claimed that transferring from SMPF to MPF would force it to pay for voice services which it does not want and that the costs of this would have to be passed onto customers.³¹⁷
- A7.11 As set out in Section 7, we consider that since the vast majority of SMPF lines are consumed by BT downstream, these specific concerns raised by stakeholders are sufficiently addressed by the general remedies. While Openreach continues to provide SMPF to other parts of BT, the general obligation to provide network access on reasonable request and the no undue discrimination obligation (including EOI) mean that it will be obliged to continue to make SMPF available to other telecoms providers on a fair and reasonable basis. We therefore expect that SMPF will remain widely available throughout the market review period, supporting those particular circumstances where telecoms providers may continue to rely on SMPF.
- A7.12 With regard to Lothian Broadband's point about having to pay for voice services over MPF, we do not agree that this would pass significant additional costs onto customers. SMPF must be provided with WLR, meaning that customers pay for line rental even if this is not

³¹⁶ Sky response to the March 2017 WLA Consultation, page 19.

³¹⁷ Lothian Broadband response to the March 2017 WLA Consultation, pages 1-3.

supplied by Lothian Broadband. In any case, we do not expect that Lothian Broadband would be forced to migrate to MPF against its wishes as we predict SMPF will still be widely available throughout the period of this market review, for the reasons set out above.

Lothian Broadband explained that its concern arose in part due to BT's deployment of Long Reach VDSL (LR-VDSL), which it feared would force telecoms providers to cancel SMPF services.³¹⁸ If BT seeks to deploy LR-VDSL in the future, we would consult on any request to remove LLU obligations and would take into account views of providers using SMPF as well as MPF in our consideration of any such request.

- A7.13 In addition to pointing out some specific cases where SMPF continues to be important, Sky stated that they still expect their SMPF volumes to be "significant" at the end of the market review period.³¹⁹ However, we consider that Sky's net SMPF additions of around [X] each month are still relatively small compared to Sky's overall customer churn.³²⁰ We remain confident in our forecast that MPF volumes will continue to rise and remain dominant up until 2021 (and beyond).
- A7.14 [X] suggested that our analysis of the number of SMPF circuits consumed by third-party telecoms providers is not accurate because we did not consider the role of SMPF as an input to wholesale broadband connect (WBC) and wholesale broadband managed connect (WBMC) services. [X] said the true number should be considerably larger than Ofcom's estimate. [X] also contested our approach to the regulation of MPF and SMPF more generally, arguing that there is no reason to differentiate MPF and SMPF regulation as these services largely use the same technology.³²¹
- A7.15 For the reasons set out in Section 3 of Volume 1, we consider that the WBA market (to which the WBC and WBMC products belong) is distinct and downstream from the WLA market. WBA services purchased from BT by other telecoms providers utilise SMPF (or other WLA services such as MPF and GEA). We classify these services as internal because the WLA service is supplied to another division of BT. We will take account of the external purchases based on these WLA services within the WBA market, which is the subject of a separate review. With regard to the distinction between regulation for MPF and SMPF, we do not consider that the similarity of technology is a reason to impose identical regulation. As set out in Section 7 of Volume 1, we consider that imposing specific access obligations on MPF plus the general access remedies imposed in Section 6 of Volume 1 are sufficient to address our competition concerns. As such we do not consider it appropriate to impose further specific obligations on SMPF.

³¹⁸ Lothian Broadband response to the March 2017 WLA Consultation, page 1.

³¹⁹ Sky response to the March 2017 WLA Consultation, page 18.

³²⁰ Sky response to the March 2017 WLA Consultation, page 19.

³²¹ [X]

Allowing for potential changes to LLU obligations

- A7.16 Several stakeholders raised specific concerns about the process for allowing BT to request a change to its LLU obligations which was proposed in the March 2017 WLA Consultation.
- A7.17 In Section 7 of Volume 1, we refer to a concern raised by Sky that a change to BT's LLU obligations could have an effect on the overall network economics of an affected telecoms provider.³²²
- A7.18 Though TalkTalk broadly agreed with our proposal, it was concerned that BT would spread the cost of rolling out such technologies across the entirety of its network, which could raise wholesale prices even for telecoms providers which would not benefit from the new deployment. TalkTalk also suggested that this cost distortion could harm the ability of BT and telecoms providers reliant on BT's network to compete with Virgin Media.³²³
- A7.19 SFT suggested that Ofcom should consider how telecoms providers using LLU would be compensated in the event that LLU becomes unavailable in a particular area following a successful request from BT to change its LLU obligations. SFT argued that local community-focused telecoms providers in rural areas could be particularly affected by a lack of effective compensation.³²⁴
- A7.20 The Independent Networks Co-operative Association (INCA) raised a related concern, arguing that there is a risk that exempting BT from its LLU obligations could inadvertently stifle competition in rural areas.³²⁵
- A7.21 [X] argued that following a successful request to cease its LLU services in a particular area, BT should be obliged to provide a replacement service in parallel to the existing service to allow a quick switch-over for businesses.³²⁶
- A7.22 Two stakeholders also raised specific concerns about LR-VDSL technology, which was discussed in the March 2017 WLA Consultation as a potential option for helping to serve the hardest to reach consumers:
- a) [X] argued that LR-VDSL could have a negative effect on the provision of Ethernet First Mile (EFM) services, which are used by businesses.³²⁷
 - b) Lothian Broadband argued that since many consumers in rural Scotland are located too far from a local exchange to receive a good quality service via LR-VDSL, it would be inappropriate for BT to request an exemption to its LLU obligations in order to introduce LR-VDSL technology.³²⁸
- A7.23 As explained in Section 7 of Volume 1, if BT develops plans to deploy technology such as LR-VDSL that could impact the use of LLU, we would consider such requests for a change to

³²² Sky response to the March 2017 WLA Consultation, page 20.

³²³ TalkTalk response to the March 2017 WLA Consultation, page 22.

³²⁴ Scottish Futures Trust response to the March 2017 WLA Consultation, pages 5-6.

³²⁵ INCA response to the March 2017 WLA Consultation, page 3.

³²⁶ [X]

³²⁷ [X]

³²⁸ Lothian Broadband response to the March 2017 WLA Consultation, page 5.

BT's LLU obligations on a case-by-case basis and would take into account concerns raised by stakeholders at that time.

VULA

- A7.24 Bit Commons urged us to establish the future regulatory and legal status of full-fibre connections and customers' right to request such a service. They noted that customers currently do not have an automatic right to request an affordable FTTP connection and suggested that this is because BT prefers to sell private circuits.³²⁹
- A7.25 The VULA remedy set out in Section 7 requires BT to supply access to both FTTP and FTTC services upon reasonable request. However, this obligation only applies in locations where BT has deployed fibre – it is not a requirement to provide a fibre connection on request at any location. The access conditions are designed to curb BT's SMP in the WLA market. It would not be appropriate for us to require BT to provide an affordable FTTP service on request to address BT's SMP.

Minimum contract period

- A7.26 TalkTalk agreed with our proposal to limit the length of minimum contract periods for FTTC-based VULA connections and migrations to one month. However, TalkTalk raised a concern that where a retail customer migrates in the middle of the month between two telecoms providers using BT's network, BT will continue to charge the original telecoms provider for the entire month via the hold-to-term charge while simultaneously charging the new telecoms provider. TalkTalk argues that to compensate for this over-recovery of BT's costs, the cost of line rental for 40/10 VULA should be reduced.³³⁰
- A7.27 We expect BT's approach to charging for mid-month migrations on FTTC-based VULA services to be broadly in line with its existing approach to MPF services, unless it can demonstrate why this would lead to an under-recovery of costs. We consider that limiting the length of minimum contract periods for FTTC-based VULA connections and migrations to one month is a proportionate measure to address the risk of BT over-recovering costs via the hold-to-term charge, while still allowing BT some necessary flexibility to use these charges to recover costs.

Section 10: Price regulation of copper access services including LLU and SLU

- A7.28 [X] argued that the lack of a charge control on SMPF would remove pricing constraints on Wholesale Broadband Managed Connect (WBMC) products³³¹, ultimately leading to higher prices.³³²

³²⁹ Bit Commons response to the March 2017 WLA Consultation, page 2.

³³⁰ TalkTalk response to the March 2017 WLA Consultation, page 13.

³³¹ WBMC is a managed variant of the WBC service supplied by BT Wholesale.

³³² [X]

A7.29 As explained above and in Section 3 of Volume 1, we consider that the WBA market (to which WMBC products belong) is distinct and downstream from the WLA market. The constraints on BT in the WBA market will be considered as part of our separate review of the WBA market.

Other comments raised by stakeholders

Period of the review

A7.30 CityFibre said we should have attempted to gain agreement from the European Commission for a five- or six-year review period in order to cover the period when FTTP network deployment would be increasing rapidly.³³³

A7.31 We are sympathetic to the consideration of longer review periods advanced by CityFibre. For example, a longer review period provides a more stable environment for investment, both for the regulated provider as well as competing providers (including those using regulated wholesale access products). However, longer review periods can present a challenge with the robustness of forecasts, particularly when services or technology are evolving. Within the current European Framework, the review period is three years and as such, we have operated within that time horizon in our market assessment and determination of remedies. We expect to commence our next review of the WLA market within the period of rapid new network deployment CityFibre refers to and will take account of market developments at that point.

Approach to market definition and SMP analysis

A7.32 CityFibre suggested that we should consult on our approach to market definition and SMP analysis. CityFibre said that Ofcom and its predecessor have been conducting market reviews based on the Common Regulatory Framework for nearly 15 years, during which time there have been substantial changes in the market on both the demand and supply sides.³³⁴

A7.33 Annex 6 of the March 2017 WLA Consultation set out our approach to market definition and SMP assessment. We consider that we have given stakeholders the opportunity to comment on our approach and we consider that further consultation is not necessary.

Switching

A7.34 CityFibre submitted a report prepared by Cenerva which considered demand-side issues raised by Ofcom's proposals, particularly consumer switching. It noted that there is currently no process for switching to and between full-fibre networks, and considered that the deployment of networks based on the PIA remedy could create further switching

³³³ CityFibre response to the March 2017 WLA Consultation, paragraphs 2.4.9-2.4.11.

³³⁴ CityFibre response to the March 2017 WLA Consultation, page 20.

difficulties. It urged us to launch a review of full-fibre switching arrangements and implement any remedies alongside other remedies we are imposing in WLA. It said our failure to consider these demand-side issues represented a significant shortcoming in our analysis.³³⁵ INCA made a similar comment.³³⁶

A7.35 In 2016 we consulted on proposals for a cross-platform switching process. In our July 2017 statement we concluded that the costs of such a process would be higher, and the benefits to consumers lower, than we had originally estimated.³³⁷ We consider that this is likely to remain the case and would apply to switching to and between full-fibre networks as they are rolled out.

A7.36 At the wholesale level however, we recognise the importance of facilitating consumer switching, and have designed our remedies accordingly. At Annex 23 we set out our decision to charge control a number of wholesale ancillary services that support switching between providers of fibre-based broadband, which are essential inputs for providers using the Openreach network when competing for retail customers.

BT's Profitability

A7.37 Vodafone expressed concern about “over-recovery in regulated markets”, and the impact of introducing a charge control on 40/10 VULA services from April 2018 rather than from the end of the previous WLA charge control.³³⁸ Both Vodafone and Sky referred to a report prepared for Vodafone by Frontier Economics estimating BT's profitability in regulated markets³³⁹, while TalkTalk reiterated its comments made in response to the Narrowband Market Review that Ofcom should allocate additional duct costs to ISDN markets.³⁴⁰

A7.38 We have considered in our analysis BT's profitability in the WLA market. We take into account BT's profitability in our discussion of the economic principles for our charge control modelling (Volume 2, Section 2) and in our decision to set a glidepath (Volume 2, Section 3). As we discuss in Annex 11 we have decided not to allocate common costs out of the WLA market in order to address BT earning profits above its cost of capital in other markets as this would distort pricing signals in the WLA market. Finally, in Annex 13 we discuss that the costs of Openreach's fault reduction programme have already been considered as part of our steady state and ongoing network adjustment.

³³⁵ CityFibre response to the March 2017 WLA Consultation, Annex B.

³³⁶ INCA response to the March 2017 WLA Consultation, paragraph 4.

³³⁷ Ofcom, July 2017. *Ofcom's decision on switching landline, broadband and/or pay TV between different platforms*. https://www.ofcom.org.uk/data/assets/pdf_file/0013/104503/Decision-on-switching-between-platforms.pdf

³³⁸ Vodafone response to March 2017 WLA Consultation, paragraphs 3.36-3.37.

³³⁹ Sky response to March 2017 WLA Consultation, paragraph A1.49.

³⁴⁰ TalkTalk response to March 2017 WLA Consultation, paragraph 6.31-6.32.

A8. Regulatory reporting

- A8.1 BT is currently subject to regulatory financial reporting requirements designed to provide us with the information we need to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions address the underlying competition issues, and investigate potential breaches of SMP conditions and anti-competitive practices.
- A8.2 As part of these requirements, each year BT prepares Regulatory Financial Statements (RFS). The RFS are prepared according to a defined framework and methodology and are published. Additional information is also provided to us privately.
- A8.3 In Volume 1, Section 6 we explain that we have decided to impose cost accounting and accounting separation obligations on BT in the WLA market. In this annex, we set out the specific regulatory accounting requirements that we have decided to impose on BT under those cost accounting and accounting separation obligations by way of directions made under the SMP conditions. The legal directions we have imposed on BT are included in Annex 33. These directions are drafted such that they apply to regulatory financial reporting prepared for the 2017/18 financial year and then subsequent years.³⁴¹
- A8.4 In the March consultation,³⁴² we proposed nine directions on BT in relation to regulatory reporting, which were subject to further proposed amendments in the August 2017 DPA Consultation³⁴³ and the November 2017 Regulatory Financial Reporting Consultation.³⁴⁴ Stakeholders have responded to our proposals and we have considered these responses in reaching our decisions set out in this statement.
- A8.5 In this annex, we first set out our decisions to impose the following four directions on BT, which were of most concern to stakeholders:
- consistency with regulatory decisions (including preparing the RFS on a RAV (Regulatory Asset Value basis));
 - the additional financial performance schedule;
 - the preparation, delivery, publication, form and content of the RFS; and
 - network components.
- A8.6 In setting out our decisions, we also set out wider issues raised by stakeholders in response to the November 2017 Regulatory Financial Reporting Consultation which fall outside the scope of the WLA market review.
- A8.7 We then set out our decisions to impose the following five directions on BT which apply to the WLA market and more broadly:
- the Regulatory Accounting Principles;

³⁴¹ This is consistent with the approach adopted in the 2017 Narrowband Market Review.

³⁴² March 2017 WLA Consultation, paragraph 10.8.

³⁴³ August 2017 DPA Consultation, paragraph 5.5-5.6.

³⁴⁴ November 2017 Regulatory Financial Reporting Consultation, paragraphs 3.6-3.8.

- transparency;
- audit of the RFS;
- the reconciliation report; and
- the reporting of electricity charges.

A8.8 Finally, we also explain why we consider that our decisions to impose regulatory financial reporting requirements as explained in this Annex and as set out in the directions at Annex 33 satisfy the legal tests in the Act and why we consider that, in making these decisions, we have complied with our applicable duties.

The Consistency with Regulatory Decisions Direction and the Additional Financial Performance Schedule Direction

A8.9 We have decided to impose regulatory accounting conditions on BT which require that BT's RFS must be prepared in accordance with the Regulatory Accounting Principles (RAP) among other things. Principle 4 of the RAP requires that Regulatory Financial Reporting must be consistent with our regulatory decisions.³⁴⁵ This also encompasses the RFS being prepared on a RAV basis.

A8.10 In general terms, we would expect regulatory decisions to be reflected in the RFS unless there were good reasons not to. In the 2014 Regulatory Financial Reporting Statement,³⁴⁶ we explained that we do not consider that the requirement for consistency means that all regulatory decisions must be reflected in the RFS. For example, when we set prices, we may include adjustments to cost calculations that do not strictly reflect BT's costs, for reasons that we disclose and consult upon. In attempting to model the impact of some adjustments, such as steady state valuation adjustments and how they might uplift costs, we would require BT to make difficult judgements about how it should reflect these adjustments in its RFS, which would not be appropriate.

A8.11 In this sub-section we set out the potential consistency requirements arising from regulatory decisions in this statement. The requirement for consistency applies to the entirety of the RFS and BT must therefore ensure in all markets where the new SMP conditions and the requirement for consistency apply that the accounting treatment reflects the consistency requirements we have specified in this statement.

A8.12 In the remainder of this sub-section we:

- summarise the charge control adjustments;
- consider whether those adjustments should be reflected in BT's regulatory financial reporting;

³⁴⁵ In the 2014 Regulatory Financial Reporting Statement and the 2015 Directions Statement <https://www.ofcom.org.uk/consultations-and-statements/category-2/bt-transparency>, we explained why Regulatory Financial Reporting should, as far as possible, be consistent with our regulatory decisions as set out in Regulatory Accounting Principle number four. (See: 2015 Directions Statement, Annex 3.)

³⁴⁶ 2014 Financial Reporting Statement, paragraph 3.38.

https://www.ofcom.org.uk/_data/assets/pdf_file/0025/78460/financial-reporting-statement-may14.pdf.

- consider each of the charge control adjustments in turn to determine whether, and if so how, they should be reflected in BT’s regulatory financial reporting; and
- identify some additional accounting adjustments that need to be reflected in BT’s regulatory financial reporting.

Summary of charge control adjustments

A8.13 We have made various adjustments to the cost information reported in BT’s 2016/17 RFS, which we used as our base year to inform our charge control decisions. We set out the detail in relevant annexes to this statement. We have summarised our charge control adjustments in the table below.

Table A8.1: List of relevant charge control adjustments

Adjustment	Description	Relevant Annex/Ref
a) Cumulo	We made a small change to the cumulo attribution methodology. The amount attributed to GEA services was based on the shares of BT’s total rateable value (RV) calculated for GEA-FTTC rental services with reference to a rateable value per connected line of £18 per annum and for other GEA rental services with reference to a rateable value per connected line of £20 per annum. That was because BT could no longer directly identify the amounts it paid on GEA services from 2017/18 onwards. We made no other changes to the attribution methodology.	Annex 12 and Annex 21
b) OSS / BSS	We have included incremental OSS/BSS spend in the bottom-up model. Some of these costs are currently attributed to copper services. In order to avoid double recovery of these costs, we have removed [£] of these incremental OSS/BSS costs from WLR and MPF rentals.	Annex 14
c) Tie cables	We reduced the Gross Replacement Costs (GRC), Net Replacement Cost (NRC) and Operating Capital Maintenance (OCM) depreciation for copper and local exchange capital costs by 70% for the main Tie Cable component (CL133) and added in [£] of pay to operating costs for services SL128 (Tie Cable Connection) and SL133 (Tie Cable rental) to remove historical capitalised labour costs.	Annex 12
d) Co-mingling	We have removed historical capitalised costs related to surveys for co-mingling provision services of [£] and reduced operating costs by [£]. In relation to other costs associated with the ACPA ³⁴⁷	Annex 12

³⁴⁷ The ACPA class of work includes spend on assets relating to construction provision, installation and recovery necessary for the operation of network equipment e.g. ventilation and cooling plant. - BT’s response of 18 August 2017 to question

CoW³⁴⁸, we have removed historical capitalised costs of [£] and reduced operating costs by [£]. This covers the net impact on both co-mingling and GEA services.

e) GEA Cablelink connections	The following services have been set at our estimate of FAC (adjusting for capitalised costs that have been paid up front): <ul style="list-style-type: none"> • 1 Gbit/s GEA Cablelink; and • 10 Gbit/s GEA Cablelink. 	Annex 23
f) MPF Cancellations	Aligned with the charges for GEA Bandwidth Modify to 40/10 FAC in the absence of reliable FAC cost information.	Annex 23
g) MPF Amend	Aligned with the charges for GEA Bandwidth Modify to 40/10 FAC in the absence of reliable FAC cost information.	Annex 23
h) MPF standard line test	In the absence of reliable cost information this has been set at a flat cap, based on the current charge.	Annex 23
i) GEA Cancel/Amend/Modify – CRD Amend, order notes amend, order cancellation, Care level, etc	Aligned with the charges for GEA Bandwidth Modify to 40/10 FAC in the absence of reliable FAC cost information.	Annex 23

2f(ii) of the 27th WLA 2017 s.135 notice. See also page 343 of BT's 2016 Accounting Methodology Document (AMD). It also includes costs of co-mingling surveys.

³⁴⁸ CoW are activities (e.g. Maintenance & Construction) which identify the plant type, or the product group/service being worked on. Usually identified as part of job/project set up. BT's 2017 AMD, Glossary.

j) GEA Cancel/Amend/Modify - Regrading of existing upstream or downstream speed	Aligned with the charges for GEA Bandwidth Modify to 40/10 FAC in the absence of reliable FAC cost information.	Annex 23
k) VLAN Moves applied to GEA Cablelink	Aligned with the charges for GEA Bandwidth Modify to 40/10 FAC in the absence of reliable FAC cost information.	Annex 23
l) Restructuring and property provision costs	Consistent with our approach in the 2016 BCMR Statement, smooth these volatile costs over a three-year period.	Annex 12
m) Sales of copper	We have annualised the estimated present value of copper sales up to 2035, using BT's WACC as the relevant discount rate. We then attribute this annual value, which we treat as a negative cost, across all copper services on an equal basis. This negative cost is modelled to increase with RPI each year.	Annex 12 and Annex 22
n) Steady state adjustment	<p>We modelled the costs of an ongoing copper network, which is consistent with our approach to modelling an ongoing FTTC overlay network.</p> <p>We have made the following adjustments to reflect an ongoing copper network as follows:</p> <ul style="list-style-type: none"> • Steady state capex – this adjusts the base year capex to equate to the base year OCM Depreciation. • Depreciation profile – this adjusts the cost recovery for heavily depreciated assets by adjusting both the asset lives (and thus the implied OCM depreciation) as well as the base year NRC. 	Annex 12
o) Common cost reattribution	We re-attributed WLA common costs between copper services and commercial GEA services.	Annex 11
p) Subsidised FTTC deployment	We removed all costs and income associated with the subsidised (i.e. areas where BT has received BDUK funding) GEA services with an adjustment made to the associated volumes and costs for the remaining commercial GEA services.	Annex 12

q) Service level	We adjusted the operating costs for reactive repair of the access network in the base year to account for the difference in the mix of service options available between the base year and our forward look period.	Annex 13
r) SLGs	To account for the new SLG regime that will be in place in the charge control period, we expect the number of faults and therefore the cost of SLG payments will decrease. Against this, however, with the introduction of automatic compensation, the cost per payment will increase. We therefore removed SLG costs from the base year model and separately modelled this impact.	Annex 12 and Annex 13
s) PIA implementation costs	To account for the cost of implementing the PIA remedy we have made a forecast of what these costs would be, including one-off set up costs and ongoing variable costs. Our forecasts are based on our assumption of PIA take-up.	Annex 12
t) Allowance for network adjustment costs below the financial limit	We included an allowance for a proportion of the costs of making network adjustments (appropriately capitalised) recovered over PIA and Other network access services.	Annex 12
u) Pension costs	[X] ³⁴⁹	Annex 12

Source: Ofcom

Should charge control adjustments be reflected in BT's RFS?

Our proposals

A8.14 In our consultations³⁵⁰ in respect of the proposed charge control adjustments, we set out the adjustments that should be reflected in the RFS to achieve consistency, and which adjustments should not be reflected in the Adjusted Financial Performance Schedules. The starting point for our analysis is that we would expect to see a cost adjustment, made by us in our regulatory decisions, to be reflected in the RFS if it relates to the way BT's actual or incurred costs should be treated.

A8.15 Our proposals reflected the approach set out in the 2015 Directions Statement where we said that "we would not expect to see a cost adjustment reflected in the RFS if:

- the adjustment has the effect of replacing BT's incurred costs with an alternative estimate of cost. In such case, we would expect to see the adjustment reflected in the Adjusted Financial Performance Schedules; or

³⁴⁹ On 15 November 2017 BT launched a 60-day consultation with its pension scheme members about possible changes to the scheme.

³⁵⁰ The March 2017 WLA Consultation, the August 2017 DPA Consultation and the November 2017 Regulatory Financial Reporting Consultation.

- the adjustment has the effect of replacing BT’s incurred costs with a value that is not based on BT’s network (whether actual or estimated). In addition, we would not expect such an adjustment to be reflected in the Adjusted Financial Performance Schedules.”³⁵¹

Stakeholder responses

- A8.16 Openreach agreed with our approach that a cost adjustment would not be expected to be reflected in the RFS or Adjusted Performance Schedule where it is only made for forecasting purposes³⁵² but noted it should not be based on incurred costs. Such adjustments, it said, would require “significant additional effort and judgement on our part and would not add significantly to stakeholder value”.³⁵³
- A8.17 Sky also agreed that “not all regulatory decisions must be reflected in the RFS and that this is a matter for Ofcom’s judgement”.³⁵⁴

Our reasoning and decisions

- A8.18 We continue to believe that it is appropriate to state on a case-by-case basis whether, and if so how, the RFS or the Adjusted Financial Performance Schedules should remain consistent with our regulatory decisions.
- A8.19 As noted above, we would expect to see a cost adjustment made by us in our regulatory decisions, to be reflected in the RFS if it relates to the way BT’s actual or incurred costs should be treated.
- A8.20 In the remainder of this sub-section we consider each of the charge control adjustments in turn and decide whether they should be reflected in either the RFS or the Additional Financial Performance Schedule, or not reflected in BT’s regulatory financial reporting, by reference to the following two questions:
- Does the adjustment have the effect of replacing BT’s incurred costs with an alternative estimate of cost?
 - Does the adjustment have the effect of replacing BT’s incurred costs with a value that is not based on BT’s network (whether actual, estimated or for forecasting purposes)?
- A8.21 Where we have decided that some form of reporting is appropriate, we then set out how the adjustments should be reflected.
- A8.22 We have decided that the RFS must include the following adjustments to the charge control (set out in Table A8.1), as these relate to the way BT’s actual or incurred costs should be treated:
- Cumulo
 - OSS/BSS

³⁵¹ 2015 Directions Statement, paragraph 3.35.

³⁵² Openreach response to the March 2017 WLA Consultation – Volume 1, paragraph 300.

³⁵³ Openreach response to the March 2017 WLA Consultation – volume 1, paragraph 300.

³⁵⁴ Sky response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 13a.

- Tie cables
- Co-mingling
- GEA Cablelink connections
- MPF Cancellations
- MPF Amend
- MPF standard line test
- GEA Cancel/Amend/Modify – CRD Amend, order notes amend, order cancellation, Care level, etc
- GEA Cancel/Amend/ Modify - Regrading of existing upstream or downstream speed
- VLAN Moves applied to GEA Cablelink

Cumulo

Our proposals

Adjustment	Replaces BT's costs with an alternative estimate?	Replaces BT's costs with a value that is not based on BT's network?	Where reported?
a) Cumulo	No	No	RFS

A8.23 In the March consultation we proposed³⁵⁵ that BT should make a minor change to the way in which it attributes its cumulo rates. We proposed that the amounts to be attributed to GEA-FTTC rental services should be calculated with reference to a rateable value per connected line of £18 per annum, and to Other GEA rental services it should be calculated with reference to a rateable value per connected line of £20 per annum. We proposed no changes to the attribution of cumulo costs for non-GEA related services.

A8.24 In the November 2017 Regulatory Financial Reporting Consultation,³⁵⁶ we noted that the consistency with regulatory decisions direction proposed in the March consultation did not reflect our proposal that the attribution to non-GEA related services remained unchanged. This was clarified by way of an amendment to the proposed consistency direction, along with minor changes to the wording relating to GEA related cumulo costs to ensure the requirements were clear.³⁵⁷

³⁵⁵ March 2017 WLA Consultation, Volume 1, paragraphs 10.32-10.34 and Table 10.3.

³⁵⁶ November 2017 Regulatory Financial Reporting Consultation, paragraph 6.31.

³⁵⁷ We also proposed to amend the existing 2014 FAMR direction in respect of cumulo. See Section 7, November 2017 Regulatory Financial Reporting Consultation.

Stakeholder responses

- A8.25 While Vodafone and UKCTA both supported our cumulo proposals, they stated that BT should not be making a profit or a mark-up on cumulo costs.³⁵⁸ Vodafone considered the regulatory reporting and transparency of cumulo costs in the RFS to be inadequate, especially given it is one of the single most significant external costs BT incurs.³⁵⁹
- A8.26 BT, while it agreed with our proposal to continue to use the existing approach, suggested the direction “should be written so as to be able to accommodate any changes that may be agreed between BT and the Valuation Office Agency (VOA) on the approach to calculating the Material Change of Circumstances in 2017/18”. It also requested that the direction should be rewritten to make certain calculations clearer, such as how cumulo costs are attributed between NGA and Non-NGA services.³⁶⁰

Our reasoning and decisions

- A8.27 We have considered BT’s suggestions to make the direction clearer and we have amended the consistency with regulatory decisions direction we proposed on cumulo to make it clear how cumulo costs are attributed between GEA and non-GEA services. This changes the form of words used in the direction but fulfils the same objective. BT’s cumulo costs on GEA services should be calculated with respect to GEA services’ share of BT’s total RV. The GEA Services RV is calculated by assuming an RV of £18 for GEA FTTC Rental connections and an RV of £20 for all other GEA Rental connections.
- A8.28 We have, however, not changed the direction as BT suggested to reflect that the approach to calculating Material Changes in Circumstance (MCCs) may change in the future. We acknowledge that the approach to MCCs may differ from our assumptions within the charge control and are willing to consider further information to improve future attributions of BT’s cumulo costs. We therefore considered rephrasing the direction so that, for example, the share of GEA related cumulo costs would be attributed to GEA FTTC Rentals with reference to a rateable value of £18 per connected line per annum “or any such amount as OFCOM may direct”. However, we did not proceed to rephrase the direction. Were BT to provide us with evidence on how MCCs have been calculated with a view to changing the cumulo attribution direction, we would be required to consult on and then potentially issue an amended direction.
- A8.29 With respect to BT’s other comments, we confirm that the BT RVs used to attribute costs between GEA and non-GEA services should be the latest values that have been published by the various rating authorities, not just the VOA. We would expect that the current approach under which cumulo GEA costs are attributed using a profit weighted net

³⁵⁸ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, page 9; UKCTA response to the November 2017 Regulatory Financial Reporting Consultation, page 2.

³⁵⁹ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, pages 9-10.

³⁶⁰ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 8.4-8.5. We describe the various terms such as Material Changes in Circumstance and the current three stage attribution approach to cumulo rates in Annex 21.

replacement cost approach would continue. Our changes to the directions reflect these points.

- A8.30 With respect to Vodafone’s and UKCTA’s comment that BT should not be making a profit or mark-up on cumulo costs, we do not consider that this is currently the case. But we agree that cumulo costs are an increasingly important part of the cost base that we have forecast will increase over the charge control period. We therefore agree with Vodafone that information on BT’s cumulo costs should be disclosed. The total amount that BT pays in cumulo rates is not confidential and we believe it appropriate that stakeholders can see how it has been attributed across services and markets. We believe that the most appropriate way for this information to be disclosed is through the creation of a new network component, which we set out below.
- A8.31 In the light of stakeholder responses, as proposed in the November 2017 Regulatory Financial Reporting Consultation we have also decided to implement the requirement in respect of the 2017/18 RFS and have accommodated this change in the relevant direction (rather than by setting a separate direction as we proposed in November).

Adjustment	Requirements on treatment in the RFS
a) Cumulo	There is a small change to the cumulo attribution methodology so that the amount attributed to GEA services should be calculated with reference to the GEA services’ share of BT’s total RV. The GEA services’ RV is calculated for GEA-FTTC rental services with reference to a rateable value per connected line of £18 per annum and for Other GEA rental services with reference to a rateable value per connected line of £20 per annum. The rest of the direction on cumulo attributions is largely unchanged though has been restated in terms of GEA and non-GEA (rather than NGA and non-NGA) services (rather than components).

OSS / BSS

Our proposals

- A8.32 In the March consultation, we noted that BT did not attribute all of the incremental OSS/BSS spend associated with its NGA programme to GEA services. We found that only [X] of the identified incremental OSS/BSS spend was attributed to GEA while the remainder is allocated to copper and non-WLA services. We proposed to address this as part of our cost attribution review by making proposals on how BT should apportion these costs in the RFS.

Stakeholder responses

- A8.33 Vodafone in its response to the March consultation³⁶¹ was concerned that the different treatment of BT’s costs (in our bottom-up and top-down models) gave BT the opportunity

³⁶¹ Vodafone response to the March 2017 WLA Consultation, paragraphs 12.7-12.9.

to over-recover their OSS/BSS costs. Vodafone expected the proportion of OSS/BSS costs going forward to be constant or declining in the charge control period.

Our reasoning and decisions

A8.34 As set out in Annex 14, following on from our consultation proposal and in response to Vodafone’s concern regarding the risk that including all of the incremental OSS/BSS spend in the bottom-up model could lead to BT over-recovering these costs (as only a small proportion of them are actually allocated to GEA services in the RFS), we have updated our March consultation analysis of the RFS.

A8.35 When analysing the 2016/17 OSS/BSS spend in the RFS, we found that [36] of the total incremental OSS/BSS spend is allocated to GEA services in the RFS. The remaining spend continued to be attributed to copper services and non-WLA services (mostly leased lines). We consider that BT should not attribute OSS/BSS costs to copper services as they are incremental to the provision of GEA and therefore adjusted our top down model for copper services accordingly.

Adjustment	Requirements on treatment in the RFS
b) OSS / BSS	BT must attribute all costs in relation to OSS/BSS to GEA services in accordance with the RAP.

Services with costs paid up front

Our proposals

A8.36 ‘Services with costs paid up front’ comprise Tie Cables, Co-mingling and GEA Cablelink Connections.

Adjustment	Replaces BT’s costs with an alternative estimate?	Replaces BT’s costs with a value that is not based on BT’s network?	Where reported?
c) Tie cables	No	No	RFS
d) Co-mingling	No	No	RFS
e) GEA Cablelink Connections	No	No	RFS

- A8.37 In the November 2017 Regulatory Financial Reporting Consultation,³⁶² we explained that the information on Tie Cables was not appropriate for the purposes of setting charge controls as BT currently capitalises labour costs it incurs when installing Tie Cables, even though they were paid for up front through connection charges. This could have led to a potential over-recovery of costs if not adjusted in the charge control.
- A8.38 Potential over-recovery of costs was also a concern with GEA Cablelink as a large proportion of the costs for GEA Cablelink are currently capitalised (despite the service being paid up-front) and either included within the 'GEA Other' service or other GEA services.³⁶³
- A8.39 In respect of Co-mingling rentals, we identified two inappropriate cost treatments. For set up costs, as with Tie Cables and GEA Cablelink, we found that BT had capitalised the survey costs (booked to the ACPA CoW) that it undertakes on the Co-mingling areas within its local exchanges despite the fact these costs have already been recovered when the surveys were undertaken. For other costs attributed from the ACPA CoW, we found that the attribution to Co-mingling was too high when compared to GEA services considering the relative age of the ACPA assets.³⁶⁴
- A8.40 We proposed regulatory financial reporting changes in line with how we modelled our proposed charge control for these services. In our modelling we removed capitalised costs that had already been paid for up-front, ensuring depreciation and ROCE costs on the capitalised assets were not included in the rental charges and treating future costs that would previously have been capitalised as operating expenses.
- A8.41 For the ACPA CoW, we proposed that BT move the NRCs and GRCs of the ACPA assets which provide power for GEA DSLAMs to the LFME³⁶⁵ CoW, with future costs treated as operating costs. For the remaining ACPA assets used to provide power for Co-mingling equipment, we proposed that BT remove the NRCs and GRCs of all historical assets already recovered via one-off or connection fees with future costs treated as an operating cost. These costs are then attributed to PG132B LLU, Co-mingling Recurring Costs.
- A8.42 We proposed that BT should report the costs for GEA Cablelink services separately.

Stakeholder responses

- A8.43 In connection with Services with costs paid up front, stakeholders other than BT were supportive of our proposals. Most raised concerns over the potential over-recovery of costs.

³⁶² November 2017 Regulatory Financial Reporting Consultation, paragraphs 5.17-5.18.

³⁶³ November 2017 Regulatory Financial Reporting Consultation, paragraph 5.20.

³⁶⁴ November 2017 Regulatory Financial Reporting Consultation, paragraph 5.19.

³⁶⁵ LFME is the Construction, Local Network Service Module Equipment CoW.

- A8.44 TalkTalk suggested that the potential double recovery that has occurred relating to Co-mingling and Tie Cable costs “may well be occurring on more products but Ofcom has yet to detect it, and external third parties do not have sufficient information to do so”.³⁶⁶
- A8.45 BT disagreed, principally because our proposal for the RFS differed from their current financial accounting policy for the statutory accounts.
- A8.46 BT, in its response to the November 2017 Regulatory Financial Reporting Consultation,³⁶⁷ reiterated the point made in Openreach’s response to the September consultation,³⁶⁸ stating that “expensing these costs in the year incurred will cause misalignment between the RFS and the statutory accounts which will reduce transparency, reliability and comparability for the users of the RFS”.³⁶⁹
- A8.47 BT disagreed with the point we made in the November 2017 Regulatory Financial Reporting Consultation that an adjustment within the reconciliation statement will resolve differences between the RFS and the statutory accounts, “as every additional reconciling item between the RFS and the Annual Report, particularly for low materiality items, increases the complexity and reduces the transparency of the RFS”.³⁷⁰
- A8.48 BT justified its financial accounting policy to capitalise these costs as appropriate on the basis that “planning, labour and other installation costs incurred to connect customers to the copper and fibre access networks are not differentiated from the overall network cost build, as these are directly attributable in bringing the network to the location and condition necessary for it to be capable of operating in the manner intended by management”.³⁷¹
- A8.49 BT continued: “these costs are necessary to support other services being offered for which income is being earned, for example rentals from FTTP and FTTC services, thereby associating the cost items with future benefits which will flow to the entity”.³⁷²
- A8.50 In contrast, Vodafone, while agreeing with our revised treatment for Services with costs paid up front, considered that BT’s current practice of recognising these services’ revenues and costs in the same way in the RFS as in its statutory accounts, conflicted with generally accepted accounting principles (GAAP).³⁷³ UKCTA made a similar point regarding BT adhering to GAAP principles.³⁷⁴

³⁶⁶ TalkTalk response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 10.

³⁶⁷ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.6.

³⁶⁸ Openreach response to the September 2017 WLA Further Consultation, paragraphs 169-171.

³⁶⁹ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.6.

³⁷⁰ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.6.

³⁷¹ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.3.1.

³⁷² BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.3.1.

³⁷³ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, page 9;

³⁷⁴ UKCTA response to the November 2017 Regulatory Financial Reporting Consultation, page 2.

- A8.51 Sky “strongly” supported our proposals, noting BT “must not be allowed to capitalise initial investment costs for ancillary services...and then double recover those costs through both retail and connection charges”.³⁷⁵
- A8.52 [S] also welcomed our proposals on the capitalisation of labour and the requirement for BT to treat any labour costs as operating costs.³⁷⁶
- A8.53 BT made a point in relation to a new International Financial Reporting Standard that comes into force this year, that “the timing of recognising the connection fees may be deferred under IFRS 15 – Revenue from Contracts with Customers, which comes into effect on 1 April 2018. Further analysis needs to be conducted to determine the impact of IFRS 15 – Revenue from Contracts with Customers on connection revenues from the above services before any methodology changes should be proposed.”³⁷⁷
- A8.54 In respect of our proposed treatment of the ACPA CoW, while BT supported the measure to separately identify and move GEA costs to the LFME CoW, they disagreed with our proposal for ACPA costs that have been paid for up front to be treated as an operating expense rather than capitalised for the same reason as with other Services with costs paid up front.³⁷⁸

Our reasoning and decisions

- A8.55 In relation to the concerns raised by stakeholders on whether potential over-recovery of capitalised charges is a widespread BT practice, in relation to the WLA market and the scope of this review, we have required³⁷⁹, for Services with costs paid up front, that BT’s reporting will be consistent with the charge control.
- A8.56 For other GEA services (see below), where we have not used BT data to set the charge control due to a lack of data availability, we have imposed regulatory reporting requirements at a granular level to ensure BT’s reporting for these services is transparent and enables us to spot any potential over-recovery going forward.
- A8.57 In relation to services in markets outside of the scope of this review, we will consider the potential over-recovery of costs in the course of future regulatory reviews.
- A8.58 In the November 2017 Regulatory Financial Reporting Consultation, we explained that, in relation to Services with costs paid up front, BT was capitalising costs inconsistently with how they were currently being recovered. Our financial reporting requirement for these services is consistent with how we modelled the cost of these services. We agree that if BT does not change its financial accounting policy, there would be an inconsistency between the RFS and BT’s statutory financial statements.

³⁷⁵ Sky response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 13.

³⁷⁶ [S] response to the November 2017 Regulatory Financial Reporting Consultation, page 5.

³⁷⁷ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.5.

³⁷⁸ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraphs 6.7 and 6.3.

³⁷⁹ Including GEA Cablelink rentals where we have set the charge at zero to prevent BT from circumventing the GEA Cablelink connection charge – see Annex 23.

- A8.59 We do not believe that BT’s lack of distinction between connection costs and network build costs is a reason for applying an inappropriate accounting policy to connection costs when those costs, unlike the network build costs, are not always recovered through rentals. We also disagree that building the network and connecting end users are the same activity. BT’s argument that the costs support additional revenue generating services such as FTTP and FTTC, does not justify them being recovered through Services with costs paid up front as well as WLA rentals.
- A8.60 We do not agree that future compliance with IFRS15 from 1 April 2018 is a relevant issue for Services with costs paid up front. IFRS15 requires that revenue and costs for contracts over a period greater than one year must be recognised over the life of the contract. Given that WLA contracts are for less than one year, IFRS15 will not apply.
- A8.61 The RFS and statutory accounts serve different purposes. For example, the RFS are prepared using the Current Cost Accounting Convention, which reflects an economic view of BT’s long-life asset base which is more appropriate for regulation than the basis of BT’s statutory accounts. The RAP are applied in order of priority, and the principle of ensuring the RFS is consistent with our regulatory decisions has a priority over the principle that the RFS are consistent with any statutory reporting requirements
- A8.62 We set out below how BT must reflect our charge control decisions in the RFS.³⁸⁰ BT must reflect adjustments in the same order we have set them out in the following table because some of the adjustments logically should follow others, while others have a cumulative effect on the RFS.

Adjustment	Requirements on treatment in the RFS
Tie Cables	BT must remove the capitalised costs that had already been paid for up front in network component CL133, ensuring depreciation and ROCE costs on the capitalised assets were not included in the rental charges. In future these costs that would have been capitalised are treated as operating expenses.

³⁸⁰ Further guidance on how the charge control adjustments should be reflected is provided to BT by way of the references in [Table A8.1](#)

Adjustment	Requirements on treatment in the RFS
Co-mingling	<p>BT must remove the capitalised survey costs in Plant Group PG136A that had already been paid for up front, ensuring depreciation and ROCE costs on the capitalised assets are not included in the rental charges. In future these costs that would have been capitalised are treated as operating expenses.</p> <p>BT must move the capitalised costs from ACPA CoW, for the ACPA assets which provide power for GEA DSLAMs, to the LFME CoW.</p> <p>BT must then remove the capitalised costs in ACPA and LFME CoW that have already paid for up-front, ensuring depreciation and ROCE costs on the capitalised assets were not included in the rental charges. In future these costs that would have been capitalised are treated as operating expenses.</p> <p>These remaining costs in ACPA CoW are then attributed to Plant group PG132B LLU, Co-mingling Recurring Costs.</p>
GEA Cablelink Connections	<p>BT must remove the capitalised costs that had already been paid for up front for GEA Cablelink services that have been attributed to GEA Services, ensuring depreciation and ROCE costs on the capitalised assets are not included in other services' rental charges. In future these costs that would have been capitalised are treated as operating expenses.</p>

Other services

Our proposals

- A8.63 In the September consultation, we proposed that MPF Cancellations, MPF Amend, GEA Cancel/Amend/Modify – CRD Amend, order notes amend, order cancellation, Care level, etc, GEA Cancel/Amend/ Modify - Regrading of existing upstream or downstream speed and VLAN moves applied to GEA Cablelink were to be charge controlled by reference to the charge for GEA Bandwidth Modify to 40/10. This was because there was no reliable FAC information for these services and GEA Bandwidth Modify to 40/10 was a reasonable proxy for those costs. In the case of MPF Standard line test, the absence of reliable FAC cost information was the determining factor in why we proposed to impose the charge control as a flat cap based on the current charge.
- A8.64 In the November 2017 Regulatory Financial Reporting Consultation, we proposed BT should record these services in its RFS and disclose the FAC costs where they were above £5m.³⁸¹

³⁸¹ November 2017 Regulatory Financial Reporting Consultation, paragraph 5.56.

Adjustment	Replaces BT's costs with an alternative estimate?	Replaces BT's costs with a value that is not based on BT's network?	Where reported?
f) MPF Cancellations	No	No	RFS
g) MPF Amend	No	No	RFS
h) MPF standard line test	No	No	RFS
i) GEA Cancel/Amend/Modify – CRD Amend, order notes amend, order cancellation, Care level, etc	No	No	RFS
j) GEA Cancel/Amend/ Modify - Regrading of existing upstream or downstream speed	No	No	RFS
k) VLAN moves applied to GEA Cablelink	No	No	RFS

Stakeholder responses

A8.65 We received no responses on our reporting proposals regarding these other services in the November 2017 Regulatory Financial Reporting Consultation.

Our reasoning and decisions

A8.66 We have decided to proceed with our proposals, for the reasons set out above. We set out below how BT should reflect our charge control decisions within the RFS.

Adjustment	Requirements on treatment in the RFS
MPF Cancellations	BT must ensure it records reliable FAC information in respect of these services.
MPF Amend	
MPF standard line test	
GEA Cancel/Amend/Modify – CRD Amend, order notes amend, order cancellation, Care level, etc	

Adjustment	Requirements on treatment in the RFS
GEA Cancel/Amend/ Modify - Regrading of existing upstream or downstream speed	
VLAN moves applied to GEA Cablelink	

Adjustments to be included in the Additional Financial Performance Schedule

Our proposals

A8.67 In the 2015 Directions Statement, we said that if not all regulatory decisions were reflected in the RFS, differences could arise between the reported view of BT's financial performance and the view we took when making regulatory decisions.³⁸² We therefore decided that BT must prepare the Adjusted Financial Performance Schedule as part of its Regulatory Financial Reporting to show the impact of certain regulatory decisions not reflected in the RFS.³⁸³

A8.68 In the March consultation we proposed that the following adjustments be included in the Additional Financial Performance Schedule.

Adjustment	Replaces BT's costs with an alternative estimate?	Replaces BT's costs with a value that is not based on BT's network?	Where reported?
l) Restructuring and Property Provision Costs	Yes	No	Additional Financial Performance
m) Residual Copper proceeds	Yes	No	Additional Financial Performance
n) Steady State adjustment	Yes	No	Additional Financial Performance

³⁸² 2015 Directions Statement, paragraph 3.36.

³⁸³ Each market review level within the RFS is composed of individual SMP markets. The market review levels and the component SMP markets for which BT has Regulatory Financial Reporting requirements are set out each year in Section 1 of BT's RFS.

Stakeholder responses

- A8.69 In respect of adjustments included in the Additional Financial Performance Schedule, all stakeholders agreed with our proposals for restructuring/property provisions and steady state adjustments. Openreach disagreed with our proposal for copper sales.³⁸⁴
- A8.70 In respect of our proposal on copper sales, Openreach said “this adjustment will be difficult to calculate and may be volatile. Given this, there would not seem to be any significant value to stakeholders in publishing this information.”³⁸⁵
- A8.71 In contrast TalkTalk said the issue of copper sales was complex and our proposed approach “appears in principle to be a reasonable way of dealing with it”.³⁸⁶

Our reasoning and decisions

- A8.72 In Annex 22, we explain that while we agree that fluctuating copper prices may make the adjustment volatile, we do not think it will be difficult to calculate. We set out a simple and clear methodology for BT to follow in calculating the impact of the adjustment in Annex 12. We believe this helps make the reporting of the adjustment easier. While the adjustment we calculated is relatively small now, it could potentially become much larger as the realisation of copper sales becomes more certain.
- A8.73 As indicated by TalkTalk’s response, information on copper sales is important to stakeholders. Both TalkTalk and Sky have in the past expressed concern³⁸⁷ that the proceeds of sales of copper would not be attributed to regulated services.
- A8.74 In line with the approach set out above, we consider that the calculation and disclosure in the Additional Financial Performance Schedule of the adjustments l)-n) in Table A8.1 improves the transparency of the RFS in a proportionate way. BT’s RFS therefore should include these adjustments in the Additional Financial Performance Schedule.
- A8.75 We summarise below in Table A8.2 how we have calculated the adjustment in our charge control model. Further references to how we have calculated the adjustment are set out in Table A8.1. BT must reflect the impact of the adjustments in its Additional Financial Performance Schedule on the same basis.

Table A8.2: Charge control adjustments to be included in BT’s Additional Financial Performance Schedule

Adjustment	Requirements on treatment in the Additional Financial Performance Schedule
Restructuring and Property Provision Costs	BT must calculate the impact of smoothing the movement of Restructuring and Property Provision Costs over a three-year moving average.

³⁸⁴ Openreach response to the March 2017 WLA Consultation, paragraph 302.

³⁸⁵ Openreach response to the March 2017 WLA Consultation, paragraph 302.

³⁸⁶ TalkTalk response to the March 2017 WLA Consultation, paragraph 6.48.

³⁸⁷ 2014 FAMR Statement, paragraph A13.279 to A13.285.

Residual Copper proceeds BT must calculate the net proceeds in copper sales that BT will recoup when it moves to a FTTx-only network. BT should discount this back using the relevant WACC and treat the calculated income as a credit against the E-Side Copper Capital Network component.

Steady State adjustment BT must uplift the NRCs of the following components to achieve an NRC/GRC ratio of 50%. BT should then adjust the asset lives to equate to the book lives of the following components to calculate the OCM depreciation.

- LLU line testing systems
- LLU systems development
- Wholesale Local Access specific
- Local exchanges general frames capital
- Local exchanges general current
- Analogue line testing equipment
- Analogue line cards
- Co-mingling power and ventilation
- Combi CardVoice.

Adjustments not included in the RFS or the Additional Financial Performance Schedule

A8.76 In the 2015 Directions Statement,³⁸⁸ we said that some regulatory decisions should not be reflected in either the RFS or the Adjusted Financial Performance Schedule. We said this is the case for adjustments that have the effect of replacing BT's incurred costs with a value that is not based on BT's network and is only made for forecasting purposes.

Our proposals

A8.77 In the March consultation we proposed that adjustments o) to t) (in Table A8.1 above) should not be included in the RFS or the Additional Financial Performance schedules.

Adjustment	Replaces BT's costs with an alternative estimate?	Replaces BT's costs with a value that is not based on BT's network?	Where reported?
o) Common Cost reattribution	Yes	Yes	Not reflected
p) Subsidised FTTC Deployment	Yes	Yes	Not reflected
q) SLGs	Yes	Yes	Not reflected

³⁸⁸ 2015 Directions Statement, paragraph 3.23.

Adjustment	Replaces BT's costs with an alternative estimate?	Replaces BT's costs with a value that is not based on BT's network?	Where reported?
r) DPA implementation costs	Yes	Yes	Not reflected
s) The allowance for network adjustment costs below the £4,750 financial limit	Yes	Yes	Not reflected
t) Pension Costs	Yes	Yes	Not reflected

Stakeholder responses

A8.78 In response to the March consultation, Openreach agreed with our proposals, but noted that “the effect of not implementing this change in the RFS is that the service level FAC information is materially inconsistent between what we would publish in the RFS and the costs used as the basis for setting prices”.³⁸⁹ As this is an issue relating to the publication within the RFS, we address this below. There were no other stakeholder responses to our March consultation on this point.

Our reasoning and decisions

A8.79 In line with our approach set out above, the adjustments set out in the items in Table A8.3 below should not be reflected in either the RFS or the Adjusted Financial Performance Schedules.

Table A8.3: Adjustments not to be made in BT's Additional Financial Performance Schedule

Adjustment	Justification for non-inclusion
Common cost reattribution	Our adjustment to re-attribute common costs between GEA and copper services uses GEA LRICs from our bottom-up model and not BT's LRIC data. It would be unreasonable to expect BT to re-produce the outputs from our bottom-up model on an ongoing basis, therefore it would not be appropriate for BT to prepare and include adjustments in respect of common cost re-attribution.
Subsidised FTTC deployment	Our adjustment to remove costs and income associated with the subsidised services with an adjustment to volumes for the commercial

³⁸⁹ Openreach response to the March 2017 WLA Consultation, paragraph 303.

services represents our view of what the network of an efficient commercial national operator would look like. It is not based on BT’s network, which includes subsidised areas. Therefore, it would not be appropriate for BT to prepare and include adjustments to remove actual BDUK subsidy income.

Service level SLGs DPA implementation costs	These adjustments in our model reflect our view of what these costs would be taking account of volume movements, efficiency and inflation. These adjustments do not reflect BT’s actual costs and should not be reflected in the RFS. It is therefore not appropriate for BT to prepare and include adjustments in respect of Service level, SLG payments and DPA implementation costs in the Adjusted Financial Performance Schedules.
The allowance for network adjustment costs below the financial limit	The allowance included in the WLA Charge Control is not an actual cost, but a pricing adjustment made within the WLA Charge Control.
Pension costs	[REDACTED]

Other accounting requirements

A8.80 We require BT to adjust the RFS where, in our opinion, the accounting treatment of certain WLA costs does not comply with our Regulatory Accounting Principles. In the 2016 BCMR Statement, we required BT to make a number of adjustments to reflect the outcome of our Cost Attribution Review.³⁹⁰ In response to the November 2017 Regulatory Financial Reporting Consultation, a number of stakeholders suggested we carry out a wider review into BT’s attribution of costs because of recent market developments (BT’s EE acquisition and the separation of Openreach, as mentioned by Vodafone³⁹¹), following our November 2017 proposals to avoid potential over-recovery of costs from Services with costs paid up front going forward (as mentioned by TalkTalk³⁹² and Vodafone³⁹³), or as a policy of increased general scrutiny (as mentioned by Sky), establishing a “forward looking framework”.³⁹⁴

A8.81 In this sub-section we set out our decision on the following six areas, where in our opinion, the accounting treatment of certain WLA costs does not comply with our Regulatory Accounting Principles. These are:

- GEA services;
- Sales of property;
- AVCs;

³⁹⁰ Ofcom, 2016, Business Connectivity Market Review, Statement (28 April 2016), Annex 28.

³⁹¹ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, pages 3-6.

³⁹² TalkTalk response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 10.

³⁹³ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, page 9.

³⁹⁴ Sky response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 8.

- Reconciliation of BT's Fixed Asset Register;
- Network adjustment costs above the financial limit; and
- Network adjustment costs below the financial limit.

GEA services

Our consultation proposals

A8.82 In the March consultation we explained³⁹⁵ that Cartesian reviewed the attribution of costs to GEA services, specifically the way in which GEA services and components were established within BT's Regulatory Financial Reporting System, the structure of BT's cost attributions to GEA services, and the attribution of costs within the WLA market (including the attribution ratio between GEA and non-GEA services). We have re-published this report in Annex 28 of this statement.

A8.83 Cartesian identified several cases where the treatment or attribution of costs were, in its opinion, contrary to the requirements of the Regulatory Accounting Principles (RAP). In each case, it recommended changes. Based on Cartesian's assessment, we proposed:

- BT should attribute fibre costs to separate GEA services based on the physical consumption of fibre assets.
- GEA network components should be subdivided where they include both provisioning and maintenance costs.
- BT should separately identify and attribute provisioning and installation costs (including labour and modems) for the different GEA services. These costs should be attributed to separate GEA services in accordance with the RAP.
- BDUK funding and the costs of deployment in BDUK areas should be attributed to the different types of GEA services (e.g. FTTP as well as FTTC) that are deployed in the BDUK areas.

Stakeholder responses

A8.84 Openreach agreed with the proposal to attribute fibre costs on physical consumption and that BDUK funding and deployment costs should be attributed to FTTP as well as FTTC services.³⁹⁶ Openreach did not agree with our proposals disaggregating provisioning and installations costs, either in creating new network components or attributing them to separate provisioning and installation GEA services.³⁹⁷ Openreach did not agree that change is required in the accounting for BDUK funding and BDUK rollout costs.³⁹⁸

Our reasoning and decisions

A8.85 As set out in above in connection with Services with costs paid up front, we consider that there is potential for over-recovery of connection costs within rental services, and believe

³⁹⁵ March 2017 WLA Consultation, paragraph 10.47.

³⁹⁶ Openreach response to March 2017 WLA Consultation, paragraph 305.

³⁹⁷ Openreach response to March 2017 WLA Consultation, paragraph 305.

³⁹⁸ Openreach response to March 2017 WLA Consultation, paragraph 305.

that it is important that BT separately accounts costs that are included in the asset base from those that relate to connecting end users which are typically paid up front.

- A8.86 We have set GEA 40/0 rental charges in this control using our bottom-up model and certain GEA Ancillary Services using adjusted or benchmarked FAC data. We require BT FAC data for GEA services to inform our regulatory decisions and to monitor the effectiveness of our charge control remedies in the market review period. In particular, it is important that provisioning and maintenance costs are separately and transparently identified to facilitate our analysis. This will also provide more transparency for stakeholders. We note the issues we have faced in this market review in relation to Services with costs paid up front, where BT’s aggregation of connection and rental costs made it difficult to spot potential over-recovery of costs.
- A8.87 In line with Cartesian’s recommendations, we have decided that BT must split the maintenance costs from the provisioning costs by the including them in separate Plant Groups. We have also decided that these separate Plant Groups should flow through to separate network components – see below. Consistent with our decisions on Services with costs paid up front, BT must not include capitalised labour and asset costs within the GEA Provisioning Plant groups (PG957P and PG958P). We set out our decision in Table A8.5 below.

Sales of property

- A8.88 In Annex 22 we set out our conclusion on the sales of property. In line with our consultation proposals,³⁹⁹ we have decided that BT should identify the type of building that the profits or losses from disposal relate to, i.e. whether the building is owned by Telereal Trillium or BT, and whether it is a general purpose or operational building; and then allocate these disposal proceeds in the same way that the underlying costs for that type of property are attributed. We set out our decision in Table A8.5 below.

AVCs

Our consultation proposals

- A8.89 In the September consultation we explained that in relation to AVCs (as well as Services with costs paid up front– see above), BT was capitalising labour costs inconsistently with how they were currently being recovered through up front charges. We proposed regulatory financial reporting requirements for Services with costs paid up front in line the proposed charge control, namely that costs which were capitalised and that had potentially already been recovered were excluded from the charge control.

³⁹⁹ Only Openreach responded to our proposal and agreed with our proposals for accounting for sales or property (Openreach response to March 2017 WLA Consultation, paragraph 306).

Stakeholder responses

- A8.90 BT said, “We review our accounting policies and treatments of all items on a regular basis and believe our current accounting treatments are correct.”⁴⁰⁰
- A8.91 [S&K] requested that we “revisit our stance on AVCs and introduce a charge control on such charges”.⁴⁰¹ We explain in Annex 23 why we have decided not to impose a charge control on AVCs.

Our reasoning and decisions

- A8.92 As set out in above for Services with costs paid for up front, we believe that it is important that BT separately accounts for costs that are included in the asset base and those that relate to connecting end users which are typically paid up front. We have concluded that BT must remove all the historical labour installation assets from GRCs and NRCs in connection with AVCs and, going forward, treat any labour costs that would previously have been capitalised as operating costs.

Reconciliation of BT’s Fixed Asset Register

Our consultation proposals

- A8.93 We explained in the November 2017 Regulatory Financial Reporting Consultation that BT’s reporting of duct and pole infrastructure costs did not provide the information we need, or possess the basic attributes of good reporting. This was because in the process of setting PIA prices we found BT’s financial records for disaggregated infrastructure elements in some cases did not exist (e.g. poles) or, where they could be identified, could not be mapped to the physical asset records.
- A8.94 We therefore proposed an amendment to the Consistency with Regulatory Decisions Direction that required BT to reconcile its physical asset inventory with the financial records within the RFS.
- A8.95 We recognised that this would be a difficult exercise and proposed to allow BT until 1 April 2020 to fully comply, although we said we expected to see information about the impact of methodology changes in information in late 2019.

Stakeholder responses

- A8.96 All stakeholders who responded supported our proposal in principle.
- A8.97 BT did not agree with our view that their current reporting of duct and pole costs did not meet the basic attributes of good reporting and said its current level of granularity and reporting is compliant with existing reporting requirements.⁴⁰²
- A8.98 BT believed that we had considerably underestimated the time it would take to implement our proposals. While BT said it had yet to undertake a feasibility study to accurately

⁴⁰⁰ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.9.

⁴⁰¹ [S&K]

⁴⁰² BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 4.5.

estimate the required time and complexity, it cited two examples of previous experience to support its view that the 1 April 2020 deadline was unrealistic: [§]and implementation of reporting requirements:

[§]

Historically, where we had to make reporting and/or system changes on the back of directions from Ofcom where the data was available within our systems, implementation took between two to three years.”⁴⁰³

A8.99 BT suggested we “explore comparable examples of its proposals in the industry. We suspect all the examples will highlight it took longer than Ofcom’s proposed timeframe and considerable challenges will have needed to be addressed.”⁴⁰⁴

A8.100 BT also explained that our proposal would trigger two significant activities, a one-time ongoing reconciliation and an “ongoing maintenance of the financial and operational records as part of business as usual”. It suggested the two activities could not be carried out simultaneously and provided a list of some of the activities that would need to be completed as part of the reconciliation:

- Updating the data model for PIPeR and Financial System across the ‘Acquire to Retire’ lifecycle;
- Verification and data validation;
- Process changes in finance, supply chain, planning and operations;
- Fixed assets register reconstruction;
- Operational readiness assessment and change;
- System changes to make the ‘acquire to retire’ and reconciliation processes sustainable;
- Training and communications for the diverse stakeholders affected; and
- Reporting and impact analysis. The combination of these activities is likely to exceed the deadline set by Ofcom.⁴⁰⁵

A8.101 Finally, TalkTalk raised a concern in connection with our calculation of PIA prices: “if there is a lack of sufficiently granular cost information it begs the question of how BT have set the current PIA prices since these PIA prices are according to BT and Ofcom based on cost”.⁴⁰⁶

Our reasoning and decisions

A8.102 Our proposal for BT to reconcile its physical asset register to its underlying physical records should not be viewed as an objective in itself. The objective is to ensure that BT’s physical infrastructure asset inventory – which is we believe currently to be BT’s PIPeR⁴⁰⁷ system - maps to the infrastructure used to deliver PIA and Other Network Access services. BT’s

⁴⁰³ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 4.2.

⁴⁰⁴ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 4.2.

⁴⁰⁵ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 4.10.

⁴⁰⁶ TalkTalk response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.

⁴⁰⁷ ‘PIPeR’ (Physical Inventory Planning E-Records) means the database held within Openreach that holds all Openreach external inventories of duct, copper and fibre assets.

financial records should accurately record the financial information of the assets that BT owns, which we assume they do in its fixed asset register, in accordance with the RAP. BT must be able to demonstrate that the physical inventory can map to the financial records. This must be done at a level of disaggregation that allows us to trace back from the new duct and pole network components into the physical asset inventory via the fixed asset register. This will allow us to check, for example, that poles which are not owned by BT and network adjustment costs above the financial limit are not being attributed to SMP services via the network components.

- A8.103 BT provided two examples to illustrate the difficulty of the reconciliation exercise. On the first, based on the limited detail provided by BT, it is difficult to assess how comparable [X].
- A8.104 On the second example, we disagree that it should take the length of time BT claims it does to implement the reporting requirements. It is worth pointing out that similar arguments were made around our reporting proposals for Excess Construction Charges (ECCs) in the 2016 BCMR.⁴⁰⁸ In that case we have worked with BT, which is in the process of introducing a more accurate costing solution. This solution will use inputs from operational systems that had not been considered at the time of the BCMR Statement. While the solution has yet to be implemented, both ourselves and BT are confident it will be in place for the 2017/18 RFS deadline.
- A8.105 It is likely that parts of BT's asset base will be easier to map to the financial records than others. Where there are significant gaps in the data, either physical or financial, BT could use surveys, sampling and/or bottom-up modelling to fill in gaps in the information. We therefore think that even if there are time consuming data issues, a matching exercise that is 80-90% complete, with some assumptions being made around the remaining 10-20%, would be possible within the time frame and would offer substantial improvements to the current position.
- A8.106 With regard to BT's view that its current duct and pole reporting meets its current regulatory obligation, if PIA service volumes increase as we expect them to, PIA services will become significant. This means they will need to be fully accounted for on a FAC basis within BT's Regulatory Reporting. We set out our decision in Table A8.4 below.
- A8.107 Finally, the use of modelling assumptions in the absence of comprehensive FAC data also applies to TalkTalk's point on the level of asset information currently available to set the PIA Charge Control. As we set out in Section 5, Volume 3 of this Statement, while no FAC information was available to set PIA charges, we used information from BT's regulatory financial reporting and cost data from underlying systems, along with some assumptions, to set the charges.

⁴⁰⁸ Ofcom, 2016. Business Connectivity Market Review Statement, Part 2, paragraph 16.71.

Network adjustments above the financial limit

Our consultation proposals

A8.108 In the August 2017 DPA Consultation we proposed that network adjustment costs that exceed the financial limit should not be recovered from the SMP products as the revenue for them would have already been recovered up front. We proposed that the network adjustment should be expensed rather than capitalised.

Stakeholder responses

A8.109 Openreach did not agree with our proposal⁴⁰⁹ and proposed that we remove the distinction in accounting treatment between network adjustment costs below and above the financial limit and treat them the same, (in line with our proposal for network adjustment costs below the financial limit).⁴¹⁰ TalkTalk made a very similar proposal to avoid complexity around the treatment of network adjustment costs within the RFS.⁴¹¹

A8.110 Openreach believed that it was disproportionate to have a different accounting policy for network adjustments above the financial limit as the value of costs and revenues associated with them was not likely to be material given the proposed range of the financial limit.⁴¹² Openreach also said it was disproportionate to require a different accounting policy for the costs and revenues for the RFS than that in the statutory accounts, which must align with the accounting standards.⁴¹³

A8.111 Openreach asked us to specify where adjustment costs above the limit should be recovered.⁴¹⁴ Openreach also asked us to confirm that the requirement to recover network adjustment costs from all services that used the physical infrastructure did not apply to historical costs and that we did not propose that BT needed to bring the treatment of historical costs in line with our proposed approach for network adjustments in the charge control.⁴¹⁵

Our reasoning and decisions

A8.112 We are aware that expensing costs in the RFS that BT capitalises in the statutory accounts, such as network adjustment costs above the limit, results in a divergence of accounting policies between the RFS and BT's statutory accounts.

A8.113 The RAP is applied in order of priority, and the principle of ensuring the RFS is consistent with our regulatory decisions has a priority over the principle that the RFS are consistent with any statutory reporting requirements. Therefore, we do not agree that the treatment in the RFS for these adjustments must follow those within BT's statutory accounts. The rationale behind our reporting proposal to expense these costs was to ensure the

⁴⁰⁹ Openreach response to the August 2017 DPA Consultation, paragraph 194.

⁴¹⁰ Openreach response to the August 2017 DPA Consultation, paragraph 198.

⁴¹¹ TalkTalk response to the August 2017 DPA Consultation (dated 12 September 2017), paragraph 3.2; TalkTalk response to the August 2017 DPA Consultation (dated December 2017), paragraph 14.

⁴¹² Openreach response to the August 2017 DPA Consultation, paragraph 195.

⁴¹³ Openreach response to the August 2017 DPA Consultation, Paragraph 189.

⁴¹⁴ Openreach response to the August 2017 DPA Consultation, paragraph 199.

⁴¹⁵ Openreach response to the August 2017 DPA Consultation, paragraph 200.

treatment matched the proposed regulatory decision which is costs should match the upfront revenue. To treat network adjustment costs below the limit the same as those above the limit, as suggested by Openreach, could result in these costs being (over) recovered in the depreciation and return on capital employed (ROCE) charges in SMP access rental services if not adjusted.

A8.114 We recognise that network adjustment costs above the limit, like those below the limit, are improvements and additions to assets with long economic lives, and therefore we will require BT to provide some private reporting on them (see below). However, our primary concern is to ensure they are not recovered again through future SMP network access services.

A8.115 In relation to Openreach's request for clarification on the recovery of above the limit network adjustment costs from unregulated services, we don't have full visibility of unregulated markets and therefore can't clarify what is included in other services. The main point is that they are not potentially over recovered in regulated SMP services.

A8.116 We set out our decision in table A8.4 below.

Network adjustments below the financial limit

Our consultation proposals

A8.117 In the August 2017 DPA Consultation we proposed that network adjustments below the financial limit should be separately identified and recorded from those above the financial limit in BT's Regulatory Financial Reporting System. We said BT should ensure that the network adjustment costs below the financial limit were capitalised and recovered over network services (including those in relation to supporting BT's own downstream services such as FTTP and G.fast beyond the cabinet) which use BT's physical infrastructure.

Stakeholder responses

A8.118 While stakeholders agreed with our proposal to require BT to separately record network adjustment costs below the limit, most respondents did not appear to think that our reporting requirements went far enough.

A8.119 Openreach agreed that network adjustment costs below the financial limit should be recovered from the products that use the physical infrastructure, but they did not agree that recovery of costs should be limited to WLA products, given that, for example, this would mean recovering costs from MPF Rentals in the WLA market, but not from WLR Rentals in the WFAEL market.⁴¹⁶

A8.120 The Passive Access Group stated that as there were no PIA components or services set up in the RFS, BT would continue to recover 100% of its duct access asset costs from all other services, which would lead to an over-recovery of duct access asset costs as PIA volumes increased.⁴¹⁷

⁴¹⁶ Openreach response to the August 2017 DPA Consultation, paragraph 192.

⁴¹⁷ The PAG response to the August 2017 DPA Consultation, paragraph 77.

Our reasoning and decisions

- A8.121 In the April 2017 DPA Consultation we proposed that network adjustment costs below the financial limit are recovered over all products in which BT has SMP in the WLA market and which use BT’s physical infrastructure (including PIA). We now clarify that we require BT to recover network adjustment costs from services outside the WLA market (i.e. this includes the WFAEL market).
- A8.122 Following the August 2017 DPA Consultation we have consulted on additional reporting requirements in relation to the future reporting of duct and pole infrastructure costs, including proposals to specify network components.⁴¹⁸ We set out our decisions in respect of the creation of new physical infrastructure components below which come into effect on 1st April 2020.
- A8.123 While we appreciate that network adjustment costs in total are not currently significant, our assumption is that they will grow [§<] in capital terms in the charge control period. We consider it is therefore proportionate for BT to separately record these costs on an FAC basis in advance of them becoming material.
- A8.124 We set out our decision for the creation of new physical infrastructure components from 1 April 2020 below. This will address the issue PAG raised of no PIA components or services being recorded in the RFS. In terms of the potential over-recovery of duct costs in this charge control, we have addressed this in the charge control where we have made an adjustment to prevent double recovery.
- A8.125 We have decided that BT must separately identify and record within its RFS all network adjustment costs below the financial limit.
- A8.126 We confirm that 2017/18 costs do not need to be restated and that the obligation relating to recovering of network adjustment costs only applies as from 1 April 2018. We set out below our decisions as to the accounting adjustments BT must make to the RFS.

Table A8.4: Other accounting adjustments to be included in BT’s RFS

Requirements on treatment in the RFS	
GEA Services	<p>BT must change the following attribution of costs in relation to GEA services:</p> <ul style="list-style-type: none"> • Attribute fibre costs to separate GEA services based on the physical consumption of fibre assets. • Subdivide GEA Network plant groups where they include both provisioning and maintenance costs. The relevant Plant groups are PG492A (FTTC Copper Tie cables), PG592C (GEA Electronics), PG953C (GEA DSLAM Cabinets) and PG954C (GEA Customer Site electronics). • Within the new GEA provisioning plant groups (see point above), BT must separately identify capitalised provisioning and installation

⁴¹⁸ November 2017 Regulatory Financial Reporting Consultation, paragraph 3.6.

	<p>costs (including labour and modems). These costs must be attributed to relevant GEA connection / provisioning service in accordance with the Regulatory Accounting Principles. This treatment should also apply to the following Plant Groups:</p> <ul style="list-style-type: none"> ○ PG957P (FTTP GEA provisioning); and ○ PG958P (FTTC GEA Provisioning). <ul style="list-style-type: none"> • Where capitalised costs have been recovered through up front charges, any asset cost (including historic costs) must be treated as an operating expense. • Attribute BDUK funding and the costs of deployment in BDUK areas to the different types of GEA services (e.g. FTTP as well as FTTC) that are deployed in the BDUK areas.
Sales of Property	<ul style="list-style-type: none"> • BT must identify the type of building that the profits or losses from disposal relate to, i.e. whether the building is owned by Telereal Trillium or BT, and whether it is a general purpose or operational building. • BT must then allocate these disposal proceeds in the same way that the “underlying costs” for that type of property are attributed. The underlying costs should mean rent for Telereal Trillium owned buildings and depreciation for BT owned buildings.
AVCs	<ul style="list-style-type: none"> • BT must remove all the historical labour installation assets from GRCs and NRCs and, going forward, treat any labour costs that would previously have been capitalised as operating costs.
Mapping BT’s Fixed asset register	<ul style="list-style-type: none"> • BT must ensure its physical asset inventory can be mapped to its financial records, which in turn can be mapped through BT’s regulatory financial reporting onto network components.
Network adjustment costs above the financial limit	<ul style="list-style-type: none"> • BT must ensure that network adjustments above the financial limit are treated as an operating cost. • The costs must be recovered separately from the telecoms provider (including BT) requiring the adjustment. This also applies to how BT recovers the costs of its own network adjustments to support its downstream services.
Network adjustment costs below the financial limit	<ul style="list-style-type: none"> • BT must identify and record network adjustments costs below the financial limit separately from other infrastructure costs. • BT must ensure any costs incurred for network adjustments below the financial limit requested by Other telecoms providers are attributed to all network access services that use the physical infrastructure. • BT must ensure that costs it incurs on its own network adjustments below the financial limit are attributed to all network access services that use the physical infrastructure.

Source: Ofcom

The Preparation, delivery, publication, form and content of the RFS Direction

Introduction

A8.127 This direction provides details of the financial information to be included in the published RFS and to be provided to us privately. Some elements of the published RFS relate to all markets⁴¹⁹ while others are specific to particular markets. To preserve the integrity and consistency of the RFS, we consider that all markets should be subject to appropriate reporting requirements.

A8.128 In this section we:

- provide an overview of the reporting requirements on BT;
- explain the changes we have made to those requirements, looking at public reporting, which is included in the published RFS, and confidential information, which is provided to Ofcom only;
- set out some changes to the reporting deadlines; and
- set out how the information is to be provided by way of a direction.

Role of regulatory financial reporting

A8.129 It is important that BT's regulatory financial reporting of the WLA market continues to be relevant, reliable, transparent and proportionate. As we said in the 2014 Regulatory Financial Reporting Statement, regulatory financial reporting should provide us with the information necessary to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues, and investigate potential breaches of SMP conditions and anti-competitive practices.⁴²⁰

A8.130 Publishing financial information can also contribute to an effective regulatory regime. One of the objectives of the 2005 EC Recommendation is to improve the transparency of accounting systems⁴²¹ and it recommends that:

“national regulatory authorities make relevant accounting information from notified operators available to interested parties at a sufficient level of detail. The detail of information provided should serve to ensure that there has been no undue discrimination between the provision of services internally and those provided externally and allow identification of the average cost of services and the method by which costs have been calculated. In providing information for these purposes,

⁴¹⁹ For example, the reconciliation of the RFS to BT Group's statutory accounts.

⁴²⁰ Ofcom, 2014. *Regulatory Financial Reporting – Final Statement*, paragraph 2.28.

⁴²¹ *Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC)*, recital 4. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32005H0698&from=EN>.

national regulatory authorities should have due regard for commercial confidentiality. In this respect, the publication by the notified operator of sufficiently detailed cost statements showing, for example, the average cost of network components will increase transparency and raise confidence on the part of competitors that there are no anti-competitive cross-subsidies. This is considered to be particularly important for wholesale services.”⁴²²

A8.131 The 2005 EC Recommendation also says that:

“regulatory accounting information serves national regulatory authorities and other parties that may be affected by regulatory decisions based on that information, such as competitors, investors and consumers. In this context, publication of information may contribute to an open and competitive market and also add credibility to the regulatory accounting system.”⁴²³

A8.132 The 2005 EC Recommendation specifically says that, subject to confidentiality considerations, profit and loss statements and capital employed statements should be published for relevant markets and services.⁴²⁴

A8.133 Consistent with the 2005 EC Recommendation, and as we said in the 2014 Regulatory Financial Reporting Statement, publishing financial information supports stakeholders’ contributions to an informed regulatory framework and adds credibility to the regulatory accounting system. Determining what would constitute a sufficient level of detail to publish is a matter of regulatory judgement, and what is justified in each case may differ between market reviews.

A8.134 As set out in the 2014 Regulatory Financial Reporting Statement, and subject to confidentiality and proportionality considerations, in each case sufficient information should be published to enable stakeholders to have reasonable confidence that BT has complied with its SMP conditions and allow them to contribute to the regulatory regime.⁴²⁵ SMP conditions include requirements regarding regulatory reporting obligations (i.e. accounting separation and cost accounting) such that publishing financial information can give confidence to stakeholders that BT is providing the required data to Ofcom under its reporting obligations and that the reporting regime overall is working as planned.⁴²⁶

A8.135 In the 2014 Regulatory Financial Reporting Statement we said that we would consider and determine what level of information would provide reasonable confidence in any particular case, following input from stakeholders.⁴²⁷ We also set out that cost, volume and revenue

⁴²² 2005 EC recommendation, recital 5.

⁴²³ 2005 EC recommendation, Annex.

⁴²⁴ 2005 EC recommendation, Annex.

⁴²⁵ For example, by contributing to the development of robust regulatory decisions, reviewing and challenging data on which those decisions are made, assisting us in monitoring compliance and helping us intervene in a timely fashion when required (see 2014 Regulatory Financial Reporting Statement, paragraphs 2.29-2.41).

⁴²⁶ In the 2014 Regulatory Financial Reporting Statement, we said at paragraph 2.31 that “we consider that a regulatory environment where stakeholders are simply informed that the regulator is satisfied that the obligations have been met is likely to be less effective than one where the industry is better informed”.

⁴²⁷ 2014 Regulatory Financial Reporting Statement, paragraph 2.39.

information published in the RFS should reflect the level of the remedy.⁴²⁸ For example, if the remedy is in the form of a charge control on individual services or baskets of services, information should generally be published relating to those services or baskets of services. However, in the March consultation, we noted that in certain circumstances, we may decide that BT needs to publish regulatory financial data that goes beyond the level of the remedy to give stakeholders reasonable confidence that BT has complied with its SMP conditions and allow them to contribute to the regulatory regime.⁴²⁹

Review of reporting requirements

A8.136 Considering the approach set out in the 2014 Regulatory Financial Reporting Statement, and taking account of the guidance in the 2005 EC Recommendation, we have considered what specific regulatory accounting requirements are required to support the remedies imposed in this review. We set out our decisions relating to reporting requirements in the following categories in the next two subsections:

- **Public information.** This is information that we consider will give stakeholders reasonable confidence that BT has complied with its SMP conditions, will allow them to contribute to the regulatory regime, and is consistent with the level of the remedy; and
- **Private information.** This is information that we receive privately from BT. We require this information to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues, and investigate potential breaches of SMP conditions and anti-competitive practices.

Public information

A8.137 In the following sections we set out our decisions on:

- the information BT must publish in the RFS for the WLA market;
- the requirements for information on EOI in relation to the WBA market; and
- the non-confidential compliance schedules that BT should publish on its website alongside the public version of the RFS.

The RFS

A8.138 In the published RFS, financial information broadly relates to three areas:

- **BT level information:** This provides information showing how regulated markets fit within the BT business and reconciliations to the statutory accounts and Openreach information.

⁴²⁸ 2014 Regulatory Financial Reporting Statement, paragraphs 4.76-4.85.

⁴²⁹ For example, in the 2016 BCMR Statement, given the broad baskets used in that charge control, we decided that BT must publish financial information on certain individual services (see Part 2, paragraphs 16.44-16.46 and 16.52-16.61).

- **Market level information:** This is information on the revenues, operating costs, capital employed and returns on MCE for a specific market.⁴³⁰ In 2016/17, these schedules show that revenue in the WLA market was £2,137m and the return on MCE was 15.6%;
- **Service level information and Network components for reported services:** This includes the revenue, volumes, prices and FAC of specific services or groups of services associated with the relevant market;⁴³¹ and in BT's cost attribution system, costs are ultimately attributed to network cost components which in turn are attributed to services. A network component schedule therefore shows how the service level FAC information is broken down by network component.⁴³²

A8.139 In addition, we require information to be published to provide stakeholders with reassurance that BT is complying with its EOI obligations and the charge controls we have set.

A8.140 In response to the 2017 November Regulatory Financial Reporting Consultation, stakeholders made a number of points beyond the scope of the WLA market review. BT wished us to re-consider a publication framework to ensure that the level of information reported is proportionate to the size of the market and the nature of the pricing (and other) remedies imposed.⁴³³ BT also made this comment in its response to the narrowband market review,⁴³⁴ as did Openreach in its response to the narrowband market review⁴³⁵ and the March consultation.⁴³⁶

A8.141 Vodafone⁴³⁷ and UKCTA⁴³⁸ argued for the continued provision of service level information where those services were subject to an SMP finding but not charge controlled, while Sky⁴³⁹ wanted more up-front scrutiny and transparency through increased publication.

A8.142 Vodafone also proposed that there should be one set of financial reporting requirements to deal with cross portfolio matters common to all markets, which should be included in each market review along with any specific amendments⁴⁴⁰ This proposal would need to be considered as part of a wider Regulatory Financial Reporting review.

⁴³⁰ In the 2016/17 RFS, this information is set out in the schedules on page 28 for the 2016/17 financial year.

⁴³¹ Page 31 of the 2016/17 RFS gives this information for 16 services provided in the WLA market.

⁴³² In relation to the WLA market, pages 32 and 33 of the 2016/17 RFS show which cost components are used by each reported WLA service.

⁴³³ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraphs 3.4-3.5.

⁴³⁴ BT response to the December 2016 Narrowband Market Review Consultation, paragraph 5.38.

⁴³⁵ Openreach response to the December 2016 Narrowband Market Review Consultation, paragraph 85.

⁴³⁶ Openreach response to the March 2017 WLA Consultation, paragraph 309.

⁴³⁷ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, page 5.

⁴³⁸ UKCTA response to the November 2017 Regulatory Financial Reporting Consultation, page 1.

⁴³⁹ Sky response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 12.

⁴⁴⁰ Vodafone response to the March 2017 WLA Consultation, paragraph 16.

BT level information

Stakeholder Comments

- A8.143 Bit Commons⁴⁴¹ and Vodafone⁴⁴² expressed concerns over BDUK reporting and the lack of any available public information.
- A8.144 Currently, there is no public reporting of BDUK funding or costs. While publication of GEA service level FAC will include those for the BDUK revenue and funding network components, we believe BT should be required to report information on an aggregate level.
- A8.145 Following the 2010 WLA Market Review, we noted that “BT receives state funding and that it may be relevant both for users of the RFS and for any future regulation of NGA to have a split of regulated asset base into the capital expenditure paid for by the state and the remainder”.⁴⁴³ We explained at the time that we discussed this with BT, who “suggested in the meantime reporting state funded assets in the schedule ‘Attribution of Wholesale Current Cost Mean Capital Employed (Annex 6A)’. This would be a one-line reporting state aid funding capital expenditure. This capital expenditure would be deducted from other asset categories.”⁴⁴⁴
- A8.146 Our reasoning and decisions
- A8.147 Whilst this direction was not re-imposed in the 2014 FAMR Statement, in the light of stakeholder comments, we think that this disclosure is a proportionate way to provide stakeholders with relevant information on the level of BT’s asset base that is funded through government and local authority grants.
- A8.148 We have decided that BT must include a new line in “Section 10 – Attribution of wholesale Current Cost mean capital Employed” called “Less Government Grants” under the “Non-Current Assets” heading. The line will disclose the NRC of all assets in each market that have been funded by government or local authority grants. This information, together with service level and FAC reporting of GEA services (below) will provide stakeholders with information as to the level of BDUK spend included within regulated markets and attributed to the main GEA rental services.

Market level information

Our consultation proposals

- A8.149 In our March consultation we proposed that BT must publish the revenue, operating costs, capital employed and returns for the WLA market. In practice, this would mean that the

⁴⁴¹ Bit Commons response to the March 2017 WLA Consultation, page 4.

⁴⁴² Vodafone response to the March 2017 WLA Consultation, page 60.

⁴⁴³ Changes to BT and KCOM’s regulatory and financial reporting 2012/13 update, paragraph 3.43. https://www.ofcom.org.uk/data/assets/pdf_file/0035/57887/bt-kcom-statement.pdf.

⁴⁴⁴ Changes to BT and KCOM’s regulatory and financial reporting 2012/13 update, paragraph 3.44. https://www.ofcom.org.uk/data/assets/pdf_file/0035/57887/bt-kcom-statement.pdf.

WLA market continues to be included in the Performance Summary by Market and Attribution of Wholesale Current Costs and Mean Capital Employed schedules in the RFS.

Stakeholder responses

- A8.150 Openreach argued it was disproportionate to continue to require BT to publish separate returns for the WFAEL and WLA markets, given the extent to which common costs have been transferred from WFAEL to WLA for charge control modelling purposes (and not reflected in regulatory financial reporting⁴⁴⁵).⁴⁴⁶
- A8.151 Openreach also said “Ofcom’s proposal would result in the reattribution of common costs between copper and fibre services across the WLA and WFAEL markets, applied in charge control modelling, being inconsistent with the RFS, making the separate market returns potentially misleading”.⁴⁴⁷
- A8.152 Openreach noted that the reallocated FAC was large, stating “the FAC of common costs reattributed from the WFAEL market to the WLA market in Ofcom’s charge control models for 2020/21 is £[X], representing [X]% of the total FAC for the WLA market”.⁴⁴⁸
- A8.153 Openreach proposed that “given the scale of the reattribution of costs between the WFAEL and WLA markets, ... only a combined market return is published as the returns for the separate markets do not reflect the impact of Ofcom’s pricing remedies and will be of little benefit to stakeholders”.⁴⁴⁹
- A8.154 Vodafone however disagreed, saying “the need to maintain a market-wide picture, year on year, is vital if recently restored trust is to be preserved”.⁴⁵⁰ Vodafone, noting that for price regulation we sometimes adopted different approaches on cost and modelling for different circumstances, continued “it is vital that these different approaches are monitored and referenced back to one common costing methodology and reporting repository, i.e. RFS”.⁴⁵¹
- A8.155 Vodafone commented that:
- “a differentiated approach to price regulation can have significant benefits for consumers, but it also creates concerns around the consistency of approach, particularly where common costs /assets are involved. Having robust, standardised, frequent and reliable published regulatory accounting material that provides comprehensive data outside the context of periodic market reviews and charge controls provides a vital anchor of consistency that helps ensure robust regulation can occur, even where different cost approaches have been taken within individual

⁴⁴⁵ As noted, Openreach agreed that the common cost adjustments should not be either reflected in the RFS nor included in the additional financial performance schedule.

⁴⁴⁶ Openreach response to the March 2017 WLA Consultation, paragraphs 298 and 313.

⁴⁴⁷ Openreach response to the March 2017 WLA Consultation, paragraph 311.

⁴⁴⁸ Openreach response to the March 2017 WLA Consultation, paragraph 312.

⁴⁴⁹ Openreach response to the March 2017 WLA Consultation, paragraph 313.

⁴⁵⁰ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, page 5

⁴⁵¹ Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, page 4.

markets, helping to guard against excess returns in aggregate and ensuring all decisions are taken within an overall market-wide context.”⁴⁵²

Our reasoning and decisions

A8.156 We disagree with Openreach’s comments that our attribution of common costs between copper and fibre services across the WFAEL and WLA markets for the purposes of setting the charge control creates inconsistency with the RFS.

A8.157 As we noted in the 2014 Regulatory Financial Reporting Statement:

“The Regulatory Financial Statements are predominately presented on a Fully Allocated Cost (FAC) basis because where we currently impose charge control remedies the predominant cost standard is currently CCA FAC, which we consider to be a reasonable proxy for LRIC+EPMU (equal proportionate mark-up). We have traditionally used FAC as a cost standard as it allows BT to recover an appropriate level of its efficiently occurred common costs. The choice of cost standard is an issue for consultation and decision in the context of, for example, charge controls rather than regulatory reporting.”⁴⁵³

A8.158 Thus, in this case we have chosen to set charges on a cost standard other than FAC, for the reasons set out in Volume 2, Section 2. That does not invalidate the publication of the RFS on a FAC basis.

A8.159 In fact, as BT pointed out in a response to the 2014 Regulatory Financial Reporting Consultation, *“inconsistencies between information in the published RFS and the way Ofcom uses cost information in making regulatory decisions should not, in themselves, be presented as a problem”*.⁴⁵⁴

A8.160 We note that the re-allocation of costs across markets (and services) is nothing new. In the 2014 FAMR Statement, when setting prices to promote efficiency, the relative charges of each of WLR+MPF and WLR+SMPF+MPF were set equal to our estimate of the LRIC differential for providing these services. We said that this implied that MPF and WLR would contribute equally to common cost recovery on a per line basis⁴⁵⁵ and that SMPF would be set at LRIC. The unrecovered common cost was then recovered over the main rental services. This was done in such a way to ensure that the price differentials for the main rental services reflected the LRIC differential.⁴⁵⁶ This adjustment involved reattributing the LRIC differentials between WLR+ SMPF minus MPF (£1.79 per line) and WLR minus MPF (-£0.82 per line) as a common cost⁴⁵⁷ in 2014/15. In the 2015 Directions Statement we did require BT to estimate the impact of the case of reattribution in the additional financial performance schedule as the common cost being reattributed was based on BT FAC data.⁴⁵⁸

⁴⁵² Vodafone response to the November 2017 Regulatory Financial Reporting Consultation, page 4.

⁴⁵³ Regulatory Financial Reporting Final Statement, May 2014, paragraph 3.26.

⁴⁵⁴ FTI Consulting. Ofcom’s consultation on BT’s Regulatory Financial Reporting. February 2014.

⁴⁵⁵ We describe this adjustment in paragraphs 4.105 to 4.112 of the 2015 Directions Statement.

⁴⁵⁶ 2014 FAMR Statement, Annex 11, paragraph A11.46.

⁴⁵⁷ 2014 FAMR Statement, Annex 9.

⁴⁵⁸ 2015 Directions Statement, paragraph 4.121

- A8.161 We disagree with Openreach that separate market returns are potentially misleading or that reporting both markets separately provides little benefit to stakeholders. The market returns that BT makes are the difference between the revenues, based on our charge control and BT's FAC costs in that market. They are a matter of fact and show in a transparent manner BT's performance. Stakeholders can see for themselves if BT's returns are comparatively high or low compared to its regulated WACC.
- A8.162 Combining the two markets would make our pricing decisions in relation to the markets opaque. It would hide the extent of any cost reattribution between markets as well as the actual returns in those markets, which may be moving in different direction. The presentation of the RFS allows stakeholders to calculate the combined returns of both markets.⁴⁵⁹
- A8.163 We have decided that BT must publish the revenue, operating costs, capital employed and returns for the WLA market. Trends in market level financial performance are informative in the context of considering the impact and effectiveness of the remedies imposed in the WLA market. Market level cost information also provides transparency regarding how BT has allocated costs between regulated markets (and between regulated and unregulated markets). We see this as facilitating stakeholder confidence that such costs have been allocated consistently and appropriately. It also mitigates the risk that costs might be unreasonably loaded onto particular services or markets. We consider it is appropriate to require BT to publish this information to demonstrate to stakeholders the overall reliability and robustness of the RFS.

Service level and network component costs for published services

Our consultation proposals

- A8.164 In the March consultation we proposed that BT should publish revenue, volume, average price and FAC for WLA services, split between internal and external customers, at the level that they are regulated. We proposed that BT should publish revenue, volume, average price and FAC information for the services/groups of services charge controlled,⁴⁶⁰ where revenues are greater than £5m and set out the potential list of these.⁴⁶¹ We also proposed that BT publish FAC cost information relating to all those services.
- A8.165 In respect of the GEA services subject to a charge control, we proposed the publication of FAC service level information on the basis that:
- we used BT's FAC data as a calibration data source;
 - prices can be tracked against the FAC service information;
 - the information provides an insight into common cost allocations as GEA FAC information when used together with WLA and WFAEL information in the attribution of common costs; and
 - the information provides a time series of costs.

⁴⁵⁹ To do this, stakeholders would add the lines of information on the summary of market performance.

⁴⁶⁰ March 2017 WLA Consultation, Volume 2, Section 3.

⁴⁶¹ March 2017 WLA Consultation, paragraph 10.79.

- A8.166 We proposed that in respect of SMPF services (SMPF Rentals, SMPF New Provides Services, SMPF Single Migrations and SMPF Bulk Migrations) which will no longer be subject to a charge control, BT would not be required to publish FAC cost base information. We also proposed that in respect of TRCs and SFIs, BT would no longer publish Appendix IV (Time related Charges and Special Fault Investigation Costs) of the RFS. We proposed that BT would continue to provide us with private reporting on both SMPF services and TRCs/SFIs.
- A8.167 We made further service and FAC level proposals in the August 2017 DPA Consultation. In respect of PIA rentals and ancillary services, given the expected level of service volumes, we proposed that BT should publish revenue, volume and average price information (separately for internal and external customers) for PIA services (where practical) on an aggregated rental and ancillary basis rather than at the individual service level at which we proposed for the PIA charge control.
- A8.168 We proposed that BT did not need to publish any information on FAC on these services as this information did not currently exist. We noted that service level FAC information would not be appropriate until the wider DPA reporting issues were resolved. In respect of network adjustment costs above the financial limit, we proposed that BT should publish the total revenues and costs within the WLA market. The proposed publication included internal and external revenue, volume and FAC within the RFS.
- A8.169 In the November 2017 Regulatory Financial Reporting Consultation, we proposed that BT should publish revenue, volume and average price (internal and external) for the following services/groups of services where revenues are greater than £5m:
- GEA 40/10 Bandwidth Change
 - VLAN moves applied to GEA Cablelink Modify transactions
 - AVCs
 - MPF Cancellations
 - MPF Amend
 - MPF Standard line test
 - GEA Cancel/Amend/Modify – CRD Amend, order notes amend, order cancellation, Care level, etc
 - GEA Cancel/Amend/ Modify - Regrading of existing upstream or downstream speed
- A8.170 The extra proposed disclosure was consistent with the level at which we proposed to regulate the services, except for AVCs where we proposed service level disclosure while the service was subject to a fair and reasonable pricing condition rather than a charge control.
- A8.171 In the August 2017 DPA Consultation we also proposed two notes to the RFS⁴⁶² in respect of network adjustment costs. We proposed the first note disclose:
- gross internal and external revenues relating to network adjustments and related FAC;
 - internal and external revenues relating to network adjustments above the financial limit and related FAC; and

⁴⁶² Notes in the RFS are listed as Appendices and can be found in pages 109 -124 of the 2017 RFS.

- net internal and external network adjustment costs (i.e. on the two bullets above) that should be recovered across all users of the physical infrastructure in the WLA market.

A8.172 We considered that this note was required to demonstrate BT’s compliance with the requirement that it does not capitalise network adjustment costs above the financial limit and recover those costs over WLA services when they had already been paid for up front as an ancillary charge. We considered that this note would also ensure that the costs of network adjustments in relation to BT’s own network deployments were recovered on the same basis as other telecoms providers using PIA.

A8.173 We proposed the second note disclose the split of network adjustment costs below the financial limit between those recovered from PIA and those recovered from other network access services. We considered that this note was necessary to demonstrate that BT was attributing the costs of network adjustments below the financial limit between PIA products and other network access services on a similar basis.

Stakeholder responses

A8.174 Openreach, Hyperoptic, TalkTalk and Vodafone responded to our proposals on service level disclosure.

A8.175 We consider stakeholders’ responses and our decisions grouped by the following themes, below:

- FAC services subject to common cost re-attribution;
- Services with costs paid up front;
- PIA; and
- Other service level disclosure.

A8.176 We then summarise our service level publication requirements.

Stakeholder responses: FAC services subject to common cost re-attribution

A8.177 Openreach’s concern on market level reporting also applied to public information proposals at the service and FAC level. Openreach said it was “disproportionate to require BT to publish service level cost information for WLA services which are affected by the reattribution of common costs assumed for modelling purposes (and not reflected in regulatory financial reporting)”.⁴⁶³

A8.178 Openreach repeated its reasoning for rejecting our proposals on market level information, and stated the publication of service level information is not appropriate given the common cost transfers, and that it was “*inconsistent with our proposed framework for regulatory financial reporting and will not provide significant benefit to stakeholders....in addition, the continued publication of this detailed information represents a significant and disproportionate burden, disclosing potentially commercially sensitive information*”.⁴⁶⁴

⁴⁶³ Openreach response to the March 2017 WLA Consultation, paragraph 298.

⁴⁶⁴ Openreach response to the March 2017 WLA Consultation, paragraph 315.

- A8.179 Openreach also disagreed with the publication of GEA service information where not charge controlled,⁴⁶⁵ and if charge controlled only where *“the pricing remedy is based on our incurred costs as reported in the RFS”*.⁴⁶⁶
- A8.180 In respect of publishing the FAC of GEA services, Openreach disagreed with its use for calibration purposes, saying that *“the top-down service level FAC data in the RFS is only one of the sources of cost information used in the calibration, with equal weight attached to top-down RFS LRIC and with consideration also given to the management accounts and the ‘BT Model’*. We welcome Ofcom carrying out a range of comparisons, but do not agree that comparison with the RFS (particularly as one source amongst many) means service level FAC data should be published in the RFS when it is clear it is prepared on a materially different basis from the FAC used in charge control modelling. In the circumstances, RFS service level FAC data will not inform stakeholders when scrutinising cost movements against prices.”⁴⁶⁷
- A8.181 Openreach disagreed with the idea that FAC data would provide information to stakeholders on how regulated prices relate to BT’s costs. Openreach said *“this is not the case where the basis on which regulated prices will be set is materially different from the basis on which we will report our incurred costs”*.⁴⁶⁸
- A8.182 Openreach also disagreed with our view that the FAC information will provide stakeholders with insight into our common cost allocations, because *“the attribution of common costs is not published in the RFS (only the outcome of the calculation) and the calculation behind the reattribution of common costs, based on our bottom-up modelling, is extremely complex”*.⁴⁶⁹
- A8.183 Openreach said that stakeholders should not have access to a time series view of GEA FAC service costs to enable them to contribute to any future market reviews as *“access to a time series view of costs prepared on a different basis from that used in setting prices will not provide stakeholders with information of significant value in making an informed contribution”*.⁴⁷⁰
- A8.184 Vodafone objected to the current lack of published GEA FAC information. It said that *“the information supplied to date around GEA is completely inadequate and leaves stakeholders in the dark”*.⁴⁷¹

Our reasoning and decisions: FAC services subject to common cost re-attribution

- A8.185 We disagree that the continued publication of this detailed information represents a significant and disproportionate burden on BT, while disclosing potentially commercially

⁴⁶⁵ Openreach response to the March 2017 WLA Consultation, paragraph 317.

⁴⁶⁶ Openreach response to the March 2017 WLA Consultation, paragraph 318.

⁴⁶⁷ Openreach response to the March 2017 WLA Consultation, paragraph 322.

⁴⁶⁸ Openreach response to the March 2017 WLA Consultation, paragraph 322.

⁴⁶⁹ Openreach response to the March 2017 WLA Consultation, paragraph 322.

⁴⁷⁰ Openreach response to the March 2017 WLA Consultation, paragraph 322.

⁴⁷¹ Vodafone response to the March 2017 WLA Consultation, page 60.

sensitive information. In preparing the RFS, BT is first required to maintain a comprehensive Cost Accounting and Accounting Separation system to produce regulatory reporting from general ledger inputs from its financial accounting system. The complexity of operating and keeping that system up to date can be demonstrated by a quick examination of BT's Accounting Methodology Document (AMD).⁴⁷² From this system, BT then must produce a set of financial statements to be published, which are audited, alongside AFIs provided to us privately. In addition, BT is required to publish other documents (such as the reconciliation report – see below). As part of the process of preparing and publishing the RFS, a system of checks and quality assurance is carried out by BT.

- A8.186 We appreciate producing the RFS is a time-consuming and resource intensive task. However, our decision to require BT to publish additional service information is a small incremental cost which we believe is outweighed by the benefit of being able to provide reasonable comfort to telecoms providers. Telecoms providers can check that BT is complying with its SMP obligations and have the opportunity to scrutinise and challenge BT's costs. Publication also instils additional discipline on BT to avoid making errors.
- A8.187 We disagree with Openreach that the additional service level information we proposed to be published is commercially confidential. The aggregated nature of the network components being reported means that any granular information around labour rates, energy costs, contractor costs, etc. (i.e. costs that are more likely to be commercially sensitive) cannot be derived from the publication of FAC by network component.
- A8.188 We disagree for the same reasons set out in paragraphs above, in relation to market level reporting, that determining GEA prices by reference to a bottom-up model negates the need for BT to publish FAC information on charges set using a bottom-up model. The publication of service level FAC information in order to compare BT's costs against prices we set is more informative than the market level information in demonstrating to stakeholders how service costs are moving in relation to the prices they pay.
- A8.189 As we calibrated GEA costs at an aggregate level, as set out in Annex 15, BT's point on service level calibration is not relevant.
- A8.190 We do not agree with Openreach's point that *where the regulated prices are set on a materially different basis than that on which BT's incurred costs are reported* it means incurred costs cannot be tracked to prices. On whatever basis prices are set, they can always be tracked against actual cost. Whilst it is true that we would not expect FAC to glide to the regulated price at the end of the charge control period, relative movements still allow stakeholders to assess the effectiveness of the charge controls we set.
- A8.191 We disagree that *"the calculation behind the reattribution of common costs, based on Ofcom's bottom-up modelling, is extremely complex"*. As we set out in Annex 11, the calculation is essentially an equi-proportional mark-up (EPMU) on MPF and GEA common

⁴⁷² <https://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2017/AMD2016-17.pdf> sets out the detail of BT's Regulatory Financial Reporting.

cost. Using the LRIC:FAC ratios in our charge control models, stakeholders can see approximately what common cost has been re-attributed.

- A8.192 We have therefore decided to require BT to publish revenue, volume, average price and FAC for WLA services, split between internal and external customers, at the level that they are regulated.
- A8.193 In Volume 1, Section 6 we explained that WLA charges are subject to a fair and reasonable charges obligation (except where a charge control or basis of charges obligation is in place), a no undue discrimination obligation and EOI. Publishing internal and external prices helps demonstrate compliance with the no undue discrimination obligation.
- A8.194 We consider that publishing internal and external revenues and volumes can demonstrate the impact and effectiveness of the remedies we have imposed in the WLA market and provides transparency about the relative usage of WLA services by BT and external telecoms providers. We set out below the full list of services that BT is required to publish revenue, volume, average price and FAC information for.
- A8.195 For component level information, we have decided that BT must publish the calculation of service level FAC based on network component costs and usage factors for the WLA market for the services subject to common cost reattribution.

Stakeholder responses: Services with costs paid up front

- A8.196 BT disagreed with our proposals and thought it was disproportionate to the benefit it might provide to publish revenue, volume, average price and FAC information for:
- AVCs, because these services are subject to a fair and reasonable charges obligation; and
 - Other Services with costs paid up front, because BT only currently publishes basket revenue in the non-confidential version of the compliance statement, individual product information is not currently available to stakeholders.⁴⁷³

Our reasoning and decisions: Services with costs paid up front

- A8.197 We believe that the publication of AVC service level and FAC information, for a service that is subject to a fair and reasonable charges obligation rather than a charge control, is justified. Our decision not to charge control AVCs (which we set out in Annex 23) will not be welcomed by all stakeholders. Additionally, as set out above, we have rectified problems in the reporting of the costs of this service. We believe that reporting of AVCs is proportionate for us to monitor that BT is no longer including capitalised costs as set well as to provide reassurance to stakeholders on this.
- A8.198 In response to BT's point that aggregated service costs should not be disclosed in the RFS for Services with costs paid up front, a quick comparison of revenues in the RFS to revenues in the related non-confidential compliance schedules reveals that there is, and always has been, a proportionate level of aggregation of services within the RFS. Where

⁴⁷³ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 6.14.

the publication of information might be illogical we are receptive to BT's views on what should be published. The alternative, to publish FAC cost information at the price list level would not be proportionate as it would require BT to report on tens of additional services for little added value. We accept that there is some incremental work required by BT to publish information on additional services, but we think that the publication of aggregated service level information for these services strikes the right balance.

A8.199 We have decided to require BT to publish revenue, volume, average price and FAC for Services with costs paid up front, split between internal and external customers, at the level that they are regulated.⁴⁷⁴

A8.200 We set out below the full list of services in relation to which BT is required to publish revenue, volume, average price and FAC information.

Stakeholder responses: PIA

A8.201 In relation to our proposals in the August 2017 DPA Consultation, TalkTalk asked Ofcom to require BT to update the RFS to reflect the different treatment of PIA productisation costs and the recovery of these costs across all SMP products.⁴⁷⁵

A8.202 Openreach noted that we did not make proposals for disclosure at market and network component level within the RFS and assumed that we proposed no further amendments to our March consultation. Openreach supported our proposal that published services should be aggregated into three groupings of PIA Rentals, PIA Ancillary Charges and PIA Adjustment Services above the financial limit per kilometre. Openreach sought confirmation that volumes and average prices were not to be reported for aggregated services as it would not be practicable to do so.⁴⁷⁶

A8.203 Openreach sought clarity that the publication of the calculation of service level FAC by component for the PIA services would not be required.⁴⁷⁷

A8.204 Openreach was also concerned that reporting downstream BT's figures (should they exist) separately to external telecoms providers' figures would disclose commercially sensitive information "which would reduce uncertainty on the downstream market and could restrict competition".⁴⁷⁸

A8.205 Hyperoptic said that appropriate reporting is required to ensure that BT does not over-recover network adjustment costs and that BT's own network deployment costs are recovered on the same basis. They believed that with increasing adoption and volume of PIA, the reporting requirements on BT may require revision to maintain the correct visibility and control.⁴⁷⁹

⁴⁷⁴ With the exception of AVCs, which we discuss further below.

⁴⁷⁵ TalkTalk response to the August 2017 DPA Pricing Consultation, paragraph 4.6.

⁴⁷⁶ Openreach response to the August 2017 DPA Consultation, paragraphs 201-203.

⁴⁷⁷ Openreach response to the August 2017 DPA Consultation, paragraph 204.

⁴⁷⁸ Openreach response to the August 2017 DPA Consultation, paragraph 190.

⁴⁷⁹ Hyperoptic response to the August 2017 DPA Consultation, page 9.

- A8.206 Vodafone⁴⁸⁰ supported our proposals and suggested that BT should be required to produce an annex to the RFS that clearly and transparently shows how duct costs are recovered across all of BT's products and services. It believed that this should show what percentage of total duct access costs are recovered from the PIA product and ensure that BT does not over-recover the asset across all its regulated and non-regulated services.
- A8.207 In respect of the first note on network adjustment costs that we proposed in the August 2017 DPA Consultation, Openreach commented that the proposal did not meet the purpose of demonstrating BT's compliance with the requirement that it did not capitalise network adjustment costs above the financial limit, as opposed to those below the financial limit (which were to be capitalised), as there was no information on the capitalised network adjustment costs below the financial limit in the proposed note.
- A8.208 Openreach also commented that as the note did not disclose network adjustment costs that were to be recovered from PIA services separately from other WLA costs, it did not provide the information for PIA services to compare against costs being recovered by BT in respect of its own services. Openreach suggested that our concerns could be addressed through the separate publication of internal and external service level revenue and FAC although they then suggested it should not be published "as this information does not provide any significant value to stakeholders".⁴⁸¹
- A8.209 In respect of the second PIA note, Openreach commented that it did not meet the purpose of ensuring that the costs of network adjustments below the financial limit were recovered on a similar basis between PIA services and other services because the note does not include a measure of the quantity of network adjustments being consumed by the different service mix taken by BT and other CPs.⁴⁸²

Our reasoning and decisions: PIA

- A8.210 We have decided that BT must disclose the revenues for PIA Rental, PIA Ancillary and PIA Network Adjustment services above the financial limit. In respect of PIA Adjustment services above the financial limit, BT must also disclose the FAC costs. In respect of PIA Adjustment below the financial limit, BT must disclose the MCE attributed to each market as an appendix to the RFS (rather than a note to the WLA market).
- A8.211 In response to TalkTalk's point that BT should update the RFS for PIA productisation costs, as BT does not separately record its productisation costs, it is not possible to disaggregate productisation costs to disclose that information within the RFS. As set out below, we will consider the issue of what should be published in relation to duct and pole infrastructure costs at a later date. This would be an appropriate time to consider how productisation might be disclosed.
- A8.212 We agree that the disclosure of average prices and volumes in respect of PIA Rentals and PIA Ancillary Charges, where the individual services within the aggregated disclosure have

⁴⁸⁰ Vodafone response to the August 2017 DPA Consultation, page 11.

⁴⁸¹ Openreach response to the August 2017 DPA Consultation, paragraphs 207-209.

⁴⁸² Openreach response to the August 2017 DPA Consultation, paragraph 212.

different units of measurement, is not practicable and confirm that this will not be required. The prices and volumes for disaggregated individual services where revenues exceed £1 million will need to be provided privately as part of the additional financial information, as we set out below.

- A8.213 In respect of PIA Rentals and Ancillary charges, we confirm that we do not currently require the publication of FAC service information as, in contrast to aggregated WLA Ancillary service information, this information cannot be readily disaggregated within BT's regulatory reporting.
- A8.214 In respect of the disclosure of network adjustment costs above the financial limit, we considered the argument for capitalising the costs as an asset above. In line with our analysis, we have decided that all the costs relating to network adjustments above the financial limit should be treated as an operating expense in the published RFS as proposed. We agree that this makes comparability with network adjustment costs below the financial limit difficult and therefore have decided that BT does not need to disclose the first note we proposed in the August 2017 DPA Consultation. We set out some alternative private reporting below.
- A8.215 In respect of the second PIA note, following further analysis and assessment we have amended the disclosure. The appendix to the RFS, rather than a note to the WLA market, will disclose internally and externally where the MCE is over £5m, the MCE of total network adjustments below the limit attributed, for each market, consistent with the allocation of these costs in the charge control. This addresses Openreach's comment that the first PIA note did not show how network adjustment costs below the limit were recovered across different sets of services compared to PIA. The appendix will also disclose the kilometres of network adjustment deployed, on the same basis. The level and movement year-on-year of asset MCE, viewed together with information on the kilometres of network deployed, will provide stakeholders with information on relative internal and external distribution of network adjustments below the financial limit. The information on disaggregated individual service basis, where revenues exceed £1m, will need to be provided privately as part of the additional financial information.
- A8.216 In response to Vodafone's request for an annex to the RFS that clearly and transparently shows how duct costs are recovered across all of BT's products and services, we note that BT already produces an annex in Section 10 of the RFS that shows the attribution of duct to markets. As noted below, we will be considering further public reporting on duct and pole infrastructure at a later date.

Stakeholder responses: Other service level disclosures

A8.217 Openreach agreed with our proposals to no longer require the publication of FAC information on SMPF services,⁴⁸³ no longer publish the SFI and TRC⁴⁸⁴ schedules and information for services with revenues below £5m.⁴⁸⁵

Our reasoning and decision: Other service level disclosures

We have removed the requirement for BT to publish information on SMPF services and the SFI and TRC schedules.

Conclusion on service level publication requirements

A8.218 As a result of all our decisions above, in summary we have decided to require BT to publish revenue, volume, average price and FAC information for the following services:

- GEA 40/10 (FTTC) Rentals
- GEA 40/10 Other Rentals
- GEA Other Rentals (all other speeds except 40/10);
- GEA 40/10 (FTTC) PCP Only Install and Start of a Stopped Line 40/10 Connections
- GEA 40/10 FTTP Other Connections
- GEA Cablelink 1 Gbit/s Connections
- GEA Cablelink 10 Gbit/s Connections
- GEA 40/10 Bandwidth Change
- VLAN moves applied to GEA Cablelink Modify transactions
- AVCs
- Cancellation of MPF orders for provide, Migration, Working Line Takeover, Modification of Amend
- Amend orders, Allowable change to MPF order
- MPF Standard line test
- GEA Cancel/Amend/Modify – CRD Amend, order notes amend, order cancellation, Care level, etc
- GEA Cancel/Amend/ Modify - Regrading of existing upstream or downstream speed, both at point of sale and in life etc.
- MPF Rentals (SML1)
- MPF New Provide Services
- MPF Single Migrations
- MPF Bulk Migrations
- Co-mingling New Provide and Rental services
- Tie cables
- Hard Cease services
- Other MPF Ancillary Services
- Special Fault Investigations

⁴⁸³ Openreach response to the March 2017 WLA Consultation, paragraph 321.

⁴⁸⁴ Openreach response to the March 2017 WLA Consultation, paragraph 323, although Openreach have objected to it being provided privately – see below.

⁴⁸⁵ Openreach response to the March 2017 WLA Consultation, paragraph 317.

- Time Related Charges;
- PIA Rentals
- PIA Ancillary charges
- Network Adjustments above the financial limit of £4,750 per km
- Other WLA

EOI reporting

Our proposals

A8.219 In the March consultation we proposed that BT continue to be subject to a specific requirement to provide network access to LLU, VULA and other key wholesale services on an EOI basis. In the November 2017 Regulatory Financial Reporting Consultation, we explained we need financial information to monitor BT's compliance with those proposed EOI conditions.

A8.220 We explained that the information we currently receive from BT on compliance with its WLA EOI obligations is published within the WBA market section of the RFS. The information allows stakeholders to see which EOI inputs were provided from the WLA market, within the published WBA service FACs, and their relative importance in the overall total cost of those WBA services. We therefore proposed in the November 2017 Regulatory Financial Reporting Consultation that BT publish EOI information for regulated WBA services, which was in a form like that imposed in the 2015 Directions Statement.⁴⁸⁶

Stakeholder responses

A8.221 [3<] agreed with our proposal.⁴⁸⁷

A8.222 BT, while it agreed in principle with our proposal to publish information that would enable us to monitor compliance with the EOI obligations, disagreed with the proposed level of detail as being unnecessary and disproportionate, both relative to the proposed fair and reasonable pricing remedy and the size of WBA Market A.⁴⁸⁸ It said the proposed level of detail to be published for EOI, would not produce useful information as most of the lines published would be zero due to the size of WBA Market A. It proposed publishing an EOI summary by market and stated this would better demonstrate compliance with the EOI obligation.⁴⁸⁹

Our reasoning and decisions

A8.223 We disagree that even if the majority of EOI line information provided on a service basis comprise zeros, it is not useful. One of the objectives of the reporting is to inform telecoms providers which EOI inputs are included in the services they buy, as well as the relative amounts. When there are significant EOI inputs within services, BT's proposed market summary would not meet the objective of providing stakeholders with information as to

⁴⁸⁶ Ofcom, November 2017 Regulatory Financial Reporting Consultation, paragraph 6.33.

⁴⁸⁷ [3<] response to the November 2017 Regulatory Financial Reporting Consultation, page 6.

⁴⁸⁸ BT response to November 2017 Regulatory Financial Reporting Consultation, paragraph 7.2.

⁴⁸⁹ BT response to November 2017 Regulatory Financial Reporting Consultation, paragraph 7.4.

which EOI inputs are within the published regulated WBA service costs and their relative importance in the overall total cost of the WBA services.

- A8.224 We do however appreciate BT’s point that Market A is reducing in size. We have therefore amended our proposal so that BT need only produce service level information where the aggregate total of EOI inputs for that service (internal or external⁴⁹⁰) is above £1m. For services below £1m, BT will aggregate them into an aggregated “Other EOI input service” and include a footnote disclosing the name of the service within the aggregated line.
- A8.225 Therefore, we have decided that BT must report the name of the EOI inputs (i.e. the WLA service or part service inputs which are subject to an EOI obligation under regulation in the WLA market), their usage factors and their unit prices for all WBA services where the annual revenue for either the external or internal variant is above £1m.
- A8.226 BT must aggregate the EOI inputs for all services below the threshold (split internal and external) into a “Other EOI input service”. BT must publish the total FAC (but not the individual non-EOI network component costs) for these services. We set out in Annex 33 the direction.

Non-confidential compliance information

- A8.227 In the 2014 Regulatory Financial Reporting Statement, we said that “BT must produce non-confidential compliance schedules for each regulated market. These non-confidential compliance statements must be published on BT’s website in the same location as the Published Regulatory Financial Statements and at the same time as the confidential compliance statements are provided to Ofcom.”⁴⁹¹ Publication of compliance statements helps provide assurance about BT’s compliance with charge controls.
- A8.228 Following the 2015 Directions Statement, BT has published non-confidential compliance schedules on its website in 2014/15 and 2015/16 in relation to the WLA market. In the March consultation we proposed directions requiring BT to publish non-confidential compliance schedules for the WLA market where we have decided to impose a specific price control. No stakeholders disagreed with this proposal, so we have decided to implement this requirement.
- A8.229 We have clarified in the direction set out in Annex 33 that revenue-related information can be redacted in the non-confidential compliance statement where revenue information is not published in the RFS, as this is consistent with current practice.

Private reporting

- A8.230 BT currently provides us with additional financial information (AFI) schedules in addition to those that are published. This includes a data file which contains detailed information on all the revenues, volumes, costs and cost categories that support the published RFS.

⁴⁹⁰ For example, if external revenue is above £1m, BT is required to publish service level EOI information for both the internal and external service.

⁴⁹¹ 2014 Financial Reporting Statement, paragraph 4.91.

A8.231 In this sub-section we discuss our proposals, stakeholder responses and our decisions on the following:

- DLRIC/DSAC data;
- Data file and the potential removal of other AFI schedules;
- SFIs and TRCs;
- GEA services;
- Additional detailed WLA Service and FAC Reporting; and
- Additional reporting for PIA services.

DLRIC/DSAC data (AFI-C1 and AFI 1-4)

A8.232 BT currently provides FAC, DLRIC and DSAC data for each service in each regulated market under AFI-C1. DLRIC and DSAC data can inform our market reviews and our assessment and analysis of appropriate remedies where SMP is present. It is important to receive this information on all markets to ensure the overall coherence of the data on DLRIC and DSAC. The same reasoning applies to receipt of LRIC information.

Our proposals

A8.233 We proposed a new Direction to clarify that we require BT to provide DLRIC and DSAC data in relation to all markets, and to extend the requirement to LRIC data.

A8.234 BT currently provides FAC and LRIC data across all markets on a cost component by cost category basis under AFIs 1-4. BT has informally provided as with AFIs 1-4 on a DLRIC and DSAC basis. We proposed to formalise this arrangement so that the DLRIC and DSAC information is provided within an amended combined AFI.

Stakeholder responses

A8.235 BT responded that we should withdraw reporting requirements for DSAC and DLRIC cost information unless it was clear for what purpose they are required.⁴⁹²

A8.236 Other stakeholders made comments beyond the scope of the WLA market review with regard to LRIC data. Vodafone⁴⁹³ and UKCTA⁴⁹⁴ requested us to review the LRIC model as part of a wider reporting review.

Our reasoning and decisions

A8.237 We have previously said DLRIC is a more useful/practical benchmark than LRIC, as it avoids having to do combinatorial tests (and is more relevant than FAC), when checking for excessive pricing and margin squeeze. In the 2016 BCMR we used DLRIC and DSAC (as well as other factors) when considering the case for starting charge adjustments.⁴⁹⁵

A8.238 In addition, with an increasing number of services subject to fair and reasonable pricing remedies rather than cost-based charge controls, we may need to undertake more

⁴⁹² BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 3.6.

⁴⁹³ Vodafone response to the 2017 Regulatory Financial Reporting Consultation, page 5.

⁴⁹⁴ UKCTA response to the 2017 Regulatory Financial Reporting Consultation, page 1.

⁴⁹⁵ Ofcom, 2016. Business Connectivity Market Review Statement, Part 2, paragraphs 4.97-4.105.

combinatorial tests going forward. As we noted in the BCMR Statement, undertaking combinatorial tests robustly is both complicated and impractical given the data that is available. DLRIC and DSAC, which are generated by BT's LRIC model, can be used by Ofcom as a practical alternative to using combinatorial tests based on LRIC and SAC.⁸² BT must therefore provide the AFIs 1-4 on a DLRIC and DSAC basis and provide AFI-C1 in respect of all markets.

Data file and the potential removal of other AFI schedules

Our proposals

- A8.239 The direction currently in place requires BT to provide a data file which contains the information supporting the RFS. We have worked closely with BT to ensure that the files it provides to us comply with this direction and allow us to interrogate the data underpinning the RFS.
- A8.240 We proposed to make amendments to the existing direction relating to the provision of the data file to capture the arrangements that are currently in place. The main change we proposed was for BT to provide the file "FAC adjustment Summary" (for LRIC model), which contains the post RFS adjustments to cost categories for the purposes of LRIC reporting.⁴⁹⁶
- A8.241 Our expectation is that the data file will provide the following information:
- Revenue, volume and cost information relating to each WLA rental, connection and ancillary service and related component. It will also help us assess the impact and effectiveness of the remedies we are imposing.
 - Revenue, volume and cost information relating to each WLA service and related components. This information helps us understand how BT is allocating costs between and within markets and helps us assess the impact and effectiveness of the remedies we are imposing.
- A8.242 In the March consultation, we also proposed a framework for the removal of AFIs where that information is contained in the data file.
- A8.243 In principle, we proposed that where the information was provided within the data file it need not be provided as a separate AFI. However, this would not apply:
- to information that we do not get as part of a data file (currently any LRIC, DLRIC and DSAC information);
 - where obtaining the information from the data file would not be straightforward and/or the information from the data file would be different to that in the AFI; or
 - where the AFI is used as a control total for information obtained from the data file (such as AFIs 1-4).

⁴⁹⁶ No stakeholder responded to our proposals.

Stakeholder responses

- A8.244 There were no substantive responses on the data file.
- A8.245 Openreach agreed that AFIs should no longer be provided if the information was available in the data file and agreed with our criteria for removing them.⁴⁹⁷ It agreed with our proposal to remove the AFIs but said information for the AFI proposed in the March consultation⁴⁹⁸ could be “extracted in a straightforward way using the data file and a published AMD annex (“AMD S9 - Component to Service”)”.⁴⁹⁹

Our reasoning and decisions

- A8.246 We have decided to confirm our proposal that where the information is provided within the data file it need not be provided as a separate AFI.
- A8.247 We have considered BT’s request that we remove the proposed AFI “Detailed WLA Service Component FACs”. However, because we specifically require this schedule to be reconciled against the ‘market summary’ of the RFS, this schedule acts as a control schedule as per point 3 above. We attempted to accommodate BT’s proposed solution, but were unable to reconcile FAC costs on the generated report to the totals in the summary page of the RFS in a straightforward manner because the data contains MCE information on a network component basis rather than a service basis. Whilst this can be done through a mapping exercise using schedule AMD Annex “AMD S9 – Component to Service”,⁵⁰⁰ this is a very time-consuming exercise. We therefore remain of the view that it is appropriate to require BT to provide the AFI “Detailed WLA Service Component FACs”.

SFIs and TRCs (AFI B1-B2)

Our proposals

- A8.248 As discussed above, we have decided to impose FAC-based charge controls in respect of SFIs and TRCs.
- A8.249 Although we proposed removing the requirement for BT to publish management accounting information for SFIs and TRCs, we explained in the March consultation that we have found the provision of this information to be useful, particularly the labour rate information which we considered in resolving a dispute.⁵⁰¹ We therefore proposed to continue to require the provision of labour cost information for SFIs and TRCs within an AFI.

⁴⁹⁷ Openreach response to the March 2017 WLA Consultation, paragraphs 326-327.

⁴⁹⁸ March 2017 WLA Consultation, paragraph 10.102.

⁴⁹⁹ Openreach response to the March 2017 WLA Consultation, paragraphs 325 and 328.

⁵⁰⁰ BT’s 2017 AMD, Annex 2016-17, tab “Annex 9 Component to Service”

<https://www.btplc.com/Thegroup/RegulatoryandPublicAffairs/FinancialStatements/2017/201617AMDAnnex.xlsx> ,

⁵⁰¹ https://www.ofcom.org.uk/data/assets/pdf_file/0016/94120/cw_01185-Disputes-between-BT-and-each-of-TalkTalk-and-Sky-in-relation-to-BTs-historical-charges-for-SFIs-and-TRCs.pdf.

Stakeholder responses

A8.250 While Openreach welcomed our proposal for them to no longer publish information on TRCs and SFIs in the RFS, it did not agree with our proposal to require it to continue to prepare and provide this information privately. It argued that “Ofcom has used such information in a dispute, but such use has not been justified by Ofcom on an ongoing basis. The ongoing annual provision of information which was used for a one-off purpose is disproportionate.”⁵⁰²

Our reasoning and decisions

A8.251 We have reconsidered the need for the information proposed in the AFI, considering what information we need to monitor compliance with the SFI and TRC charge control, and agree with BT that we can obtain the information on a one-off basis should we need it for a dispute. BT’s reporting of FAC costs within the RFS for SFIs and TRCs also reduces the need for this schedule in terms of providing information to support our regulatory duties. We have therefore decided that BT will not be required to provide this AFI.

GEA (AFIs B4 - B6)

A8.252 As noted above, we have decided that BT should provide the revenue and FAC component breakdown for all services where revenue is expected to exceed £5m in the year. BT currently provides this information in AFI-B4 in relation to GEA revenues and AFI-B5 in relation to GEA service FACs, albeit for several services where the revenues are below £5m. AFI B6 contains information on government grants in relation to GEA.

Our proposals

A8.253 We proposed that BT should no longer be required to provide the information in schedules AFI-B4 and AFI-B5 as this largely duplicates the “Additional Detailed WLA Service and Component FAC Reporting” AFI set out below.

A8.254 AFI-B6 currently provides information on the allocation of government grants in relation to GEA services. We proposed to keep this AFI but require BT to separately show grants received for operating expenditure as well as capital expenditure.

A8.255 In the March consultation, we also proposed that BT provide a further breakdown of the two network components: Funded Fibre Rollout Spend (which aimed to capture all the capital expenditure within BDUK areas) and Fibre Rollout Funding (which captured movements of BDUK income). This proposed AFI would set out the costs and revenues that are attributed to both network components and the basis of Finance Type (disaggregating out any Transfer charges), and reattributing to network components in the absence of the BDUK components. For the key GEA services this information would reconcile to that publicly reported within the RFS.

⁵⁰² Openreach response to the March 2017 WLA Consultation – volume 1, paragraph 323.

Stakeholder responses

A8.256 Openreach did not agree that change was required for the accounting for BDUK funding and BDUK rollout costs to provide further transparency over how BDUK funding is spent.⁵⁰³

Our reasoning and decisions

A8.257 We set out the current reporting requirement on the accounting for BDUK funding and roll out costs in the 2015 Directions Statement⁵⁰⁴ and while the information was a useful starting point for our analysis in this market review, we have had numerous issues with that information.

A8.258 There have been several errors corrected and improvements made to these network components as set out in the 2014/15 and 2015/16 Reconciliation Reports. In summary, the 2014/15⁵⁰⁵ error corrected BDUK operating grant and expenditure incorrectly allocated to the FTTC Development component rather than the BDUK funding and expenditure components. In 2015/16⁵⁰⁶ BT improved the accuracy of reporting within the BDUK network components by changing the BDUK depreciation calculation from an annual average to a monthly one. Northern Ireland and TSO BDUK income and expenditure were also now captured within the BDUK components.

A8.259 As Cartesian pointed out “BDUK funding and BDUK rollout finance type of costs do not provide full clarity on how the BDUK funding is spent”.⁵⁰⁷

A8.260 BT must provide the more granular information we proposed in the March consultation to satisfy us that the attribution to the network components is in accordance with the RAP.

Additional Detailed WLA Service and FAC Reporting

Our proposals

A8.261 Consistent with our decision in the 2016 BCMR Statement, we proposed and have now decided, to require BT to provide additional information to us in private in relation to detailed WLA Revenue and Cost information and WLA service component FACs, where revenues are above £5m.

Stakeholder responses

A8.262 TalkTalk wanted us to require BT to report FAC for all regulated services over £1m revenue (whether they are price regulated or not). Some of this reporting could be privately to Ofcom and in their view, this would allow us to set robust charge controls on products that have not previously been charge controlled and modify baskets. In addition, TalkTalk

⁵⁰³ Openreach response to the March 2017 WLA Consultation – volume 1, paragraph 305.

⁵⁰⁴ 2015 Directions Statement, Section 5.

⁵⁰⁵ BT 2015 Reconciliation Report, 2 December 2015, Section 5.11 (page 31),

<http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2015/ReconciliationReport201415.pdf>

⁵⁰⁶ BT 2016 Reconciliation Report, 28 October 2016, Section 5.12 (page 30),

<http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2016/ReconciliationReport2015-16.pdf>

⁵⁰⁷ Cartesian, 13 March 2017. Cost Allocation Review: Next generation Access Services (‘Cartesian NGA Report’). Annex 28, page 9.

considered we could assess profitability on non-price regulated products and analyse whether their cost attributions are reasonable.⁵⁰⁸

Our reasoning and decisions

A8.263 Consistent with the 2016 BCMR Statement,⁵⁰⁹ we have decided that BT must supply additional information in respect of all WLA services where revenues are above £5m, which we consider to be a proportionate level of reporting for most SMP services.⁵¹⁰ We have decided there should be two requirements:

- **Detailed WLA Service information:** This should set out the revenues, volumes and FAC on a CCA basis of any other WLA service not publicly disclosed where the revenue from this service is above £5m. The revenues and costs should, in total, be reconciled to the revenues and costs included within the publicly reported totals for the WLA market. This information will ensure that we have sufficient information to identify services that account for a considerable proportion of WLA revenues and costs. Where BT cannot demonstrate this information meets the data file requirements, this information should be supplied as an AFI.
- **Detailed WLA Service Component FACs:** This should set out the calculation of FAC based on component costs and usage factors for all services reported under the first requirement. The fully allocated service unit costs should reconcile to those given in the first requirement. As with Detailed WLA Service information, this schedule would ensure that we have sufficient information to identify services that account for a considerable proportion of WLA costs. As with the Detailed WLA Service information, where BT cannot demonstrate this information meets the data file requirements, this information should be supplied as an AFI.

Additional reporting for PIA services

Our proposals

A8.264 In the August 2017 DPA Consultation we proposed two AFIs:

- “Additional detailed service reporting for PIA services”, where BT should provide individual internal and external revenue and volume information for every disaggregated service within each specified PIA group of services where the annual revenues for that service exceeds £1m. We proposed that BT should also include a reconciliation with the disclosures in the published RFS; and
- “Updated inputs for our calculation of the maximum PIA rental charges” (see Section 5, Volume 3 of this Statement).

⁵⁰⁸ TalkTalk response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 17.

⁵⁰⁹ Ofcom, 2016. Business Connectivity Market Review Statement, Volume 12, paragraph 16.85.

⁵¹⁰ In respect of nascent fast-growing services, such as GEA AFI in the 2014 FAMR and PIA services in the “Additional reporting for PIA services”, we consider a lower threshold of £1m to be more appropriate.

Stakeholder responses

- A8.265 In response to the August 2017 DPA Consultation, Openreach sought confirmation in respect of the first PIA AFI that services within each service group for which the revenue falls below £1m can be added together into a single ‘other service’ line item. Openreach also sought confirmation that no volume information needed to be provided for this ‘other service’, given that the sum of several different volumes will not be meaningful. Openreach welcomed our proposal that services listed in the additional AFI should be limited to those where annual revenue exceeded £1m.⁵¹¹ Openreach also commented that as the information was readily identifiable in the data files, a separate AFI was not required.⁵¹²
- A8.266 Openreach noted that within the proposed second PIA AFI, we included the requirement to provide CCA costs for CoW Local Distribution Duct, based on RAV adjusted values. Openreach pointed out that this information is already provided as part of an existing AFI and sought confirmation that it should therefore not be required to duplicate the provision of this information.⁵¹³
- A8.267** Openreach sought further confirmation that the remaining information required for the second PIA AFI was the same as that provided in their response to a statutory information request related to the WLA Market Review and, whether this information will be based on BT’s PIA pricing model.⁵¹⁴

Our reasoning and decisions

- A8.268 For the first PIA AFI, we agree with Openreach’s request that the services within each service group for which the revenue falls below £1m can be added together into a single aggregated service line for that service grouping and that no volume information needs to be provided for these.
- A8.269 While we do not expect BT to provide a separate AFI if the information is readily identifiable within the data files, this only applies if it passes the tests set out above. As these services are not currently in the data file, we expect BT to provide the AFI.
- A8.270 For the second PIA AFI, we can confirm that CCA costs for CoW Local Distribution Duct is provided as an existing AFI and therefore we do not require BT to duplicate the provision of this information.
- A8.271 We can confirm that the other updated model inputs information to be included in the second AFI should be provided in line with the information provided as part of its response⁵¹⁵ to our information request relating to the WLA Market Review and that this information should be based on BT’s pricing model. We describe the modelling inputs in more detail in Section 5 of Volume 3 of this Statement.

⁵¹¹ Openreach response to the August 2017 DPA Consultation, paragraph 215.

⁵¹² Openreach response to the August 2017 DPA Consultation, paragraph 215.

⁵¹³ Openreach response to the August 2017 DPA Consultation, paragraph 216.

⁵¹⁴ Openreach response to the August 2017 DPA Consultation, paragraph 217.

⁵¹⁵ Openreach response dated 9 February 2017 to Ofcom’s s.135 notice dated 27 January 2017, file ‘In Confidence - Updated PIA Model FY1415_v8b.xlsx’.

- A8.272 As noted in above, we have decided that BT need not publish the first PIA note we proposed in the March consultation. As explained, the purpose of the proposed note was to provide a comparison of internal and external network adjustments costs both below and above the financial limit in order to check for non-discrimination. As BT noted in its response, as network adjustments below the limit are capitalised, while above the limit are expensed, comparability of the costs was not possible.
- A8.273 Comparability of costs for non-discrimination remains a reporting requirement. On that basis we have decided that BT must provide a third PIA AFI, instead of the proposed first PIA note. The third PIA AFI will set out, on an accumulated MCE basis, internal and external network adjustments below and above the limit within all relevant markets. In respect of network adjustment costs below the financial limit, as noted above, these should be disaggregated on a service basis, where the accumulated MCE is greater than £1m. BT must also include the kilometres of network adjustments below the limit deployed in the year. This information must reconcile to the PIA annex published in the RFS. In respect of network adjustments above the financial limit, internally and externally, for each market, we require BT to restate these costs on an accumulated MCE basis as if they had been capitalised rather than expensed. BT must also include the kilometres of network adjustments above the limit deployed in the year.
- A8.274 While BT will have separately recorded the financial information on network adjustments costs above the financial limit, it will be required to do separate calculations outside of the RFS to restate the information on an accumulated MCE basis. For this reason, the information is more suitable to be provided as an AFI.
- A8.275 We set out the content of the AFIs that BT must provide in Annex 33.

Reporting deadlines

Our proposal

- A8.276 In the March consultation, in response to some confusion on when BT had to submit its AFIs, we proposed to amend the form and content direction to make it clear that non-LRIC AFIs (including the data file) should be provided alongside the RFS. In response to the practical issue that BT can only prepare LRIC data once its FAC RFS have been finalised, we proposed that LRIC AFIs should be supplied when the RFS is published and the data file no later than two weeks after the RFS is published.

Stakeholder responses

- A8.277 TalkTalk agreed with our proposed directions and deadline but said it has “repeatedly noted the lateness of BT’s publication of regulatory financial reporting information (and associated late submission to Ofcom), which lessens scrutiny of BT and threatens to

undermine the process of regulating BT”. TalkTalk said, “Ofcom should rigorously enforce the timings of BT submitting and publishing its regulatory financial information”.⁵¹⁶

A8.278 Openreach broadly agreed with our proposals, but on the LRIC AFI deadline proposed that due to the need for “appropriate checks and approvals take place”, the deadline when they should be supplied and published be extended by a further two weeks.⁵¹⁷ In relation to the submission of the reconciliation report they said “we consider that the same reason for extended deadlines related to LRIC AFI also applies to the reconciliation report, as both rely on the final RFS. Therefore, we propose that a final version of the reconciliation report is provided to Ofcom on the same date that the RFS is published, and published two weeks after the RFS is published.”⁵¹⁸

Our reasoning and decisions

A8.279 Since publication of the 2014 Regulatory Financial Reporting Statement, on two occasions, elements of the RFS have not been published on the expected 31 July deadline.

- **2014/15 RFS:** BT did not publish the reconciliation report on 31 July 2015. On this occasion we commenced enforcement action on 6 November 2015 which required BT to publish the reconciliation report by 4 December 2015. BT published the reconciliation report on 2 December 2015.⁵¹⁹
- **2015/16 RFS:** We consented to defer the publication of the RFS from 31 July 2016 to 30 November 2016 to allow BT to reflect regulatory accounting methodology changes imposed by the 2016 BCMR Statement in the 2015/16 RFS.⁵²⁰

A8.280 We will continue to ensure BT meets its regulatory requirements in relation to publishing the RFS and will take enforcement action where appropriate.

A8.281 In relation to BT’s request for an extension to the deadline to supply the LRIC AFIs, while we recognise that the AFIs can’t be completed until the FAC data is complete, BT has nearly four months from the end of the financial year until the RFS needs to be submitted to ensure the FAC data is reliable and robust. This is adequate time to finalise both the RFS and the LRIC AFIs. For the reconciliation report, given our decision for a significantly reduced level of publication (see below), we also think the four-month timeframe to produce the report is adequate.

Implementation of the preparation, delivery, publication, form and content of the RFS Direction

A8.282 We have decided to implement the requirements set out above in relation to preparation, delivery, publication, form and content of the RFS in respect of the WLA market by way of

⁵¹⁶ TalkTalk response to the March 2017 WLA Consultation, paragraph 6.49.

⁵¹⁷ Openreach response to the March 2017 WLA Consultation, paragraph 331.

⁵¹⁸ Openreach response to the March 2017 WLA Consultation, paragraph 331.

⁵¹⁹ https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01171

⁵²⁰ https://www.ofcom.org.uk/data/assets/pdf_file/0017/63620/consent-310316.pdf

a direction. We consider that it is appropriate for the direction proposed in the March consultation⁵²¹ with the modifications necessary to reflect our decisions set out above to be imposed

The network components direction

- A8.283 This direction specifies all the network cost components used by BT to prepare the RFS. To preserve the integrity and consistency of BT's regulatory financial reporting it is important that there is a single list of network components used to attribute costs to services in regulated markets. In the 2015 Directions Statement, we gave a direction to BT in respect of, among others, the WLA market, specifying the network components. In the 2016 BCMR Statement,⁵²² we gave a direction to BT specifying the list of network components in relation to the markets covered by that review.
- A8.284 In our March consultation we considered the list set out in the direction given in the 2016 BCMR Statement as an appropriate starting point for review in relation to the markets covered by this review.⁵²³
- A8.285 BT made a wider point in connection with our proposal to list network components via a direction within the legal instruments in response to the November 2017 Regulatory Financial Reporting Consultation⁵²⁴ and proposed that we delay the implementation of most of our network components in order for them to be considered as part of a wider reporting review.
- A8.286 In terms of the network component proposals we set out in the various consultations, with the exception of the new duct and pole infrastructure network components, all need to be in place for the 2018/19 RFS and therefore we do not consider that we can delay their implementation. As proposed in the November 2017 Regulatory Financial Reporting Consultation, duct and pole infrastructure network components do not need to be in place until April 2020.
- A8.287 In this section we discuss stakeholder responses and our conclusions for the following sets of network components:
- GEA;
 - new duct and pole infrastructure components;
 - Services with costs paid up front;
 - other changes; and

⁵²¹ BT provided also provided minor comments on the draft direction in relation to typing errors, formatting and definitions. We have incorporated these comments in our final direction.

⁵²² Ofcom, 2016, Business Connectivity Market Review Statement, paragraph 16.90 says that, following a review of the network components, i) components that are only utilised by services in markets where no cost accounting obligation exists were removed from the component list, ii) nine new components were introduced, and iii) seven components were withdrawn.

⁵²³ Some of the components added to the network component list in the 2016 BCMR Statement are relevant to the WLA market, e.g. the component for 'FTTC Development'.

⁵²⁴ BT response to November 2017 Regulatory Financial Reporting Consultation, paragraph 7.10.

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GEA

Our proposals

A8.288 In the March consultation, for the purposes of transparency and to ensure the reporting issues identified by Cartesian (see above) were addressed in relation to GEA costs, we consulted on adding eight new network components.⁵²⁵

Stakeholder responses

A8.289 Only Openreach responded to our proposals and agreed with creating most of the additional GEA network components but did not think they should be published as “Ofcom is not proposing that GEA services are to be charge controlled based on a top down model consistent with the RFS”.⁵²⁶ In relation to the splitting of GEA provisioning and maintenance costs that are within the GEA Provisioning components currently in separate components, Openreach did not agree this change was required.⁵²⁷

Our reasoning and decisions

A8.290 We believe the imposition of the new cost components for these growing services, in light of the issues explained above in relation to Services with costs paid up front, will improve the reliability of the RFS for GEA Ancillary Services in a proportionate manner. We have decided to add the eight components to the network component list, as proposed in the March consultation, with name changes to four existing network components:⁵²⁸

- GEA FTTC Repair costs (taken from GEA FTTC provisioning component, excluding maintenance costs and capitalised labour and modem costs);
- GEA FTTP Repair costs (taken from GEA FTTP provisioning component, excluding maintenance costs and capitalised labour and modem costs);
- Fibre Voice Access (FVA) rental;
- Fibre Voice Access (FVA) connection;
- GEA FTTP Access Fibre Spine (taken from the network component (CL950), which is to be renamed GEA FTTC Access Fibre Spine);
- GEA FTTP Access Fibre Distribution (taken from the network component (CL951), which is to be renamed GEA FTTC Access Fibre Distribution);
- GEA FTTP Electronics (taken from the network component (CL952), which is to be renamed GEA FTTC Electronics); and

⁵²⁵ We consulted on the first four of the list discussed below, as we have created a new fibre voice access rental and connection component.

⁵²⁶ Openreach response to the March 2017 WLA Consultation, paragraph 308.

⁵²⁷ Openreach response to the March 2017 WLA Consultation, paragraph 305.

⁵²⁸ The name changes aim to better reflect what costs remain in each of these network components following the removal of costs from them and their addition to the new network components.

- GEA FTTP Customer Site Installation (taken from the network component (CL954), which is to be renamed GEA FTTP Customer Site Installation).

New Duct and Pole infrastructure components

Our proposals

A8.291 In the November 2017 Regulatory Financial Reporting Consultation, as part of our long-term reporting requirements for Duct and Pole infrastructure costs, we proposed to specify ten new network components for BT that capture the capital and maintenance costs of ducts and poles within its physical infrastructure. This built on the proposal made in March 2017. We proposed the new network components would appear in the public version of the RFS until July 2020/21 and we also said we would consult separately on how duct and pole costs would be reported publicly in the RFS and what, if any, additional confidential information we would require.

A8.292 We said it would be for BT to determine how network components were constructed but they must ensure that the attributions to them are in accordance with the RAP. We also highlighted that we would need to decide in the next BCMR if these components should be extended into services in that market. The new components we proposed were as follows:

- Duct Spine capital;
- Duct Spine maintenance;
- Junction Boxes Capital;
- Junction boxes maintenance;
- Manhole Capital costs;
- Manhole maintenance costs;
- Pole capital costs;
- Pole maintenance costs;
- Lead in duct capital costs; and
- Lead in maintenance costs.

Stakeholder responses

A8.293 All stakeholders that responded supported the principle of the new components.

A8.294 TalkTalk questioned our proposal to allow BT to determine how costs were attributed, stating it afforded BT too much discretion over the components construction: “BT has a track record of manipulating cost attributions to increase their profits”. TalkTalk suggested we should have oversight of the attribution approach prior to it being implemented in a similar manner to the change control process for changes in the regulatory accounting methodology, whereby we have sight of changes and can block them if we deem it appropriate.⁵²⁹

⁵²⁹ TalkTalk response to the November 2017 Regulatory Financial Reporting Consultation, paragraphs 8-9.

- A8.295 BT raised several issues with our approach. It agreed that the current network component structure did not provide the additional level of granularity of financial information on duct and pole costs or facilitate the monitoring of compliance with the proposed non-discrimination remedy for PIA.⁵³⁰ However, it argued that “the creation of these five new network component pairs, involves a disproportionate level of resource and additional complexity to our reporting systems relative to the benefit they would bring to Ofcom and other stakeholders”.⁵³¹
- A8.296 BT also said that “the separation of infrastructure cost elements from those for cables and active services would require revision to the allocation methodologies used in the RFS and is likely to result in a different allocation of costs to markets and services to that used today”. BT noted that as we use this information in our charge control models, “these changes may result in a different way in which shared infrastructure costs are recovered, in particular between WLA and Business Connectivity markets”.⁵³²
- A8.297 BT suggested that appropriate transitional arrangement or alignment of the WLA with the BCMR should be considered to “ensure our costs are not under, or over-recovered” as a result of the new network components.⁵³³
- A8.298 Finally, BT was concerned that publication of these new network components would result in disclosing commercially sensitive information, and put Openreach at a disadvantage to its competitors (Virgin Media, CityFibre, Vodafone, Hyperoptic and Gigaclear), whose costs were unpublished in this form, which would undermine effective competition in the market and harm Openreach’s legitimate business interests.⁵³⁴
- A8.299 As noted above with reconciliation of the fixed asset base, BT felt we had under-estimated the complexity of creating these network proposals.

Our reasoning and decisions

- A8.300 We have decided to maintain our proposals and require BT to specify ten new network components that capture the capital and maintenance costs of its duct and pole infrastructure.
- A8.301 In response to TalkTalk’s concern of giving BT too much flexibility on the network component design, we do not have the in-depth knowledge of how disaggregated duct and pole costs can be extracted from BT’s regulatory financial reporting system to prescriptively set the new duct and pole components, hence we have decided to allow BT to determine how the appropriate costs are attributed to the network components to comply with the RAP.

⁵³⁰ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 4.6.

⁵³¹ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 4.7.

⁵³² BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 2.6.

⁵³³ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 2.7.

⁵³⁴ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 2.5.

- A8.302 While this does give BT discretion over the network components' construction, the solutions TalkTalk propose are already available to us. We intend to work with BT to understand how the components will be constructed. As set out in the November 2017 Regulatory Financial Reporting Consultation, we will consult further on the detail of their construction as well as how they could feature in public reporting for DPA including ancillary services.⁵³⁵ In addition, as the introduction of these new components will require BT to introduce and amend attribution methodologies, they will be captured by the Change Control process as TalkTalk suggests.
- A8.303 We disagree with BT's argument that the new components require a disproportionate level of resource. As noted in BT's response to the November 2017 Regulatory Financial Reporting Consultation, it is currently "working on a number of proposals to strengthen the relevance, reliability, transparency and proportionality of our regulatory reporting processes".⁵³⁶ Given the increased focus on passive services and considering the level of costs covered by the duct and infrastructure, such a review would be very limited if these costs were not in scope.
- A8.304 The new duct and pole components that we are imposing clearly map on to the infrastructure elements that we are regulating as part of our PIA remedy and will improve the transparency within BT's reporting systems compared to the current combined copper/fibre duct network components. This will benefit us and other stakeholders.
- A8.305 We agree with BT that the new components are likely to result in a different attribution of costs to markets and services that use them today and this may result in a different way in which shared infrastructure costs are attributed (although not necessarily recovered) between WLA services and the business connectivity services.
- A8.306 If, as part of the BCMR, we decide to impose these network components, BT's suggestion of transitional arrangements and/or alignment of charge controls for the purposes of regulatory financial reporting, is worthy of consideration to ensure that their introduction does not lead to disruptive cost recovery paths.
- A8.307 We have explained that the 10 network components we consulted on reflected the most logical way of capturing the infrastructure elements of duct and poles consumed by PIA and other network access services. We therefore see no reason to change our proposal for the introduction of these new network cost components.
- A8.308 In response to BT's concern that publication of these new network components would result in disclosing commercially sensitive information to network building competitors, as noted previously, we plan to consult separately on how duct and pole costs would be reported publicly in the RFS, what if any additional confidential information we would require and what reporting there should be in relation to the PIA ancillary services. We still expect to consult in early 2019 to allow BT to implement any new reporting proposals by 1 April 2020.

⁵³⁵ November 2017 Regulatory Financial Reporting Consultation, paragraph 3.5.

⁵³⁶ BT response to November 2017 Regulatory Financial Reporting Consultation, paragraph 3.7

A8.309 The same response to BT’s concern on our under-estimation of the complexity of reconciliation of the fixed asset register applies to introducing these new network components, which is set out above.

Services with costs paid up front

Our proposals

A8.310 In the November 2017 Regulatory Financial Reporting Consultation, we proposed to create five new network cost components relating to WLA Ancillary charges. They were:

- GEA Cablelink Expenditure;
- Co-mingling Rentals Expenditure;
- Co-mingling Connections Expenditure;
- AVC Expenditure; and
- Other WLA Ancillary Expenditure.

A8.311 The proposed network components capture all costs (especially labour) relating to Services with costs paid up front where the revenue for the connection, installation or one-off cost has been received up-front but the connection, installation or one-off cost had been previously capitalised within the regulatory asset base.

Stakeholder responses

A8.312 BT disagreed with our proposal to create five new network cost components but instead wanted to work with us “on an alternative solution, which would be more effective, efficient and value-adding to our stakeholders” and suggested “we did not prescribe the additional components in the context of this consultation, but rather defer[red] it to a later stage, following further information gathering and consultation with [BT] and other stakeholders”.⁵³⁷

Our reasoning and decisions

A8.313 While we may consider redefining network components at a later date, due to the process of further analysis required it would mean the new WLA Ancillary operating cost network component would not be in place for the 2018/19 RFS, the first year of reporting on this market review. It is therefore not appropriate to delay implementation of our decisions.

A8.314 Since the November 2017 Regulatory Financial Reporting Consultation, we have however reconsidered the number of network components that need to be created. The purpose of the components is to check compliance with our Consistency direction and provide reasonable assurance to stakeholders that BT is no longer capitalising and potentially over-recovering these costs. We have decided this can be done by introducing one new network component, the new WLA Ancillary operating network component, instead of the several components we consulted on, to ensure a more efficient and less burdensome capture of

⁵³⁷ BT response to November 2017 Regulatory Financial Reporting Consultation, paragraph 6.12.

the relevant information as the nature of the costs within the network components are the same across all the affected services.

Other changes

A8.315 We proposed and have decided to further amend the network components, to ensure the list reflects the network components that are reported in the RFS. Most of the proposed changes were minor except for the following:

- **TRCs:** We have amended the name of the published network component to “Regulated time related charges” to ensure that this component is consumed by only regulated services.
- **TISBO Components:** There are 11 components in the list of network components that we proposed in March that are consumed only by unregulated TISBO services. These components are no longer relevant for our regulatory financial reporting purposes, so we have removed them from the direction we proposed in the March consultation.
- **Ofcom Administration Fee:** We have split this network component into a “Wholesale” and an “Openreach” network components, which ensures greater transparency on the fees BT pays to Ofcom.
- **Pair Gain:** We have re-introduce the Pair Gain network component as there are still costs associated with Pair Gain equipment.

Cumulo

A8.316 As noted in above, Vodafone and UKCTA said BT should not be making a profit or mark-up on cumulo costs and that information on BT’s cumulo costs should be disclosed.

A8.317 We accept that cumulo costs are an increasingly important part of the cost base that we have forecast will grow significantly over the charge control period and it is appropriate that stakeholders can see how these costs have been attributed across services and markets. We have therefore decided to require BT to set up a new network component. We do not believe this is onerous or disproportionate: BT already has two plant groups that capture these costs, PG941A and PG942A. We have therefore decided to require BT to create a new network component called Cumulo.

The Regulatory Accounting Principles direction⁵³⁸

A8.318 We decided to introduce the RAP in the 2014 Regulatory Financial Reporting Statement.⁵³⁹ The RAP is a set of guiding principles with which BT’s Regulatory Financial Reporting must comply. To preserve the integrity and consistency of the RFS we consider that the RAP should be implemented across all regulated markets (to the extent that each market review considers this to be appropriate) as there are significant advantages to BT and other

⁵³⁸ The Regulatory Accounting Principles are: 1. Completeness; 2. Accuracy; 3. Objectivity; 4. Consistency with regulatory decisions; 5. Causality; 6. Compliance with the statutory accounting standards; 7. Consistency of the RFS as a whole and from one period to another.

⁵³⁹ 2014 Regulatory Financial Reporting Statement, paragraph 1.12 and Section 3.

stakeholders of BT applying one set of principles across all markets. We received no substantive stakeholder comments on the direction re-imposing the RAP. We therefore have decided to implement these requirements by giving a direction to BT in respect of the WLA market, as proposed in the March consultation which was in the form set out in the 2015 Directions Statement.

The Transparency Direction

- A8.319 One of the purposes of imposing a cost accounting obligation is to ensure that fair, objective and transparent criteria are used to prepare regulatory financial statements. Therefore, the purpose of any such direction is to ensure that any information, material or explanatory document prepared by BT in respect of the RFS is sufficiently transparent such that a suitably informed reader can gain a clear understanding of the information presented. To preserve the integrity and consistency of the RFS, we consider that all markets should be subject to the same transparency direction.
- A8.320 Only Openreach responded to our proposals on this direction. In its response to the Cartesian report in respect of AMD descriptions, Openreach said “we recognise that the description in the Accounting Methodology Document (AMD) requires clarification for NGA provisioning and maintenance components, which will be implemented in the 2016/17 AMD”.⁵⁴⁰
- A8.321 We have reviewed the 2016/17 AMD for changes in descriptions in Plant Groups and Cost components in connection with GEA provisioning and maintenance network components. In terms of the Plant groups and Cost components identified by Cartesian, the description has not been updated since 2015/16, additionally the descriptions of the identified GEA Plant Groups remain confusing and opaque. We expect BT to rectify this matter for the 2017/18 AMD.
- A8.322 We consider that it is appropriate to implement these requirements in this review and have decided to give a direction to BT as proposed in the March consultation which was in the form set out in the 2015 Directions Statement in respect of the WLA market.

The Audit of the RFS Direction

- A8.323 Audit of the RFS can help give users confidence that the information provides a fair reflection of financial performance, is free from error and has been prepared following the accounting methodology statements published by BT and relevant directions issued by us.⁵⁴¹ To preserve the integrity and consistency of the RFS we consider that all markets should be subject to the same audit direction. We consider that it is appropriate to implement these requirements in this review and therefore, have decided to give a

⁵⁴⁰ Openreach response to the March 2017 WLA Consultation, paragraph 305.

⁵⁴¹ Chapter 5 of the 2014 Regulatory Financial Reporting Statement explained the changes to audit requirements imposed on BT.

direction to BT as proposed in the March consultation which was in the form set out in the 2015 Directions Statement in respect of the WLA market.

A8.324 We consider it appropriate to implement this requirement in this review and we have decided to implement it by giving a direction to BT in relation to the WLA market. We received no substantive stakeholder comments on the direction relating to the audit of the RFS. Therefore, we have decided to implement these requirements proposed in the March consultation by giving a direction to BT in the form set out in the 2015 Directions Statement.

The Reconciliation Report Direction

A8.325 In the 2014 Financial Reporting Statement we decided as a matter of policy that BT must publish the impact of all material changes and errors in an annual reconciliation report with an accompanying assurance report from their regulatory auditors. Changes to attribution methods or the correction of errors can affect all markets reported in the RFS. As a result, to preserve the integrity and consistency of the RFS, we consider that all markets should be subject to the same direction to produce a reconciliation report.

A8.326 In the November 2017 Regulatory Financial Reporting Consultation, we explained that BT had asked⁵⁴² us to change the form of the information provided within the reconciliation report. It asked us to no longer require the production of the two annexes on the basis that their production involves a disproportionate level of resource relative to the benefit they bring to Ofcom and other stakeholders.

A8.327 We explained that we had reviewed the information provided in the annexes in the light of the level of resource indicated by BT and the benefit that they provide to us and stakeholders more generally. We proposed to remove the requirement to publish separate annexes and instead provide additional audited summary schedules of all the methodology changes and all the error corrections in the RFS. We also proposed that the remainder of the report and the new schedules would be published in the RFS itself rather than as a separately published document. We proposed that BT continue to keep the data to generate any page of annexes being removed if requested by us in the future.

A8.328 BT suggested that as there were no reasons to defer removal of the Reconciliation Report annexes, the removal should take place immediately to prevent production of unnecessary data, i.e. no annexes for the 2018 Reconciliation Report rather than 2019 Reconciliation Report, as proposed.⁵⁴³ While [] had “little sympathy with BT that the production of two annexes is onerous and resource intensive” they agreed with the proposal, acknowledging Ofcom’s decision that “duplication of published material is not necessary”.⁵⁴⁴

A8.329 In the light of stakeholder comments, in relation to BT’s reconciliation report, we have decided to:

⁵⁴² BT, Letter from [] to [], Ofcom, 26 May 2017.

⁵⁴³ BT response to the November 2017 Regulatory Financial Reporting Consultation, paragraph 7.7.

⁵⁴⁴ [] response to the November 2017 Regulatory Financial Reporting Consultation, page 6.

Remove the requirement to provide Annex 1, except for Section 5.1 Reversal (Performance summary by Market), 10.1.1 Reversal (Attribution of Wholesale Current Costs) and Section 10.1.2 Reversal (Attribution of Wholesale Current Cost Mean Capital Employed) as BT's regulatory auditor can provide an opinion on these sections of the Annex, as they show in summary form, the aggregate impact of reversing the methodology changes on the current year in the RFS.

Remove the requirement to provide Annex 2, except for Section 5.1 Restated (Performance summary by Market), Section 6.1.1 Restated (Attribution of Wholesale Current Costs) and Section 6.1.2 Restated (Attribution of Wholesale Current Cost Mean Capital Employed) as BT's regulatory auditors can provide an opinion on these sections of the Annex, as they show, in summary form, the aggregate impact of correcting the errors on the prior year RFS.

Require that BT continues to keep the data that is currently used to generate Annexes 1 and 2 to reproduce any page of the Annexes 1 and 2 if that page is requested by us in the future.

Require that BT includes what is currently the main body of the reconciliation report together with the retained sections of the annexes which the regulatory auditors can opine on (set out in the above paragraphs) within the published RFS with no loss of detail. As well as reducing the amount of published information, the inclusion of the information within the RFS will aid readability to stakeholders.

In the light of stakeholder responses, we have also decided to implement the requirement in respect of the 2017/18 RFS by way of an additional direction as it is appropriate to do so for the reasons we set out in relation to the 2018/19 RFS.

The Electricity Reporting Direction

- A8.330 In Volume 1, Section 10 we set out our decision that electricity charges will remain subject to a basis of charges obligation. In the March consultation⁵⁴⁵ we proposed to continue with the same obligation as set out in the 2014 FAMR Statement, which requires BT to set electricity charges that are reasonably derived from its wholesale purchase of electricity plus an appropriate mark up, to reflect BT's own costs.
- A8.331 We received no stakeholder comments on our proposal.
- A8.332 We continue to believe that publication of non-confidential information in BT's AMD is needed to provide stakeholders transparency as to the methodology BT uses to set electricity charges. We also consider it appropriate to require BT to provide specific financial information, including the precise level of BT's mark up on the purchase of electricity costs, in private as an AFI. This information could allow third parties to derive

⁵⁴⁵ No stakeholders commented on our proposal to impose the directions for consistency with regulatory decisions and electricity charge attributions.

the underlying purchase costs which we consider are likely to be confidential and commercially sensitive.

A8.333 We set out the direction in Annex 33.

Legal tests relating to our regulatory financial reporting directions

A8.334 Under Condition 12.4 (set out at Annex 33), Ofcom may from time to time make such directions as they consider appropriate in relation to BT's obligations under Condition 12.

A8.335 To give regulatory effect to our decisions in relation to regulatory financial reporting directions set out in this Annex, we have imposed directions under section 49 of the Act and SMP Condition 12.4. We set out our directions in relation to regulatory financial reporting at Annex 33.

A8.336 We consider that the directions we are giving fulfil our general duties under section 3 of the Act and meet the Community requirements set out in section 4 of the Act for the reasons given above. In giving the directions, we have taken due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

A8.337 Section 49(2) of the Act further requires that Ofcom must be satisfied that any direction satisfies the test in that section, which requires directions to be objectively justifiable, non-discriminatory, proportionate and transparent.

The consistency with regulatory decisions and the additional Financial Performance Schedule direction

A8.338 We have considered the consistency with regulatory decisions direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because it is necessary for us to give a direction which includes specifying the accounting treatment of the relevant WLA ancillary services costs so that the RFS is consistent with our regulatory decision to set charge controls (or in the case of AVCs, other pricing obligations) in relation to WLA ancillary services. The direction also provides BT with clarity as to how our decisions will need to be reflected in the RFS;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area;
- proportionate because our decision is no more than would be required to ensure consistency with our decisions. Further, BT retains a key role in determining the basis of preparation of the RFS; and
- transparent because it is clear that the intention of our decision is to ensure that BT's RFS are consistent with our decisions in relation to the WLA charge controls (or in the case of AVCs, wider pricing obligations).

A8.339 We have considered our decisions about the Adjusted Financial Performance Schedules against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that they are:

- Objectively justifiable because some disclosure of BT's financial performance from a regulatory perspective is appropriate and the decision in relation to the calculation of the impact of the smoothing restructuring and property provision costs, residual copper proceeds and the steady state adjustments specifies the detail which will; enable BT to produce the additional statement. Our decision concerning Schedule 2 of the Adjusted Financial Performance Schedules to be provided only to us seeks to enable us to understand the way in which BT has calculated the impact of the smoothing restructuring and property provision costs, residual copper proceeds and the steady state adjustments in the published Adjusted Financial Performance Schedule.
- Not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area.
- Proportionate because our decision in relation to the Adjusted Financial Performance Schedules is no more than is required to provide stakeholders with a better understanding of BT's financial performance from a regulatory perspective and to enable us to understand the way in which BT has prepared the published Adjusted Financial Performance Schedule.
- Transparent because the intention of our decision is to ensure that stakeholders can gain a better understanding of BT's financial performance from a regulatory perspective and that we can understand the way in which BT has prepared the published Adjusted Financial Performance Schedule.

The preparation, delivery, publication, form and content of the RFS Direction

A8.340 We have considered the Form and Content of the RFS direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because the information to be provided, both in public and in private, seeks to ensure that stakeholders have sufficient information about the products and services they purchase to provide them with reasonable confidence about BT's compliance with its SMP conditions and that we have sufficient information necessary to carry out our functions;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area. We have explained in this document the reasons for requiring relevant additional information from BT both publicly and privately;
- proportionate because the direction will be no more than is required to ensure the effectiveness of our decisions in this market review and will ensure that Ofcom and stakeholders are provided with a sufficient level of information, and does not extend beyond these; and

- transparent because the intention of the direction is to make sure that the RFS remain fit for purpose and that Ofcom and stakeholders are provided with a sufficient level of information.

The network components direction

A8.341 We have considered the network components direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because it is necessary to make the reporting of services in the WLA market consistent with our regulatory requirements;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area;
- proportionate because our decision is no more than is required to specify network components relevant to the charge controls that we have decided to impose on ancillary services; and
- transparent because it is clear that our decision seeks to specify relevant network components in the light of our charge controls and to ensure that these network components remain fit for purpose.

The Regulatory Accounting Principles direction

A8.342 We have considered the Regulatory Accounting Principles direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because by specifying the Regulatory Accounting Principles we will establish the attributes for BT's regulatory financial reporting;
 - not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area;
 - proportionate because our direction requires is no more than is required to ensure an absence of bias and consistency with regulatory decisions. While we have established the Regulatory Accounting Principles, BT retains an important role in determining the basis of preparation of the RFS, and can continue to put through methodology changes where this is in line with the RAP and such changes have been notified to Ofcom; and
- transparent because the intention of our direction is to ensure we take a greater role in the basis of preparation of the RFS to ensure an absence of bias and consistency with regulatory decisions.

The transparency direction

A8.343 We have considered the transparency direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because the Accounting Methodology Documents previously prepared by BT were difficult to understand. The changes we are making will continue

to clarify that BT should be providing less detailed, but clearer Accounting Methodology Documents;

- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area;
- proportionate because the changes are no more than is required to ensure that presentation of the basis of preparation is clear for users, and they reduce the regulatory burden on BT; and
- transparent because the intention of our changes is to ensure that presentation of the basis of preparation is clear for users.

The Audit of the RFS Direction

A8.344 We have considered the audit of the RFS direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because it is important for both stakeholders and Ofcom that an appropriate level of assurance is provided on the RFS;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area;
- proportionate because the audit requirements are no more than is necessary to ensure that an appropriate level of assurance is provided on the RFS; and
- transparent because the intention of our changes is to ensure that an appropriate level of assurance is provided on the RFS.

The Reconciliation Report Direction

A8.345 We have considered the electricity reporting direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because it is necessary for there to be visibility in relation to changes and errors made in the Regulatory Financial Statements, both for us and for other stakeholders, and it is therefore necessary for us to specify the requirements in relation to the content of the reconciliation report and the accompanying audit opinion;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull Area;
- proportionate because our decisions are no more than is required to provide visibility in relation to changes and errors both for us and for other stakeholders; and
- transparent because our decisions seek to provide visibility in relation to changes and errors both for us and for other stakeholders and to provide BT with clarity about the requirements specifying the content of the reconciliation report and the accompanying audit opinion.

The Electricity Reporting Direction

A8.346 We have considered the electricity reporting direction against the tests set out in section 49(2) of the Act and for the reasons set out above, we consider that the direction is:

- objectively justifiable because our decisions concerning the additional information to be provided in the Detailed Attribution Methods seek to ensure that BT provides to stakeholders transparency as to the methodology which it uses to set the electricity charges. Our decisions concerning the additional information to be provided to us in private seek to ensure that we have the information which we need to carry out our functions;
- not unduly discriminatory because BT is the only SMP provider which has SMP obligations in relation to the electricity charges;
- proportionate because the changes are no more than is required in order to achieve transparency and give us the information we need to carry out our functions, and in particular does not require BT to publish information which may be commercially sensitive; and
- transparent because it is clear that the intention is to make sure that the Regulatory Financial Statements remain fit for purpose and adequately reflect the outcomes of the Fixed Access market review, that BT provides to stakeholders transparency as to the methodology which it uses to set the electricity charges, and that we have the information which we need to carry out our functions.

A9. Diagrams of service

A9.1 This annex provides a brief description of the exchange and street cabinet wiring arrangements associated with the provision of core WLR, LLU and GEA-FTTC Rental services. Understanding these wiring arrangements is necessary to understand the engineering activity that is required at the exchange and street cabinet to migrate a customer from one telecoms provider to another, and between services with the same telecoms provider. This activity is one of the main drivers of migration costs.

Wiring arrangements for core WLR, LLU and GEA-FTTC rental services

A9.2 There are five means the WLR, LLU and GEA-FTTC services can be used to provide voice and voice + broadband services, namely:

- a) for voice only, WLR; and
- b) for voice + broadband:
- c) WLR+SMPPF;
- d) MPF;
- e) WLR+FTTC; or
- f) MPF+FTTC⁵⁴⁶.

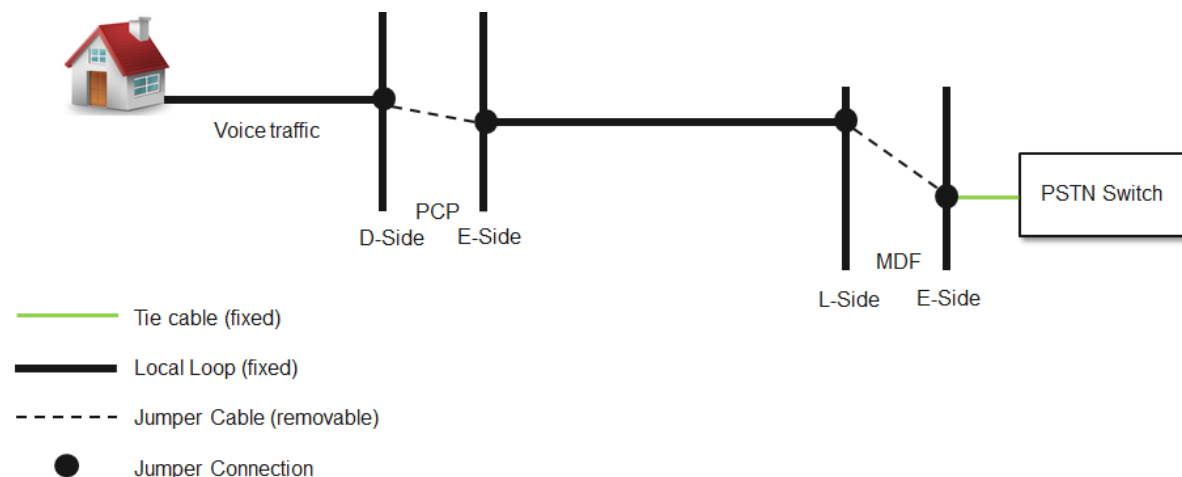
A9.3 Each of these five means require different wiring on the Main Distribution Frame (MDF) at the exchange and in the copper street cabinet (also referred to as the Primary Cross-connect Point, (PCP), and distinct from the street cabinet housing the FTTC DSLAM⁵⁴⁷). The MDF is the termination point of the local loops of the telecommunications network (all copper telephone lines used to provide telecommunications services are terminated here). The MDF is then used to connect these local loops to additional equipment located at the exchange using jumper wires. A jumper is a copper cable that provides a flexible connection between two terminal ends, commonly used in an exchange to connect the Line-Side (L-Side) to the Exchange-Side (E-side) of the MDF, and in a PCP to connect the Distribution-Side (D-Side) to the Exchange-Side (E-Side) of the PCP.

⁵⁴⁶ SOGEA and Single Order G.fast (SOG.fast) have been excluded from this analysis as at the time of writing they are not commercially available. SOGEA refers to Single Order GEA, a proposed variant of the GEA-FTTC service (based on VDSL2 technology) that does not require an underlying WLR or MPF service, and can therefore be provided as a 'single order'. SOG.fast refers to Single Order G.fast, a proposed variant of the GEA-FTTC service (based on G.fast technology) that does not require an underlying WLR or MPF service, and can therefore be provided as a 'single order'.

⁵⁴⁷ 'DSLAM' refers to a DSL Access Multiplexer, typically located in a telephone exchange building or a street cabinet, that provides broadband services to multiple premises over the copper access network using DSL technologies ('DSL' refers to Digital Subscriber Line, a family of technologies that provide broadband internet access over traditional copper telephone lines between an end-customer's premises and a street cabinet or telephone exchange building).

A9.4 When migrating a customer from one telecoms provider to another, or between services with the same telecoms provider, the number of jumper movements needed varies according to the service required by the customer and the technology used by the gaining and losing providers. To explain this, we provide stylised representations of the wiring arrangements at the PCP and MDF for the various WLR, LLU and GEA-FTTC services, and their interactions with DSLAM, MSAN⁵⁴⁸, TAM⁵⁴⁹ and PSTN⁵⁵⁰ switch equipment, as shown in the diagrams below.

Figure A9.1: WLR Wiring



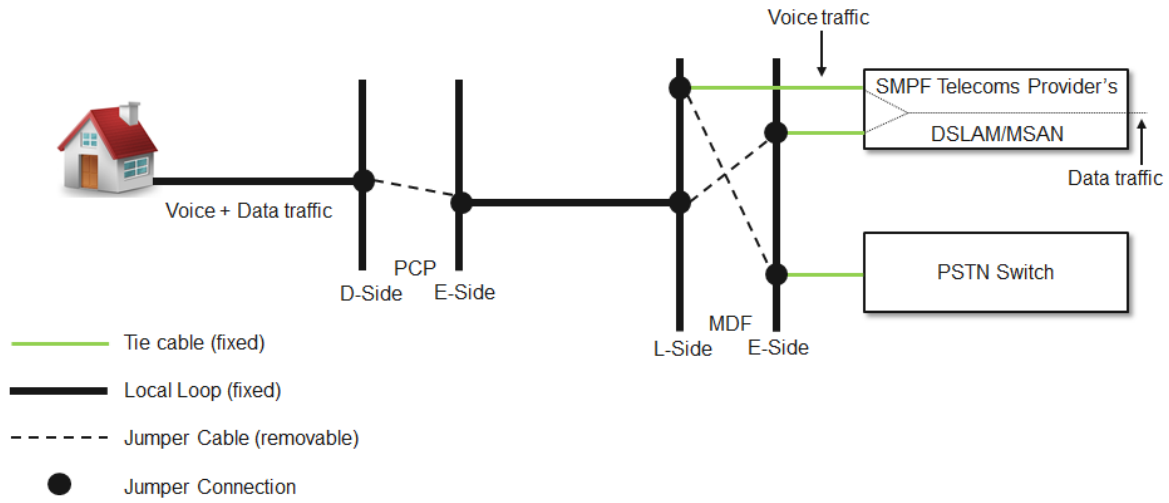
Source: Ofcom

⁵⁴⁸ 'MSAN' refers to a Multi-Service Access Node, typically located in a telephone exchange or a street cabinet, that provides a range of services, including DSL-based broadband and voice, to multiple premises over the copper access network.

⁵⁴⁹ 'TAM' refers to a Test Access Matrix, typically located in a telephone exchange building, that provides on-demand test signals and measurement capabilities for end-customer telephone lines so that a telecoms provider can remotely identify and diagnose potential faults.

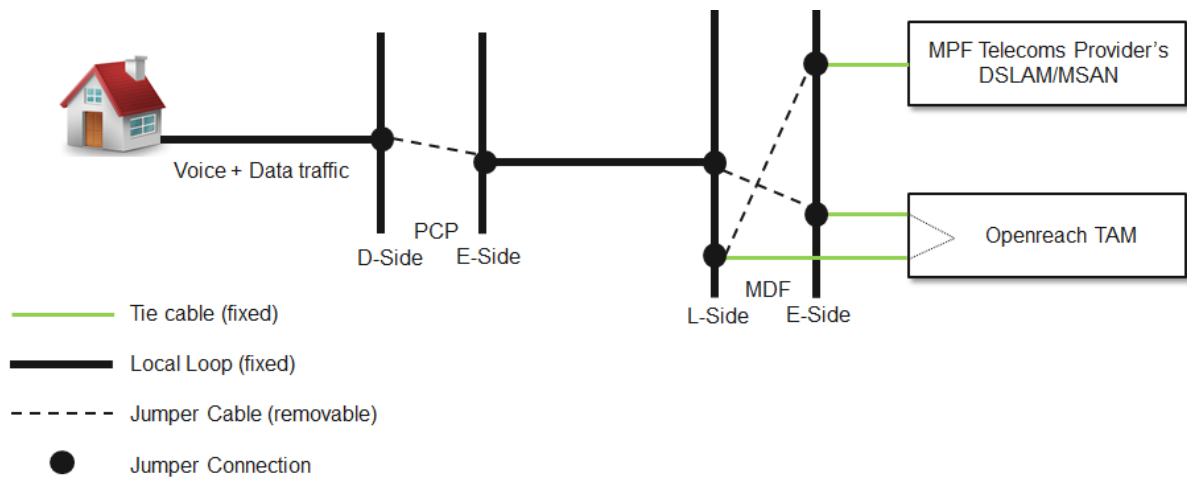
⁵⁵⁰ 'PSTN' refers to the Public Switched Telephone Network, a telecommunications network that uses circuit-switched technology to provide voice telephony services.

Figure A9.2: WLR + SMPF Wiring



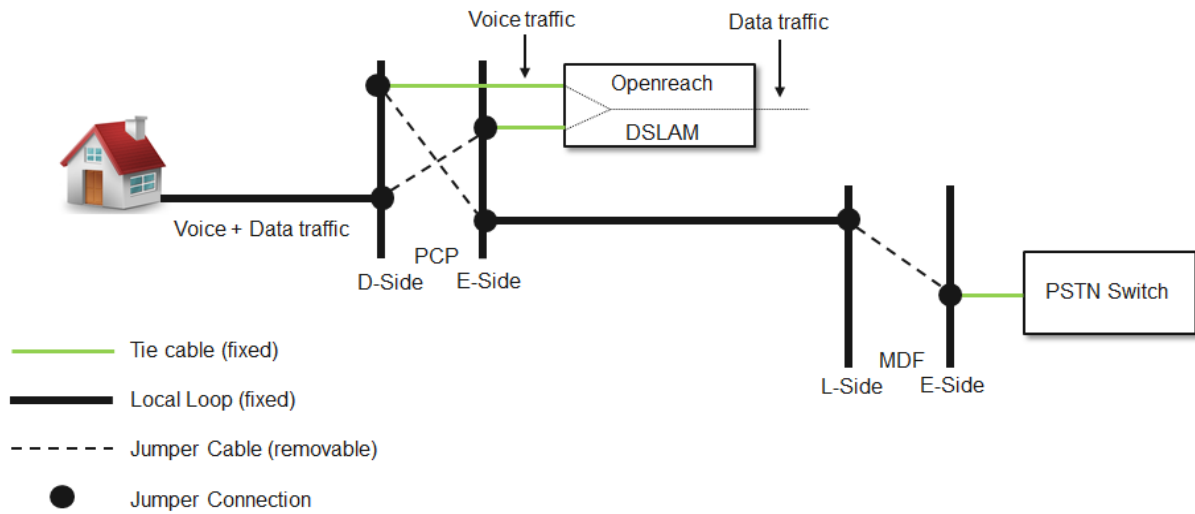
Source: Ofcom

Figure A9.3: MPF Wiring



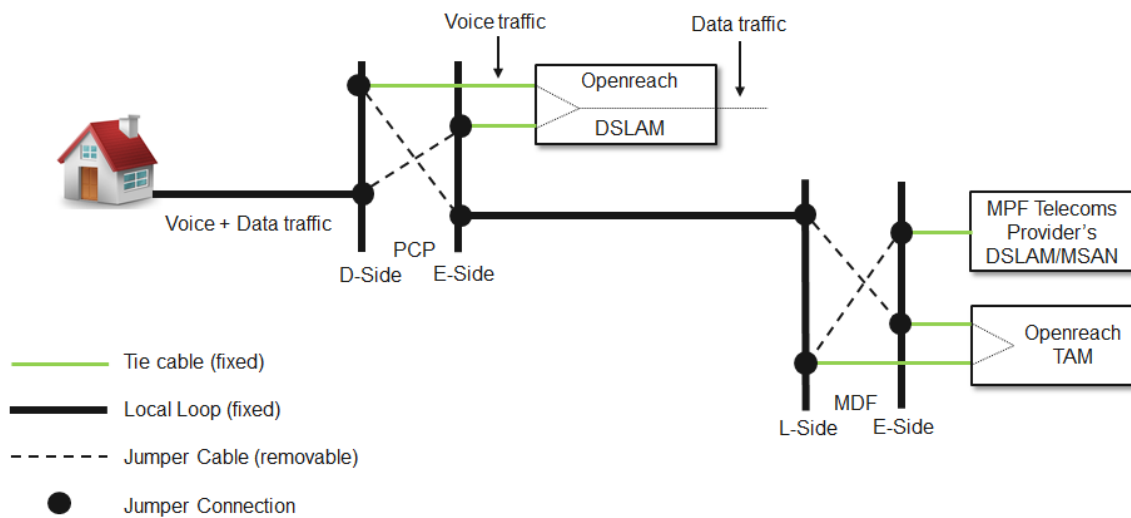
Source: Ofcom

Figure A9.4: WLR + FTTC Wiring



Source: Ofcom

Figure A9.5: MPF + FTTC Wiring



Source: Ofcom

A9.5 The above diagrams show the MDF and PCP jumpering configuration (including the number of jumpers) and tie cable configuration (including the number of tie cables) that applies to each rental service. Each rental service relates to a different set up and must be changed where a customer switches telecoms provider or otherwise requires a change in service or services.

A9.6 The provision of WLR involves one tie cable at the MDF, whilst both the WLR+SMPF and MPF services involve three tie cables at the MDF. The provision of WLR+FTTC involves a

total of three tie cables, two at the PCP and one at the MDF. The provision of MPF+FTTC involves a total of five tie cables, two at the PCP and three at the MDF.

A9.7 The WLR and WLR+SMPF rental services include one tie cable; MPF includes two tie cables; WLR+FTTC includes three tie cables; and MPF+FTTC includes four tie cables.

A9.8 Therefore, with WLR and WLR+FTTC no extra tie cables need to be bought separately; with MPF and MPF+FTTC one extra tie cable must be purchased separately; with WLR+SMPF two extra tie cables must be purchased separately. This is summarised in Table A9.6 below.

Table A9.6 Services and tie cables required

Service	Tie Cables (MDF + PCP)		
	Total required	Included with service	Extra to be purchased separately
WLR	1	1	0
WLR+SMPF	3	1	2
MPF	3	2	1
WLR+FTTC	3	3	0
MPF+FTTC	5	4	1

Source: Ofcom

Jumper movements for WLR, LLU and GEA-FTTC migration services

A9.9 There are twenty-seven different migration services offered by Openreach. The key difference between each of these lies in the technology used by the gaining and losing telecoms provider, which determines the number of jumper movements at the exchange's MDF and/or PCP. We show those migration services related only to copper services in Table A9.7 below, then in Table A9.8 the migration services involving FTTC are presented.

Table A9.7 Telecoms provider copper migration services and jumper movements

Migration Service Reference	From	To	Jumpers						
			PCP Removed	PCP Installed	PCP Total	MDF Removed	MDF Installed	MDF Total	PCP + MDF Total
1	WLR	WLR	0	0	0	0	0	0	0
2	WLR	WLR + SMPF	0	0	0	1	2	3	3
3	WLR	MPF	0	0	0	1	2	3	3
4	WLR + SMPF	WLR	0	0	0	2	1	3	3

5	WLR + SMPF	WLR + SMPF	0	0	0	2	2	4	4
6	WLR + SMPF	MPF	0	0	0	2	2	4	4
7	MPF	MPF	0	0	0	1	1	2	2
8	MPF	WLR + SMPF	0	0	0	2	2	4	4
9	MPF	WLR	0	0	0	2	1	3	3

Source: Ofcom

A9.10 The different copper-based migration services are as follows:

- Service 1 – WLR to WLR: this service involves remaining with the set up in Figure A9.1 and therefore no jumpering activity at the MDF or PCP (it only consists of a systems update to reflect the change of telecoms provider). We consider that this service is only relevant to inter-telecoms provider migrations (i.e. from one telecoms provider to another) and not intra-telecoms provider migrations (i.e. a change of services provided by the same telecoms provider).
- Service 2 – WLR to WLR+SMPF: involves moving from the setup in Figure A9.1 to that shown in Figure A9.2. This means that one jumper is removed and a further two jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 3 – WLR to MPF: involves moving from the set up in Figure A9.1 to that shown in Figure A9.3. This means that one jumper is removed and two new jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 4 – WLR+SMPF to WLR: involves moving from the set up in Figure A9.2 to that shown in Figure A9.1. This means that two jumpers are removed and one jumper is installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 5 – WLR+SMPF to WLR+SMPF: involves remaining with the set up in Figure A9.2 but switching to the DSLAM or MSAN of another telecoms provider. Thus, this requires removing two jumpers connecting to the equipment of the losing telecoms provider at the MDF, and installing two new jumpers connecting to the equipment of the gaining telecoms provider at the MDF. We consider that this service is only relevant to inter-telecoms provider migrations and not intra-telecoms provider migrations.
- Service 6 – WLR+SMPF to MPF: this service relates to moving from the set up in Figure A9.2 to that shown in Figure A9.3. This means that two jumpers are removed and a further two jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.

- Service 7 – MPF to MPF: involves remaining with the set up in Figure A9.3 but switching to the DSLAM or MSAN of another telecoms provider. Thus, this requires removing one jumper connecting to the equipment of the losing telecoms provider at the MDF, and installing one new jumper connecting to the equipment of the gaining telecoms provider at the MDF. An intra-telecoms provider migration option is not applicable to this service.
- Service 8 – MPF to WLR+SMPF: this service relates to the simultaneous provision of a WLR Conversion and SMPF New Provide, and involves moving from the set up in Figure A9.3 to that shown in Figure A9.2. This means that two jumpers are removed and a further two jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 9 – MPF to WLR: involves moving from the set up in Figure A9.3 to that shown in Figure A9.1. This means that two jumpers are removed and one new jumper is installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.

Table A9.8 Telecoms provider FTTC migration services and jumper movements

Migration Service Reference	From	To	Jumpers						
			PCP Removed	PCP Installed	PCP Total	MDF Removed	MDF Installed	MDF Total	PCP + MDF Total
10	WLR	WLR + FTTC	1	2	3	0	0	0	3
11	WLR	MPF + FTTC	1	2	3	1	2	3	6
12	WLR + SMPF	WLR + FTTC	1	2	3	2	1	3	6
13	WLR + SMPF	MPF + FTTC	1	2	3	2	2	4	7
14	MPF	WLR + FTTC	1	2	3	2	1	3	6
15	MPF	MPF + FTTC	1	2	3	1	1	2	5
16	MPF	MPF + FTTC	1	2	3	0	0	0	3

17	WLR + FTTC	WLR + FTTC	0	0	0	0	0	0	0
18	WLR + FTTC	MPF	2	1	3	1	2	3	6
19	WLR + FTTC	WLR + SMPF	2	1	3	1	2	3	6
20	WLR + FTTC	WLR	2	1	3	0	0	0	3
21	WLR + FTTC	MPF + FTTC	0	0	0	1	2	3	3
22	MPF + FTTC	MPF + FTTC	0	0	0	1	1	2	2
23	MPF + FTTC	WLR + FTTC	0	0	0	2	1	3	3
Migration Service Reference	From	To	Jumpers						
			PCP Removed	PCP Installed	PCP Total	MDF Removed	MDF Installed	MDF Total	PCP + MDF Total
24	MPF + FTTC	MPF	2	1	3	1	1	2	5
25	MPF + FTTC	MPF	2	1	3	0	0	0	3
26	MPF + FTTC	WLR + SMPF	2	1	3	2	2	4	7
27	MPF + FTTC	WLR	2	1	3	2	1	3	6

Source: Ofcom

A9.11 The different migration services involving FTTC are as follows:

- Service 10 – WLR to WLR+FTTC: involves moving from the set up in Figure A9.1 to that shown in Figure A9.4. This means that one jumper is removed at the PCP and two new jumpers are installed at the PCP. No jumper changes are required at the MDF for this service. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 11 – WLR to MPF+FTTC: involves moving from the set up in Figure A9.1 to that shown in Figure A9.5. This means that one jumper is removed from the PCP and one

jumper is removed from the MDF, and two new jumpers are installed at the PCP and two new jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.

- Service 12 – WLR+SMPF to WLR+FTTC: involves moving from the set up in Figure A9.2 to that shown in Figure A9.4. This means that one jumper is removed at the PCP and two jumpers are removed at the MDF, and two new jumpers are installed at the PCP and one new jumper is installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 13 – WLR+SMPF to MPF+FTTC: involves moving from the set up in Figure A9.2 to that shown in Figure A9.5. This means that one jumper is removed from the PCP and two jumpers are removed from the MDF, and two new jumpers are installed at the PCP and two new jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 14 – MPF to WLR+FTTC: involves moving from the set up in Figure A9.3 to that shown in Figure A9.4. This means that one jumper is removed at the PCP and two jumpers are removed at the MDF, and two new jumpers are installed at the PCP and one new jumper is installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 15 – MPF to MPF+FTTC: involves moving from the set up in Figure A9.3 to that shown in Figure A9.5, where the customer changes telecoms provider. This means that one jumper is removed from the PCP and one jumper is removed from the MDF, and two new jumpers are installed at the PCP and one new jumper is installed at the MDF. Refer to service 23 for the equivalent intra-telecoms provider migration.
- Service 16 – MPF to MPF+FTTC: involves moving from the set up in Figure A9.3 to that shown in Figure A9.5, where the customer remains with the same telecoms provider. This means that one jumper is removed from the PCP and no jumpers are removed from the MDF, and two new jumpers are installed at the PCP and no new jumpers are installed at the MDF. Refer to service 22 for the equivalent inter-telecoms provider migration.
- Service 17 – WLR+FTTC to WLR+FTTC: this service does not involve any jumpering activity at the MDF or PCP (it only consists of a system update to reflect the change of telecoms provider). We consider that this service is only relevant to inter-telecoms provider migrations and not intra-telecoms provider migrations.
- Service 18 – WLR+FTTC to MPF: involves moving from the set up in Figure A9.4 to that shown in Figure A9.3. This means that two jumpers are removed at the PCP and one jumper is removed at the MDF, and one new jumper is installed at the PCP and two new jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 19 – WLR+FTTC to WLR+SMPF: involves moving from the set up in Figure A9.4 to that shown in Figure A9.2. This means that two jumpers are removed at the PCP and one jumper is removed at the MDF, and one new jumper is installed at the PCP and two new jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.

- Service 20 – WLR+FTTC to WLR: involves moving from the set up in Figure A9.4 to that shown in Figure A9.1. This means that two jumpers are removed at the PCP and one new jumper is installed at the PCP. No jumper changes are required at the MDF for this service. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 21 – WLR+FTTC to MPF+FTTC: involves moving from the set up in Figure A9.4 to that shown in Figure A9.5. This means that one jumper is removed at the MDF and two new jumpers are installed at the MDF. No jumper changes are required at the PCP for this service. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 22 – MPF+FTTC to MPF+FTTC: involves remaining with the set up in Figure A9.5 but switching to the DSLAM or MSAN of another telecoms provider at the exchange. Thus, this requires removing one jumper connecting to the equipment of the losing telecoms provider at the MDF, and installing one new jumper connecting to the equipment of the gaining telecoms provider at the MDF. A system update to reflect the change of telecoms provider for the FTTC service would also be required. We consider that this service is only relevant to inter-telecoms provider migrations and not intra-telecoms provider migrations.
- Service 23 – MPF+FTTC to WLR+FTTC: involves moving from the set up in Figure A9.5 to that shown in Figure A9.4. This means that two jumpers are removed at the MDF and one new jumper is installed at the MDF. No jumper changes are required at the PCP for this service. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 24 – MPF+FTTC to MPF: involves moving from the set up in Figure A9.5 to that shown in Figure A9.3, where the customer changes telecoms provider. This means that two jumpers are removed from the PCP and one jumper is removed from the MDF, and one new jumper is installed at the PCP and one new jumper is installed at the MDF. Refer to service 25 for the equivalent intra-telecoms provider migration.
- Service 25 – MPF+FTTC to MPF: involves moving from the set up in Figure A9.5 to that shown in Figure A9.3, where the customer remains with the same telecoms provider. This means that two jumpers are removed from the PCP and no jumpers are removed from the MDF, and one new jumper is installed at the PCP and no new jumpers are installed at the MDF. Refer to service 24 for the equivalent inter-telecoms provider migration.
- Service 26 – MPF+FTTC to WLR+SMPF: involves moving from the set up in Figure A9.5 to that shown in Figure A9.2. This means that two jumpers are removed from the PCP and two jumpers are removed from the MDF, and one new jumper is installed at the PCP and two new jumpers are installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.
- Service 27 – MPF+FTTC to WLR: involves moving from the set up in Figure A9.5 to that shown in Figure A9.1. This means that two jumpers are removed from the PCP and two jumpers are removed from the MDF, and one new jumper is installed at the PCP and one new jumper is installed at the MDF. Both inter-telecoms provider and intra-telecoms provider migrations would result in the same jumper movements.