

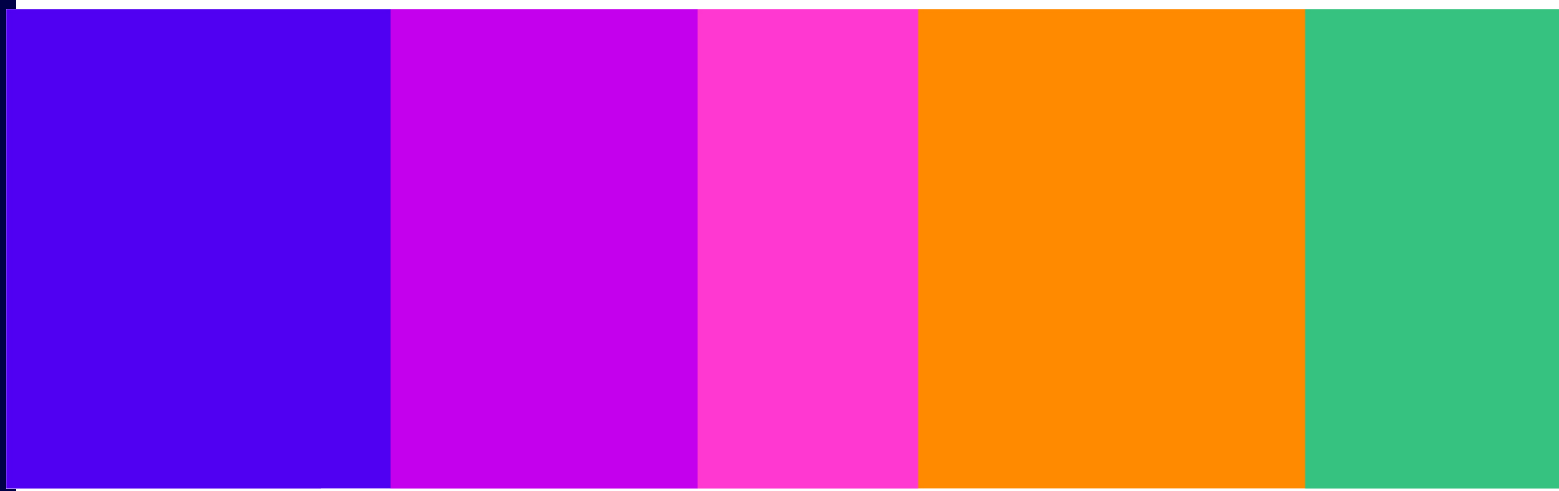
Promoting competition and investment in fibre networks: Telecoms Access Review 2026–31

Annex 1 – 21

Annex

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A1. Regulatory framework

Regulatory framework

- A1.1 This Annex provides an overview of the regulatory framework relevant to the market review process, to give some additional context to the matters discussed in this document, including the SMP conditions and Directions published in Volume 7.
- A1.2 Market review regulation is technical and complex, and requires us to apply legislation. We may also have regard to 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 in relation to these markets.
- A1.3 The regulatory framework relevant for market reviews is set out in Part 2 of the [Communications Act 2003](#) (the 'Act'). In particular, sections 45 to 48C and sections 78 to 86 set out the procedure for imposing conditions based on a finding of significant market power (the 'SMP conditions'), sections 87 to 93 set out specific rules for each type of SMP condition.

Market review concept

- A1.4 A market review is a process by which, at regular intervals, we identify relevant markets 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.
- A1.5 In carrying out this work, we act in our capacity as the sector-specific regulator for the UK communications industries, including telecommunications. As mentioned above, our functions in this regard are to be found in Part 2 of the Act. The Act requires Ofcom to carry out reviews of competition in communications markets¹ 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:
- the identification and definition of the relevant markets (the market definition stage);
 - the assessment of competition in each market, in particular whether the relevant market is effectively competitive (the market analysis stage); and
 - the assessment of appropriate regulatory obligations (the remedies stage).

¹ Section 84(A) of the Act.

Market definition

Relevant markets

- A1.7 The Act provides that, before making a market power determination², 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.³
- A1.8 In identifying or analysing markets, the Act provides that we may have regard to certain recommendations or guidelines published by the European Commission, and guidelines published by BEREC (the Body of European Regulators for Electronic Communications) (‘EECC materials’) relating to market identification and analysis⁴, such as the Commission Recommendation on relevant product and service markets 2020 (‘2020 EC Recommendation’).⁵
- A1.9 We may only identify a market for the purpose of assessing market power where we consider the three criteria set out in section 79(2B) of the Act (the ‘three criteria test’) are met.
- A1.10 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 horizon⁶, 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).
- A1.11 The fact that we identify product and service markets that meet the three criteria test does not automatically mean that regulation is warranted. Market definition is not an end in itself but rather one input into assessing effective competition.

Sufficiency of competition law

- A1.12 In considering the third limb of the three criteria test, that competition law alone is insufficient to adequately address the identified market failure(s), 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

² 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.

³ Section 79(1) of the Act. See also *British Telecommunications Plc v Office of Communications* [2017] CAT 25.

⁴ Section 79(2ZA). Section 79(6A) of the Act defines EECC materials as “recommendations or guidelines published by the European Commission, and guidelines published by BEREC, under the Framework Directive or EECC Directive (including those published after IP completion day)” i.e. after 31 December 2020.

⁵ [Commission Recommendation](#) of 18 December 2020 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Code.

⁶ Such time period as we determine to be appropriate in relation to the review.

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.

- A1.13 *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.
- A1.14 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 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.

Forward look

- A1.15 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. The Act requires that Ofcom must conduct a forward-looking assessment of the market, taking into account expected or foreseeable developments that may affect competition in the market.⁷

Approach to market analysis and modified Greenfield

- A1.16 When identifying and analysing markets, we apply the following two principles.
- A1.17 First, when identifying wholesale markets for the purposes of section 79(1) of the Act, we start with an analysis of corresponding retail (or other downstream) market(s). We do not formally define the retail market(s), but we do consider whether the retail market(s) is (are) prospectively competitive in the absence of wholesale regulation based on a finding of SMP, and therefore whether any lack of effective competition is durable.⁸
- A1.18 If the underlying retail market(s) is (are) prospectively competitive under these circumstances, we would conclude that regulation is no longer needed at the wholesale level. If the underlying retail market(s) is (are) not prospectively competitive, then we identify the corresponding wholesale market(s). Where wholesale markets are vertically linked, we identify and analyse the most upstream market first, followed by a subsequent analysis of the markets that are downstream, to determine whether they would be effectively competitive in the presence of regulation upstream.
- A1.19 Second, when identifying and analysing a market, we assume that no SMP regulation exists in that particular market. This avoids the risk of circularity in our assessment – i.e. a finding of no SMP in a market which is predicated on pre-existing *ex ante* regulation of that market (this is often referred to as the ‘modified Greenfield approach’).⁹

⁷ S79(1A) the Act.

⁸ Our analysis takes into account the effects of other types of (sector-specific) regulation, decisions or legislation applicable to the relevant retail and related wholesale market(s) during the relevant period.

⁹ [Hutchison 3G UK Ltd v The Office of Communications](#) [2009] EWCA Civ 683.

A1.20 We note that this approach is consistent with that set out in the European Commission's SMP Guidelines.¹⁰

Product and geographic dimensions

A1.21 We use competition law methodologies in the market review analysis. In particular, there are two dimensions to the definition of a relevant market: (i) the relevant products to be included in the same market; and (ii) the geographic extent of the market.

A1.22 The boundaries between markets are determined by identifying competitive constraints on the price setting behaviour of firms. There are two main constraints to consider:

- to what extent it is possible for a customer to substitute other services for those in question in response to a 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 price increase (supply-side substitution).

A1.23 The hypothetical monopolist test is a tool used to identify good demand-side and supply-side substitutes. 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 suppliers of other products would begin to compete with the hypothetical monopolist, then the market definition should be expanded to include the substitute products.

A1.24 The starting point for the application of hypothetical monopolist test can be referred to as the 'focal product',¹¹ and typically starts from the narrowest potential market definition.¹²

A1.25 We may consider both demand-side substitution and supply-side substitution possibilities to consider whether either provide additional constraints on the pricing behaviour of the hypothetical monopolist. 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). 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.

A1.26 In relation to defining the relevant geographic markets, this comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in which the conditions of competition are sufficiently homogeneous, and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different. Areas in which the conditions of competition are heterogeneous do not constitute a uniform market.

¹⁰ [Guidelines on market analysis and the assessment of significant market power](#) under the EU regulatory framework for electronic communications networks and services (2018/C 159/01) ('EC SMP Guidelines'), paragraphs 15-18. See also [Commission Staff Working Document](#) accompanying the EC SMP Guidelines (C(2018) 2374), page 14.

¹¹ This reflects the terminology used by UK competition authorities (see OFT, [Market definition Guidelines](#), December 2004, OFT403, which has subsequently been adopted by the CMA Board).

¹² 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".

A1.27 Our approach to market definition follows that used by the UK competition authorities.

Relationship with *ex post* competition law

A1.28 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 (i) the markets identified *ex ante* are based on an overall forward-looking assessment of the structure and the functioning of the market under examination, and (ii) as noted above, in carrying out an *ex ante* assessment, we assume there is no SMP regulation in place in 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 1998](#) (relating to the application of the Chapter I or II prohibitions) or the [Enterprise Act 2002](#).

Market analysis

Effective competition

- A1.29 The Act requires that we carry out market analyses of identified markets for the purpose of making or reviewing market power determinations. The Act requires that such analyses are normally to be carried out within five years from the publication of a previous market power determination relating to that market. Exceptionally, the five-year period may be extended for up to one additional year.¹³
- A1.30 In carrying out a market analysis, the key issue for Ofcom is to determine whether any one or more operator(s) has SMP.
- A1.31 The definition of SMP is equivalent to the concept of dominance as defined in competition law.¹⁴ 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.
- A1.32 The Act provides that, in considering whether to make or revise a market power determination, we may have regard to EECC materials relating to market analysis or the determination of what constitutes significant market power, such as the EC SMP Guidelines.¹⁵
- A1.33 The EC SMP Guidelines consider the specific application of competition law principles to the electronic communications sector. They reflect our understanding of the factors driving competitive conditions in the markets we are reviewing. We have therefore had regard to the EC SMP Guidelines in considering whether to revise market power determinations in this Statement.
- A1.34 We consider that market shares provide a useful first indicator of competitive conditions in the market, and that they should however be interpreted in light of the relevant market conditions.¹⁶ According to established case law, a market share in excess of 50% is itself

¹³ Section 84A of the Act.

¹⁴ Section 78(1) of the Act. References in section 78 to dominance of a market are to be construed, so far as it is appropriate to do so, in the same way as the reference in section 18(1) of the Competition Act 1998 to a dominant position in a market.

¹⁵ Section 79(2BA) of the Act.

¹⁶ EC SMP Guidelines, paragraph 54.

evidence of a dominant position, save in exceptional circumstances.¹⁷ On this point, we have had regard to the judgment of the Competition Appeal Tribunal in BCMR 2019. The Tribunal confirmed that the existence of a high market share is to be a trigger for a full assessment, but not to be determinative in itself.¹⁸

A1.35 The EC SMP Guidelines set out, additionally to market shares, criteria that can be used to measure the power of an operator to behave to an appreciable extent independently of its competitors, customers, and consumers, including:

- barriers to entry;
- barriers to expansion;
- absolute and relative size of the undertaking;
- control of infrastructure not easily duplicated;
- technological and commercial advantages or superiority;
- absence of or low countervailing buying power;
- easy or privileged access to capital markets/financial resources;
- product/services diversification (for example, bundled products or services);
- economies of scale and economies of scope;
- direct and indirect network effects;
- vertical integration;
- a highly developed distribution and sales network;
- conclusion of long-term and sustainable access agreements;
- engagement in contractual relations with other market players that could lead to market foreclosure; and
- absence of potential competition.¹⁹

A1.36 A dominant position can derive from a combination of these criteria which when taken separately may not necessarily be determinative.

Remedies

Powers and legal tests

A1.37 Section 87(1) of the Act provides that where we have made a determination that a person has SMP in an identified services market, we must set such SMP conditions authorised by section 87 as we consider appropriate to apply to that person in respect of the relevant network or relevant facilities.²⁰

A1.38 Additionally, section 46(8A) of the Act provides that where we find that a person who did have SMP in a services market, no longer does so in that particular market, we are able to

¹⁷ And this is consistent with the position taken in the EC SMP Guidelines, paragraph 55.

¹⁸ [TalkTalk Telecom Group plc and Vodafone Limited v Ofcom \(BCMR 2019\)](#), Judgment of 5 March 2020 [2020] CAT 8, at paragraphs 163-171 and 282-283.

¹⁹ EC SMP Guidelines, paragraph 58.

²⁰ Section 84(4) of the Act provides that where Ofcom determines that an undertaking to whom any SMP conditions apply is no longer a person with significant market power in that market, Ofcom must revoke every SMP condition applied to that person by reference to the market power determination made on the basis of the earlier analysis.

impose SMP conditions on them for a transitional period. The period in question is however long we consider is necessary to ensure a sustainable transition for those who benefitted from the SMP conditions imposed following the previous SMP determination.

- A1.39 The Act identifies 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.²¹
- A1.40 For each and every SMP condition, we explain why it satisfies the requirement in section 47(2) of the Act that the obligation is:
- a) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
 - b) not such so as to discriminate unduly against particular persons or against a particular description of persons;
 - c) proportionate to what the condition or modification is intended to achieve; and
 - d) transparent in relation to what is intended to be achieved.
- A1.41 As part of ensuring that an SMP condition meets this requirement, we consider whether it is based on the nature of the competition problem(s) we have identified in our market analysis.
- A1.42 Additional legal requirements may also need to be satisfied depending on the SMP obligation in question. For example, we are subject to additional requirements when imposing price controls and cost recovery obligations.
- A1.43 Specifically, we explain why any such SMP condition satisfies the requirements of section 88 of the Act. Namely:
- our analysis indicates a risk that the telecoms provider concerned might fix and maintain prices at an excessively high level or impose a price squeeze so as to have adverse consequences for end-users of public electronic communications services;
 - we consider the setting of the obligation is appropriate for the purposes of –
 - i) promoting efficiency;
 - ii) promoting sustainable competition;
 - iii) conferring the greatest possible benefits on the end-users of public electronic communications services having regard where relevant to the market analysis, to the long term interests of end-users in the use of next-generation networks; and
 - iv) where relevant to the market analysis, promoting the availability and use of new and enhanced networks.²²
 - In setting such an SMP condition we also take account of:
 - the extent of investment by the telecoms provider in the matters to which the SMP obligation relates;
 - v) where the condition involves price controls on the provision of network access to existing network elements, the benefits of predictable and stable wholesale prices in ensuring:
 - a) efficient market entry; and

²¹ Sections 87 and 88 of the Act.

²² Section 88(1) of the Act.

b) sufficient incentives for all undertakings to bring into operation new and enhanced networks.²³

- A1.44 Where an obligation to provide third parties with network access is considered appropriate, we take into account factors including:
- a) the technical and economic viability, having regard to the state of market development, of installing and using facilities that would make the network access unnecessary;
 - b) the feasibility of the provision of the identified network access;
 - c) any technological developments that, in our opinion, are likely to affect the design and management of the relevant network or facilities;
 - d) the need to ensure that the provision of the identified network access does not have the effect of favouring one form of technology over another in relation to the design and management of the electronic communications networks;
 - e) the investment of the network operator who is required to provide access (taking account of any public investment made);
 - f) the need to secure effective competition (including, where it appears to us to be appropriate, economically efficient infrastructure-based competition) in the long term and to support innovative business models that support sustainable competition; and
 - g) any rights to intellectual property that are relevant to our decisions.²⁴
- A1.45 In this Statement, we demonstrate the application of the relevant requirements to the SMP obligations that we have decided to impose. In doing so, we also set out our assessment of how, in our opinion, the performance of our general duties under section 3 of the Act would be secured or furthered by our regulatory intervention, and that it would be in accordance with the six requirements in section 4 of the Act (see below). This is also relevant to our assessment of the likely impact of implementing our decisions.

Ofcom's general duties – section 3 of the Act

- A1.46 Under the Act, our principal duty in carrying out our 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.
- A1.47 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.
- A1.48 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 this review, we consider that a number of such considerations are relevant, in particular:
- the desirability of promoting competition in relevant markets;
 - the desirability of encouraging investment and innovation in relevant markets;
 - the desirability of encouraging the availability and use of high-speed data transfer services throughout the UK; and
 - the desirability of ensuring that relevant markets facilitate end-to-end connectivity in the interests of consumers in those markets.
- A1.49 We are also required to have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases

²³ Section 88(2) of the Act.

²⁴ Section 87 of the Act.

in which action is needed, as well as to the interest of consumers in respect of choice, price, quality of service and value for money.

A1.50 However, we have a wide measure of discretion in balancing our statutory duties and objectives. In doing so, we will take account of all relevant considerations, including the responses we received during our consultation processes, in reaching our conclusions.

Section 4 of the Act – duties for the purposes of fulfilling obligations

A1.51 Section 4 of the Act requires us, when carrying out our market review functions, to act in accordance with six requirements for regulation which are in summary:

- i) to promote competition in the provision of electronic communications networks and services, associated facilities and the supply of directories;
- ii) to promote the interests of all members of the public in the United Kingdom;
- iii) 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);
- iv) to encourage, to such extent as Ofcom considers appropriate the provision of network access and service interoperability for the purpose of securing: efficient and sustainable competition; efficient investment and innovation; and the maximum benefit for customers of telecoms providers and of persons who make associated facilities available;
- v) to encourage compliance with certain standards in order to facilitate service interoperability, end-to-end connectivity, and secure freedom of choice for the customers of telecoms providers; and
- vi) to promote connectivity and access to very high capacity networks²⁵ by members of the public and businesses in the United Kingdom.

A1.52 We consider that the first, second, third, fourth and sixth 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.

Section 4A of the Act – taking account of EC recommendations

A1.53 Section 4A of the Act provides that in carrying out certain of our functions (including, among others, our functions in relation to market reviews), we may take account of recommendations issued by the European Commission under Article 19(1) of the

²⁵ A "very high capacity network" is set out in section 4(12A) of the Act as meaning "an electronic communications network which—

(a) consists wholly of optical fibre elements at least up to the distribution point at the serving location; or
(b) is capable of delivering, under usual peak-time conditions, network performance that, in OFCOM's opinion, is similar, in terms of available downlink and uplink bandwidth, resilience, error-related parameters and latency and its variation, to the network performance of a network falling within paragraph (a)."

Framework Directive²⁶ or Article 38(1) of the EEC Directive²⁷ if the recommendations appear to us to be relevant to those functions.

Impact assessment – section 7 of the Act

A1.54 The regulatory framework in relation to impact assessments under section 7 of the Act is set out in Volume 1. The March 2025 Consultation, October 2025 Further Consultation and November 2025 Further Consultation taken together constitute our impact assessment for the purposes of section 7.

Equality impact assessment

A1.55 The regulatory framework in relation to equality impact assessments under the Equality Act 2010 and the Northern Ireland Act 1998 is set out in Annex 18. The assessment is also set out in that Annex.

Welsh language impact assessment

A1.56 The regulatory framework in relation to the Welsh language impact assessment is set out in Annex 18. The assessment is also set out in that Annex.

UK Government’s Statement of Strategic Priorities

- A1.57 Under section 2B(2) of the Act, when exercising our telecoms functions, we are required to have regard to a Statement of Strategic Priorities (SSP) that has been designated by the Secretary of State under section 2A(1) pursuant to the requirements set out in section 2C of the Act.
- A1.58 On 29 October 2019, the then government designated its SSP for telecommunications, the management of radio spectrum, and postal services (the ‘2019 SSP’). As at the date of this Statement, we have a duty to take have regard to the 2019 SSP in carrying out our telecoms functions.
- A1.59 On 11 February 2026, a draft SSP was laid before Parliament (the ‘2026 draft SSP’).²⁸ Subject to completion of the procedural steps in section 2C of the Act, it will replace the 2019 SSP once it is designated by the Secretary of State.
- A1.60 Further detail in relation to the 2019 SSP and the 2026 draft SSP is set out in Volume 3, Section 1.

The desirability of promoting economic growth

- A1.61 In exercising our regulatory functions, we are also required to have regard to the desirability of promoting economic growth (the ‘growth duty’).²⁹ In particular, we must

²⁶ Directive 2002/21/EC of the European Parliament and of the Council on a [common regulatory framework](#) for electronic communications networks and services, as amended by Directive 2009/140/EC of the European Parliament and of the Council.

²⁷ Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the [European Electronic Communications Code](#) (Recast).

²⁸ Department for Science, Innovation and Technology. 11 February 2026. [Draft Statement of Strategic Priorities for telecommunications, the management of radio spectrum, and postal services](#).

²⁹ Section 108 of the [Deregulation Act 2015](#), which was extended to Ofcom’s regulatory functions by [The Economic Growth \(Regulatory Functions\) \(Amendment\) Order 2024](#).

consider the importance for the promotion of economic growth of exercising the regulatory function in a way which ensures that regulatory action is taken only when it is needed, and any action taken is proportionate. Section 110(3) of the Deregulation Act 2015 requires us to have regard to the '[Growth Duty: Statutory Guidance](#)' (revised by Government in May 2024). See Volume 3, section 1.

Regulated entity

- A1.62 The power in the Act to impose an SMP obligation by means of an SMP condition provides that it is to be applied only to a “person” whom we have determined to be a person having SMP in a specific market for electronic communications networks, electronic communications services or associated facilities (i.e. the ‘services market’).³⁰
- A1.63 We consider it appropriate to prevent a dominant provider to whom an SMP 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.
- A1.64 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”.

³⁰ Section 46(8) of the Act.

A2. Overview of telecoms networks

A2.1 This annex provides an overview of access, backhaul, and core networks – how they are configured, and the technologies used to connect end-users or customers so they can access their mobile and fixed telecoms services. Although this annex mainly focuses on fixed networks, covering fixed broadband for residential/SME customers and leased lines for business customers, it also includes a section on wireless technologies covering fixed wireless access (FWA) and satellite broadband.³¹

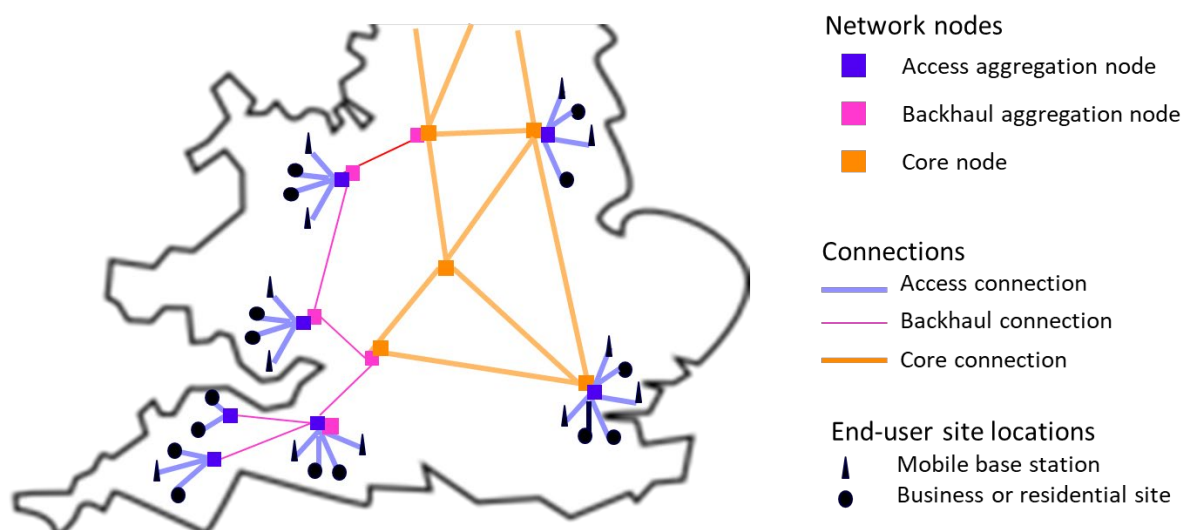
General overview

A2.2 A communications network provides the services that enable end-users or customers to exchange information and is comprised of several elements:

- Access connections
- Backhaul and core connections
- Network nodes which house equipment

A2.3 Figure A2.1 below sets out a high-level view of how the different network nodes and logical connections can be used to create a national communications network. It also shows where the different types of network nodes may be located (or co-located) geographically. These connections and network nodes are described in more detail in the following sections.

Figure A2.1: Illustration of a logical and geographic arrangement of a communications network



Source: Ofcom. 2026.

³¹ SME stands for small and medium enterprises.

- A2.4 Each end-user is connected to one of the network's access aggregation nodes.³² This is referred to as the 'access connection'. Each access aggregation node is connected to at least one core node, either directly or indirectly, via a backhaul aggregation node using a backhaul connection.³³ Core nodes are then connected to one or more core nodes to form a core network.³⁴ In general, there are more access aggregation nodes than backhaul aggregation nodes and more backhaul aggregation nodes than core nodes.
- A2.5 This structure is common to networks used to provide most voice and data telecoms services – including telephony, fixed broadband, mobile, and leased lines. These networks differ in scale (numbers of each type of node), the number of stages of access and backhaul aggregation (typically between one and three), and the structure of the core network.
- A2.6 Access aggregation nodes are generally placed where end-users are grouped most closely and can be easily reached (such as the centre of cities, towns, and villages) and are used to connect end-users, using access connections, to the network.³⁵
- A2.7 For residential broadband services, the point-of-handover at the end-user site is likely to be inside the residential premises.³⁶ For leased lines, the point-of-handover for the access connection at the end-user or customer site can be located in, for example, the communications room of a business, the basement of a multi dwelling unit (MDU),³⁷ or within a suitable enclosure at a mobile base station site.
- A2.8 Backhaul aggregation nodes have higher capacity than access aggregation nodes as they aggregate traffic from multiple access aggregation nodes (which connect to multiple end-user sites and multiple services) and can act as the point of connection between different access aggregation nodes which can be many kilometres apart.
- A2.9 Core connections (and core nodes) transport multiple telecoms services aggregated from all the services provided to customers or end-users and generally have higher capacity than backhaul connections (and backhaul aggregation nodes). Core nodes are used to route (or switch) traffic from backhaul connections onto the core network, or between backhaul aggregation nodes or other core nodes.
- A2.10 Core nodes are often located in a city of significant population within the geographic area covered by the network. These can then be linked to other core nodes to create a national

³² Access aggregation nodes aggregate the traffic from multiple access connections. They may be connected to one or more access aggregation nodes to create a more resilient network in the event of a failure in the network equipment or connection.

³³ Backhaul aggregation nodes combine the traffic from multiple access aggregation nodes onto a single backhaul connection. They are then connected to one or more backhaul aggregation or core nodes depending on the level of resilience required.

³⁴ Core nodes are used to route or switch traffic between other core nodes and may often link to backhaul aggregation nodes. Most core nodes have at least two connections between them using separate physical routes to provide resilience.

³⁵ The access connection may be transmitted over radio (wireless), fibre, coaxial cable or copper.

³⁶ A point-of-handover at the end-user site is where the end-user can 'plug in' a connection between their own equipment, such as their fixed or wireless router, and the network termination equipment (NTE).

³⁷ This could be a case where a leased line is purchased by a provider of telecoms services (typically broadband services) within the MDU.

core network. For example, a UK wide network may have core nodes located in key cities such as London, Bristol, Birmingham, Manchester, Leeds, Glasgow, and Edinburgh.³⁸

- A2.11 Most locations or sites housing core nodes also contain backhaul and access aggregation nodes, the latter for serving the area immediately surrounding the site.³⁹ Similarly, a site containing a backhaul aggregation node may also contain one or more access aggregation nodes to provide connectivity to the surrounding area. More remote network sites may only contain an access aggregation node.
- A2.12 To enable customers or end-users on different networks to communicate with each other or to access services, networks are usually interconnected between or near to core nodes.⁴⁰ The network-to-network interconnect may be at a site (point-of-handover) where both networks are present, at a co-location facility such as at a BT exchange, at a data centre, or at an internet peering site.⁴¹ In some instances where two networks are not co-located, interconnect may be achieved using a dedicated point-to-point connection between the two network sites.⁴²
- A2.13 Access connections (in the form of cables) can be run underground in ducts, buried directly in the ground, or carried overhead via poles. Backhaul and core connections will be typically run underground in ducts except in very exceptional cases (such as in rural areas) where they may be carried overhead.

Data centres

- A2.14 Data centres are secure buildings that house computing facilities for cloud-based and other information technology (IT) services such as data storage, application hosting, and data processing. Data centres may also house network nodes which include core and backhaul aggregation functions or they may also be used as a co-location facility with points of interconnect to other networks.
- A2.15 Most data centres require reliable high-capacity connections, often to several different telecoms providers. This capacity is needed to support many telecoms services and to support multiple customers across multiple sites.
- A2.16 Some data centres have multiple tenants and may be owned and operated by telecoms providers or run by third-party providers. In this latter case they are known as 'carrier-neutral data centres'.
- A2.17 Other data centres may be owned by a single customer, such as a large enterprise, providing services over a virtual private network at their own customer site rather than in a

³⁸ Core nodes and backhaul aggregation nodes may also be tiered, with the highest tier carrying the most traffic and connected to give high levels of resilience. For example, a network may have an inner core (sometimes referred to as a backbone network) and an outer core, together with a backhaul network also being tiered. Tiering is useful in managing capacity and resilience in national networks with many customers.

³⁹ Aggregation nodes (access, backhaul, and core) can be sited in, for example, a telecoms provider's operational building, in a BT exchange, or in a data centre. Some sites may have more than one type of aggregation node at the same location.

⁴⁰ Interconnect can be used to enable connections between two different telecoms providers, or between a telecoms provider and, for example, a data centre provider.

⁴¹ Internet peering is a method that allows two or more network operators to interconnect and exchange traffic directly without having to pay a third party to carry traffic across the Internet.

⁴² For example, Openreach provides products to connect between nodes located within a BT exchange (internal Cablelink) and to connect to other networks nearby (external Cablelink).

network operator's operational building. Being dedicated to a single customer, these are generally not used for the aggregation and onward routing of third-party traffic.

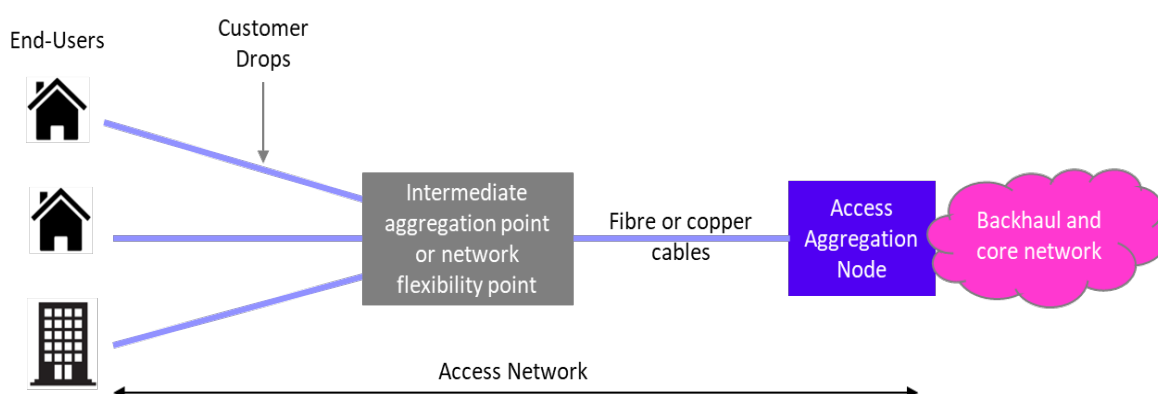
Fixed broadband and telephony services for residential/SME customers

- A2.18 Networks that supply broadband and telephony services to residential premises, small offices/home offices (SOHOs), and small and medium enterprises (SMEs) need to be able to deliver connections to new end-users reasonably quickly on request and for a relatively low cost. So that providers can connect end-users quickly, these networks need to be deployed with network flexibility points close to prospective end-users to minimise costs where infrastructure build may be required to make the final connection.
- A2.19 A broadband connection can be created by using third-party supplied physical infrastructure (e.g. ducts or poles), with the telecoms provider then adding their own fibre cables and electronics to connect to an end-user or customer.

Access network overview

- A2.20 Access networks provide the connection to the customer premises or the end-user site. The connection to the end-user from the access aggregation node may be realised all, or in part, using fixed connectivity (fibre, copper, coaxial cables) or using wireless connectivity. Wireless connectivity is discussed in more detail below in the section on 'Wireless technologies'.
- A2.21 While there are several different types of access networks, they all share certain common attributes which make up the access connection between end-user sites and an access aggregation node. Those common attributes include customer drops, intermediate aggregation or network flexibility points, and fibre or copper cable links to the access aggregation node. Figure A2.2 below illustrates how these constituent elements relate to one another.

Figure A2.2: Generic fixed access network



Source: Ofcom. 2026.

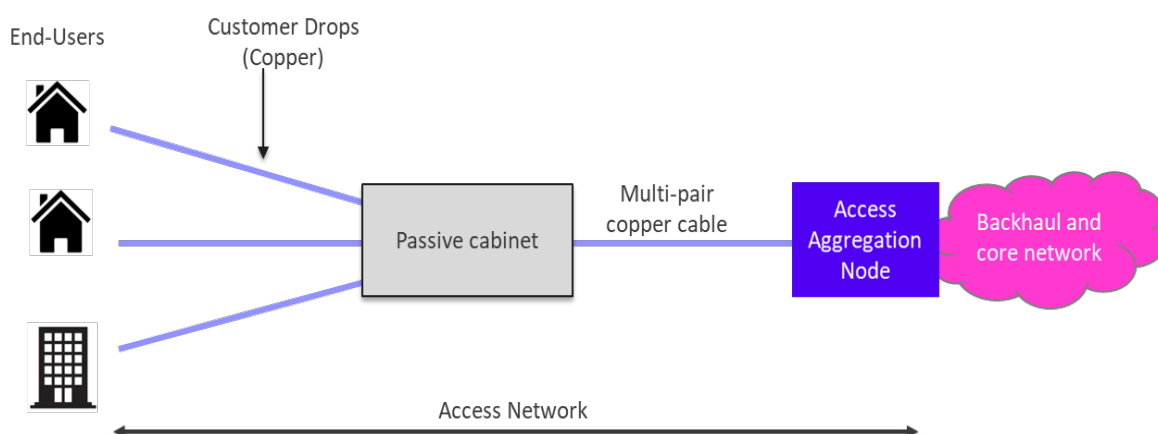
- A2.22 Customer drops, or customer lead-ins, are the dedicated physical bearer (or radio links in the case of wireless networks) connecting an end-user's equipment, called customer premises equipment (CPE), to a network over which the end-user's data is carried.

- A2.23 Network flexibility points can connect to several customer drops and are sometimes placed near to the end-user's premises. Their purpose is to aggregate multiple customer drops into a smaller number of bearers which are then taken back to the access aggregation node within a local area.⁴³ An access aggregation node is likely be connected to multiple network flexibility points in a given area.
- A2.24 In some cases, network flexibility points use active electronics which aggregate traffic from several customer connections. This aggregated traffic is then carried over a dedicated physical connection back to the access aggregation node (see Figure A2.4 showing 'FTTC' network as an example). The alternative is to use a dedicated physical connection (either in a fibre, a coaxial or a copper cable) between each end-user site and the access aggregation node.

Copper access network

- A2.25 Access networks were initially deployed using copper connections to the end-user sites as shown in Figure A2.3. These copper networks were initially deployed to provide telephony services using a multi-pair copper cable from an access aggregation node to a passive cabinet, connecting directly to end-users using individual copper connections (also referred to as 'customer drops').⁴⁴

Figure A2.3: Copper access network



Source: Ofcom. 2026.

- A2.26 Initially, broadband services were added by providing broadband equipment, acting as the access aggregation node at the local exchange using ADSL technology.⁴⁵ The characteristics of this equipment and the copper line limited the speed available on the network, with speeds of up to 24 Mbit/s using ADSL2+ (end-users typically experience less than this with speeds diminishing with distance). The copper network is also more affected by faults than

⁴³ Network flexibility points may be linked directly back to an access aggregation node or as part of a 'daisy chain' (such as network flexibility points shown as part of a ring within the access network topology illustrated later in Figure A2.14).

⁴⁴ We refer to the cabinet as 'passive' as it uses simple physical copper connections to connect between the multi-pair copper cable and the customer drop rather than using 'active' electronics (which requires an external power source to operate).

⁴⁵ ADSL is short for asymmetric digital subscriber line. This is a technology used for transmitting data over copper lines to an end-user and is part of a family of digital subscriber line (DSL) technologies such as ADSL, ADSL2+, SDSL (symmetric DSL), VDSL (very high-speed DSL) and VDSL2.

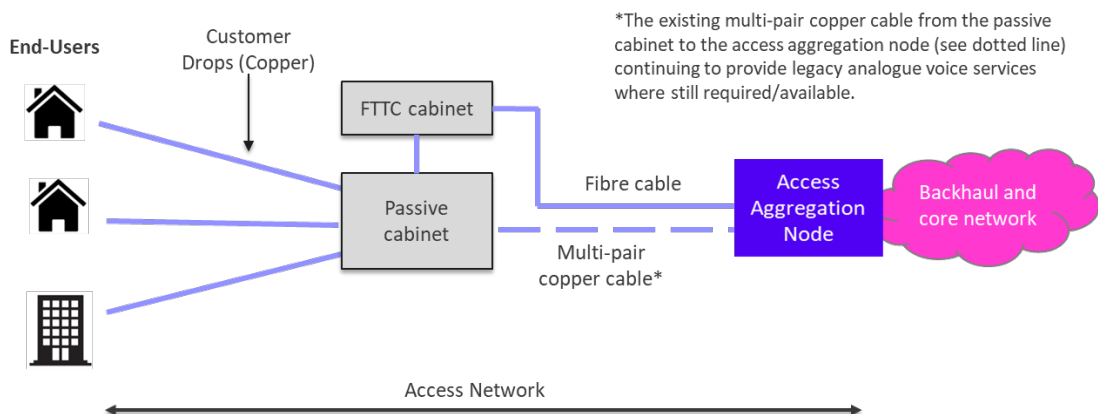
modern fibre networks, in part because it can be affected by the weather, and because the age of the network can lead to more faults.

Fibre to the cabinet (FTTC) access network

- A2.27 Many copper networks have been upgraded to support higher speeds by deploying broadband equipment (electronics) nearer to the end-users; at a street cabinet rather than in the exchange (shown as 'FTTC cabinet' in Figure A2.4). The broadband equipment is then connected to the end-user copper connection (i.e. the customer drop) via the existing 'passive' cabinet (which is located nearby), and to the access aggregation node using a fibre connection. This access network structure is known as fibre to the cabinet (FTTC).
- A2.28 FTTC networks can provide broadband services with download speeds of up to 80 Mbit/s depending on the length of the copper line between the end-user and the street cabinet.⁴⁶ These higher speeds are achieved using VDSL technology over shorter copper connections (compared to ADSL technology with broadband equipment based in the exchange).
- A2.29 In the FTTC networks, the fibre to the cabinet is shared by all the end-users on the cabinet. Since capacity is shared among multiple end-users, it may not be the case that each end-user simultaneously receives maximum speeds.

Figure A2.4: Fibre to the cabinet access network

FTTC Access Network



Source: Ofcom. 2026.

- A2.30 It is possible to provide even faster speeds over copper connections using G.fast technology.⁴⁷ These higher speeds are achieved by placing G.fast equipment close to the end-user, such as at the final distribution point (e.g. a pole or a footway box), to reduce the length of the copper connection. G.fast equipment can also be deployed in street cabinets

⁴⁶ For example, Openreach, 2026. [Fibre to the Cabinet broadband | Openreach](#) "Fibre to the Cabinet broadband" variant showing up to 76 Mbit/s download speed. Accessed on 18 February 2026.

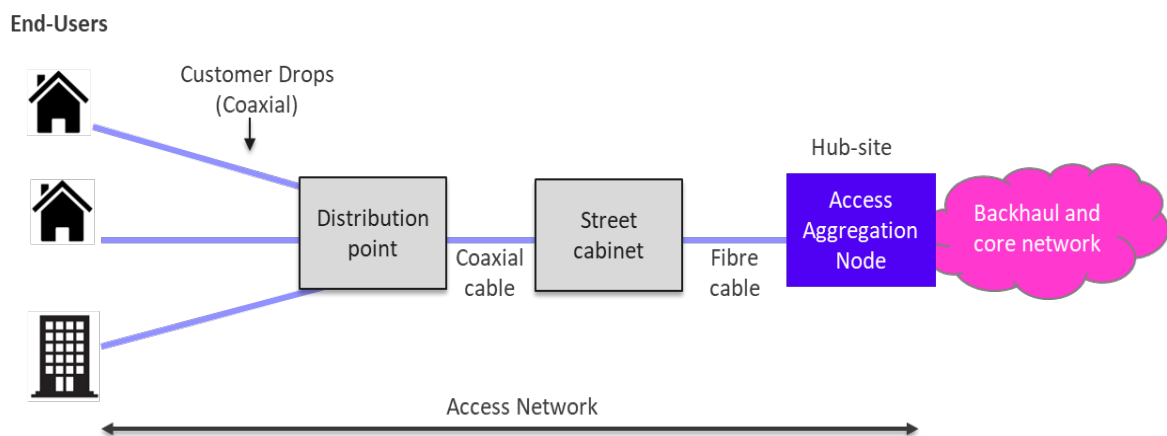
⁴⁷ G.fast is a DSL technology designed to deliver higher broadband speeds than earlier DSL technologies (such as VDSL or ADSL) over existing twisted copper wires. A technique known as vectoring can be used to maximise the performance of DSL technologies and minimise the interference between end-users' circuits. Vectoring is necessary where G.fast is used alongside circuits using VDSL to avoid such interference.

close to the end-users. For example, Openreach has deployed G.fast equipment at selected street cabinets and offers services with download speeds of up to 330 Mbit/s.⁴⁸

Cable access network

- A2.31 Virgin Media O2 operates a cable network available across much of the UK, using a hybrid fibre coaxial (HFC) cable system as shown in Figure A2.5. Fibre is used between the hub-site (access aggregation node) and the street cabinet where, using electronics, it is connected to the copper coaxial cable for connection (via a distribution point) to the end-user. Some HFC systems connect fibre to the distribution point before using coaxial cable for the final customer drop.
- A2.32 Similar to FTTC networks, in the cable networks, the fibre to the cabinet is shared by all the end-users on the cabinet. Since capacity is shared among multiple end-users, it may not be the case that each end-user can simultaneously receive maximum speeds.

Figure A2.5: Hybrid fibre coaxial ‘cable’ access network



Source: Ofcom. 2026.

- A2.33 The cable network was originally deployed to provide television (TV) services. Broadband services were subsequently introduced by adding broadband equipment supporting Data-Over-Cable Service Interface Specification (DOCSIS). DOCSIS equipment is located at the hub-site which connects to the cable access network. This hub-site also aggregates traffic from other street cabinets within a local area.
- A2.34 The speed over a cable connection depends on the version of DOCSIS being used, with gigabit speeds currently available from Virgin Media O2 using DOCSIS 3.1.⁴⁹ DOCSIS 3.1 has the potential to support downstream capacity of up to 10 Gbit/s and upstream capacity of up to 1-2 Gbit/s. However, download speeds are expected to be lower than this in practice as it depends on factors such as how the network is configured and the capabilities of the DOCSIS modems installed at the end-user's site. DOCSIS is expected to be upgradable in

⁴⁸ Openreach, 2026. [Fibre to the Cabinet broadband | Openreach](#) "GFast broadband" variant showing up to 330 Mbit/s download speed. Accessed on 18 February 2026.

⁴⁹ For example, Virgin Media O2, 2026. For customers taking the 'Gig 1' service, which can deliver an average download speed of just over 1.1 Gbit/s. Accessed on 18 February 2026.

the future as new standards become available, such as DOCSIS 4.0 which supports downstream capacity of up to 10 Gbit/s and upstream capacity of up to 6 Gbit/s.⁵⁰

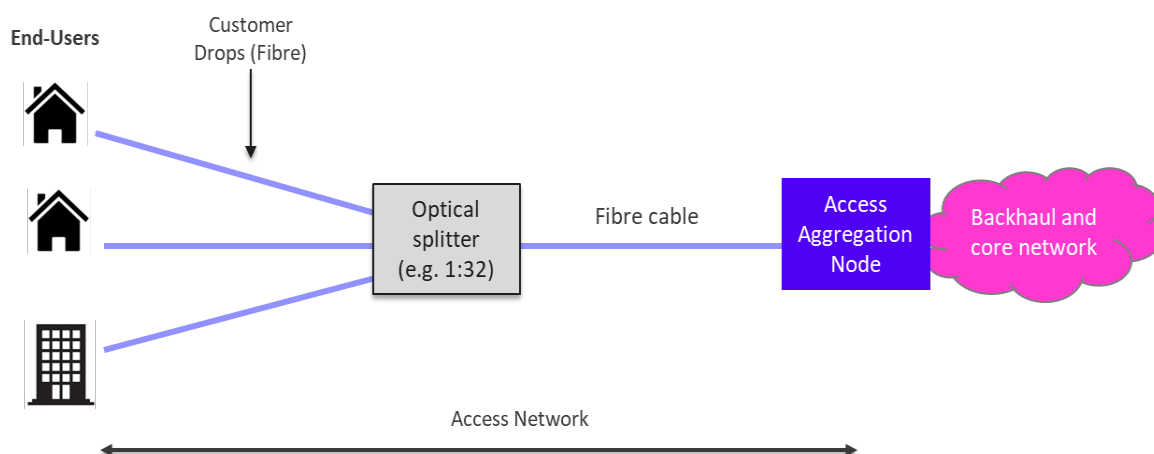
Fibre to the premises (FTTP) access network

A2.35 Networks which use copper for the final connection to the end-user, including cable networks, are in the process of being superseded by fibre to the premises (FTTP). FTTP is currently being rolled out across the UK by many network operators.⁵¹

A2.36 FTTP or full-fibre networks can be provided in two main ways⁵²:

- Shared point-to-multipoint passive optical networks (PON), which we discuss below
- Dedicated point-to-point fibre, which we cover later in this annex under 'Leased lines connectivity for business customers'

Figure A2.6: Fibre to the premises access network using a PON



Source: Ofcom. 2026.

A2.37 A PON is a shared fibre network (as shown in Figure A2.6). Each end-user, with an optical network terminal (ONT), is assigned a dedicated fibre connecting to an optical splitter which then connects to an optical line terminal (OLT) equipment at the access aggregation node. As several end-users are connected to the same optical splitter (e.g., 8, 16 or 32-way split), the capacity for each PON connected to the OLT is shared between them.⁵³ The number of end-users connected to each shared PON is typically 32 or less, which is generally fewer than the shared infrastructure on an FTTC or a cable network.⁵⁴

A2.38 Initial PON deployments generally use gigabit PON technology (GPON), with capacity of 2.5 Gbit/s downstream and 1.25 Gbit/s upstream. While the majority of FTTP deployments in

⁵⁰ Cablelabs, 2026. [DOCSIS 4.0 technology](#). Accessed on 18 February 2026.

⁵¹ ISPreview. 27 November 2025. [Full Fibre UK Broadband Connections Overtake FTTC for First Time - ISPreview UK](#). Accessed on 18 February 2026.

⁵² Ofcom. 26 September 2023. [Evolution of Fixed Access - Ofcom](#). Accessed on 18 February 2026.

⁵³ PON architectures are 'Point-to-multi-point' which employ a single higher capacity central terminal (such as an OLT) shared among many connections. An OLT can serve several PONs, and each PON can have multiple end-users (depending on the split ratio of the optical splitter). Optical splitters in a PON are 'passive', which means they do not require an external power source to operate. On the other hand, both OLT and ONT are 'active', which means they require an external power source to operate.

⁵⁴ In both the FTTC and cable networks, the fibre to the cabinet is shared by all the end-users on the cabinet.

the UK have been historically based on GPON, higher speed symmetric PON technologies are now being widely deployed. The expectation is that older PON systems can readily be upgraded to higher speed PON systems in the future.^{55 56 57 58 59} Examples of higher speed PONs include widely available symmetric 10 Gbit/s systems such as XGS-PON, as well as emerging technologies offering symmetric speeds of 25 Gbit/s (e.g., 25G-PON) and 50 Gbit/s (e.g., 50G-PON).^{60 61 62} This upgrading can be done as demand for faster speeds grows and as equipment costs fall. This process of upgrading can also take place without the need to replace the optical fibres and optical splitters.

- A2.39 As with all PON architectures, GPON capacity is shared among end-users. As a result, although peak speeds (typically 1 Gbit/s as seen by the end-user) may be achieved in short bursts, the average capacity available to an end-user may be less. Therefore, the average speed depends on the number of active users on the network at any one time.⁶³
- A2.40 Some telecoms providers may deploy XGS-PON and other high-speed symmetric PON technologies (such as 25G-PON or 50G-PON) to deliver residential broadband services, as well as high-speed 'leased line equivalent services'. Leased lines equivalent services may be shared among fewer end-users than residential broadband services, with some of the capacity being 'ringfenced' or reserved for a particular end-user to whom the capacity appears uncontended, i.e. Ethernet delivered over symmetric PON. See Figure A2.7.

⁵⁵ ISPreview. 17 May 2025. [Openreach Doc Hints at XGS-PON FTTP Plan for 3.3Gbps UK Broadband - ISPreview UK](#). Accessed on 18 February 2026.

⁵⁶ ISPreview. 22 December 2022. [Ogi Become First UK ISP to Deploy Nokia's 25Gbps Full Fibre Tech - ISPreview UK](#). Accessed on 18 February 2026.

⁵⁷ ISPreview. 13 April 2023. [London Full Fibre ISP G.Network Tests Nokia's 25Gbps PON Tech - ISPreview UK](#). Accessed on 18 February 2026.

⁵⁸ ISPreview. 10 December 2025. [CityFibre Updates on Future UK 50Gbps and 100Gbps Broadband Upgrades - ISPreview UK](#). Accessed on 18 February 2026.

⁵⁹ ISPreview. 22 May 2025. [Netomnia Goes Live with First 50Gbps UK Full Fibre Broadband Network - ISPreview UK](#). Accessed on 18 February 2026.

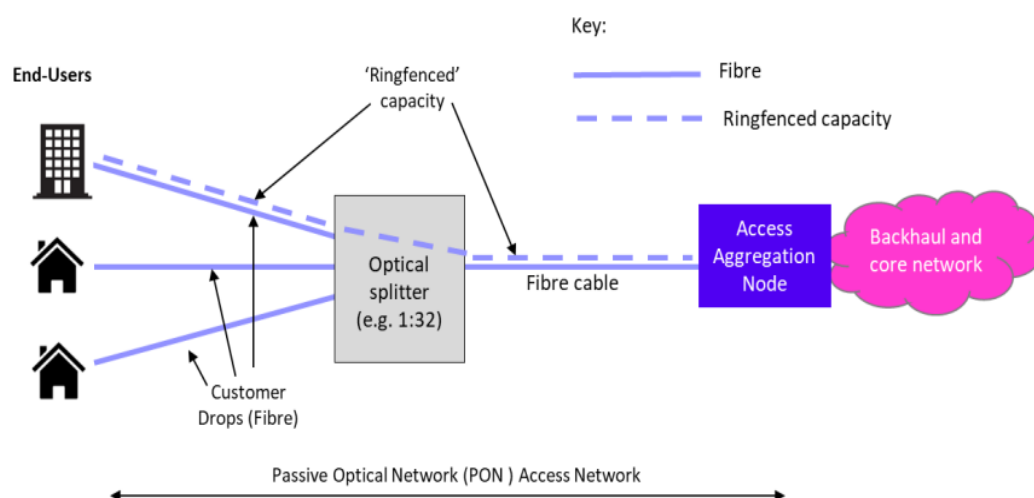
⁶⁰ XGS-PON offers 10 Gbit/s symmetric services (X stands for 10, S stands for symmetric) where the downstream as well as the upstream capacity is 10 Gbit/s.

⁶¹ 25G-PON offers 25 Gbit/s symmetric services where the downstream as well as the upstream capacity is 25 Gbit/s. It can also be available as an asymmetric service where the downstream capacity is 25 Gbit/s and the upstream capacity can be 10 Gbit/s.

⁶² 50G-PON offers 50 Gbit/s symmetric services where the downstream as well as the upstream capacity is 50 Gbit/s. It can also be available as an asymmetric service where the downstream capacity is 50 Gbit/s and the upstream capacity can be either 12.5 Gbit/s or 25 Gbit/s.

⁶³ The average speed per end-user is often more than the PON capacity divided by the number of users. This is because end-users with large demands at a point in time can use capacity from end-users with low demand at that moment - a process known as statistical multiplexing. PONs may also be configured to serve fewer users, thereby offering higher average speeds.

Figure A2.7: Structure of a leased line equivalent service (delivering Ethernet over symmetric PON)



Source: Ofcom. 2026.

- A2.41 As an example, an XGS-PON based FTTP network which has a capacity of 10 Gbit/s can be shared among multiple end-users. It can also be used to offer a symmetric uncontended capacity over the same PON. To do this, the PON would be configured to 'ringfence' or reserve 1 Gbit/s of the shared capacity to offer a 1 Gbit/s 'leased line equivalent' Ethernet service.⁶⁴ In practice, this means that up to seven 1 Gbit/s 'leased line equivalent' Ethernet connections can be provided over one XGS-PON based FTTP network. However, this may constrain the capacity available for existing as well as prospective residential broadband connections on that XGS-PON based FTTP network.⁶⁵
- A2.42 To take advantage of these high-speed, high-capacity access networks, the backhaul and core networks must be configured to provide sufficient capacity at peak times. Similarly, any services being accessed, such as data storage at a data centre must be configured to provide the capacity and speeds needed to meet user demand and avoid capacity bottlenecks in delivering an end-to-end service.
- A2.43 PON systems can also be used to carry, as an overlay, the same DOCSIS signals used in the cable access networks described earlier. This uses a technique referred to as Radio Frequency over Glass (RfOG).⁶⁶ This is the approach used by Virgin Media O2 as it rolls out its XGS-PON based FTTP network and has an advantage of using the same customer equipment (i.e., routers) for both HFC and FTTP networks.⁶⁷

⁶⁴ The notion of 'leased line equivalent' refers to features such as uncontended capacity, symmetric download and upload speeds, and quality of service parameters similar to business point-to-point dedicated leased line services (e.g. high availability, fast repair times and installation times, and continuous monitoring and support). PON based 'leased line equivalent' services may not be able to match certain characteristics of a point-to-point leased line using a dedicated fibre link which offers, for example, higher physical security and uncontended access across a wide range of bandwidths and at speeds greater than those supported on a PON.

⁶⁵ Although an XGS-PON has a headline capacity of 10 Gbit/s, in practice the available capacity is reduced to around 7 - 8 Gbit/s due to, for example, standard specified protocol (aka signalling) overheads.

⁶⁶ With RfOG, the passive architecture is the same as PON. It emulates HFC (DOCSIS) over fibre, but fibre connectivity is converted back to coaxial cable connectivity at the customer premises.

⁶⁷ ISPReview. 20 April 2023. [Virgin Media UK's XGS-PON Full Fibre Upgrade to Go Live Later in 2023 - ISPReview UK](#). Accessed on 18 February 2026.

- A2.44 FTTP networks, although often used to denote PONs, can also be deployed using a dedicated point-to-point fibre connection, rather than shared connections across multiple end-users, such as in a PON. These point-to-point connections are covered in more detail in the following description of leased lines, and although they can be used to connect to residential end-users with high-speed requirements, they are generally used to connect to businesses.

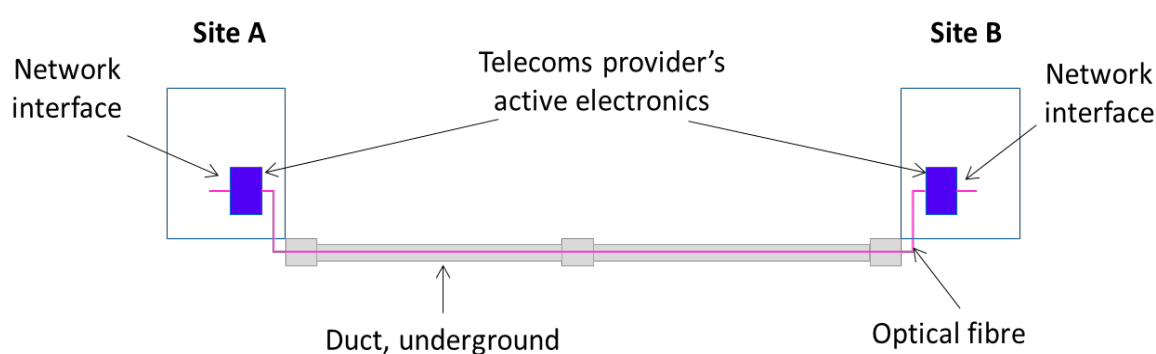
Leased lines connectivity for business customers

- A2.45 Traditionally, businesses (including mobile operators) have used leased lines to connect their sites to a telecoms provider's network using high-capacity, point-to-point, symmetric and dedicated circuits for use by a single customer (i.e., providing uncontended capacity).⁶⁸ Leased lines can be significantly more expensive per end-user or customer than broadband services as they are provided over dedicated infrastructure rather than the infrastructure, and costs, being shared by multiple customers.

Leased lines overview

- A2.46 Leased lines generally use optical fibre (or increasingly less common, copper) to make the physical connection between two points. These connections in the form of cables are typically run inside a duct (as illustrated in Figure A2.8). The route between two points in a network can be referred to interchangeably as circuits or connections.
- A2.47 Leased lines can be provided by a supplier with or without active electronics. The electronics, whether provided by the supplier or customer, can use several different technologies such as Ethernet or wavelength division multiplexing (WDM).⁶⁹ These technologies are covered in more detail in Section 2 of Volume 2.

Figure A2.8: Structure of a typical leased line



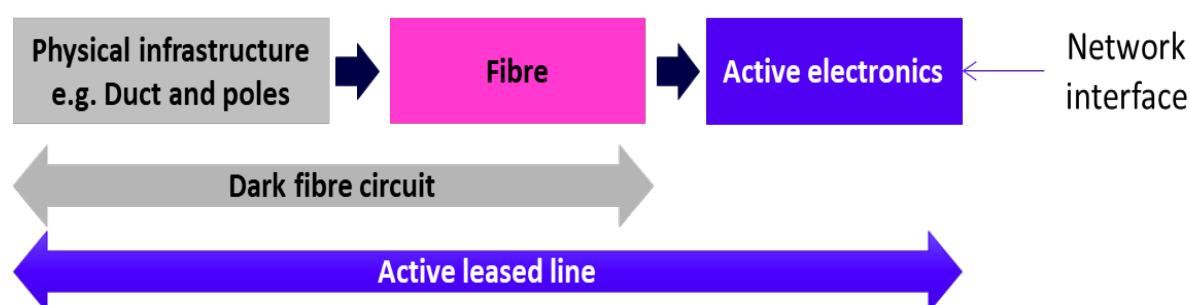
Source: Ofcom. 2026.

⁶⁸ Symmetric implies that the upload speeds are the same as the download speeds in a leased line. Dedicated implies that each leased line circuit is for the exclusive use of a single business customer. Uncontended capacity implies that the capacity of a leased line is guaranteed and not subject to reduction at, for example, busy times.

⁶⁹ These types of technologies have also been referred to as contemporary interface (CI) in previous Ofcom market reviews.

- A2.48 A circuit without active electronics is often referred to as a dark fibre (DF) connection.⁷⁰ For DF, the customer creates an active leased line by connecting the DF into their own electronic equipment at both ends of the circuit, potentially reducing the amount of electronics in the end-to-end circuit. This can give technical benefits such as improved reliability and reduced latency. Customers using DF will need expertise to specify, install, and manage the end-user equipment and fault management on the dark fibre connection.
- A2.49 A leased line can also be created by using third-party supplied physical infrastructure (e.g. ducts or poles), with the telecoms provider then adding its own fibre cables and electronics to connect to an end-user or customer. The relationship between the building blocks used to provide a dark fibre circuit and an active leased line is shown in Figure A2.9.

Figure A2.9: Main building blocks of a leased line



Source: Ofcom. 2026.

Leased line networks

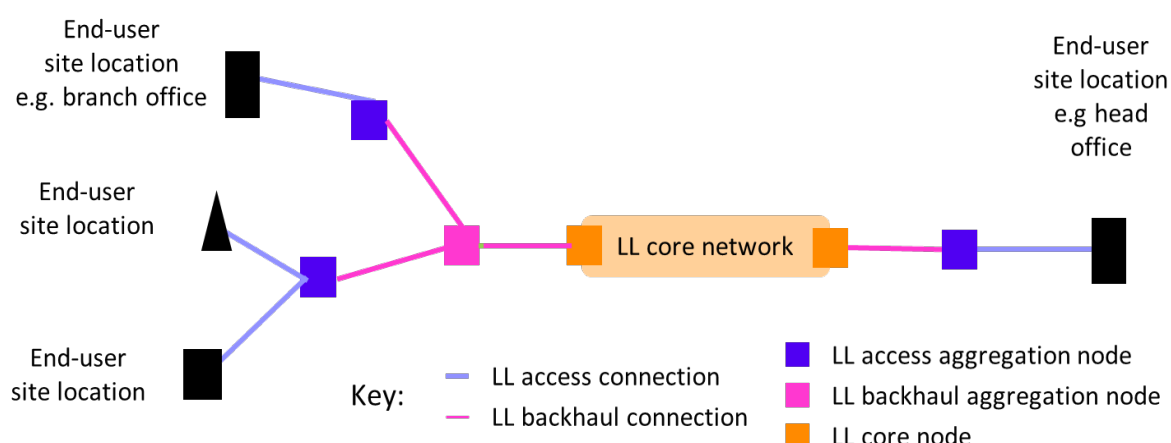
- A2.50 A leased line network can be configured in several ways. Leased lines are used as the building block to create an end-to-end service which can be optimised to meet a particular service requirement. We cover the following example configurations:
- Dedicated leased line networks
 - Business virtual private networks (business VPNs)
 - Mobile leased line networks
 - Broadband leased line networks

Dedicated leased line networks

- A2.51 A dedicated leased line network (as shown in Figure A2.10) provides a collection of point-to-point end-to-end connections to create a private network, i.e., circuits in the end-to-end network are not shared. This model is becoming less common but may still be used when security or network features, such as low end-to-end latency, are a key concern. These networks have mainly been superseded by business VPNs (see Figure A2.11).

⁷⁰ Dark fibre is a term used to describe an optical fibre that has not been connected to any electronic equipment. It is called a 'dark fibre' product as the electronic equipment which 'lights' the fibre and enables the circuit to receive and transmit data is not included as part of the dark fibre connection.

Figure A2.10: Dedicated leased line end-to-end connectivity



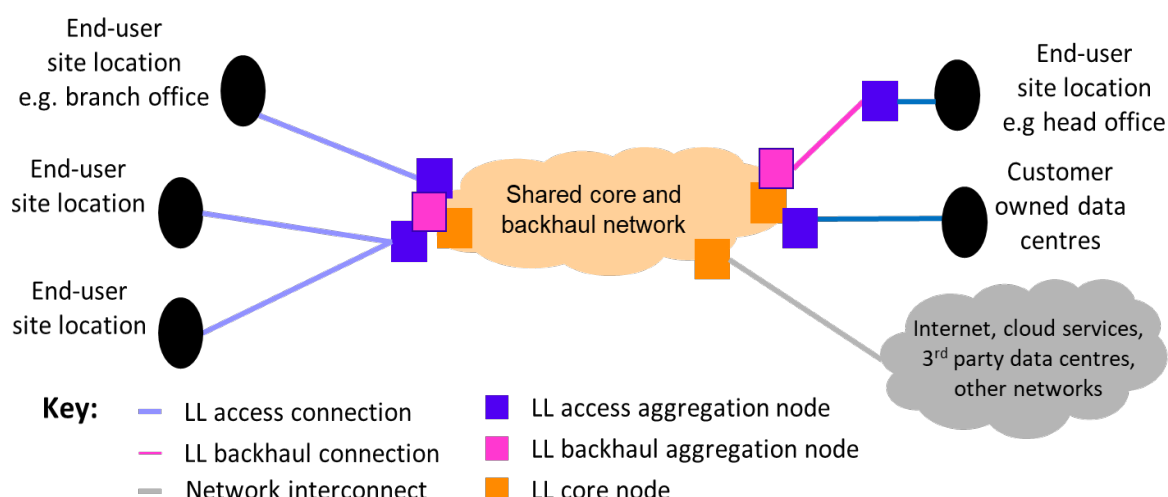
Source: Ofcom. 2026. LL is short for leased line.

Business VPNs

- A2.52 Business VPNs provide any-to-any connections between multiple business sites which can be spread over a wide geographic area (see Figure A2.11). These networks are likely to include internet connectivity and connections to outsourced cloud computing services. Figure A2.11 also shows the end-user sites connected with leased lines to provide high speed dedicated capacity.
- A2.53 Although not shown in Figure A2.11, end-user sites can also be connected using a business broadband connection (such as those delivered over an FTTC or FTTP PON) where higher speeds available over a ‘dedicated’ point-to-point leased line may be of less importance – such as to a small branch office. Some businesses may prefer newer PON technologies (e.g. XGS-PON) which can offer symmetric upload and download speeds, combined with similar quality of service parameters as point-to-point leased lines, i.e. leased line equivalent services.
- A2.54 Unlike a dedicated leased line network, a business VPN shares backhaul and core capacity across multiple business customers. The same core and backhaul network may also be used to carry traffic for other services such as broadband and mobile. The data for each customer is separated using virtual paths on a shared physical connection within the backhaul and the core network. It therefore appears as a ‘private’ network from a customer’s perspective.
- A2.55 Access to cloud-based services such as data storage, application hosting, and data processing can also be provided as part of an overall service. Figure A2.11 shows a single connection to cloud-based services. However, these services can be placed nearer to the customers’ access connections (such as at multiple core nodes or even multiple backhaul aggregation nodes) to improve reliability, reduce core capacity requirements, and speed up response times. This can be referred to as edge or distributed computing.⁷¹

⁷¹ Content distribution networks (CDNs) for video streaming as part of a broadband network is another example where cloud hosted services are placed nearer to the customer rather than being centralised.

Figure A2.11: Business VPN with connectivity to internet and cloud computing services



Source: Ofcom. 2026. LL is short for leased line.

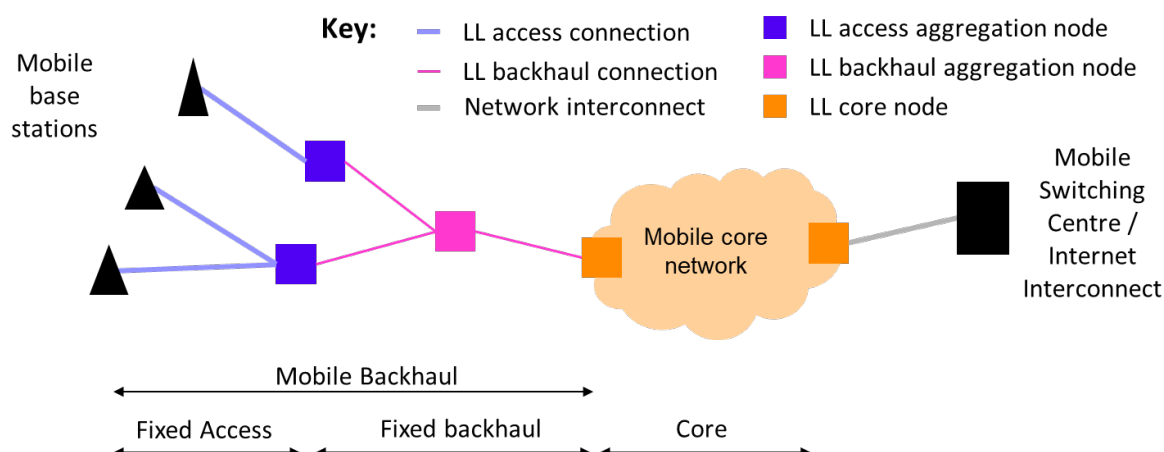
Mobile leased line networks

- A2.56 Leased lines can be used by mobile network operators (MNOs) to connect their base stations to their core network nodes using access and backhaul leased line connections (see Figure A2.12).⁷²
- A2.57 The term 'mobile backhaul' is often used to refer to the combination of access and backhaul leased line connections between the mobile base station and the mobile core node (i.e., the arrow labelled 'mobile backhaul' in Figure A2.12).⁷³
- A2.58 MNOs may also use leased lines to provide connectivity between their core sites, and connections to the internet and other networks, to support mobile services.

⁷² A base station is a fixed transceiver used in mobile networks that serves as one of many connectivity points within a mobile network, where each base station may serve one or more mobile devices. It connects to the mobile core network via the mobile backhaul. These base stations provide the network of radio coverage that allows mobile phones to make calls and access internet while on the move.

⁷³ In Figure A2.12, a traditional monolithic architecture (typical of 4G deployments) is used, where the network components are tightly integrated in a dedicated special purpose hardware (i.e., there is tight integration between hardware and software). On the other hand, a disaggregated architecture (typical of 5G deployments) breaks down the monolithic architecture into smaller, modular network components hosted on a general-purpose hardware (i.e., software decouples from the hardware) which allows for a more flexible and scalable network architecture, allowing disaggregated network components to be located in different physical locations. This disaggregated architecture gives rise to a 'fronthaul' which could be a fibre-based link connecting the two disaggregated components in two different physical locations (e.g., a central unit could be located in an access aggregation node, while a remote unit stays at the mobile base station, with both units connected via a fibre-based link which is shown as an arrow labelled 'fixed access' in this figure).

Figure A2.12: Mobile network backhaul connectivity using leased lines



Source: Ofcom. 2026. LL is short for leased line.

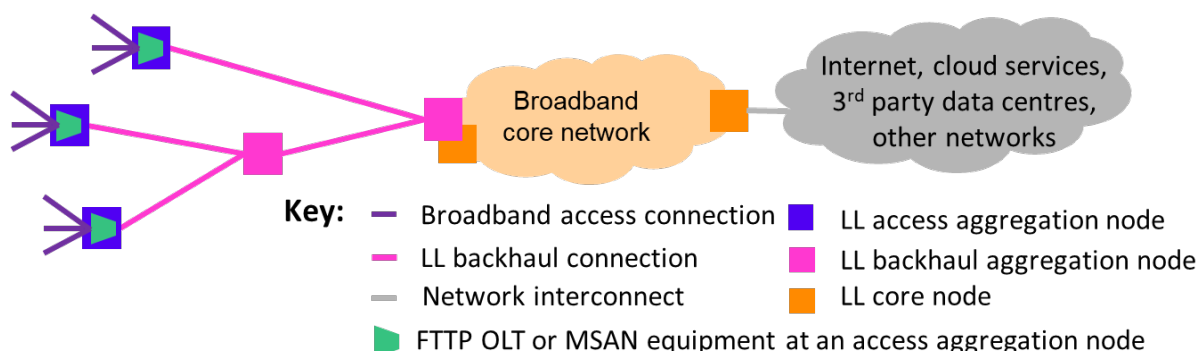
Broadband leased line networks

A2.59 Fixed broadband operators can build their own broadband network using leased lines to create backhaul leased line connections from the core network, which are then connected to broadband access connections at the access aggregation node.

A2.60 For example, a fixed broadband operator may place their network equipment (e.g. their MSAN at an access aggregation node) to connect to BT's copper access network at a BT local exchange.⁷⁴ In another example, a fixed broadband operator may place their FTTP OLT at an access aggregation node (in their own operational building) to connect to their own fibre access network. This equipment (at the access aggregation node) can then be connected to a backhaul and a core network which can be connected to the internet at suitable locations to provide an end-to-end broadband service. These two examples are represented in Figure A2.13.

A2.61 As with business VPNs (explained above), the core and backhaul network may carry traffic for multiple access services such as broadband and leased lines.

Figure A2.13: Broadband network backhaul connectivity using leased lines



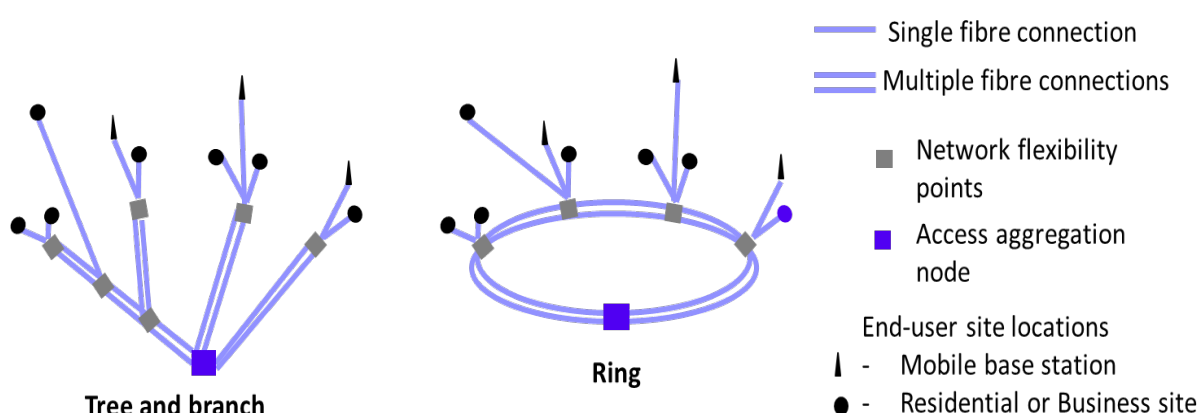
Source: Ofcom. 2026. LL is short for leased line.

⁷⁴ MSAN is short for multi-service access node used by 'local loop unbundlers' (LLU) to connect multiple BT copper access connections to electronics before backhauling the aggregated traffic back to a core/backhaul aggregation node in the network.

Network design choices

A2.62 There are many ways a network operator can choose to connect the nodes that make up its network in addition to a 'tree and branch' architecture illustrated in the previous network diagrams. For example, nodes may be connected in a 'ring' architecture as illustrated in Figure A2.14. The 'tree and branch' architecture is generally used by BT in its access network, partially due to historical reasons where originally, copper lines went from a central exchange, down streets to a distributed network of street cabinets, and then on to individual homes and business premises. A ring architecture is often used in backhaul and core networks to provide additional resilience. This is the preferred design for the core network for operators such as CityFibre.⁷⁵ A combination of both architectures can also be used.

Figure A2.14: Different types of network topology



Source: Ofcom. 2026.

A2.63 As shown in Figure A2.14, in a tree and branch network topology, individual fibres are taken from an end-user site and connected to a multi-fibre cable (or access 'distribution' cable) at fibre connection points (also referred to as network flexibility points).⁷⁶ These multi-fibre cables are then connected to equipment at an operator's site (i.e. an access aggregation node) to aggregate the traffic from the fibres connected to the end-user sites.

A2.64 For a ring network topology, the network can be set up to let traffic travel either clockwise or anti-clockwise around the ring. This means that if there is a problem in one direction of the network, traffic can be rerouted in the opposite direction (automatically, if suitable electronics are in place) i.e., the ring network topology provides additional resilience. This is not readily possible in a 'tree and branch' network topology where there is only one route from an end-user site to the access aggregation node. To get around this, 'tree and branch' networks may provide additional resilience by adding a second circuit with a different ('diverse') routing to the end-user site using the same or an alternative supplier.

⁷⁵ CityFibre. 25 March 2022. [Modern Full Fibre Exchanges offer Service Providers the... | CityFibre](#). Accessed on 18 February 2026.

⁷⁶ Customer site or an end-user site is connected with a fibre cable with a limited number of fibres but only one fibre is necessary for the connection. At the network flexibility point, this fibre is connected to a fibre in a multi-fibre cable (with more fibres).

Wireless technologies

A2.65 The previous sections within this annex describe networks that provide services at a fixed end-user location using a wired (either copper, coaxial cable or fibre) connection all the way. This section looks at services that can be connected to end-users using wireless links and include:⁷⁷

- Mobile broadband services delivered to nomadic end-users via a mobile network (such as 4G or 5G)
- Broadband services delivered to fixed end-users via a fixed wireless access (FWA)⁷⁸ network
- Satellite broadband services delivered to fixed end-users via satellite or non-terrestrial networks (NTN)
- Wireless backhaul links for other networks (such as mobile networks).

A2.66 This section does not cover in-building WiFi connections which can be used, for example, to connect wirelessly to a fixed or a wireless broadband connection.

Mobile broadband services delivered to nomadic end-users via a mobile network

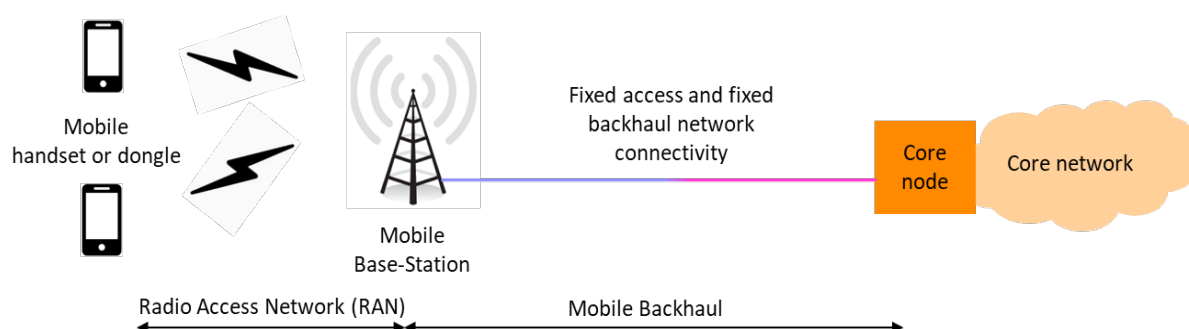
A2.67 Use of mobile broadband services can be a convenient way for customers to access the internet and can be used both as an alternative, as well as in addition, to a fixed broadband connection. Customers in this category can connect to a 4G or 5G mobile network when they are at home or on the move using their mobile phone, a dongle or similar equipment (see Figure A2.15). As shown in Figure A2.15, a typical mobile network consists of a radio access network (RAN) with a base station, a mobile backhaul (which is typically provided via a fixed connection), and a mobile core network.⁷⁹

⁷⁷ Wireless links can have different connection topologies: Point-to-Point, where wireless connectivity is provided between two specified fixed points (microwave links for mobile backhaul are an example of this topology); Point-to-Multipoint, where wireless connectivity is provided between a single specified fixed point and more than one other fixed points (provision of residential broadband using fixed wireless access is an example of this topology); and Multipoint Mesh, where wireless connectivity is provided through full or partial connection between multiple fixed points (we have not covered Multipoint Mesh topology in this annex due to it not being used significantly in the UK market).

⁷⁸ FWA is a fixed broadband access technology that supports broadband services via a wireless network – either via a mobile network operator (MNO) or wireless internet service provider (WISP).

⁷⁹ Although mobile backhaul is typically provided via fixed connections such as leased lines using fibre, it can also be provided via point-to-point wireless links, such as a microwave links.

Figure A2.15: Typical mobile network topology



Source: Ofcom. 2026.

A2.68 While high speeds are possible, due to the shared nature of the network and the fact that speed will depend on the quality of signal being received, speeds are likely to be much lower in many cases. 5G networks may offer faster connection speeds than 4G as seen in Ofcom's 2025 Mobile Matters report.⁸⁰ The report indicates that 47% of 5G connections had an average download speed of 100 Mbit/s or higher versus 10% on 4G.

A2.69 Mobile coverage is another important consideration, with availability continuing to improve. UK 5G coverage outside of premises from at least one MNO⁸¹ now ranges between 94% and 97%, based on our Very High and High Confidence levels,⁸² whereas 4G coverage from at least one MNO now reaches 96% of the UK landmass.⁸³

Broadband services delivered to fixed end-users via a FWA network

A2.70 In a fixed wireless access (FWA) network, wireless links are used to provide broadband connectivity to a fixed location, such as a residential or a business premises. The wireless links are the final wireless access connection between a fixed point at the end-user's site and a fixed radio transmitter (such as a mobile network base station or a wireless access point). This avoids the need to install a fixed access connection (such as a cable) between the end-user and a broadband or leased line network.⁸⁴

A2.71 FWA can be delivered by:

- Mobile network operators (MNOs)
- Wireless Internet service providers (WISPs)

⁸⁰ Ofcom. 17 July 2025. [Mobile Matters 2025](#), pages 7 and 22. Accessed on 18 February 2026.

⁸¹ By 'at least one MNO', we mean the combined coverage that would be available if the total coverage of each MNO was included in an aggregated coverage footprint.

⁸² We present 5G coverage using two confidence levels: High Confidence with signal strength of -110 dBm or better, associated with at least an 80% probability of coverage; and Very High Confidence with signal strength of -100 dBm or better, associated with around a 95% probability of coverage. Ofcom. 19 November 2025. [Connected Nations UK Report 2025](#), pages 4 and 30. Accessed on 18 February 2026.

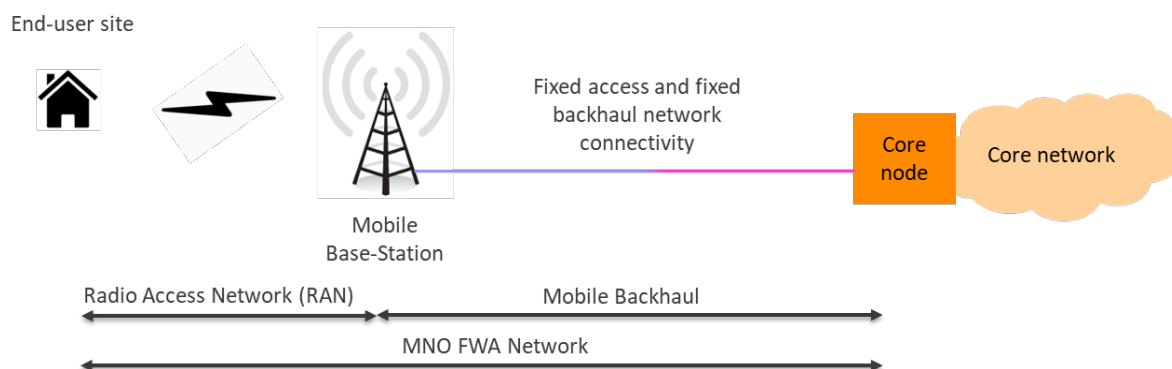
⁸³ Ofcom. 19 November 2025. [Connected Nations UK Report 2025](#), pages 3 and 4. Accessed on 18 February 2026.

⁸⁴ Installing a new fixed access connection (such as a fibre cable) may require civil works which may prove too costly, especially in rural areas where the number of premises could be limited but distances between the access aggregation node and premises may be very long (i.e., several kilometres).

FWA from MNOs

- A2.72 FWA on mobile networks from MNOs is offered on licensed 4G and 5G networks, usually to an indoor customer premises equipment or router. The performance of the broadband connection is dependent on the quality of the mobile signal that is received indoors. Some operators are offering solutions to improve the quality of the signal received indoors for example through a pre-configured external antenna combined with an internal router designed for self-installation by customers. This then makes use of the stronger outdoor mobile signal to provide for an improved broadband experience.⁸⁵
- A2.73 These services share the network capacity with mobile users. This means that the capacity of the network must be carefully managed between the demands of existing mobile users and FWA customers. There may be areas of high mobile demand where a reliable FWA service cannot be offered.
- A2.74 FWA over MNO's 4G/5G networks provides a connection between a mobile base station and a customer premises equipment (which acts as both a receiver of the mobile signal and also a transmitter of WiFi signals within a premises) - see Figure A2.16. This type of service shares many of the characteristics with mobile broadband but optimised for home usage. For example, the customer premises equipment can be placed at a suitable fixed location within a customer's site to allow connections to other customer equipment (e.g., smart TVs, computers) and to enable WiFi connectivity.

Figure A2.7: Typical 4G/5G FWA network topology



Source: Ofcom. 2026.

- A2.75 As the customer premises equipment is mains powered and is a dedicated unit for internal use, it provides better performance than mobile broadband services delivered to nomadic end-users via a mobile network.
- A2.76 Many MNO-based FWA systems have typically deployed point-to-multipoint links which are used to provide residential broadband connections.⁸⁶
- A2.77 Similar to mobile broadband services delivered via a mobile network, depending on traffic and capacity in the mobile network, speeds in an MNO based FWA network can vary. For

⁸⁵ For example, Three (now VodafoneThree) launched what is called a '5G Outdoor hub'. [Outdoor Hub - get the ultimate 5G Home Broadband | Three](#). Accessed on 18 February 2026.

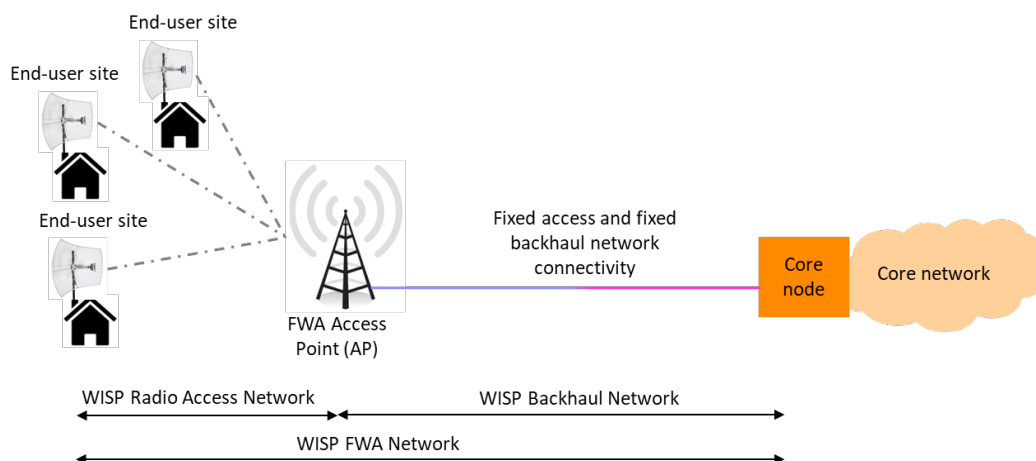
⁸⁶ In an MNO based point-to multipoint FWA system, a base station serves multiple end-users at different end-user sites.

example, based on Connected Nations data analysis in 2023, average download speed for some MNO based FWA connections was between 69 to 238 Mbit/s.⁸⁷

FWA from WISPs

- A2.78 FWA services from WISPs are based on proprietary solutions. They require Line of Sight (LoS) or near-LoS wireless connectivity between the provider's access point (also referred to as a base station or a mast site) and an outdoor antenna on the customer's premises. The outdoor antenna on the customer's premises is connected to an indoor customer premises equipment using a wired connection. Connections from WISPs are particularly useful in more remote, hard to reach areas where network coverage may be poor.
- A2.79 Services from WISPs traditionally used 'licence exempt' and 'light licensed' spectrum. However, we continue to see some use of shared access spectrum with 5G technology specifically for residential broadband services, which enables WISPs to provide superfast and above speeds much more widely.⁸⁸ The performance of services may be impacted by LoS issues, which can become more significant at higher frequencies (WISPs have a range of frequency options, with choice informed by capacity and performance requirements, as well as technology and kit available in a given band).
- A2.80 Similar to MNO-based FWA systems, many WISP-based FWA systems have typically deployed point-to-multipoint links which are used to provide residential broadband connections.⁸⁹
- A2.81 Figure A2.17 shows a point-to-multipoint FWA system being used for connecting multiple customer premises for residential broadband services. Since these services are LoS between the network (or the FWA Access Point as shown in Figure A2.17) and the end-user site, they can be difficult to deploy in built up areas such as city centres.

Figure A2.8: Typical WISP based Point-to-Multipoint FWA network topology



Source: Ofcom. 2026.

⁸⁷ Ofcom. 13 February 2024. [Interactive report 2023 - Ofcom](#), page 18, Fixed, FWA mobile & LEO satellite performance. Accessed on 18 February 2026.

⁸⁸ Ofcom introduced its Shared Access framework in 2019 to support local spectrum access for local networks. The framework includes the 3.8-4.2 GHz band and part of the 26 GHz band that are suitable for the provision of high-speed networks based on 5G technology.

⁸⁹ In a WISP based point-to multipoint FWA, an FWA access point (a type of base station which can serve multiple customers) is used to connect to multiple fixed external antennas at different end-user sites.

Satellite broadband

- A2.82 Satellite broadband service can be delivered via either a geostationary orbit (GSO) satellite or a non-geostationary orbit (NGSO) satellite constellation.^{90 91} These satellite technologies continue to evolve rapidly, offering an alternative way to deliver broadband services, particularly in locations which do not have coverage from fixed or FWA networks. Data from Ofcom's Connected Nations 2025 report shows that consumers are also buying these services even where other fixed network technologies are available.⁹²
- A2.83 GSO satellites are fixed at a position on the geostationary belt moving with the Earth as it rotates. They are positioned at a very large distance from the Earth, being able to cover large areas. This results in delays in response times and slow speeds.
- A2.84 NGSO satellites, on the other hand, are positioned much closer to the Earth, covering smaller areas than the GSO satellites and allowing for faster response times and higher speeds. As they are not at a fixed location, a network of hundreds of constantly moving satellites is necessary to provide consistent and constant coverage. In order to maintain a continuous connection, end-user terminals must be capable of tracking satellites as they pass overhead.
- A2.85 GSO satellite services currently offer lower speeds than fixed broadband services, with typical download speeds up to 75 Mbit/s.⁹³ In addition, traditional GSO satellite services have higher latency than fixed broadband services.⁹⁴ This could affect some users who have requirements for low latency, e.g., end-users wishing to make video calls or gamers.
- A2.86 At the time of writing, there are two NGSO satellite systems providing a satellite broadband service in the UK. Space X, which now has more than 9,000 satellites in low Earth orbit (LEO) as at December 2025 with its satellite broadband service, Starlink, available for use in several countries, including the UK.⁹⁵ Additionally, Eutelsat OneWeb, which completed the first phase of its LEO constellation in 2023, offers satellite broadband services for businesses.⁹⁶ Following OneWeb's merger with Eutelsat, the operator also provides multi-orbit connectivity using both GSO and NGSO constellations.⁹⁷
- A2.87 Although satellite services do not typically guarantee any minimum speeds on their packages, in the data published in Ofcom's 2025 Connected Nations report, Starlink

⁹⁰ GSO satellites orbit the earth at about 36,000 km and have traditionally been the primary way of delivering satellite communications services.

⁹¹ According to [ITU-T Recommendation Y.3200](#), NGSO systems include low Earth orbit (LEO) constellations which tend to orbit up to 2,000 kilometres above the Earth's surface, medium Earth Orbit (MEO) constellations which tend to orbit mainly between 8,000 and 20,000 kilometres above the Earth's surface, and finally constellations operating in highly elliptical orbit (HEO) which operate with a range of operational altitudes between 7,000 km and more than 45,000 km.

⁹² Ofcom. 19 November 2025. [Connected Nations UK Report 2025](#). Page 18. Accessed on 18 February 2026.

⁹³ ISPreview. [Satellite Broadband ISP List - Page 1 - ISPreview UK](#). There are two satellite broadband services on this ISP list: one from Starlink, which uses LEO, and the other from Freedomsat, which uses GSO and also acts as a reseller for Starlink. Accessed on 18 February 2026.

⁹⁴ GSO satellites tend to have high latency due to the signal having to travel the long distance to and from the satellite.

⁹⁵ Space.com. 19 December 2025. [Starlink satellites: Facts, tracking and impact on astronomy | Space](#). Accessed on 18 February 2026.

⁹⁶ BBC. 26 March 2023. [OneWeb launch completes space internet project - BBC News](#). Accessed on 18 February 2026.

⁹⁷ Eutelsat. [Satellite Connectivity Solutions | Eutelsat Group](#). Accessed on 18 February 2026.

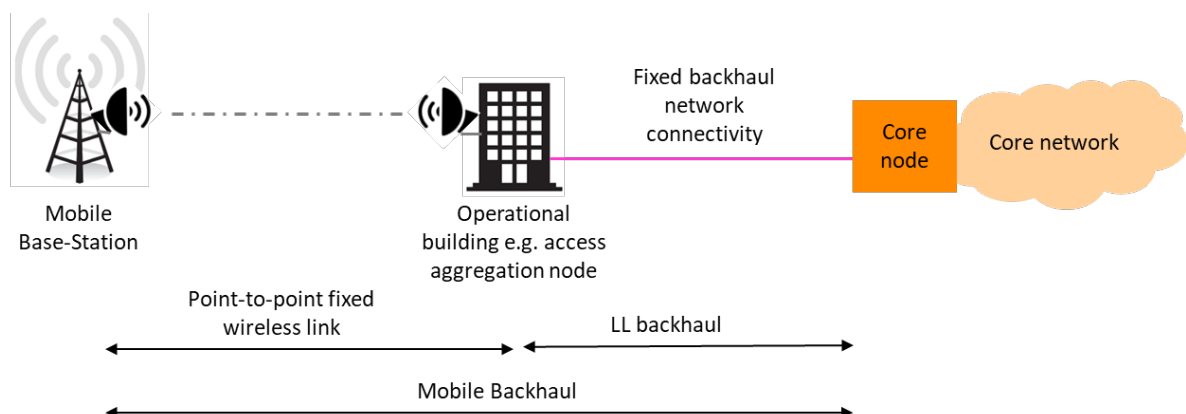
indicate average download speeds of over 210 Mbit/s and average upload speeds to be around 20 Mbit/s.⁹⁸

- A2.88 According to Connected Nations 2025 report, the majority of Starlink connections are in rural areas with over 12,600 of these connections in locations without access to decent broadband from a fixed line or FWA. Starlink also offers portable broadband terminal which enables consumers to relocate the terminal between different locations.⁹⁹
- A2.89 Both FWA (provided by MNOs as well as WISPs) and satellite broadband connections can also provide superfast speeds, and under certain conditions, these may be gigabit capable speeds.¹⁰⁰ However, actual speeds will be dependent on the specific deployment, available capacity at the site, and the number and location of users.¹⁰¹

Wireless backhaul links

- A2.90 Wireless links are also used for provisioning backhaul for other networks, such as backhaul for mobile network base stations (also referred to as mobile backhaul).
- A2.91 Figure A2.18 shows a point-to-point fixed wireless link (e.g., a microwave link) being used for connecting a mobile base station to an access aggregation node as part of a mobile backhaul network.¹⁰²

Figure A2.9: Example of a point-to-point fixed wireless link used for mobile backhaul



Source: Ofcom. 2026. LL is short for leased line.

- A2.92 Using a point-to-point fixed wireless link (e.g., a microwave link) for connecting base stations to a mobile network can be a useful alternative to fixed connections (such as leased lines). This is particularly so where operators require a wireless connection between a base station and fibre point of presence and/or in more remote, difficult to reach areas where fixed line coverage may be poor. However, compared to a leased line, these wireless

⁹⁸ Ofcom. 19 November 2025. [Connected Nations UK Report 2025](#). Page 18. Accessed on 18 February 2026.

⁹⁹ ISPreview. 1 August 2024. [Starlink Broadband Launch Mini Dish and Mini Roam Service in UK - ISPreview UK](#). Accessed on 18 February 2026.

¹⁰⁰ For FWA, equipment supporting gigabit capable speeds is available from various suppliers. For satellite services, this may be possible too, but it may come with an extreme cost, therefore making it viable only for some niche business connectivity use cases, instead of residential broadband.

¹⁰¹ Ofcom. 19 November 2025. [Connected Nations UK Report 2025](#). Page 17. Accessed on 18 February 2026.

¹⁰² Connections from a mobile base station to one or more remote base stations can also be configured as a 'daisy-chain', as part of a resilient ring.

links have some limitations such as lower capacity compared to fibre based backhaul and requirement for LoS connectivity.

- A2.93 Satellite networks can potentially be used as an alternative backhaul solution for MNOs to expand their services into remote and hard-to-reach areas where traditional terrestrial backhaul methods like leased lines or point-to-point fixed wireless links are impractical.¹⁰³ However, satellite based backhaul solutions will also have limitations such as lower capacity and higher latency compared to fibre based backhaul or point-to-point fixed wireless links.^{104 105}

¹⁰³ Analysys Mason. 26 April 2024. [Satellite is an increasingly cost-effective means for MNOs to reach remote mobile customers.](#) Accessed on 18 February 2026.

¹⁰⁴ Ofcom. 5 September 2024. [Update: Review of the use of fixed wireless links and spectrum implications.](#) Accessed on 18 February 2026.

¹⁰⁵ As satellite constellations evolve and innovate, the latency and capacity available from a satellite based backhaul link is expected to improve.

A3. Methodology for geographic assessment of WLA network coverage and market shares

A3.1 In this Annex we describe the input data and methodology that we use:

- i) to define Area 2 and Area 3 for the WLA markets; and
- ii) to calculate WLA market shares in Area 2 and Area 3.

Geographic market analysis

A3.2 In Volume 2, Section 4, we identified how we are treating competitors for the purposes of geographic market definition. Specifically, we concluded that VMO2 is a current material and sustainable competitor and any altnets planning to cover at least 50,000 premises by March 2031 are potential material and sustainable competitors.

A3.3 In this subsection we explain the data we collected from VMO2 and altnets, how we identified relevant competitors, and describe how we mapped the current and expected geographic coverage of those relevant competitors in each postcode sector.

Input data

A3.4 The geographic market analysis uses data on altnets' and VMO2's existing and planned network coverage. This data was collected for Connected Nations and supplemented through TAR26 s135 notices.¹⁰⁶

A3.5 The following paragraphs provide more detail about the input data used. We also include Table A3.1 below, setting out the altnets from which we used data.

Existing build and active customer connections data

A3.6 We use Connected Nations data on existing network coverage as of 1 July 2025 from VMO2 and each of the altnets in Table A3.1.¹⁰⁷

Table A3.1: list of providers we collected fixed network data from.

• 1310*	• Fusion Fibre Group	
• 4thUtility	• G.Network*	• Technological Services*
• Airband	• Gigaclear	• Telcom Infrastructure*
• AllPoints Fibre	• Glide Business*	• toob
• Ask4	• GoFibre*	• Trooli
• Atlas Communications	• Grayshott Gigabit	• Truespeed
• B4RN*	• Hampshire Broadband	• Virgin Media O2*
	• Highland Broadband Networks*	
• Bogons*	• Hyperoptic	• Vodafone

¹⁰⁶ In addition to the geographic market analysis, we have also used data on planned coverage from altnets, VMO2 and Openreach to produce the figures on network coverage mentioned across the Statement.

¹⁰⁷ July 2025 data is the latest set of Connected Nations data we could process and use ahead of publication in March 2026. The current coverage data is correct as of July 2025 but was collected in August 2025.

• brsk*	• ITS Technology Group*	• Voneus
• BT	• KCOM	• Wessex Internet
• CityFibre*	• Lightspeed Broadband	• WightFibre
		• Wildanet
		• Zen Internet
• Community Fibre*	• MS3	
• Connect Fibre	• Michaelston y Fedw Internet	• Zzoomm ¹⁰⁸
• Connexin ¹⁰⁹	• Netomnia ¹¹⁰ *	
• Country Connect*	• nexfibre*	
• County Broadband*	• OFNL*	
• F&W Networks	• Ogi	
• FibreNest*	• Openreach*	
	• Orbital Net	
• Fibrus	• Quickline Communications*	
• Freedom Fibre	• Sky	
• Full Fibre	• TalkTalk plc/PXC	

*Note: providers marked with * are those who were sent the supplementary TAR26 s135 notices referred to above to collect additional information on planned network coverage.*

A3.7 The Connected Nations dataset provides information on UK premises passed and active customer connections by each operator as of July 2025.¹¹¹

Planned build data

A3.8 As noted in Volume 2, Section 4, we have updated the planned data since the March 2025 consultation. Overall, our dataset includes data on planned build between July 2025 and July 2031:

- iii) We used Connected Nations data on planned network coverage up to January 2030 from the altnets indicated in Table A3.1. Connected Nations formally requested data up to January 2028, but some providers voluntarily submitted data up to January 2030, which we have also used.
- iv) In addition, we used our statutory powers to obtain supplementary data on planned network coverage between July 2025 and July 2031 (see Table A3.1 above for more

¹⁰⁸ Full Fibre and Zzoomm are listed as separate entities as Connected Nations' request for information predated the completion of their merger.

¹⁰⁹ Connexin has recently been acquired by CityFibre. This has been reflected in the modelling. Connexin. 24 March 2025. [CityFibre acquires Connexin's full fibre infrastructure in strategic agreement](#). Accessed on 29 January 2026.

¹¹⁰ In February 2026, the owners of the VMO2 network (Liberty Global and Telefonica), and InfraVia, agreed to acquire Substantial Group (including the Netomnia network footprint and retail brands YouFibre and Brsk) through their existing joint venture, nexfibre. As the deal is not yet complete and subject to regulatory approval, we continue to consider the Netomnia network footprint as separate from VMO2/nexfibre. VMO2. 18 February 2026. [InfraVia, Liberty Global and Telefónica acquire Substantial Group for £2 billion through their existing joint venture, nexfibre](#). Accessed on 26 February 2026.

¹¹¹ The statutory information requests for Connected Nations ask operators to provide data on which individual premises in the UK they are actively connected to, including individual apartments in blocks of flats.

details).^{112 113} Of the providers from which we requested supplementary data, 15 had updated build plans since their submission to Connected Nations.

A3.9 Given the above, we consider that our modelling likely captures the vast majority of planned coverage.

Data processing

- A3.10 The data gathered by Connected Nations was processed as described in the Methodology Annex of the Connected Nations report.¹¹⁴
- A3.11 All existing and planned figures as well as the total number of premises per postcode sector are against the Connected Nations July 2025 premises base. This is the set of properties that formed the basis of the Connected Nations 2025 report and is described in detail in the Connected Nations Methodology Annex.¹¹⁵ To get the final ‘base’, we took the Connected Nations July 2025 premise base and removed PO box premises. We expect there are 32.2 million relevant premises in scope.
- A3.12 Coverage information for individual premises was then aggregated at postcode sector level to assess presence of relevant competitors as described later in this Annex.
- A3.13 As explained above, we received supplementary build data in response to s135 notices from 15 providers. These plans were integrated with the data gathered by Connected Nations. We processed this supplementary data as follows.
- A3.14 If a provider stated that the new submission was a replacement to its Connected Nations submission, we used that instead of the Connected Nations data. If we were told it was an addition (i.e. the plans from previous submissions still stand, and the new submission contains additional plans since then) we used both the Connected Nations and supplementary data and adjusted for any overlap.
- A3.15 For most providers, updated plans were submitted at UPRN level, or we were able to deduce UPRN level data from the submission. This meant that we were able to integrate the data with the Connected Nations data at premise level. Where supplementary data included premises not in the Connected Nations premises base, we excluded these premises, to ensure we were using a consistent base. We could then aggregate the plans, including both the Connected Nations submissions and the supplementary data, at postcode sector level (adjusting for any overlap).
- A3.16 However, three providers [X] were unable to provide plans at UPRN level.¹¹⁶ Hence, we were only able to integrate this data after aggregation at postcode sector level. [X] were only able to provide plans with addresses.¹¹⁷ In a small number of cases, the address was incomplete. Where a postcode was included in the address, we extracted the postcode sector and calculated the total number of planned premises in each postcode sector. For a small number of addresses, postcodes were not included, and the address could not be

¹¹² In addition to premises level data from Connected Nations, as part of the TAR26 s135 notices we also asked for updated premises level plans to extend the fixed network between July 2025 and July 2031.

¹¹³ We note that based on the planned build data collected by Connected Nations, the providers we requested supplementary planned build data from account for the vast majority [X] of all altnets’ planned build.

¹¹⁴ Ofcom. 19 November 2025. [Connected Nations 2025 Methodology Annex](#). Pages 6-8.

¹¹⁵ Ofcom. 19 November 2025. [Connected Nations 2025 Methodology Annex](#). Pages 3-6.

¹¹⁶ [X] response dated [X] to s135 notice dated [X], questions [X]; [X] response dated [X] to s135 notice dated [X], question [X]; [X] response dated [X] to s135 notice dated [X], question [X].

¹¹⁷ [X] response dated [X] to s135 notice dated [X], questions [X].

matched with an address in the Ordnance Survey's AddressBase® Premium data. This meant that these plans could not be included. [redacted] gave plans at postcode level.¹¹⁸ We used this to extract the postcode sector and calculate the total number of plans per postcode sector. [redacted] gave their response at postcode sector level.¹¹⁹

- A3.17 We need UPRN level data to check if a given UPRN is in the Connected Nations premise base. This means that for these three providers, we implicitly assumed that all planned UPRNs from these providers are situated in the Connected Nations July 2025 premise base.
- A3.18 After aggregating the rest of the planned data at postcode sector level, we added the [redacted] plans. For all three providers, we were told that these were updated plans to those previously submitted.¹²⁰ This means only current coverage and the supplementary plans were included for [redacted]. If the provider already had coverage in a given postcode sector, the number of planned UPRNs from the supplementary submission was summed with the existing number of premises covered in that postcode sector.

Methodology

- A3.19 This section provides more details on our methodology to identify relevant competitors (in addition to BT) for the purposes of geographic market definition, and our approach to assess coverage of relevant competitors at postcode sector level.

We use a 50,000 premises threshold to identify relevant competitors

- A3.20 As outlined above and discussed in detail in Volume 2, Section 4, the first step of our geographic analysis involves the identification of those competitors (in addition to BT) we consider relevant for the purposes of defining the boundary between Area 2 and Area 3 – i.e., those altnets that already are or have the potential to become material and sustainable competitors ('relevant competitors').
- A3.21 In particular, as detailed in Volume 2 Section 4, we conclude that VMO2 is a current material and sustainable competitor and any altnets planning to cover at least 50,000 premises by March 2031 are potential material and sustainable competitors.
- A3.22 To inform our decision that the 50,000 premises level is an appropriate threshold, we ran sensitivity checks where we used different thresholds to see how this impacted the geographic market boundary. We found that changing the threshold did not have a major impact on the results. For example, when we doubled the premise threshold to 100,000 premises, the overall proportion of postcodes classified as Area 2 and 3 remained the same. Only 49 postcode sectors out of 9,705 were no longer classified as Area 2. When we removed the threshold (to include VMO2 and all altnets), only 24 additional postcode sectors were classified as Area 2.
- A3.23 To identify altnets who are relevant competitors we use data on total coverage (i.e., existing and planned coverage over the 2026-31 review period) across the UK and including

¹¹⁸ [redacted] response dated [redacted] to s135 notice dated [redacted], question [redacted].

¹¹⁹ [redacted] response dated [redacted] to s135 notice dated [redacted], question [redacted].

¹²⁰ [redacted] response dated [redacted] to s135 notice dated [redacted], questions [redacted]; [redacted] response dated [redacted] to our clarificatory question dated [redacted] concerning the s135 notice dated [redacted], question [redacted]; [redacted] response dated [redacted] to follow up question dated [redacted] concerning s135 notice dated [redacted], question [redacted].

the Hull Area.¹²¹ Any altnet with a total coverage of at least 50,000 premises is considered a relevant competitor for the purposes of our geographic market definition.

A3.24 Specifically, the list of relevant competitors includes: VMO2 (including its use of nexfibre's FTTP network)¹²², CityFibre, Gigaclear, Hyperoptic, Community Fibre¹²³, Netomnia,¹²⁴ [Redacted list of altnets^{125 126}].¹²⁷

A3.25 Having identified the list of relevant competitors we then map their presence across postcode sectors in the UK (excluding the Hull Area).^{128 129} This is detailed below.

We use a 50% threshold to identify presence at postcode sector level

A3.26 As explained in Volume 2, Section 4, we consider a relevant competitor as 'present' within a postcode sector if its network covers at least 50% of premises within the postcode sector.

A3.27 To determine if one of the relevant competitors is present, we assess each postcode sector separately, for each operator. For each postcode sector, we determine how many premises are within it.¹³⁰ For each operator, we then determine how many premises within that postcode sector they are expected to cover by 2031 (summing existing and planned build).

¹²¹ As explained in Volume 2, Section 4, this is because we think the potential for an altnet to be considered as an acquisition target would likely depend on their total coverage across the UK, including the Hull Area. However, as further detailed below, we do not consider any build in the Hull Area for the purpose of determining relevant competitors' presence and delineating the boundaries between Area 2 and Area 3.

¹²² As set out in Volume 2, Section 4, VMO2 and nexfibre are separate companies, but due to the arrangement between them explained in Section 4, we use the combined VMO2 and nexfibre data on coverage and active lines for the purpose of defining geographic markets. In particular, when we refer to the presence of VMO2, we mean VMO2 on the footprint that includes nexfibre, unless otherwise specified. This also includes Upp which was acquired by nexfibre in 2023. See: nexfibre. 6 September 2023. [nexfibre acquires altnet Upp to accelerate fibre rollout by 175,000 homes in partnership with Virgin Media O2](#). Accessed on 9 March 2026. As mentioned above, in February 2026, the owners of the VMO2 network and InfraVia agreed to acquire Substantial Group through their existing joint venture, nexfibre. The deal is not yet complete and subject to regulatory approval and we continue to consider the Netomnia network footprint as separate from VMO2/nexfibre. VMO2. 18 February 2026. [InfraVia, Liberty Global and Telefónica acquire Substantial Group for £2 billion through their existing joint venture, nexfibre](#). Accessed on 26 February 2026.

¹²³ Community Fibre announced its acquisition of Box Broadband in 2021. In light of this, we have aggregated figures on coverage and take-up for Community Fibre and Box Broadband. See: Community Fibre. 11 August 2021. [Community Fibre announces acquisition of Box Broadband](#). Accessed on 9 March 2026.

¹²⁴ In light of their merger, we have aggregated figures for coverage and take-up for Netomnia and Brsk. See: Netomnia. 15 June 2024. [Netomnia and Brsk to merge creating the second largest altnet in the United Kingdom](#). Accessed on 9 March 2026. See also footnote 17.

¹²⁵ [Redacted] Information provided by [Redacted] by email on [Redacted].

¹²⁶ [Redacted]

¹²⁷ We note that Annex 1 of Openreach's response interpreted the list in the consultation as a "smaller set of seven competitors". This was likely due to the assumption that only one altnet name was redacted, while this was actually a list. See: [Openreach](#) response to TAR26 March 2025 Consultation. Annex 1. Page 19.

¹²⁸ As explained in the footnote above, this means that, for the purpose of delineating the boundaries between Area 2 and Area 3, we exclude any relevant competitors' coverage in the Hull Area.

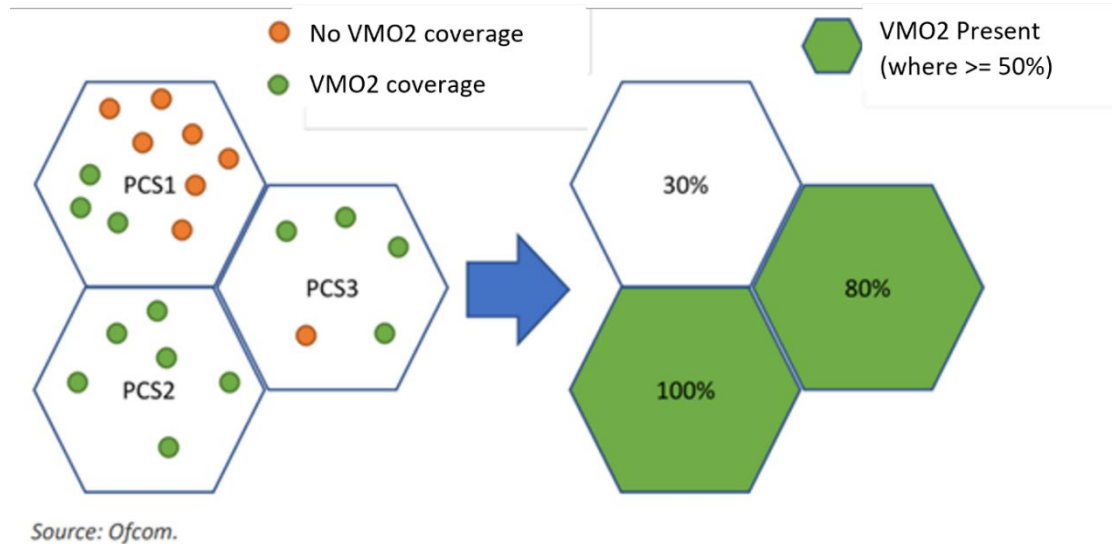
¹²⁹ A small number of postcode sectors geographically lie both in and out of the Hull Area. In our analysis, we have included postcode sectors where Openreach is the incumbent for at least one UPRN. In determining presence, we only include those premises where Openreach is the incumbent.

¹³⁰ Although the number of premises in the UK is expected to increase over time (e.g. due to the Government's house building plans), our modelling assumes the number of premises does not change. This is a modelling simplification in the absence of specific forecasts.

If an operator is expected to cover 50% or more of the premises in a postcode sector, we conclude that they are present in that postcode sector.

A3.28 Figure A3.1 provides an illustration of our approach to assess presence using VMO2 as an example.

Figure A3.10: Example illustration of approach to assess coverage¹³¹



A3.29 As discussed in Volume 2, Section 4, all postcode sectors where at least one of the relevant competitors is present are part of Area 2. All other postcode sectors are allocated to Area 3.

A3.30 The next section provides more details about relevant competitors' presence and summarises how we propose to allocate UK postcode sectors into Area 2 and Area 3.¹³²

Results of our geographic market analysis

A3.31 Tables A3.2 and A3.3 show the results of the geographic market analysis based on current or potential material and sustainable competitors' presence as of July 2025 and by 2031 respectively. Figures in all tables in this Annex exclude the 46 Hull Area postcode sectors and their premises.

A3.32 Table A3.2 shows that at least one or more of the relevant competitors were present in addition to BT in 71% of UK postcode sectors that account for 79% of UK premises as of July 2025.

A3.33 Table A3.3 shows that we expect this figure to grow to 81% of UK postcode sectors that account for 86% of UK premises by 2031.

¹³¹ PCS means Postcode Sector. Each dot is a premises, and the hexagons are postcode sectors.

¹³² As discussed in this annex and in Volume 2, Section 4, when delineating the boundaries between Area 2 and Area 3, we exclude Hull Area postcode sectors.

Table A3.2: Summary of results of WLA geographic market analysis based on existing presence of relevant competitors in addition to BT as of July 2025

Relevant competitors in addition to BT – existing presence	Count of postcode sectors	Count of UK premises	% of UK postcode sectors	% of UK premises
Two or more	2,453	9.9m	25%	31%
One	4,473	15.6m	46%	48%
None (i.e. BT only)	2,779	6.7m	29%	21%
Total	9,705	32.2m	100%	100%

Source: Ofcom analysis of providers data. Figures may not sum to 100% due to rounding.

Notes: The premises are the total number of premises in the postcode sectors where relevant competitors are deemed to be present, not the number of premises passed by the network/s. All figures exclude 46 Hull Area postcode sectors.

Table A3.3: Summary of results of WLA geographic market analysis based on existing and planned presence of relevant competitors in addition to BT over the review period

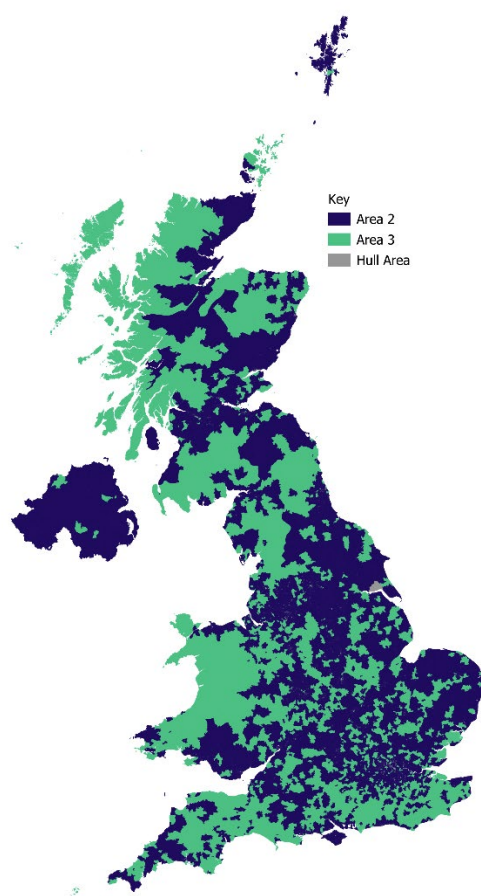
Relevant competitors in addition to BT – network presence including plans	Count of postcode sectors	Count of UK premises	% of UK postcode sectors	% of UK premises
Two or more	4,092	15.9m	42%	49%
One	3,732	11.9m	38%	37%
None (i.e. BT only)	1,881	4.4m	20%	14%
Total	9,705	32.2m	100%	100%

Source: Ofcom analysis of providers data.

Notes: Figures may not sum to 100% due to rounding. The premises are the total number of premises in the postcode sectors where relevant competitors are deemed to be present, not the number of premises passed by the network/s. All figures exclude 46 Hull Area postcode sectors. The latest date available for planned coverage is up to July 2031.

A3.34 The map below (Figure A3.2) shows Area 2 (in blue), where at least one of the current or potential material and sustainable competitors are expected to have presence by 2031 based on existing and planned build.

Figure A3.2: Map of Area 2 and Area 3 postcode sectors



Source: Ofcom analysis of providers data. Contains Ordnance Survey data © Crown copyright and database right 2024. Contains Royal Mail data © Royal Mail copyright and database right 2024. Contains National Statistics data © Crown copyright and database right 2024.

A3.35 Table A3.4 shows the results for our proposed WLA Areas 2 and 3. The postcode sectors making up those geographic markets that we have identified can be found in Schedule 2.

A3.36 Based on our analysis of existing and planned build, Area 2 comprises 81% of postcode sectors and 86% of UK premises. This compares to 82% of postcode sectors and 90% of premises in the March 2025 Consultation. This change is largely in response to updated plans received through the s135 notices, where there was a reduction in plans by some of the altnets.

Table A3.4: Summary of results of WLA geographic market analysis

WLA geographic market	Count of postcode sectors	Count of UK premises	% of UK postcode sectors	% of UK premises
Area 2	7,824	27.8m	81%	86%
Area 3	1,881	4.4m	19%	14%

Source: Ofcom analysis of providers data. All figures exclude 46 Hull Area postcode sectors.

WLA market shares

A3.37 In this section of the Annex, we set out our methodology for calculating WLA market shares as of July 2025. We use these shares alongside other data in our WLA market analysis.

Input data

A3.38 We use Connected Nations data (as per July 2025) on active broadband connections, i.e. connections that provide an active broadband service to residential or business customers, to determine the number of connections by network in each postcode sector.¹³³

A3.39 Connected Nations collects information on individual customer connections, including location and technology, from the same network operators that provide coverage information and the largest retail service providers (see Table A3.1).

Data processing

A3.40 In line with data on existing and planned build, data on active broadband connections was first matched against the Connected Nations July 2025 premises base. In particular, just over 27.3m active connections in the Connected Nations data had a postcode sector in the WLA market areas.

A3.41 The number of active connections for each network operator was then aggregated at postcode sector level and used in conjunction with the results of the geographic market analysis.

Methodology

A3.42 To calculate market shares we divide the number of active broadband connections from a specific provider by the total number of active broadband connections in a given geographic area.

A3.43 To reflect the overall level of competitive constraint exerted on BT in our SMP assessment, when calculating market shares, we take into account active lines provided by all altnets included in the Connected Nations data, irrespective of whether they were identified as relevant competitors for the purpose of delineating the boundaries between geographic market areas.

A3.44 Market shares for WLA Area 2 and WLA Area 3 for BT, VMO2 and CityFibre are outlined in Table A3.5.

A3.45 As detailed in Table A3.1, Connected Nations collects data from the main broadband suppliers together with many smaller operators. Some of the smaller operators, which are not a part of the Connected Nations data, may not be captured in our calculations. We expect the impact on our overall market shares to be negligible.

¹³³ Ofcom. 19 November 2025. [Connected Nations 2025 Methodology Annex](#). Page 9. Market share calculations are based on the number of active WLA connections, including broadband services used for standalone landline services, but do not include customers that take a standalone landline service delivered over the traditional Public Switched Telephone Network. Standalone landline refers to a landline service bought as a standalone contract and not as part of a bundle with other services such as broadband or Pay TV.

Table A3.5: Summary of market shares for WLA markets, July 2025

	Area 2	Area 3
BT's share of WLA connections	61-80% [>]	81-90% [>]
Largest rival (VMO2), share of connections	11-30% [>]	0%-10% [>]
Second largest rival¹³⁴ (CityFibre), share of connections	0%-20% [>]	0%-10% [>]

Source: Ofcom analysis of provider data.

¹³⁴ Defined by total current footprint.

Data collection from providers

- A3.46 We sought data on coverage, take-up and planned network deployment for fixed networks from the providers listed in Table A3.1. Not all providers listed may have provided data on all of coverage, take-up and planned network deployment.
- A3.47 We used data collected for the purposes of Connected Nations reporting, including coverage and take-up data that was collected in August 2025, and planned network deployment data collected in May 2025. Additionally, we used our statutory powers to formally request additional planned network deployment data in June or July 2025.¹³⁵ We received additional plans in response to s135 notices from [redacted].

¹³⁵ s135 notice dated 23 June 2025 or 28 July 2025, question F.

A4. Choice of anchor products

- A4.1 In Volume 4 we present our decisions relating to pricing remedies for WLA services. This involves maintaining the charge control approach for WLA pricing and applying the regulation to the 80/20 anchor product.
- A4.2 In this Annex, we explain why we have decided that 80/20 would be a suitable anchor product, taking into account stakeholder feedback on the March 2025 Consultation.

Our proposals

- A4.3 In the March 2025 Consultation, we proposed a pricing continuity approach in WLA Area 2 and WLA Area 3, which involved shifting the existing charge controls on Openreach 40/10 services to 80/20 services. As part of our proposal, we examined in detail the options and evidence for retaining controls on 40/10 services compared to 80/20 services.
- A4.4 Our provisional conclusion was that shifting the anchor to 80/20 reflects the underlying approach taken in past market reviews better than retaining the anchor on 40/10, both in terms of the impact on investment and sufficiently protecting consumers. The 80/20 anchor also better reflected the trends in consumer demand for higher speed services, and the declining customer volumes on 40/10 services.
- A4.5 In the October 2025 Further Consultation, we considered the option for the anchor products' wholesale prices to be governed by Openreach's existing commercial contracts and offers (the "Contract Focused Approach"). We did not comment on arguments made by stakeholders relating to the appropriateness of 80/20 as an anchor for the TAR26 period in that consultation.

Stakeholder responses

- A4.6 CityFibre, Sky, PXC, AllPoints Fibre, as well as the Scottish Government, Consumer Scotland and the Advisory Committee for Scotland, all supported our proposal to focus on Openreach's 80/20 products.¹³⁶
- A4.7 They noted that 80/20 was currently the most popular speed product on FTTC, and welcomed introducing charge controls on this product which would continue to protect consumers as the market evolves, offering a greater constraint on the higher speed tiers as they become more popular with consumers.
- A4.8 PXC, Sky and VodafoneThree also noted that, if the anchor was not updated to 80/20, then the 40/10 anchor would become an increasingly ineffective constraint as volumes were declining and customers were moving up to higher speeds. PXC and Sky said that customers were highly unlikely to reduce their speed to the 40/10 product, even in the

¹³⁶ [CityFibre](#) response to TAR26 March 2025 Consultation, paragraph 2.23. [Sky](#) response to TAR26 March 2025 Consultation, paragraph 18. [PXC](#) response to TAR26 March 2025 Consultation, paragraph 2.5. [AllPoints Fibre](#) response to TAR26 March 2025 Consultation, paragraph 35. [Scottish Government](#) response to TAR26 March 2025 Consultation, page 2. [Consumer Scotland](#) response to TAR26 March 2025 Consultation, page 7. [Advisory Committee for Scotland](#) response to TAR26 March 2025 Consultation, page 7.

face of significant price rises on their existing, faster services.¹³⁷ As part of its consultation response, Sky noted that it offered 3,000 of its Superfast customers (advertised speed 61Mbit/s) a £3.50 per month saving to downgrade to Sky's Superfast 35 product (advertised speed 36Mbit/s), and no customers took up the offer.¹³⁸

- A4.9 CityFibre¹³⁹ and Sky¹⁴⁰ considered that the proposed 80/20 anchor would better protect competition since it would better limit Openreach's ability to deter ISPs migrating demand to altnets through increasing copper prices.
- A4.10 However, some concerns were expressed about the strength of the constraint on the pricing of faster FTTP products.
- a) While [S<] supported the change in anchor from 40/10 to 80/20, it cited clause 15.2 in the Equinox 1 Offer which allows Openreach to adjust more broadly the pricing terms of the Equinox discounts after 2026 should Ofcom make changes to the regulated anchor product. [S<] was concerned that Openreach might signal that it would punish ISPs moving to altnets by increasing the prices of other (non-anchor) FTTP products. However, [S<] accepted that this risk may be low, including because of the combined constraint from a charge control on the 80/20 service and competition from altnets.¹⁴¹
 - b) VodafoneThree stated that, while the revision to the pricing anchor to 80/20 is a useful measure, it was concerned that consumers wishing to purchase higher bandwidths in WLA Area 3 may face higher prices than those in WLA Area 2.¹⁴²

Our reasoning and decisions

Approach to the choice of anchor product in previous market reviews

- A4.11 We introduced anchor product regulation in the 2018 WLA Statement, and continued this approach in the WFTMR21.
- A4.12 In the 2018 WLA Statement, we introduced a charge control on the FTTC 40/10 rental charge (and FTTP at the same price for homes served only by FTTP), which were the products Openreach used to meet its Virtual Unbundled Local Access (VULA) obligations.
- a. We performed analysis to ensure that this anchor would protect consumers.¹⁴³
 - b. We had regard to key objectives relating to investment. In particular, preserving the investment incentives faced by competitors to Openreach to build their own networks where viable, and preserving the investment incentives faced by BT/Openreach by applying the 'fair bet'.¹⁴⁴

¹³⁷ Both Sky and PXC reference the Frontier Economics pre-consultation submission: Frontier Economics. 2025. [Willingness to pay for different broadband speeds](#)

¹³⁸ Sky response to TAR26 March 2025 Consultation, paragraphs 22-24.

¹³⁹ CityFibre. 12 June 2025. [CityFibre](#) response to TAR26 March 2025 Consultation, paragraph 2.26.

¹⁴⁰ Sky. June 2025. [Sky](#) response to TAR26 March 2025 Consultation, paragraph 16.

¹⁴¹ [S<] confidential response to TAR26 March 2025 Consultation. [S<]

¹⁴² [VodafoneThree](#) response to TAR26 March 2025 Consultation, paragraphs 76-77.

¹⁴³ Ofcom, 2018. [Wholesale Local Access Statement](#), Vol. 1, paragraphs 9.90-9.93.

¹⁴⁴ Ofcom, 2018. [Wholesale Local Access Statement](#), Vol. 1, paragraph 9.10.

- A4.13 We noted the tension between these objectives and the need to find an appropriate balance. Ultimately, we concluded that the balance would be achieved by a charge control on the FTTC 40/10 product, allowing pricing flexibility on higher speed products.¹⁴⁵
- A4.14 The WFTMR21 continued the approach of using an anchor charge control on FTTC 40/10, and FTTP 40/10 where FTTC was not available. As part of our assessment of pricing continuity, we considered:
- a. The impact on investment, both by altnets and Openreach.¹⁴⁶
 - b. Whether consumers would be sufficiently protected.¹⁴⁷
- A4.15 Given our objectives are unchanged from 2021, we consider that our underlying approach to the anchor product remains relevant for this review period.
- A4.16 Continuity of this approach involves adopting a basic superfast broadband product as the anchor that promotes investment by Openreach and competing networks while sufficiently protecting consumers.¹⁴⁸
- A4.17 In this annex we consider which of the following options best reflects these principles:
- a) Retaining 40/10 for both FTTC and FTTP as the anchor, as implemented in the March 2021 Statement (**Option 1**).
 - b) Shifting the anchor to 80/20 for both FTTC and FTTP (**Option 2**).
- A4.18 Below we consider the implications of these options for investment and the protection of consumers, taking into account the evidence we have collected on the market dynamics and consumer preferences and stakeholder responses, before setting out our conclusions. This allows us to identify the option that maintains continuity with the approach used in previous market reviews while taking into account the subsequent changes in the market.

Implications for investment

- A4.19 We expect that applying the anchor to either 40/10 or 80/20 products, as part of a pricing continuity approach, would have fairly similar impacts on investment.
- A4.20 However, prior to the March 2025 Consultation multiple stakeholders expressed concerns that Openreach may raise FTTC 80/20 prices. In addition, [3<] is concerned about Openreach raising prices, including for faster FTTP products, in response to ISPs moving customer volumes to altnets. The threat of such retaliatory behaviour may deter ISPs from using altnet FTTP (including limiting the number of altnet orders where a wholesale agreement is in place) which would likely harm altnet investment incentives.¹⁴⁹

¹⁴⁵ Ofcom, 2018. [Wholesale Local Access Statement](#), Vol. 1, paragraph 9.25. We also noted that BT's 'fair bet' on FTTC had already been recouped.

¹⁴⁶ Ofcom, March 2021, [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#), Vol.4, paragraphs 1.19-1.42.

¹⁴⁷ Ofcom, March 2021, [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#), Vol.4, paragraphs 1.43-1.59. We also considered whether there was a risk that Openreach might engage in a margin squeeze strategy, taking into account the substitutability of our anchor for higher speed broadband products (paragraphs 1.60-1.61).

¹⁴⁸ FTTC 40/10 was considered a 'basic SFBB' product during WLA 2018 and again in WFTMR21, with products offering 80 Mbit/s and above considered 'higher speeds'.

¹⁴⁹ [3<] confidential response to TAR26 March Consultation. [3<].

- A4.21 In terms of FTTC, while the mix of products that different ISPs buy from Openreach varies, overall FTTC 80/20 is currently a more important product than FTTC 40/10. We forecast that this will remain the case over the review period. An FTTC 80/20 anchor price that provides continuity with Openreach's current, discounted FTTC price may provide ISPs that use altnets with more protection from retaliation by Openreach. This in turn would help preserve altnet investment incentives.
- A4.22 In terms of FTTP, we also consider that an 80/20 anchor will help preserve altnet investment incentives.
- a) As discussed below (and as acknowledged by [§<]), an 80/20 anchor exerts an indirect constraint on the pricing of faster Openreach FTTP products.¹⁵⁰ This constraint is stronger than would be the case for a 40/10 anchor. This makes it more costly for Openreach to retaliate against ISPs for using altnets by raising the price of faster FTTP products.
 - b) In any event, Ofcom will remain vigilant. If Openreach were to retaliate against ISPs for using altnets, including by raising its FTTP prices, we would look closely at the actions taken. If we assess such moves by Openreach to be potentially anti-competitive, we will consider the most appropriate means of intervention, including whether to use our competition law powers.¹⁵¹

Implications for consumer protection

- A4.23 When considering whether the anchor sufficiently protects consumers, it is important to look forward towards the likely position during the 2026-31 review period. An anchor protects consumers in the following ways:
- a. It provides direct price protection, by capping the price of the anchor product.
 - b. It also offers protection indirectly, as the potential for substitution to the anchor product constrains the price of the other non-anchor products in Openreach's portfolio.
- A4.24 We recognise that Option 1 and Option 2 will apply a stronger constraint on products with speeds closer to the anchor than those with much higher speeds (such as 500 Mbit/s or 1Gbit/s services). In particular, 80/20 is likely to impose a stronger constraint on higher bandwidth products than 40/10, simply because it is closer in speed to those products.
- A4.25 In WLA Area 2, competition from altnets may provide an extra degree of protection for end-users. However, in WLA Area 3 where material and sustainable competition is not expected to emerge, there is a greater reliance on the anchor product to protect consumers.
- A4.26 Below we discuss the evidence before setting out our conclusions.

Survey evidence on customer demand and preferences

- A4.27 As part of our analysis on broadband end-user demand, willingness to pay and preferences, we gathered customer survey data conducted by communications providers as well as data relating to customer's upgrade and downgrade activity.

¹⁵⁰ [§<] confidential response to TAR26 March Consultation. [§<].

¹⁵¹ Please see our [Enforcement guidelines for Competition Act investigations](#) dated 28 June 2017 for further details of Ofcom's powers under the Competition Act 1998.

A4.28 The following consistent messages emerged.

- a. Price and reliability of service, which include adequate and consistent speeds, are by far the most important considerations to consumers when they are selecting their broadband products.¹⁵²
- b. Despite price being a vital concern for customers, they are very unlikely to downgrade their broadband speed in the face of cost-of-living pressures or to save money.¹⁵³ To convince a customer to downgrade their service, the price differentials have to be very large.¹⁵⁴ This is confirmed by research conducted by Sky on its own customers, where no customers who were offered a discount to downgrade took up the offer.¹⁵⁵
- c. Broadband customers are using the internet more intensely since the COVID-19 pandemic. Family households and particularly affluent families, are the most likely to be engaging in high bandwidth or data intense activities such as streaming or gaming, which indicates they may require more expensive faster speed services.¹⁵⁶
- d. Many workers still work from home, and a significant proportion of those are working up to 4 days a week from home, placing an additional importance on the quality and reliability of their home broadband connection.¹⁵⁷

A4.29 Under Option 2, consumers on higher speeds will be more adequately protected through a greater substitution effect with the 80 Mbit/s product, than if the anchor were retained at 40 Mbit/s under Option 1.

A4.30 Actual downgrade and upgrade data collected from providers also supports the view that customers tend to upgrade their speed in a stepwise manner. Once customers purchase a service at a given speed level, the majority do not downgrade to a lower speed with their existing provider.¹⁵⁸

A4.31 In summary:

- a. Price is important to consumers. As a result, a suitable anchor can indirectly constrain the price of other Openreach WLA products.
- b. For an anchor product to offer sufficient protection to consumers it should be a product that customers willingly would choose should prices on other products rise, as well as one that meets their minimum bandwidth requirements. The reluctance of consumers to downgrade to a slower product suggest that Option 2 (an 80/20 anchor) is likely to offer a greater constraint on higher speed services than Option 1 (a slower 40/10 anchor).

¹⁵² [redacted] response dated [redacted] to s135 notice dated [redacted]

¹⁵³ [redacted] response dated [redacted] to s135 notice dated [redacted]

¹⁵⁴ [redacted] response dated [redacted] to s135 notice dated [redacted]

¹⁵⁵ Sky response to TAR26 March 2025 Consultation, paragraphs 22-24.

¹⁵⁶ [redacted] response dated [redacted] to s135 notice dated [redacted]

[redacted] response dated [redacted] to s135 notice dated [redacted]

¹⁵⁷ [redacted] response dated [redacted] to s135 notice dated [redacted]

¹⁵⁸ [redacted] response dated [redacted] to s135 notice dated [redacted].

Current Openreach pricing and discounts

- A4.32 Almost all Openreach FTTP is sold pursuant to its Equinox 2 Offer.¹⁵⁹ As a result, the Equinox 2 prices represent the market prices for Openreach FTTP services, rather than Openreach's list prices.
- A4.33 For FTTC services, Openreach introduced a discount program that initially was conditional on providers meeting volume thresholds, one of which was for orders of 80/20 Mbit/s and above. This became unconditional in 2021 and has since been extended.
- A4.34 The flattening effect that these discount programs had on Openreach's FTTC and FTTP prices is shown in Table A4.1. It depicts discounts of 20% and above on services 80 Mbit/s or faster across all technologies.

Table A4.1: Openreach wholesale price list and discounts (2025-26 prices, selected products)

	Annual Rental List Price	Annual Rental Discounted Price	Discount
40/10 FTTC*	£181.32	N/A	
55/10 FTTC*	£232.38	£195.59	16%
80/20 FTTC*	£255.54	£195.59	23%
160/30 FTTC*	£278.58	£224.11	20%
40/10 SOGEA	£181.33	N/A	
55/10 SOGEA	£232.20	£195.59	16%
80/20 SOGEA	£255.36	£195.59	23%
40/10 FTTP	£206.56	N/A	
80/20 FTTP	£259.20	£198.96	23%
160/30 FTTP	£317.28	£207.84	34%
550/75 FTTP	£409.20	£241.68	41%
1000/115 FTTP	£469.20	£266.88	43%

*Note: * FTTC price includes £106.50 annual rental charge for MPF SML1 (charge controlled).*

Source: Openreach FTTP, FTTC, SOGEA published price lists, Equinox 2 Offer price list, Special Offer on FTTC and SOGEA price list.

- A4.35 The result of both discounting programs was that large volumes of customers were directed away from 40/10 products and towards higher speed tiers. For example, Openreach's Equinox 2 discounting program incentivised ISPs away from selling the regulated FTTP 40/10 product, as higher speeds could be offered for cheaper or equivalent amounts, leaving the WFTMR21 anchor FTTP product with very low take-up.

¹⁵⁹ The 'Equinox 2 Offer' refers to Openreach's "Equinox FTTP Offer Contract – Supplemental Agreement" which, from April 2023, offered further discounts on FTTP rental and connection charges.

- A4.36 Whether Option 1 or Option 2 sufficiently protects consumers depends in part on the extent to which 40/10 or 80/20 products indirectly constrain other products. The historical pricing evidence presented above does not offer definitive evidence of substitutability, particularly when looking forward to the period 2026-31. That said, we have drawn the following inferences.
- A4.37 The narrowing pricing differential between products of 160 Mbit/s and below may suggest that there is an element of substitutability between these products, and that if the price of one variant in this bracket of products were out of line with the others, then consumers would opt for something else.
- A4.38 As consumers migrate to higher bandwidth services on FTTP (above 160 Mbit/s), the indirect constraint from a lower speed anchor could reduce. This is because users of these products are likely to be looking for higher speeds for particular use cases, and so maybe less willing to downgrade to a lower speed anchor.

Current and forecast volumes on Openreach's network

- A4.39 The following section makes reference to the Ofcom WLA forecasts, which are discussed in further detail in Annex 10.
- A4.40 Between the start and end of the review period, we forecast around 7.2 million subscribers will move off the Openreach legacy network either onto Openreach FTTP or alternative networks. Despite this, the two major legacy speeds, 40 Mbit/s and 80 Mbit/s, will continue to be relevant over the review period. In particular, 80 Mbit/s is expected to continue to remain the major legacy speed tier.
- A4.41 If the anchor product is shifted to FTTC 80/20 under Option 2, the majority of consumers on legacy technologies are likely to be directly protected. Option 1 is likely to directly protect roughly 30% of legacy customers.
- A4.42 Based on our WLA volume forecasts, we are expecting a continued, significant flow of customers to [X] FTTP services of 100 Mbit/s and above over the review period as customers upgrade from legacy technologies. It is therefore important to consider the level of constraint that an anchor would place on FTTP services of 100 Mbit/s and above [X], given [X].
- A4.43 The anchor product could potentially constrain prices of FTTP [X] services of 100 Mbit/s and above even if these FTTP [X] consumers are reluctant to downgrade. This is because, if the price of FTTP [X] services of 100 Mbit/s and above were to rise significantly, the flow of customer upgrades to these products would be slowed. These effects provide an indirect constraint on the price [X] of these services. We consider that Option 2 is likely to exert a stronger constraint on this flow of customers into FTTP [X] services of 100 Mbit/s and above, than Option 1. Customers would have a more suitable alternative if the anchor were 80/20, rather than 40/10. Customers may delay their decision to upgrade from 80/20 legacy services if FTTP [X] services of 100 Mbit/s and above increased in price.
- A4.44 Our WLA forecasts also show that higher speed products with download speeds of 500 Mbit/s or greater will become more popular during the review period, with these speeds forecast to be [X] 25-50% of Openreach's FTTP volumes in FY30. We recognise that either

a 40/10 or an 80/20 anchor are likely to provide a more limited constraint on these much faster products.¹⁶⁰

Trends in bandwidth demand

- A4.45 As explained above, to identify an anchor product that would sufficiently protect consumers it is important to look forward to the likely position over the 2026-31 review period. There has been significant growth both in data usage as well as the demand for speed over the last 5-7 years, and we expect further growth as consumers continue to use their fixed-line broadband more intensely and in more ways.¹⁶¹
- A4.46 In order to continue to be a reasonable choice for consumers and therefore continue to sufficiently protect consumers from price rises on other products in the Openreach portfolio, it is important that the product selected as the anchor keeps pace with how end-users are using their broadband service. In this case, shifting the anchor to 80/20 services would double both the upload and download speeds of the previous anchor, and provide better protection for consumers as the demand for speed and data continues to grow, rather than retaining the anchor on 40/10.

Conclusion on consumer protection

- A4.47 Having considered the evidence above, an 80/20 anchor (Option 2) is more likely to sufficiently protect consumers than a 40/10 anchor during 2026-31. Many respondents to the March 2025 Consultation agreed with this and supported the proposed anchor in their responses.
- A4.48 We recognise that the constraint 80/20 exerts on the fastest Openreach broadband variants, now up to 1.8Gbit/s, may be limited (albeit stronger than a 40/10 anchor). Nonetheless, we consider that it will sufficiently protect broadband customers as a whole.
- A4.49 VodafoneThree raised a specific concern about higher prices for higher bandwidth products in WLA Area 3 than in WLA Area 2.¹⁶² As explained above, and consistent with Ofcom's approach to the anchor in past market reviews, the issue is whether the anchor sufficiently protects consumers. It is not intended to prevent price differences between geographic markets.

Overall conclusion on the anchor product

- A4.50 The anchor regulation ensures consumers have access to an adequate superfast product, and the use of a charge-controlled anchor product allows pricing flexibility for higher bandwidth products. This has been an important part of the anchor pricing approach and its support for the investment cases of both Openreach and altnet network deployments.
- A4.51 As explained above, Option 2 (shifting the anchor to 80/20) reflects the underlying approach taken in past market reviews better than Option 1 (retaining the anchor on 40/10), both in terms of the impact on investment and in terms of sufficiently protecting consumers.

¹⁶⁰ As explained above, the anchor will indirectly constrain the price of FTTP [3<] services of 100 Mbit/s and above to some degree. These FTTP [3<] services may then impose a limited constraint on higher bandwidth services.

¹⁶¹ Ofcom. 19 November 2025. [Connected Nations UK Report 2025](#), page 6

¹⁶² [VodafoneThree](#) response to TAR26 March 2025 Consultation, paragraphs 74-77.

A4.52 Accordingly, in Volume 4 our decision for maintaining pricing continuity for WLA services involves an 80/20 anchor.

A5. Leased line access geographic analysis

- A5.1 Volume 2, Section 5 discusses our approach to LLA geographic market definition based on available evidence and feedback submitted by stakeholders in response to the March 2025 Consultation and to the November 2025 Further Consultation.
- A5.2 In this Annex we describe the data analysis that we have carried out in relation to the LLA market.
- A5.3 We first cover:
- input data – the sources and types of data that we gathered for this work; and
 - data cleaning – the steps taken in checking and preparing the datasets for our analysis.
- A5.4 We then explain how we consider whether a relevant LLA provider and its network are ‘within reach’ of leased line demand sites (we refer to this as the ‘buffer distance’). We set out:
- our modelling approach, as implemented in the network reach model;
 - the role of the buffer distance as a key parameter of the network reach model;
 - the evidence we considered for setting the buffer distance; and
 - our reasoning for deciding on the value of buffer distance.
- A5.5 We then set out the methodologies we adopted in carrying out the following elements of our analysis:
- **network reach analysis**, used to determine the location of competing networks and their proximity to users of LLA services; and
 - **LLA provisions analysis**, used to calculate market shares and other measures of competitive market conditions in the provision of LLA services.
- A5.6 At the end of each methodology subsection, we set out the results that we draw on in reaching our conclusions in our market analysis, as set out in Volume 2, Sections 5.

Input data

- A5.7 In this subsection we describe the data inputs we used. All data supplied by telecoms providers was obtained using our formal information gathering powers between May 2024 and February 2026.

Postcode data

- A5.8 We used the Ordnance Survey Code-Point with Polygons dataset from April 2025¹⁶³ and the National Statistics Postcode Lookup (“NSPL”) dataset from February 2025.¹⁶⁴ This postcode data is used to determine the locations of demand sites (see below) and LLA circuit ends.

¹⁶³ See: Ordnance Survey. 2025. [Code-Point with Polygons](#). Accessed on 17 December 2025.

¹⁶⁴ See: Office for National Statistics. 2025. [ONS National Statistics Postcode Lookup \(February 2025\) for the UK](#). Accessed on 17 December 2025.

Physical network infrastructure data

A5.9 We asked LLA providers¹⁶⁵ to supply details of their physical networks as set out in the following paragraphs (we have updated this information since the March 2025 Consultation).

Flexibility points

A5.10 We asked providers for the locations of all their network flexibility points. These are the points where existing physical links can be accessed to connect an end-user premises using a customer-specific network extension, and from which the provider would consider, within its current network planning practice, extending its network reach to provide services to additional end-user premises. Examples of flexibility points include buildings where fibre terminates on an optical distribution frame or underground chambers where fibre can be accessed, such as where ducts meet at a junction.

Physical infrastructure maps

A5.11 We asked providers other than Openreach to supply up-to-date digital maps of their entire physical infrastructure, such as duct, poles, or chambers, including their own physical infrastructure as well as third-party physical infrastructure that the providers used for their telecoms network (for example, specific items of Openreach physical infrastructure used based on PIA).¹⁶⁶

Network sites

A5.12 We asked providers for up-to-date information on their network sites. Network sites are locations in a provider's network where it has installed transmission equipment used for leased lines (or other connectivity services) and which are capable of serving more than one business customer. A network site can be a data centre or a location in a provider's network that is not an end-user site, such as a local exchange or a network aggregation node. We asked for the location of each network site, a brief description of the nature of the site, and whether it coincides with a customer site.

Network expansion plans

A5.13 We also asked providers for up-to-date details of their plans for network expansion. Most stated that they had no specific network expansion plans (beyond customer-specific requests). [X] provided a high-level description of the likely routes for its planned network expansion but was unable to provide the exact locations. [X] said that its build plan over the next five years is dynamic, depending on (i) the availability and flow of finance to fund the significant capital expenditure required and (ii) a regular review of where it makes economic sense to build, taking account of the extent of overbuild by Openreach in particular. It provided a list of postcodes which it said are likely to be served through network expansion [X] and a digital map of its planned spine network routes and expansion areas [X]. [X] said that its future supply of LLA services would be driven by its

¹⁶⁵ CityFibre, Colt, Commsworld, eircom, FibreSpeed, ITS, KCOM, Lumen, MS3, National Grid Telecoms, Neos, Nexfibre, Openreach, Verizon, VMO2, VodafoneThree, Vorboss, WightFibre, and Zayo.

In February 2026, the owners of the VMO2 network (Liberty Global and Telefonica), and InfraVia, agreed to acquire Substantial Group (including the Netomnia network footprint and retail brands YouFibre and Brsk) through their existing joint venture, nexfibre. The deal is not yet complete and is subject to regulatory approval. VMO2. 18 February 2026. [InfraVia, Liberty Global and Telefónica acquire Substantial Group for £2 billion through their existing joint venture, nexfibre](#). Accessed on 26 February 2026.

¹⁶⁶ [X]

existing network and provided its network expansion plans but highlighted various limitations in terms of data availability. [X] provided plans for its network expansion but highlighted the uncertainties and limitations of the data, stating that network elements reported as planned may in fact be due to be built, may never be built or may already have been built. [X] and [X] provided their network expansion plans.

Combined physical network infrastructure data

- A5.14 We have used duct maps together with flexibility points and poles to represent the location of networks in our network reach analysis.
- A5.15 We have used network sites to identify the site type of leased line circuit ends (see below).

LLA demand sites data

- A5.16 We have sought to identify the locations of demand for LLA connectivity in the review period. We consider that the demand is likely to be driven by the following types of sites:
- fibre-connected LLA sites;
 - sites of large businesses; and
 - mobile cell sites.¹⁶⁷
- A5.17 We describe below the data used for each type of sites.

Fibre-connected LLA sites

- A5.18 We consider that current fibre-connected LLA sites are a likely source of demand for LLA services in the review period. Although individual sites may or may not require LLA services in the review period, given they have previously received a LLA service we consider that their locations provide the most relevant representation of the areas where the demand is likely to come from.
- A5.19 We have used data about leased lines provisions in 2020-2024 to identify LLA sites that were provisioned using the respective providers' own fibre. See below the details on the processing of leased lines provisions data.
- A5.20 In generating the dataset of fibre-connected LLA sites, we have excluded LLA provisions to mobile cell sites, as these are represented by a separate dataset of mobile cell sites below. This is to ensure that each mobile cell site is represented no more than once.

Sites of large businesses

- A5.21 We recognise that LLA demand in the review period may also come from locations other than current fibre-connected LLA sites which were provisioned between 2020 and 2024. To represent these additional locations, in postcodes where no fibre-connected LLA site has been identified using the above data, we considered the sites of large businesses.
- A5.22 We used the CACI D&B Business Data dataset from August 2025 to identify the sites of businesses with 250 or more employees nationally.¹⁶⁸ As this dataset contains the postal

¹⁶⁷ Unlike the March 2025 Consultation, we no longer represent data centre access sites using a separate dataset. This is because data centres, to the extent they are the locations of LLA sites, are already captured by the data on fibre-connected LLA sites.

¹⁶⁸ CACI. August 2025. D&B Business Data for Ofcom. The dataset is used subject to the following attributions:

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- © CACI 2025.

address of each site, we identified the postcode of each site and used the postcode centroid to approximate the site's location. We consider this to be a proportionate way of representing each site's location. We also used this approach in the WFTMR21, albeit on a different dataset.

- A5.23 Like fibre-connected LLA sites, we note that individual business sites may or may not demand LLA services in the upcoming review period. However, we consider that their locations provide the most relevant representation of the additional areas where demand for LLA services is more likely to come from.

Mobile cell sites

- A5.24 MNOs use leased lines to connect mobile cell sites to their core network (mobile backhaul).
- A5.25 Since the March 2025 Consultation, we have obtained a list of mobile cell sites collected for Connected Nations. We have also asked MNOs and MBNL to provide a list of mobile cell sites that they are planning to decommission and those that they are planning to deploy by the end of the review period.
- A5.26 We used this data to construct a list of mobile cell sites.

Combined demand sites data

- A5.27 We combined data on the location of fibre-connected LLA sites, sites of large businesses and mobile cell sites to create a list of modelled LLA demand sites.
- A5.28 We then filtered out demand sites inside the Hull Area. Postcode sectors that straddle the Hull Area boundary are included in our analysis but only the demand sites outside the Hull Area are taken into account within those postcode sectors.

Table A5.1: Summary of modelled LLA demand sites by category

Type of demand site	Number	Percentage
Fibre-connected LLA sites	258,476	65%
Sites of large businesses	54,969	14%
Mobile cell sites	82,961	21%
Total	396,406	100%

Source: Ofcom analysis of provider data and CACI D&B Business Data.

Leased lines provisions data

- A5.29 We asked providers for a list of all leased line, leased line equivalent and dark fibre circuits that they connected to customers in 2020 to 2024. The information requested in relation to these circuits included:
- circuits supplied to business customers, MNOs or other telecoms providers;
 - newly connected circuits, and upgrades or regrades to existing circuits;
 - on-net and off-net circuits; and
 - services supplied using any of the following interfaces:
 - > Ethernet (other than (i) Ethernet over symmetric PON; and (ii) EFM);
 - > Ethernet over symmetric PON;
 - > WDM (incl. DWDM);

- > SDH/PDH;
- > EFM;
- > SDSL;
- > analogue; and
- > any other interfaces that support dedicated capacity presented to the customer (e.g. Fibre Channel, ATM, Frame Relay, broadcast-specific interfaces such as SDI or RFoG).

A5.30 We used this data to create the leased line provisions dataset, containing all leased line, leased line equivalent and dark fibre circuit ends connected by providers in 2020 to 2024.¹⁶⁹

Data cleaning

A5.31 In this sub-section, we describe the steps involved in using our input data to create the leased line provisions dataset we need for our analysis. The key steps are:

- identifying and excluding all circuits that are not in the LLA product market;¹⁷⁰
- removing duplicate dark fibre circuits;
- classifying each circuit end as either being supplied using the provider's own network ("on-net") or being purchased from a third party ("off-net");
- identifying the location of each circuit end;
- excluding circuit ends that do not connect to access sites;
- identifying the bandwidth sold to the customer; and
- identifying how each circuit end was connected (e.g. whether and what type of build activity was required).

A5.32 We discuss these in turn below before describing our output dataset.

Identifying and excluding circuits not in the LLA product market

A5.33 We looked for key words of products, bandwidths, interfaces and physical links that we wanted to exclude from the leased line provisions dataset. We assumed that any circuits not flagged in this way for exclusion were in the LLA product market.¹⁷¹

A5.34 We excluded:

¹⁶⁹ We did not ask for a full inventory of leased line, leased line equivalent and dark fibre circuits given previous concerns in relation to the quality of the data held by providers. See: Ofcom. 2019. [Promoting competition and investment in fibre networks: review of the physical infrastructure and business connectivity markets](#). Annex 12. Paragraphs A12.70 to A12.74.

¹⁷⁰ Volume 2, Section 5 details our decision on LLA product market based on available evidence and feedback submitted by stakeholders in response to the March 2025 Consultation and to the November 2025 Further Consultation.

¹⁷¹ Volume 2, Section 5 sets out the list of services we exclude from the LLA product market. We note that each of these services may appear under multiple names in the leased line provisions dataset. Therefore, the list of excluded circuits and services set out in this section is longer than the list of excluded services set out in Volume 2, Section 5.

- circuits classed as analogue, PDH/SDH,¹⁷² time division multiplex (TDM), radio base station (RBS) and legacy analogue traditional interface (TI) products;
- circuits with bandwidths of 2 Mbit/s or less, as they are indicative of legacy products;
- Cablelink circuits, as these are only used for access to network equipment within a BT exchange or to connect to infrastructure close to a BT exchange, which means that they are not LLA circuits;
- network-to-network interface products, as these are not LLA circuits;
- leased line products used only for connectivity between BT exchanges (EBD);
- leased line products used for specialist applications such as Broadcast, Street Access, and EAD rugged;
- business-grade connectivity services provided over Ethernet in the first mile (EFM) and asymmetric broadband (DSL, FTTx, G-PON);¹⁷³
- wavelength division multiplex (WDM) individual wavelengths, as their presence would lead to double-counting of circuits; and
- circuits transmitted via copper, radio/microwave or satellite, as these are not included in the LLA product market.

A5.35 Many of these excluded circuit types had low volumes. Table A5.2 shows that this step resulted in 13% of circuit ends in the leased line provisions dataset being excluded.

Table A5.2: Leased line products identification

Circuit end observations*	Number	Percentage
LLA products	860,103	87%
Non-LLA products	129,659	13%
Total	989,762	100%

Source: Ofcom analysis of provider data.

**At this stage of data processing, a circuit end may be captured by more than one observation where it is supplied by one telecoms provider to another. In this case, the circuit end will be classified as “on-net” for the telecoms provider who supplies it using their own network and as “off-net” for the purchasing telecoms provider.*

Removing duplicate dark fibre circuits

A5.36 Dark fibre circuits sold to other leased line providers appear in the raw data twice: once as a dark fibre circuit for the supplier, and again as a leased line circuit for the provider who purchased it. To avoid double-counting, we excluded all dark fibre circuits sold to other providers.

A5.37 Table A5.3 shows that this step resulted in 1.3% of circuit ends of LLA products being removed.

¹⁷² Plesiochronous / synchronous digital hierarchy.

¹⁷³ See Volume 2, Section 5.

Table A5.3: Dark fibre identification

Circuit end observations*	Number	Percentage
LLA products	860,103	100%
Dark fibre supplied to other providers	10,800	1.3%
LLA products excluding dark fibre supplied to other providers	849,303	98.7%

Source: Ofcom analysis of provider data.

*At this stage of data processing, a circuit end may be captured by more than one observation where it is supplied by one telecoms provider to another. In this case, the circuit end will be classified as “on-net” for the telecoms provider who supplies it using their own network and as “off-net” for the purchasing telecoms provider.

Classifying each circuit end as on-net or off-net

A5.38 The majority of circuit ends were identified as being on-net or off-net in the data set. Where circuit ends were not identified as being supplied either on-net or off-net, we included them as on-net in our wholesale service share analysis (to the extent we were able to identify their geographic location – see below). Table A5.4 shows that 8.4% of circuit ends of LLA products excluding dark fibre supplied to other providers were classified in this way.

Table A5.4: On-net and off-net circuit ends

Circuit end observations	Number	Percentage
LLA products excluding dark fibre supplied to other providers	849,303	100%
On-net	697,634	82.1%
Off-net	80,357	9.5%
Unclassified	71,312	8.4%
LLA products wholesale (on-net and unclassified)	768,946	90.5%

Source: Ofcom analysis of provider data.

Identifying the location of each circuit end

A5.39 The first step was to ensure the postcodes provided were in a valid UK postcode format and to convert the coordinates provided into the British National Grid coordinate reference system (CRS). We then proceeded in the following steps:

- Where we were provided only coordinates for a circuit end, we mapped the coordinates to the Ordnance Survey postcode polygons to retrieve the corresponding postcode.¹⁷⁴

¹⁷⁴ The Ordnance Survey postcode polygons draw boundaries between postcode units.

- b. Where we were provided coordinates and postcodes for a circuit end, we validated whether the postcode was active against the NSPL. For active postcodes we took the postcode as given. For inactive postcodes, we mapped the coordinates provided to the Ordnance Survey postcode polygons to retrieve the corresponding active postcode.
- c. Where we were provided only postcodes, we retrieved the postcode centroid from the NSPL.¹⁷⁵ For inactive postcodes we then mapped the postcode centroid to the Ordnance Survey postcode polygons to retrieve the corresponding active postcode.

A5.40 The results of postcode validation are presented in Table A5.5.

Table A5.5: Missing and available postcodes

	Number	Percentage
LLA products excluding dark fibre supplied to other providers, of which:	849,303	100%
Missing postcode	36,953	4.4%
Available postcode	812,350	95.6%

Source: Ofcom analysis of provider data.

A5.41 We have noted the circuit ends with missing postcode data as having an unknown location in our final dataset.

Excluding circuit ends that do not connect to access sites

A5.42 This step involves excluding circuit ends that are not within the access layer, i.e. those that do not connect to end-users. Specifically, those are circuit ends that correspond to BT exchanges, KCOM exchanges, network site data centres and other network sites.

A5.43 We asked providers to identify whether each circuit end terminates in an end-user site or a network site. Where providers did not provide this information, we used information on the postcodes of providers' network sites to identify circuit ends connected to those network sites.

A5.44 Table A5.6 shows that this step resulted in the exclusion of around 47% of circuit ends of LLA products excluding dark fibre supplied to other providers.

Table A5.6: Network sites and leased lines access sites

	Number	Percentage
LLA products excluding dark fibre supplied to other providers, of which:	849,303	100%
Network sites	398,972	47%
Access sites	436,299	51%
Unknown*	14,032	2%

Source: Ofcom analysis of provider data.

¹⁷⁵ The postcode centroid is the mean location of addresses in a postcode snapped to the nearest property.

**Circuit ends with missing postcodes where the provider did not identify the circuit end type.*

Bandwidth sold to the customer

- A5.45 This step involved standardising the format of the information provided on the sold bandwidth used to define the bandwidth categories in our analysis. The process involved using regular expressions to identify the number provided in the bandwidth field. We assumed the number provided to be Mbit/s unless otherwise stated (in which case we converted to Mbit/s).
- A5.46 For 10% of LLA circuit ends, the bandwidth information was missing.

How the circuit end was connected

- A5.47 For each on-net and dark fibre circuit end, we asked providers whether they installed new blown fibre, new fibre cable, new tubing or new duct, and whether they used third-party duct. In addition, for the connections that involved the installation of any of these infrastructures, we asked for information on the actual distance dug, the length of fibre cable or tubing installed, the length of blown fibre and the length of third-party duct used.
- A5.48 The extent of information supplied by providers varied greatly, with some able to provide details of distances for individual circuit ends or circuits,¹⁷⁶ others only providing partial or aggregated data,¹⁷⁷ and some unable to provide any data at all on how individual circuits or circuit ends were connected.
- [X].
 - [X].
 - [X].
 - [X].
 - [X].
 - [X].
 - [X].
 - [X].
 - [X].
 - [X].

Output dataset

- A5.49 Following the above steps, we created an output dataset including only circuit ends in the LLA product market. This dataset has 450,331 circuit ends.

¹⁷⁶ For data provided by circuit rather than circuit end, we had to make some assumptions to map this data to circuit ends for the purpose of our analysis. Where we identified only one end of the circuit to be an access end, we attributed the build data to this access end. Where we identified both ends to be access ends, we assigned the build to each end with a 50% probability. Where both ends were identified as non-access, the build was not relevant to our analysis.

¹⁷⁷ Where data was provided on how a circuit end was connected but not on the distance, we have included it in our analysis of the proportions of circuit ends that required build activity but were unable to use it for the analysis of build distances.

A5.50 Table A5.7 below shows that the LLA provisions dataset contains a small proportion of circuit ends for which we are missing information on key variables. For example, for 7% of circuit ends we do not know whether these were on-net or off-net.

Table A5.7: Proportion of LLA circuit ends with unknown values of key variables

	Number	Percentage
LLA circuit ends, of which:	450,331	100%
Unknown if on-net or off-net	32,638	7%
Unknown location	12,461	3%
Unknown bandwidth	44,769	10%
Unknown for at least one of the key variables	84,359	19%

Source: Ofcom analysis of provider data.

Network reach model and the buffer distance

A5.51 We use the Network Reach Model (NRM) to model the presence of relevant networks that offer LLA services and for the purposes of defining geographic markets. Our NRM counts network presence by identifying a relevant LLA provider as ‘within reach’ if its network is measured to be within a certain distance of a demand site (we refer to this as the ‘buffer distance’).

A5.52 The purpose of the buffer distance is to capture the distance at which LLA providers can supply – and compete for – customers who require a LLA service, thereby informing our assessment of competitive conditions.

A5.53 We have concluded that:

- . A buffer distance of 100m would be appropriate for determining the boundaries between LLA Area 2 and Area 3.
- a. A buffer distance of 50m remains appropriate for determining the boundaries of the HNR Area.

A5.54 We discuss our conclusions in more detail in Volume 2, Section 5. Below we describe the evidence that underpins these conclusions.

Evidence on the 50m buffer distance

A5.55 We have analysed the network presence we are likely to capture with a 50m buffer distance.

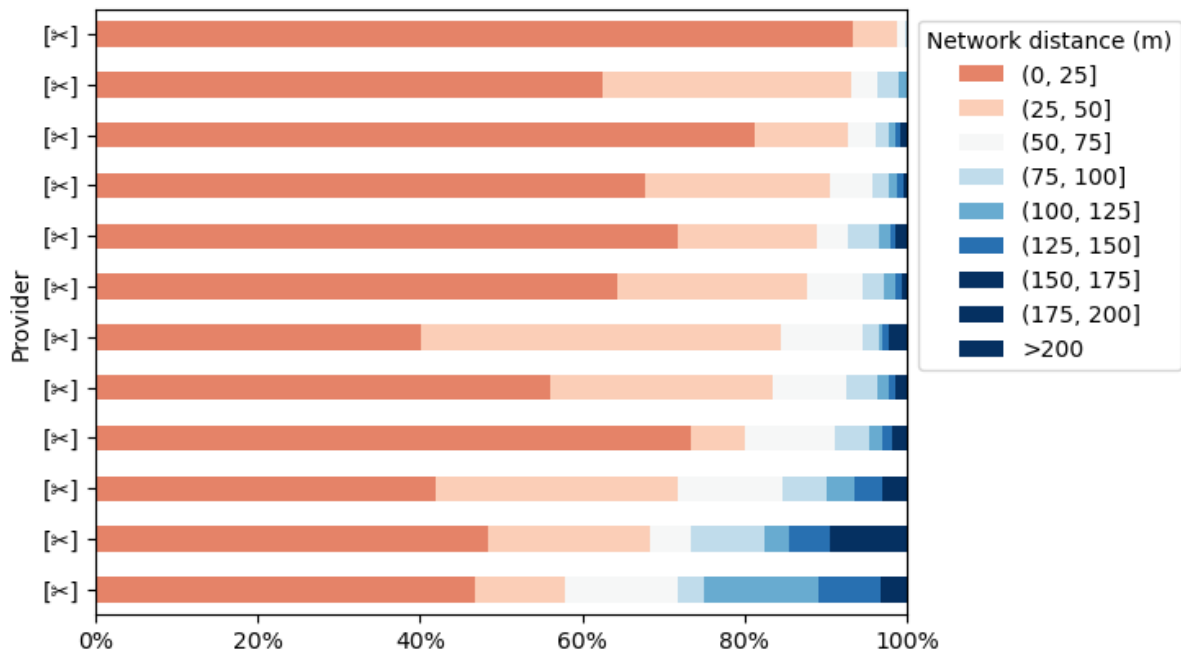
A5.56 First, we have looked at the extent to which a 50m buffer distance captures fibre-connected LLA end-user sites.¹⁷⁸ To do so, we have measured the distance between fibre-

¹⁷⁸ As set out above, in the NRM, each demand site is represented by a single point, whereas in reality the site extends over a certain area. Therefore, networks connected to a site at its edge may appear some distance away from the point that represents the site. We need to account for a degree of ‘buffer distance’ to ensure we capture those networks as ‘within reach’ of that demand site.

connected sites (using on-net LLA provisions in 2020-2024) and the 2025 network footprints.¹⁷⁹

A5.57 As set out in Figure A5.1, the data suggests that fibre-connected LLA end-user sites are largely concentrated within a 50m buffer distance. In a minority of cases, the distances between the end-user sites and the networks are longer.¹⁸⁰

Figure A5.1: Distribution of current fibre-connected LLA end-user sites by distance from network physical infrastructure¹⁸¹



Note: Fibre-connected LLA end-user sites are approximated by LLA circuit ends provisioned on-net in 2020-2024 by the respective LLA provider.

Source: Ofcom analysis of provider data.

A5.58 Secondly, we have looked at whether a 50m buffer distance is appropriate to capture instances where a site is close to a network, but it is not fibre-connected. In the March

¹⁷⁹ Some fibre-connected sites may have been connected outside this period, which we will not be able to capture. Also, end-user sites provisioned in this period may have been disconnected by now.

¹⁸⁰ This may be due to a number of factors. For example, sites extending over relatively large areas are still represented by a single point, which may appear a longer distance away from networks connected to the edge of that area. Also, some sites are represented by their postcode centroid where the exact coordinates were not provided.

¹⁸¹ [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] response dated [redacted] and [redacted] to s135 notice dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted], [redacted], and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] response dated [redacted] to s135 notice dated [redacted], section [redacted].

2025 Consultation, consistent with our position in the BCMR19¹⁸² and the WFTMR21¹⁸³ we considered that in such cases LLA providers would still find it economic to reach a customer by digging to install new duct.

- A5.59 Specifically, we looked at data on dig distances for LLA circuit ends provisioned in 2020-2024 to update our assessment of LLA providers' digging behaviour.¹⁸⁴ As summarised in Table A5.8, data is only available for a subset of LLA providers. The available data indicates that dig distances are typically short. This is consistent with our finding in the March 2025 Consultation.¹⁸⁵
- A5.60 Overall, this evidence indicates that a 50 metres buffer distance is likely to capture sites which are either fibre-connected or a short distance from a network such that a LLA provider could economically dig to supply them.

Table A5.8: Summary of dig distances for LLA customer-specific network extensions in 2020-2024¹⁸⁶

Provider	Period ⁽¹⁾	Number of observations ⁽²⁾	Lower quartile ⁽³⁾	Median ⁽³⁾	Upper quartile ⁽³⁾
[X]	2020-2023	2,611	0-10m [X]	11-20m [X]	51-75m [X]
[X]	2020-2024	395	0-10m [X]	0-10m [X]	21-30m [X]
[X]	2020-2023	124	0-10m [X]	11-20m [X]	41-50m [X]
[X]	[X]	44	0-10m [X]	0-10m [X]	11-20m [X]
[X] ⁽⁴⁾	2020-2023	39	301-350m [X]	551-600m [X]	801-850m [X]

¹⁸² Ofcom. 2019. [Promoting competition and investment in fibre networks: review of the physical infrastructure and business connectivity markets](#). Volume 2.

¹⁸³ Ofcom. March 2021. [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#). Volume 2.

¹⁸⁴ Only a minority of providers were able to report the dig distances for customer-specific network extensions.

¹⁸⁵ As set out in the March 2025 Consultation, although limited data was provided on the dig distances of competing networks in the period 2020 to 2023, the data we have received are consistent with the findings in the WFTMR21 that the median dig distances tend to be short across all geographic markets (in all cases less than 20m). Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Volume 2. Paragraph 5.220. Footnote 391.

¹⁸⁶ [X] responses dated [X] and [X] to s135 notices dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X], [X], and [X] to s135 notices dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notices dated [X] and [X], section [X].

Provider	Period ⁽¹⁾	Number of observations ⁽²⁾	Lower quartile ⁽³⁾	Median ⁽³⁾	Upper quartile ⁽³⁾
[X]	2020-2024	14	0-10m [X]	11-20m [X]	21-30m [X]
Openreach	2020-2024	[X]	0-10m [X]	0-10m [X]	31-40m [X]

Notes:

- (1) The period reported is the period for which we have data on dig distances from a specific LLA provider.
- (2) The number of observations indicates the total number of LLA circuit ends for which we have data on dig distances from a specific LLA provider. This means that the number of observations presented in this table is lower than the total number of LLA circuit ends provisioned by the provider in the relevant period.
- (3) We understand at least some LLA providers have reported distances based on route distance rather than point-to-point, straight-line distances. Route distances between two points are generally longer than straight-line distances between the same points.
- (4) [X]: All but one observation are circuits built for a [X] contract.

Source: Ofcom analysis of provider data.

Evidence on impact of PIA and LLA customer-specific network extensions

A5.61 To understand the impact of PIA on the distance over which LLA providers can serve and compete for customers, we gathered qualitative evidence on LLA providers' provisioning policies and procedures. We also collected data on build distances using PIA and considered the extent to which LLA providers are able to compete for customers at different distances from their network footprints.

Usage of PIA for customer-specific network extensions

A5.62 As set out in the March 2025 Consultation, PIA seeks to promote competition and investment in WLA and LLA markets, as it reduces the cost and increases the speed of network rollout by Openreach's competitors.¹⁸⁷

A5.63 Consistent with this, the evidence from LLA providers' provisioning policies and procedures suggests that – while in practice build distances vary depending on a number of technical and commercial considerations¹⁸⁸ – PIA can reduce the costs of building customer-specific network extensions and allow LLA providers to connect customers who are further away from their flexibility points. For example:

¹⁸⁷ Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Volume 3. Paragraph 1.69.

¹⁸⁸ Some stakeholders suggested that they are more likely to build longer connections for higher bandwidth products or where the contract value is higher; for example, [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X].

- Some stakeholders, [redacted] and [redacted], indicated that PIA can reduce the costs to build customer-specific network extensions by 30%-80% [redacted].¹⁸⁹
- Evidence from provisioning policies indicates that, with the benefit of PIA, LLA providers might be willing to build customer-specific network extensions up to between 300 metres and 5km.¹⁹⁰ Consistent with this, some of the responses to the November 2025 Further Consultation indicate that providers are able to build longer customer-specific network extensions with PIA.¹⁹¹

- A5.64 We consider that specific estimates on build distances from provisioning policies should be treated with some caution. They are likely to provide an indication of the longest customer-specific network extensions LLA providers would be willing to build, which is potentially different from the typical length of the customer-specific network extensions these LLA providers would build in practice. However, we believe this evidence consistently indicates that PIA has materially improved the economics of building customer-specific network extensions.
- A5.65 We have also analysed available data on build distances using PIA for LLA circuit ends that were newly provisioned between 2020 and 2024 and compared this with the data on dig distances set out above.
- A5.66 While the scope of the data is limited,¹⁹² it is consistent with the qualitative evidence and suggests that PIA enables LLA providers to build customer-specific network extensions over longer distances, compared to cases where digging would be required. The same data also suggests that in practice PIA build distances will vary between LLA providers and will be subject to local circumstances. The evidence is summarised in Table A5.9.

¹⁸⁹ [redacted] response dated [redacted] to s135 notice dated [redacted], question [redacted]. [redacted] response dated [redacted] to s135 notice dated [redacted], question [redacted]. In addition, [redacted] response dated [redacted] to s135 notice dated [redacted], questions [redacted].

¹⁹⁰ For example, [redacted] response dated [redacted] to s135 notice dated [redacted], questions [redacted]. [redacted] response dated [redacted] to s135 notice dated [redacted], question [redacted].

¹⁹¹ [CityFibre](#) response to TAR26 November 2025 Consultation. Paragraphs 1.12-1.14. [Openreach](#) response to TAR26 November 2025 Consultation. Paragraphs 39 and 49-55. [Virgin Media O2](#) response to TAR26 November 2025 Consultation. Paragraph 19. [Community Fibre](#) response to TAR26 November 2025 Consultation. Page 3.

¹⁹² Out of the providers we contacted, we have data from four providers, two of whom used PIA in a material number of cases, while the remaining two have only used it sporadically.

Table A5.9: Summary of build distances using PIA for LLA customer-specific network extensions in 2020-2024¹⁹³

Provider	Period ⁽¹⁾	Number of observations ⁽²⁾	Lower quartile ⁽³⁾	Median ⁽³⁾	Upper quartile ⁽³⁾
[X]	2021-2024	2,875	76-100m [X]	176-200m [X]	301-350m [X]
[X]	[X]	541	21-30m [X]	51-75m [X]	101-125m [X]
[X]	2020-2023	3	126-150m [X]	126-150m [X]	176-200m [X]
[X]	2020-2023	2	151-175m [X]	251-300m [X]	401-450m [X]

Notes:

- (1) The period reported is the period for which we have data on PIA build distances from a specific LLA provider.
- (2) The number of observations indicates the total number of LLA circuit ends for which we have data on PIA build distances from a specific LLA provider. This means that the number of observations presented in this table is lower than the total number of LLA circuit ends provisioned by the LLA provider in the relevant period.
- (3) We understand at least some LLA providers have reported distances based on route distance rather than point-to-point, straight-line distances. Route distances between two points are generally longer than point-to-point, straight-line distances between the same points.

Source: Ofcom analysis of provider data.

Availability and desirability of PIA usage to build customer-specific network extensions

- A5.67 While PIA can reduce time and costs to build customer-specific network extensions, qualitative and quantitative evidence suggests that LLA providers may not always be able or willing to use PIA to build customer-specific network extensions.
- A5.68 In particular, our review of LLA providers' internal provisioning policies suggests that:
- PIA may not be a viable option to build customer-specific network extensions when, for example, customers require diverse routing, do not accept the usage of a third-party infrastructure due to security concerns, or if services require specific network topologies or resilience standards.¹⁹⁴

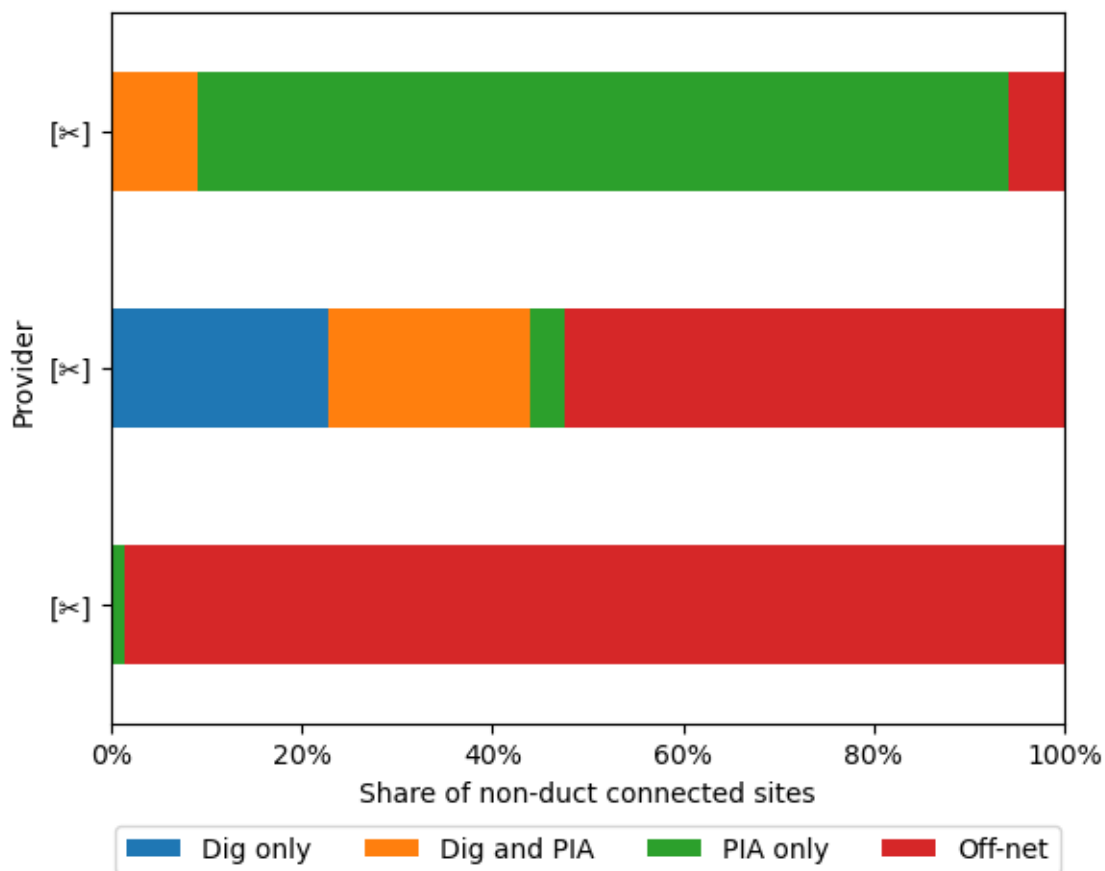
¹⁹³ [X] responses dated [X] to s135 notice dated [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X].

¹⁹⁴ For example, [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X].

- Some stakeholders also said that PIA use is not always possible or preferable to build customer-specific network extensions because of damaged or blocked duct, lack of duct capacity or due to a risk of third-party damage to installations.¹⁹⁵
- Different LLA providers may use PIA to varying degrees. For example, [X] stated that it generally does not use third-party physical infrastructure – including PIA – for customer-specific network extensions.¹⁹⁶

A5.69 In line with this, as set out in Figure A5.2, our analysis of the LLA provisions data¹⁹⁷ suggests that the three LLA providers for which we have information use PIA to varying degrees for customer-specific network extensions. Our analysis also suggests that, in a significant number of cases, those three LLA providers would choose to provision a circuit either by buying a service off-net or digging instead of using PIA.

Figure A5.2: Build vs buy proportions in the provisioning of LLA end-user sites in 2024¹⁹⁸



Source: Ofcom analysis of provider data.

¹⁹⁵ For example, [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X]. [X] response dated [X] to s135 notice dated [X], questions [X].

¹⁹⁶ [X] response dated [X] to s135 notice dated [X], question [X].

¹⁹⁷ We used data on circuit ends that were provisioned in 2024 to compare the proportion of instances LLA providers build customer-specific network extensions compared with using an off-net circuit purchased from a third party. Our analysis covered all LLA providers who were able to identify in their provisions data LLA circuit ends that required digging and/or usage of PIA duct for a customer-specific network extension.

¹⁹⁸ [X] responses dated [X] to s135 notice dated [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X]. [X] responses dated [X] and [X] to s135 notice dated [X] and [X], section [X].

A5.70 As discussed in Volume 2, Section 5 we however recognise that – as suggested by CityFibre, VMO2 and Openreach in their responses to the November 2025 Further Consultation – usage of PIA by LLA providers may increase going forward.¹⁹⁹

Extent to which different competing networks can build to win customers based on distance

A5.71 We have also compared the number of LLA circuit ends provisioned on-net at different distances from each competing network footprint versus those provisioned by Openreach in the same distance bands from that competing network. This helps to inform our view on the extent to which different competing networks can compete for customers and therefore provides additional context to our understanding of competitive conditions.²⁰⁰

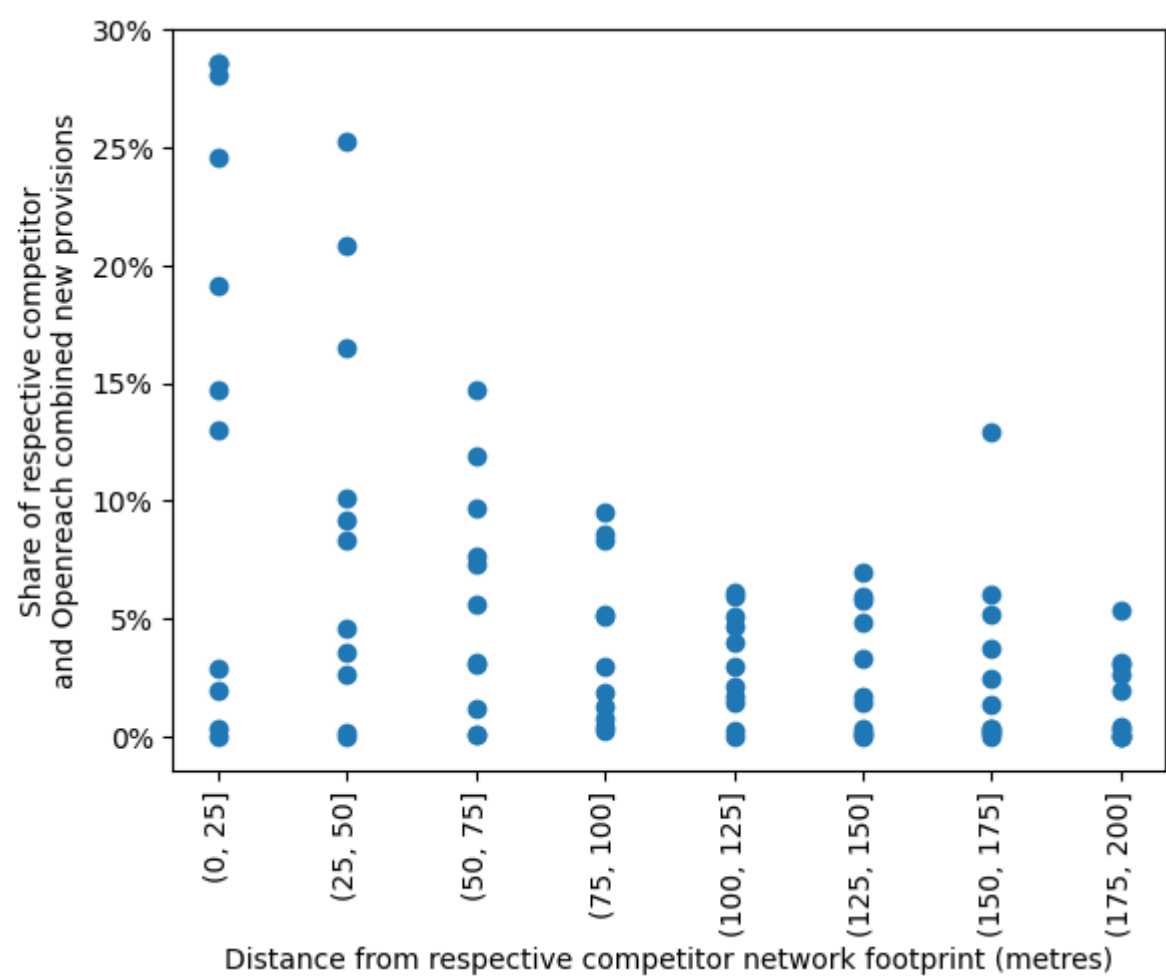
A5.72 As depicted in Figure A5.3, our analysis suggests that LLA providers are able to supply customers over a range of distances from their network footprint. However, having to build over longer distances for a LLA customer-specific network extension makes competing networks relatively less likely to win business. The share of new business won by competing networks relative to Openreach²⁰¹ declines for sites further away from each competing network’s footprint. For example, it is largely below 10% for distances beyond 100m. This would suggest that Openreach has generally been able to win at least nine in ten of the new connections provisioned over distances beyond 100 meters against an individual competitor.

¹⁹⁹ [CityFibre](#) response to TAR26 November 2025 Consultation. Page 4. Paragraph 1.15. [Virgin Media O2](#) response to TAR26 November 2025 Consultation. Page 7. Paragraph 19. [Openreach](#) response to TAR26 November 2025 Consultation. Page 23. Paragraphs 64-65.

²⁰⁰ We have conducted this analysis across the entirety of the UK (including the CLA). This is because we consider the underlying economics of building customer-specific network extensions are likely to be similar across all geographic areas.

²⁰¹ We calculated the share of each competing provider’s LLA circuit ends relative to that provider’s and Openreach’s combined LLA circuit ends.

Figure A5.3: Share of 2024 on-net LLA provisions relative to Openreach by distance from competing networks²⁰²



Note: Each point represents a given competing LLA provider’s share of its and Openreach’s combined number of LLA circuit ends provisioned on-net in 2024 for a given distance from that competing LLA provider’s physical infrastructure. For any given distance shown on the horizontal axis, all points that are arranged vertically belong to different LLA providers and are measured with reference to each LLA provider’s respective physical infrastructure.

Source: Ofcom analysis of provider data.

²⁰² [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted], [redacted], and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] responses dated [redacted] and [redacted] to s135 notices dated [redacted] and [redacted], section [redacted]. [redacted] response dated [redacted] to s135 notice dated [redacted] section [redacted].

Summary of the evidence on the buffer distance

A5.73 In summary, the evidence discussed above suggests that:

- A buffer distance of 50m remains appropriate to capture cases where networks are already fibre-connected to or at a short distance from demand sites. In the latter case, LLA providers would typically find it economic to reach the customer by digging to install their own duct.
- PIA has the potential to increase the distance over which LLA providers can extend their networks to compete for customers. However, there is uncertainty as to when and where LLA providers will be able to use PIA to build customer-specific network extensions; and LLA providers are less successful at winning business for customers that are a greater distance from their network footprint.

Network reach analysis

A5.74 Using the LLA demand sites dataset and the physical network infrastructure dataset, we conducted our network reach analysis to determine the scale and location of competing network deployment.

A5.75 In this analysis, we determined the number of competing networks located within the relevant buffer distance of each modelled demand site. We then classified each postcode sector based on whether at least 65% of its demand sites were located within the buffer distance of zero, one, or two or more competing networks. For example, a postcode sector with 50% of its demand sites located within the buffer distance of two or more competing networks, 75% within the buffer distance of one or more competing networks, and 100% within buffer distance of zero or more competing telecoms infrastructure providers, would be classified as BT+1.

A5.76 Some postcode sectors did not have any LLA demand sites located within their boundaries. For these postcode sectors we notionally assigned each postcode a demand site located at the postcode centroid. This ensures that competing network 'presence' is identified in these postcode sectors. The numbers of postcode sectors with no demand sites in each of our geographic markets are summarised in Table A5.10 below.

Table A5.10: Postcode sectors with no demand sites

Geographic market	Total number of postcode sectors	Number of postcode sectors with no LLA demand sites	Proportion of postcode sectors with no LLA demand sites
HNR Area	930	101	11%
Area 2	5,391	315	6%
Area 3	3,416	104	3%

Source: Ofcom analysis of provider data and CACI D&B Business Data.

A5.77 The results of our network reach analysis are summarised in Table A5.11 below and set out in Volume 2, Section 5.

Table A5.11: Summary of LLA geographic markets

	Postcode sectors		Demand sites		LLA circuit ends provisioned in 2020 to 2024	
Geographic market	Number	Share of UK excl. the Hull Area	Number	Share of UK excl. the Hull Area	Number	Share of UK excl. the Hull Area
HNR	930	9%	52,892	13%	61,280	17%
Area 2	5,391	54%	218,728	55%	202,719	55%
Area 3	3,416	34%	102,392	26%	70,587	19%

Note: Table uses data from current and potential material and sustainable LLA competitors.

Source: Ofcom analysis of provider data and CACI D&B Business Data.

A5.78 Below we provide results on the following:

- the average number of competing networks by geographic market; and
- the proportion of demand sites within the relevant buffer distance of a given number of competing networks by geographic market.

Postcode sectors inside the CLA

A5.79 We have identified two postcode sectors (E22 2 and E22 3) that were not included in the WFTMR21 and are located inside the area of other postcode sectors (E14 9 and E14 5, respectively) classified as part of the CLA in the WFTMR21. As these new postcode sectors are located in an area that we previously found to be effectively competitive in the WFTMR21, we consider they form part of the CLA area that we previously deregulated. We have therefore not included them in our current market review and instead classified them as part of the CLA.

Average number of competing networks

A5.80 Tables A5.12 and A5.13 show the average number of competing networks within the relevant buffer distance of demand sites (i.e., for each demand site we identify the number of competing networks within the relevant buffer distance and then calculate an average for all demand sites in each geographic market), for each of our geographic markets and for HNR Area postcode sectors in major cities, respectively.²⁰³

²⁰³ In Volume 2, Section 5 we sometimes refer to this as “network presence” for shorthand.

Table A5.12: Average number of competing networks within the relevant buffer distance of demand sites for each geographic market

Geographic market	HNR Area	Area 2	Area 3
Average number of current and potential (current only) material and sustainable competitors present within the relevant buffer distance⁽¹⁾	4.06 (2.88)	1.85 (1.11)	0.42 (0.24)

(1) The figures presented without brackets have been calculated using data from current and potential material and sustainable competitors, including current as well as planned deployment (where available) and a buffer distance of 100m. The figures presented in brackets have been calculated using data from current material and sustainable competitors, including their current deployment only and a buffer distance of 50m.

Source: Ofcom analysis of provider data.

Table A5.13: Average number of competing networks within 50m of demand sites, for HNR Area postcode sectors in major cities

Area	Average number of current material and sustainable competitors within 50m of demand sites
Liverpool	3.1
Manchester	3.5
North London	2.9
Birmingham	3.2
South West London	2.7
North West London	3.1
South East London	3.3
Edinburgh	2.9
Glasgow	3.5
East London	3.3
All other areas	2.6
Total for HNR Area	3.1

Source: Ofcom analysis of provider data.

A5.81 In Volume 2, Section 5, we assess competitive conditions in postcode sectors where the average number of rival networks present is materially higher than in other HNR Area postcode sectors, using the number of rival networks present in the 2021 CLA market as a reference point. We identified postcode sectors in which the average number of current material and sustainable competitors is greater or equal to the average of the 2021 CLA

market (which was 5.1 networks).²⁰⁴ There are 10 such postcode sectors. Of these, four are in various parts of Greater London, three are in Glasgow, two are in Manchester, and one is in Birmingham. Table A5.14 provides an overview of these postcode sectors.

Table A5.14: Postcode sectors in the HNR Area with average network reach at or above the level of the 2021 CLA market

Postcode sector	Average number of current material and sustainable competitors within 50m of demand sites
[X]	5.2
[X]	5.2
[X]	6.4
[X]	6.3
[X]	6.0
[X]	5.5
[X]	5.3
[X]	5.2
[X]	5.6
[X]	5.1

Source: Ofcom analysis of provider data.

Proportion of demand sites within the relevant buffer distance of N competing networks

A5.82 Table A5.15 shows the proportion of demand sites within the relevant buffer distance of a certain number of competing networks, for each of our geographic markets. Table A5.16 shows the proportion of demand sites within 50m of a certain number of competing networks for HNR Area postcode sectors in major cities. Areas of higher competition will see a higher proportion of demand sites within a given distance of a higher number of competing networks.

Table A5.15: Proportion of demand sites within the relevant buffer distance of at least a certain number of competing networks, for each geographic market

Geographic market		HNR Area	Area 2	Area 3
Proportion of demand sites	N=0 or more	100%	100%	100%
		(100%)	(100%)	(100%)

²⁰⁴ Ofcom. March 2021. [Statement: Promoting investment and competition in fibre networks: Wholesale Fixed Telecoms Market Review 2021-26 – Volume 2: Market Analysis](#). Table 7.6.

Geographic market		HNR Area	Area 2	Area 3
with N current and potential (current only) material and sustainable competitors within the relevant buffer distance ⁽¹⁾	N=1 or more	99.2% (95.7%)	91.6% (75.1%)	29.5% (18.7%)
	N=2 or more	94.5% (82.0%)	54.3% (24.7%)	8.6% (3.8%)
	N=3 or more	77.9% (53.6%)	23.9% (8.0%)	2.6% (1.0%)
	N=4 or more	57.9% (31.5%)	9.6% (2.5%)	1.0% (0.3%)
	N=5 or more	38.8% (16.2%)	3.7% (0.9%)	0.4% (0.1%)
	N=6 or more	23.7% (6.8%)	1.4% (0.3%)	0.1% (0.0%)
	N=7 or more	10.7% (1.8%)	0.3% (0.0%)	0.0% (0.0%)
	N=8 or more	3.2% (0.3%)	0.0% (0.0%)	0.0% (0.0%)

(1) The figures presented without brackets have been calculated using data from current and potential material and sustainable competitors, including current as well as planned deployment (where available) and a buffer distance of 100m. The figures presented in brackets have been calculated using data from current material and sustainable competitors, including their current deployment only and a buffer distance of 50m.

Source: Ofcom analysis of provider data.

Table A5.16: Proportion of demand sites within 50m of at least a certain number of competing networks, for HNR Area postcode sectors in major cities

Area	Number of current material and sustainable competitors within 50m distance								
	0+	1+	2+	3+	4+	5+	6+	7+	8+
Liverpool	100%	98.6%	89.3%	63.1%	32.1%	17.8%	4.9%	0.0%	0.0%
Manchester	100%	94.6%	85.8%	70.2%	52.1%	30.8%	13.7%	1.2%	0.0%
North London	100%	97.4%	84.1%	49.9%	32.1%	17.9%	8.1%	3.2%	0.8%
Birmingham	100%	97.5%	85.6%	63.9%	44.2%	22.4%	7.2%	0.6%	0.0%
South West London	100%	95.2%	80.5%	50.7%	26.3%	10.6%	4.8%	0.7%	0.0%
North West London	100%	97.4%	82.8%	54.3%	35.8%	26.5%	9.8%	3.4%	0.1%

Area	Number of current material and sustainable competitors within 50m distance								
	0+	1+	2+	3+	4+	5+	6+	7+	8+
South East London	100%	96.8%	82.2%	62.5%	43.9%	25.9%	11.7%	6.1%	3.0%
Edinburgh	100%	94.0%	84.0%	53.0%	33.8%	15.5%	5.1%	0.3%	0.0%
Glasgow	100%	97.1%	88.0%	66.4%	42.5%	29.9%	15.4%	9.2%	1.0%
East London	100%	96.3%	79.7%	61.7%	44.3%	25.5%	12.0%	4.5%	1.2%
All other areas	100%	95.1%	80.0%	47.7%	24.2%	10.6%	4.3%	0.9%	0.0%
Total for HNR Area	100%	95.7%	82.0%	53.6%	31.5%	16.2%	6.8%	1.8%	0.3%

Source: Ofcom analysis of provider data.

LLA provisions analysis

A5.83 In this section we describe the analysis of the LLA provisions data.

Wholesale service shares

A5.84 Using the LLA provisions dataset, we conducted the analysis of Openreach's wholesale service share. Table A5.17 shows the number of LLA circuit ends provisioned and wholesale service shares for individual years 2020 to 2024, and for all five years combined, in each of our geographic markets.

Table A5.17: Number of on-net LLA circuit ends provisioned and wholesale service shares in 2020 to 2024

Geographic market	Indicator	Period					
		2020	2021	2022	2023	2024	2020 to 2024
HNR Area	Number of LLA circuit ends provisioned	11,872	12,204	11,488	11,697	11,235	58,620
	Openreach's wholesale service share	61-70% ([>]%)	61-70% ([>]%)	61-70% ([>]%)	61-70% ([>]%)	61-70% ([>]%)	61-70% ([>]%)
	VMO2's wholesale service share	11-20% ([>]%)	21-30% ([>]%)	11-20% ([>]%)	11-20% ([>]%)	11-20% ([>]%)	11-20% ([>]%)
	LL-only providers' wholesale service share	5-9% ([>]%)	10-14% ([>]%)	10-14% ([>]%)	15-19% ([>]%)	15-19% ([>]%)	10-14% ([>]%)
Area 2	Number of LLA circuit ends provisioned	38,133	41,638	37,568	38,677	39,995	196,176
	Openreach's wholesale service share	71-80% ([>]%)	71-80% ([>]%)	71-80% ([>]%)	71-80% ([>]%)	71-80% ([>]%)	71-80% ([>]%)
	VMO2's wholesale service share	11-20% ([>]%)	21-30% ([>]%)	11-20% ([>]%)	11-20% ([>]%)	11-20% ([>]%)	11-20% ([>]%)
	LL-only providers' wholesale service share	0-4% ([>]%)	0-4% ([>]%)	0-4% ([>]%)	5-9% ([>]%)	5-9% ([>]%)	0-4% ([>]%)
Area 3	Number of LLA circuit ends provisioned	12,592	13,923	14,169	14,054	15,606	70,408
	Openreach's wholesale service share	91-100% ([>]%)	91-100% ([>]%)	91-100% ([>]%)	91-100% ([>]%)	91-100% ([>]%)	91-100% ([>]%)
	VMO2's wholesale service share	0-10% ([>]%)	0-10% ([>]%)	0-10% ([>]%)	0-10% ([>]%)	0-10% ([>]%)	0-10% ([>]%)

		Period					
	LL-only providers' wholesale service share	0-4% ([<])%	0-4% ([<])%	0-4% ([<])%	0-4% ([<])%	5-9% ([<])%	0-4% ([<])%

Note: The number of LLA circuit ends in the period 2020-2024 may exceed the total of the individual years. Some observations were provided for the period with an unknown year. These observations are included in the total for the whole period, but not the individual years.

Source: Ofcom analysis of provider data.

A5.85 Table A5.18 shows the number of LLA circuit ends provisioned and Openreach's wholesale service share for individual years 2020 to 2024, and for all five years combined, for the HNR Area postcode sectors with higher average network reach.

Table A5.18: Number of on-net LLA circuit ends provisioned and Openreach's wholesale service share in 2020 to 2024 for postcode sectors in the HNR Area with average network reach at or above the level of the 2021 CLA market

		Period					
Area	Indicator	2020	2021	2022	2023	2024	2020 to 2024
Greater London, Manchester, Birmingham, and Glasgow postcode sectors combined	Number of postcode sectors	10					
	Number of LLA circuit ends	266	268	278	322	227	1,367
	Openreach's wholesale service share	71-80% ([<])%	61-70% ([<])%	71-80% ([<])%	61-70% ([<])%	61-70% ([<])%	61-70% ([<])%
Greater London postcode sectors	Number of postcode sectors	4					
	Number of LLA circuit ends	121	111	109	115	98	555
	Openreach's wholesale service share	71-80% ([<])%	71-80% ([<])%	71-80% ([<])%	71-80% ([<])%	61-70% ([<])%	71-80% ([<])%
Manchester postcode sectors	Number of postcode sectors	2					
	Number of LLA circuit ends	33	29	24	38	29	157

		Period					
	Openreach's wholesale service share	71-80% ([<])%	51-60% ([<])%	51-60% ([<])%	51-60% ([<])%	41-50% ([<])%	51-60% ([<])%
Birmingham postcode sectors	Number of postcode sectors	1					
	Number of LLA circuit ends	48	42	72	46	43	251
	Openreach's wholesale service share	71-80% ([<])%	71-80% ([<])%	71-80% ([<])%	71-80% ([<])%	61-70% ([<])%	71- 80% ([<])%
Glasgow postcode sectors	Number of postcode sectors	3					
	Number of LLA circuit ends	64	86	73	123	57	404
	Openreach's wholesale service share	61-70% ([<])%	51-60% ([<])%	51-60% ([<])%	51-60% ([<])%	71-80% ([<])%	61-70% ([<])%

Source: Ofcom analysis of provider data.

Off-net proportion of LLA circuit ends

A5.86 Table A5.19 shows the results of our analysis of the proportion of LLA circuit ends provisioned by competing providers (other than Openreach) using circuit ends purchased from third parties (i.e., 'off-net') in each geographic market.

Table A5.19: Analysis of the proportion of LLA circuit ends provisioned by competing providers off-net in 2020 to 2024

		Period					
Geographic market	Indicator	2020	2021	2022	2023	2024	2020 to 2024
HNR Area	Number of LLA circuit ends (off-net and on-net)	[<]	[<]	[<]	[<]	[<]	[<]
	Proportion off-net	35%	30%	31%	29%	23%	30%
Area 2	Number of LLA circuit ends (off-net and on-net)	[<]	[<]	[<]	[<]	[<]	[<]

		Period					
	Proportion off-net	48%	38%	47%	44%	31%	42%
Area 3	Number of LLA circuit ends (off-net and on-net)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Proportion off-net	85%	78%	78%	82%	63%	78%

Source: Ofcom analysis of provider data.

Digging behaviour by bandwidth

- A5.87 We also looked at how digging by networks in the provision of services with bandwidths above 1 Gbit/s, compared with that for services offering bandwidths of 1 Gbit/s and below. We found that over the period 2020 to 2024, 7% of new connections for bandwidths above 1 Gbit/s involved some digging compared with 9% for lower bandwidths.
- A5.88 As set out above we have limited data available on median dig distance for new connections. For Openreach, we previously found that the median dig distance for new connections in 2020-2023 was 11-20m ([REDACTED])m for bandwidths above 1 Gbit/s compared with 0-10m ([REDACTED])m for lower bandwidths.²⁰⁵

²⁰⁵ Openreach response dated 19 June 2024 to s135 notice dated 9 May 2024, section A.

A6. Inter-exchange connectivity analysis

- A6.1 As explained in Volume 2, Section 6, in order to assess significant market power (SMP) in inter-exchange connectivity, we have looked at Principal Core Operator (PCO) presence at BT exchanges.
- A6.2 In this annex, we describe the evidence gathering exercise we have undertaken to identify rival presence at a BT exchange, and the modelling approach we have used to complete our analysis. We have adopted a similar approach to the analysis of rival presence as we did in the WFTMR21. We also set out the results of our analysis, describing how they have changed since the WFTMR21.
- A6.3 We then set out the results of the proximity analysis, used to identify the proximity of BT exchanges to PCOs' networks.

Modelling approach

PCO presence

- A6.4 The purpose of our IEC model is to determine which BT exchanges will have PCO presence during the 2026-31 review period.
- A6.5 In order for a non-BT network to connect to a BT exchange for IEC purposes, it needs to purchase an external Cablelink product. Therefore, we gathered evidence from providers in relation to their purchases of external Cablelink products²⁰⁶ and used the data to approximate PCO presence at BT exchanges.²⁰⁷

²⁰⁶ On 29 July 2024 we sent a statutory information request to Openreach, requesting data on sales of external Cablelink products at each BT exchange. On 23 October 2024 we sent statutory information request to 20 providers, including the providers classified as PCOs in the WFTMR21 and the providers with the most purchases of external Cablelink products. This included [redacted]. We asked these providers to verify their purchases of external Cablelink products from Openreach and confirm what they were using them for. This was to inform our assessment of presence at a BT exchange. We note some providers were not able to indicate with certainty whether the external Cablelink product was used for backhaul and/or core services. We also asked [redacted] to provide information on external Cablelink products purchased from BT downstream divisions. In addition, we gathered evidence from providers to understand whether there had been any changes or new entry in the provision of IEC services, and their views on the key competitors in IEC services, since the WFTMR21.

²⁰⁷ For the purposes of the statement, we have not sought a new set of data from all providers but updated the data from the March 2025 Consultation where necessary. As noted in the March 2025 Consultation, fully updating the data between consultation and statement would be time and resource intensive (for both providers and us) and, given the relative stability of the market and the limited rollout plans that stakeholders had shared with us, we considered that the resource required for a full update is likely to be disproportionate to the likely change in modelling results. We also explained that we would seek updates to some elements of the data between consultation and final statement, and refresh the affected modelling accordingly, if we considered these would result in meaningful changes to the modelling and the time and resource involved is proportionate. Therefore, for the purposes of the statement, we sought updated data from [redacted] in light of the previously submitted plans to expand backhaul and/or core presence to additional BT exchanges, as set out in Volume 2, Section 6. [redacted] indicated there have not been material changes in the data. [redacted] response dated

- A6.6 We determine competitive presence at each BT exchange based on whether a PCO is connected at that exchange via a 'Cablelink External' (or legacy variants 'BT Cablelink-External' and 'LLU Egress-External') for the purpose of providing backhaul and/or core services.
- A6.7 As in the WFTMR21, we count the PCO as present at an exchange if the PCO is directly or indirectly connected at an exchange:
- Directly connected: a PCO is directly connected if the PCO has network equipment at a BT exchange and purchases an external Cablelink product to connect to its own network, for the purpose of self-supplying backhaul and/or core services, and/or supplying third-parties with backhaul and/or core services; or
 - Indirectly connected: a PCO is indirectly connected if a customer present at an exchange purchases an external Cablelink product to connect to a PCO's network, which may not have network equipment at the BT exchange, for backhaul and/or core services. A PCO could also be indirectly connected if the external Cablelink product is purchased by a PCO that does not have network equipment at the BT exchange but connects third-parties in the exchange to its own network to supply them with backhaul and/or core services.

Exchange exit

- A6.8 As part of our information gathering process, we asked providers whether they had plans to exit any exchanges, and if so, the date of the planned exit. Where a provider has indicated that it plans to exit an exchange prior to the start of the review period, we have not counted the relevant PCO as present at that exchange. We also understand that some providers are planning to exit exchanges during the review period, however, we understand that this is largely related to the planned closure of these exchanges and is expected to happen at or around the same time as this planned closure. As such, we do not expect a significant time period where the exchange remains operational but with fewer competitors.²⁰⁸ Therefore, we do not consider it appropriate or necessary to review these exchange classifications again during the review period.

Results of our analysis

- A6.9 In summary we have identified 4,204 BT Only exchanges, 742 BT+1 exchanges, and 78 new BT+2 exchanges.^{209 210}

[3<] to s135 notice dated [3<], question [3<]. We also gathered updated data from [3<], as its previous submission had missing data. We updated the model to incorporate the data we received from [3<].

²⁰⁸ Volume 3, Section 3 sets out the details and timing of Openreach's exchange closure programme.

²⁰⁹ Exchanges with two or more PCOs present are classified as BT+2 exchanges.

²¹⁰ Note there are four additional exchanges in the current list of exchanges since WFTMR21. Openreach and BT indicated that Baynard House (CLFAR, CLWOO) and Faraday Building (CLMOO, CLFLE) should be included as two separate exchanges. Openreach also indicated LNILC (ILFORD CENTRAL ATE), NSDIN (DINNET UAX), and STWHTLY (LOCKS HEATH WHITELEY TE) should be included in the list of exchanges; see Openreach Limited response dated 19 June 2024 to s135 notice dated 9 May 2024, question B3, and see British Telecommunications Plc response dated 27 November 2024 to s135 notice dated 23 October 2024, question C1. As such, we have listed Baynard House (CLFAR, CLWOO) and Faraday Building (CLMOO, CLFLE) as separate exchanges, and we have included three exchanges that were not included in our WFTMR21 list of exchanges. The figures cited in Paragraph A6.9 and set out in Table A6.1 include these four additional exchanges. NSDIN (DINNET UAX) and STWHTLY (LOCKS HEATH WHITELEY TE) have been identified as BT Only. LNILC (ILFORD

A6.10 We have provided a list of exchanges that are subject and not subject to regulation in Schedule 4 to the legal conditions in Volume 7. We also list the 549 BT+2 exchanges which do not form part of this review as we previously found them to be effectively competitive, for completeness and ease of reference. The Exchange Exit pilot exchanges²¹¹ have also been included. Schedule 4 also sets out the MDF IDs that are co-located within one exchange building and their respective classifications.

Changes in classifications since the WFTMR21

A6.11 Overall, the results of our assessment are similar to those in the WFTMR21.

A6.12 Nevertheless, there have been some changes in our results. There has been a decrease in the number of exchanges that are BT Only (-71 exchanges) and BT+1 (-3 exchanges), and we have found 78 new BT+2 exchanges (see Table A6.1 below). Overall, we find 196 exchanges with a different classification to WFTMR21 (see Table A6.2 below).

A6.13 The two tables below summarise the changes to our findings.

Table A6.1: Number of exchanges by classification

Classification	Number of exchanges in WFTMR21	Number of exchanges in TAR26	Change in number of exchanges
BT Only	4,275	4,204	-71
BT+1	745	742	-3
BT+2 (new)	N/A	78	N/A
BT+2 (existing)	549	549	N/A
Total	5569	5573	

Note: the 549 BT+2 (existing) exchanges refer to the exchanges we previously found to be effectively competitive in the WFTMR21. These exchanges do not form part of this review.

Table A6.2: Changes in classifications at the exchange level

Change in classification from WFTMR21 to TAR26	Number of exchanges
BT Only to BT+1	94
BT Only to BT+2	5
BT+1 to BT Only	26
BT+1 to BT+2	71

Note: the four additional exchanges described in footnote 210 are not included in the figures in Table A6.2, as these exchanges did not have a classification in the WFTMR21.

CENTRAL ATE) and Faraday Building (CLMOO, CLFLE) are among the 78 new BT+2 exchanges. Note that in Schedule 4, these two have been classified as 'BT plus two or more', rather than 'BT plus two or more new' or 'BT plus two or more new (transitional)'.

²¹¹ Openreach. [Exchange Exit Programme](#). Accessed 6 March 2026.

Proximity analysis

- A6.14 In this section we provide summary statistics of the distances between BT exchanges and PCOs' networks.
- A6.15 For each BT exchange, we calculate the distance to PCOs' networks and identify the minimum distance to a PCO network that is not connected to the BT exchange using an external Cablelink product, that is, the distance to the closest unconnected PCO network.²¹² We then calculate the averages and medians of these minimum distances across BT exchanges. For BT Only exchanges, we also show the figures in relation to the second closest unconnected PCO network.²¹³ These are shown in Table A6.3 below for BT Only exchanges, and Table A6.4 for BT+1 exchanges.

Table A6.3: The average and median distance from BT Only exchanges to PCOs²¹⁴

Presence at BT exchange	Average distance (m) to:		Median distance (m) to:	
	1st closest	2nd closest	1st closest	2nd closest
BT Only	5,576	11,337	2,364	5,359

Table A6.4: The average and median distance from BT+1 exchanges to nearest unconnected PCO²¹⁵

Presence at BT exchange	Average distance (m)	Median distance (m)
BT+1	1,091	210

²¹² To determine the location of BT exchanges we use Eastings and Northings provided by Openreach, as part of its physical network infrastructure data submission described in Annex 5.

²¹³ Given our findings in the SMP assessment of the IEC market in Volume 2, Section 6 that the presence of one non-BT PCO is not sufficient to exert a competitive constraint on BT, it is likely that two PCOs would need to roll out in order for a BT Only exchange to become competitive.

²¹⁴ In the WFTMR21, we found that average distance to the nearest PCO network at BT Only exchanges was 5.6km, with a median distance of 2.6km. We found that the average distance to the second nearest PCO network at BT Only exchanges was 11.6km, with a median distance of 5.7km. Ofcom. March 2021. [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#). Annex 5. Table A5.26.

²¹⁵ In the WFTMR21, we found that the average distance to the second nearest (i.e. the nearest unconnected) PCO network at BT+1 exchanges was 875m, with a median distance of 250m. Ofcom. March 2021. [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#). Annex 5. Table A5.26.

A7. Guidance on PIA network adjustments and no undue discrimination compliance

- A7.1 In Volume 3, Section 5, we outlined our specific access remedies for access to BT's physical infrastructure. These include a requirement on BT to adjust its physical infrastructure network in certain circumstances. In Volume 3, Section 4, we also decided to impose a no undue discrimination requirement on BT in the physical infrastructure market.
- A7.2 In this annex, we outline our guidance on what we consider a network adjustment constitutes, and how we intend to monitor Openreach's compliance with our no undue discrimination remedy in the physical infrastructure market.

Network adjustments

The requirement to make network adjustments is limited

- A7.3 While our approach allows Openreach some degree of flexibility, we seek to ensure that Openreach does not act unreasonably. Therefore, where Openreach refuses a request for network access, it should provide reasons for doing so. Furthermore, if it becomes apparent that this approach is not working, we will reconsider whether it is appropriate to adopt a more prescriptive approach.
- A7.4 When designing our guidance on the extent of the network adjustments requirement we have taken into account the factors set out in section 87(4) of the Act, in particular:
- i) the technical and economic viability (including the viability of other network access products, whether provided by the dominant provider or another person), having regard to the state of market development, of installing and using facilities that would make the proposed network access unnecessary;
 - ii) the feasibility of the provision of the proposed network access;
 - iii) technological developments that are likely to affect the design of the network;
 - iv) the need to ensure that the provision of network access does not have the effect of favouring one form of technology over another in relation to the design and management of the network;
 - v) the investment made by the person initially providing or making available the network or other facility in respect of which an entitlement to network access is proposed (taking account of any public investment made);
 - vi) the need to secure effective competition (including, where it appears to us to be appropriate, economically efficient infrastructure-based competition) in the long-term and to support innovative business models that support sustainable competition.
- A7.5 In our guidance, we have set out the criteria we expect to apply. In selecting these criteria, we have taken particular account of the first, second and sixth of the section 87(4) factors set out above. We consider these factors follow on from our reasons for imposing a PIA obligation. Without access to BT's physical infrastructure network, large-scale network deployment in significant parts of the country is likely to be unviable. Without an obligation to make network adjustments, the scope for competitive network investment will be

reduced. Moreover, our objective in imposing PIA is to unlock the efficiencies arising from sharing existing infrastructure to the greatest extent possible to help facilitate competitive network investment at scale, and therefore promote effective competition in the long-term. However, in imposing PIA we seek to ensure that the obligation is appropriately limited and that we do not create incentives to use PIA where this is not necessary.

- A7.6 Specifically, the following three criteria should be applied to determine whether a particular network adjustment falls within the scope of the PIA obligation:
- **Is the requested adjustment necessary?** This criterion considers the narrow question of whether an alternative option exists which would render the requested adjustment unnecessary, taking account of the first factor set out in section 87(4) of the Act.
 - **Is the requested adjustment feasible?** This criterion considers whether there are barriers that prevent Openreach from being able to make the required adjustment, taking account of the second factor set out in section 87(4) of the Act.
 - **Does the requested adjustment improve efficiency?** This criterion considers whether the requested adjustment promotes efficiency and is therefore consistent with our rationale for requiring BT to provide network access in the form of PIA (i.e. to unlock the efficiencies from sharing existing infrastructure). This takes account of the sixth factor set out in section 87(4) of the Act.
- A7.7 With respect to the third and fourth factors set out in section 87(4) of the Act, our criteria are technologically and network design neutral and therefore take account of these factors.
- A7.8 With respect to the fifth factor set out in section 87(4) of the Act, we take account of this through our approach to cost recovery, set out in Volume 4, Section 4. Specifically, we consider Openreach has a fair opportunity to recover the costs of any network adjustments.

Defining a network adjustment

- A7.9 Before discussing the three criteria applicable when determining the extent of the PIA obligation on Openreach, we clarify what we mean by a network adjustment.

Facilitating access to existing infrastructure

- A7.10 Network adjustments forming part of PIA involve facilitating access to existing infrastructure, rather than the construction of new infrastructure. Since the specific network access obligation proposed in this review requires Openreach to provide access to existing physical infrastructure, it does not ordinarily require Openreach to construct physical infrastructure on behalf of other telecoms providers. This does not mean that Openreach is never required to construct new physical infrastructure assets (e.g. new ducts, chambers or poles), but where it is required to do so, this will be for the purposes of facilitating access to existing physical infrastructure.
- A7.11 Therefore, Openreach should not be required to construct new physical infrastructure for rival telecoms providers in geographic locations where it does not already have infrastructure (i.e. outside its network footprint). This amounts to an extension of the infrastructure network rather than making use of existing infrastructure assets and will therefore always fall outside the scope of our network access obligation.
- A7.12 Similarly, where additional capacity is required within the existing network footprint, as the amount of additional capacity sought increases relative to the total capacity in that section

of the existing infrastructure, the work required to provide that capacity is increasingly likely to resemble the construction of new parallel infrastructure, rather than facilitating access to the existing infrastructure.

Permanent changes

- A7.13 Network adjustments involve making changes which are permanent. It is sometimes necessary to remove obstructions preventing use of existing infrastructure that is otherwise in good working order.²¹⁶ Our view is that it is more appropriate to regard the removal of obstructions as ancillary activities associated with the deployment and maintenance of access networks, rather than network adjustments. This is because activities associated with removing obstructions often need to be undertaken every time cables are to be installed or where a telecoms provider needs to access its fibre network as part of on-going maintenance or repair of that fibre. The ability of telecoms providers to remove such obstructions is provided for by virtue of the requirement on BT to provide certain ancillary services, but we do not regard them as network adjustments.²¹⁷
- A7.14 In contrast, we regard network adjustments as involving permanent changes which are required to facilitate access to the physical infrastructure. Generally, this will involve making a permanent change to the physical infrastructure itself, although as we explain below, it may involve the permanent removal of redundant cables or equipment left in the physical infrastructure.²¹⁸

Three criteria test for the network adjustment requirement

- A7.15 Below, we explain how to apply the three criteria identified above, to determine whether a particular network adjustment falls within the scope of the PIA obligation. We consider that these criteria are cumulative, i.e. Openreach should only be required to make network adjustments where all three criteria are met.

Is the requested adjustment necessary?

- A7.16 In some of the cases where a telecoms provider encounters an unusable section of physical infrastructure, an alternative option of still using BT's physical infrastructure may exist, which would enable the telecoms provider to deploy its access network without an adjustment to the physical infrastructure being made. Provided these alternatives allow for a reasonably equivalent outcome for the telecoms provider compared to making an adjustment, Openreach is unlikely to be under an obligation to remedy the unusable section of the physical infrastructure.
- A7.17 For example, in the case of an unusable section of duct, an alternative duct route might exist; or in the case of an unusable chamber, an alternative chamber might be available with space to accommodate the equipment. Provided these alternatives allow the telecoms provider to deploy its network to the same end customer premises, and any

²¹⁶ For example, removing silt from ducts, or pumping water out of chambers before being able to deploy and maintain access networks through Openreach's underground physical infrastructure. Similarly, it is sometimes necessary to cut back trees to access the top of poles and install or maintain dropwires or pole-top equipment.

²¹⁷ The practical effect of this is that these ancillary activities are not subject to our proposals regarding the recovery of network adjustment costs below the financial limit.

²¹⁸ The removal of redundant cables or equipment left in the physical infrastructure by telecoms providers using the infrastructure (including BT), is distinct from changes to BT's active network. The latter is not part of the PIA remedy (although under our regulation BT can choose to meet its obligations to make network adjustments by making changes to its active network in lieu of making a network adjustment).

additional cost incurred by the telecoms provider is not disproportionate²¹⁹, Openreach is unlikely to be under an obligation to remedy the unusable section of the physical infrastructure.

Is the requested adjustment feasible?

- A7.18 Adjustments which are infeasible are not required under the network access obligation. In some cases, there may be technical, operational or legal barriers that prevent Openreach from being able to make the required adjustment, for example, wayleave access for the work is not granted, or planning restrictions are in place.
- A7.19 In some cases, such barriers may not be insurmountable, but the cost involved in overcoming any barriers would be significant. We consider that this is addressed by the third factor discussed below (i.e. whether the adjustment is efficient).

Does the requested adjustment improve efficiency?

- A7.20 We consider that Openreach should only be required to make network adjustments where this improves efficiency (i.e. it is quicker, easier and/or cheaper for Openreach to adjust the existing physical infrastructure than for a telecoms provider to install its own infrastructure alongside BT's). This is consistent with our rationale for requiring BT to provide network access in the form of PIA. We want to encourage infrastructure sharing when it is more efficient than the other options available to a telecoms provider, such as building its own physical infrastructure, as these efficiencies will facilitate investment which would not otherwise be viable.
- A7.21 If telecoms providers paid the full upfront cost of any network adjustments they requested, we would expect them to have incentives to request network adjustments only where this was the most efficient way to overcome unusable sections of physical infrastructure. However, for the reasons set out in Volume 4, Section 4 we have decided that Openreach should recover the costs of network adjustments, up to a financial limit, over all users of the physical infrastructure. We recognise that as a result, telecoms providers may not have the incentive to choose the most efficient solution to overcome unusable sections of physical infrastructure (for example, when choosing between requesting a network adjustment or building their own parallel infrastructure).
- A7.22 Given the risk that telecoms providers request network adjustments which would be inefficient, we consider that Openreach should only be required to adjust its physical infrastructure where this improves efficiency. This reflects our aim in requiring Openreach to make network adjustments, namely, to avoid unnecessary duplication of the physical infrastructure in situations where it is quicker, easier and/or cheaper for Openreach to adjust the infrastructure than for a telecoms provider to install their own infrastructure.²²⁰

²¹⁹ For example, a telecoms provider may incur additional costs associated with longer lengths of fibre, or higher rental charges associated with longer lengths of duct. In assessing whether the additional cost is disproportionate, we would consider how any cost difference compares to the cost of undertaking the requested adjustment.

²²⁰ We recognise that it might be argued that Openreach should also be required to make network adjustments in situations where the adjustment is as efficient as the telecoms provider installing its own infrastructure, on the basis that this would promote greater network competition and would still ensure efficient network adjustments. However, at this stage, we are not persuaded that such an obligation is necessary to ensure effective competition in the long term or proportionate given our current understanding of the benefits and risks. For the avoidance of doubt, our approach does not prevent Openreach from choosing to undertake a broader set of network adjustments than required under the network access obligation, provided it treats all telecoms providers including BT in the same way (unless differences can be justified).

- A7.23 We would consider whether this is the case by comparing two scenarios:
- c) Openreach adjusts its physical infrastructure to remedy the unusable section of Openreach's infrastructure (the 'factual' scenario); and
 - d) the telecoms provider builds its own network asset to circumvent the unusable section of Openreach's infrastructure (the 'counterfactual' scenario).
- A7.24 Openreach should only be required to make network adjustments where the factual scenario is more efficient than the counterfactual scenario, for example, it is quicker, easier and/or cheaper.²²¹
- A7.25 In this comparison, the cost in the factual scenario should be the incremental cost to Openreach of making the adjustment at the telecoms provider's request. For example, if Openreach would have carried out the work anyway, even if the telecoms provider had not requested the adjustment, the incremental cost will be lower than the cost of the civil works (and in some cases could be zero).
- A7.26 Moreover, the factual and counterfactual scenarios should be based on Openreach's own engineering practices applicable at the time. This ensures that Openreach cannot refuse requests for network adjustments by requiring competing telecoms providers to choose a lower cost engineering solution that it would not choose for itself. This approach will also provide greater certainty to Openreach and competing telecoms providers in cases where a range of engineering solutions might exist.
- A7.27 We recognise that it might be argued that even in cases where it is more efficient for Openreach to make an adjustment than for the telecoms provider to build its own network asset, the costs involved in making the adjustment outweigh the benefits of making of the adjustment (i.e. so the adjustment could still be considered inefficient). At the level of individual network adjustments, we think a comparison of the costs and benefits is unlikely to be a meaningful exercise. This is because the benefits of making network adjustments – i.e. more fully realising the efficiency benefits of sharing the existing infrastructure, thereby increasing the scope for competitive network investment – arise from the cumulative impact of multiple adjustments, rather than an individual network adjustment. We consider that the risks of the costs outweighing the benefits should be assessed at the overall level of whether the entry of a competing network provider is efficient, and address this in Volume 4, Section 4.

Openreach should choose how to undertake network adjustments

- A7.28 We believe that, where an adjustment is necessary for Openreach's physical infrastructure network to be available to telecoms providers for the purpose of deploying their own networks, Openreach should be able to choose the form of adjustment it makes to meet its obligation. This provides Openreach with the flexibility to choose the most efficient solution possible and allows it to take account of its own future requirements.
- A7.29 We note that a possible concern of other telecoms providers might be in relation to Openreach's ability to choose how to undertake network adjustments. Notwithstanding the benefits of giving Openreach flexibility, it is important that Openreach is not able to

²²¹ We note that time and difficulty (or operational complexity) can be thought of as drivers of additional costs.

exploit this flexibility to undermine the effectiveness of the remedy. We consider that our broader measures prevent Openreach from doing this in the following ways²²²:

- a) The non-discrimination requirements prevent Openreach from applying a different approach for external PIA users to the approach taken for its own network deployments unless such a difference can be justified;
- b) The requirement to produce a Reference Offer includes a requirement to set out the terms and conditions on which other providers may purchase PIA and access BT's infrastructure (also see below); and
- c) Our approach regarding how BT should recover the costs of making any adjustments provide Openreach with the incentive to select the most efficient approach and limit the incentive to select high cost solutions to increase a competing telecoms provider's costs of deployment.

A7.30 Some network adjustments may be just as easily carried out by the telecoms provider. For the avoidance of doubt, our guidance sets out where a network adjustment is likely to be required. If an adjustment falls within the scope of the access obligation, although the responsibility for the adjustment rests with Openreach, it may meet this requirement by agreeing with industry arrangements for the telecoms provider to undertake the works itself (effectively on behalf of Openreach).²²³

Breaking in and out of BT's network infrastructure

A7.31 Telecoms providers are likely to deploy hybrid networks, using a mixture of Openreach's infrastructure and their own infrastructure.²²⁴ Therefore, to make effective use of Openreach's physical infrastructure, telecoms providers need to be able to break in and out of the infrastructure to interconnect with their own infrastructure. In addition, the ability of telecoms providers to overcome unusable sections of Openreach's physical infrastructure as efficiently as Openreach depends on the ability to break in and out of Openreach's physical infrastructure at particular points.²²⁵

A7.32 For the avoidance of doubt, the ability of telecoms providers to break in and out of the infrastructure is provided for by virtue of the requirement on BT to provide certain ancillary services, but we do not regard breaking in and out of the network as network adjustments on the basis that these are for the purpose of enabling hybrid networks rather than making BT's network ready for use.

Compliance with the no undue discrimination obligation in the physical infrastructure market

A7.33 In Volume 3, Section 4 we impose a no undue discrimination on BT in the physical infrastructure market. We said we would interpret that obligation as requiring strict equivalence in respect of all processes and sub-products that contribute to the supply and

²²² For further details about the proposed NUD requirement and Reference Offer, see Volume 3, Sections 4 and 5 respectively. For further details about proposed cost recovery of network adjustments, see Volume 4, Section 4.

²²³ As network adjustments are made to Openreach's physical infrastructure, Openreach will retain ownership of the relevant assets.

²²⁴ Most deployments are hybrid designs but with varying use of Openreach's infrastructure.

²²⁵ For example, the ability to install duct directly between Openreach's chambers requires that they can break out of the end walls of Openreach's chambers (i.e. in the direction of the duct run).

consumption of network access, with discrimination permitted only in cases where Openreach demonstrates that a difference in respect of a specific process step or sub-product is justified. Where Openreach can justify any processes or systems used by network users as being different from those used by Openreach, the condition requires these to be broadly equivalent. This means that any difference must not put network users at a disadvantage, particularly in terms of extra cost, time or uncertainty, compared to the processes Openreach follows internally.

- A7.34 We are not imposing an upfront obligation on Openreach to justify all instances of non-equivalence, however, we are proposing to retain the requirement on Openreach to produce an Internal Reference Offer that requires it to set out its internal processes to some degree. This will allow Ofcom and stakeholders to identify any differences in the processes for internal use of network access compared to such use by third parties and to assist transparency for the monitoring of potential anti-competitive behaviour. This helps to ensure that PIA users can have confidence that they are not at a disadvantage, particularly in terms of extra cost, time or uncertainty, compared to the processes Openreach follows internally.
- A7.35 The Internal Reference Offer should set out the services used by Openreach in a different manner, giving visibility to any justification for non-equivalence, as well as highlighting where processes, rules or systems (or similar) are the same. For example, where engineering rules are equivalent this should be made transparent and steps taken by Openreach to ensure consistency across all activities for physical infrastructure access whether undertaken under PIA, or otherwise.
- A7.36 As set out in Volume 3, Section 5, while we consider it to be disproportionate to require Openreach to explain all differences within the Internal Reference Offer, we consider that Openreach should do this on a forward-looking basis. Specifically, when Openreach makes changes to the systems or processes it follows to access its physical infrastructure, it should update the Internal Reference Offer to reflect the new systems and processes. In doing so, where those changes lead to ongoing non-equivalence between the relevant internal and external systems and processes, the Internal Reference Offer should include some justification for the ongoing non-equivalence.
- A7.37 Our ongoing monitoring programme's scope includes ensuring that Openreach complies with the current non-discrimination obligation and we propose to maintain this going forward. This programme involves working with the OTA2 and PIA users in order to evaluate their experience of the network access products. We will also continue to make use of our information gathering powers where appropriate to evaluate any network access processes that we identify are at risk of failing to be equivalent. Furthermore, we will carefully consider, and where appropriate investigate, any evidence of non-compliance. This evidence could come from a range of sources, such as information submitted by our stakeholders, our regular review of BT's Regulatory Financial Statements, information gathered as part of our market reviews, the set of no undue discrimination (NUD) KPIs and through use of our investigatory powers.

PIA pricing under the NUD obligation

- A7.38 We consider our NUD condition requires Openreach to supply PIA to BT downstream divisions (e.g. BT Enterprise) on an equivalent basis to how third parties use PIA,²²⁶ including the same PIA charges.
- A7.39 Openreach is not required to, nor does it, consume exactly the same services and so does not pay the PIA charges that other telecoms providers pay. It is important that this does not result in competing telecoms providers being at a disadvantage to Openreach.
- A7.40 As explained below, we consider that our measures on PIA pricing (i.e. the price caps we are proposing and our proposal that Openreach should recover the costs of making the existing infrastructure ready for use across all users of the infrastructure) sufficiently addresses most of our concerns over discrimination with respect to PIA pricing. Where this is not the case, the NUD obligation for the physical infrastructure market should ensure equivalence except where differences can be justified.

Rental charges

- A7.41 Any concerns about discrimination between the level of rental charges paid by external customers and what Openreach pays for its use of the physical infrastructure assets are sufficiently addressed by our proposed regulation of rental charges. As explained in Volume 4, Section 4, we outline PIA rental charges that telecoms providers other than Openreach will pay based on ‘fair shares’. In setting these charges, one of our objectives is to ensure a level playing field exists between Openreach and other telecoms providers that make use of PIA to provide downstream products. The way these charges are set means they are not intended to be paid by Openreach. Rather, Openreach must recover the balance of costs not recovered from other users of the physical infrastructure from its own downstream services.²²⁷

Ancillary charges – network adjustments

- A7.42 With respect to ancillary charges, the most significant of these relate to network adjustments i.e. charges for making the existing physical infrastructure ready for use.
- A7.43 As explained in Volume 4, Section 4 we conclude that Openreach should recover the costs of network adjustments, below the financial limit, over all users of the physical infrastructure, in the same way as it does for BT. Where telecoms providers are not charged for network adjustments, no concerns over discrimination with respect to pricing of network adjustments arise.
- A7.44 However, we have also outlined that a financial limit should apply to the costs of network adjustments, with any costs incurred above the financial limit recovered directly from the telecoms provider requesting the network adjustment, through ancillary charges.

²²⁶ That is, we do not expect differences between BT downstream and third party PIA users to be justified.

²²⁷ The physical infrastructure cost to be attributed to downstream Openreach services represents total physical infrastructure rental costs (including a return on capital employed) net of any external purchases of physical infrastructure (e.g. from sales to external customers and other parts of BT like Global Services). BT should attribute these costs to downstream Openreach markets in consistent with the Regulatory Reporting Principles we are proposing to impose on BT as explained in Volume 6. To ensure BT’s allocation approach is transparent to us and stakeholders, in Volume 6 we explain that BT is required to explain its approach in its accounting methodology documents (“AMD”) and publish a diagram illustrating how duct and pole costs are allocated from the PIA market to downstream SMP markets. Any material changes to BT’s approach must be set out in its annual Change Control Notification, along with the impact of the changes.

- A7.45 To ensure that other telecoms providers are not at a disadvantage to Openreach with respect to network adjustment charges above the financial limit, we continue to interpret the no undue discrimination obligation to mean that Openreach should charge itself internal transfer charges for network adjustments which are consistent with the charges faced by competing telecoms providers using PIA (to the extent that a different approach cannot be justified). This means that where Openreach undertakes network adjustments to support its own network deployments, the costs of network adjustments above the financial limit should be attributed entirely to the relevant Openreach downstream products in the regulatory accounts, and not spread across all users of the physical infrastructure. The regulatory accounts will support any assessment of compliance with the no undue discrimination obligation.
- A7.46 For the avoidance of doubt, Openreach is not required to charge the internal transfer charges at the point of undertaking the ancillary activity. It can calculate these charges (which should be the same as those incurred by other telecoms providers) retrospectively as part of its regulatory financial reporting. Openreach is also not required to maintain a separate inventory for any assets created or improved by network adjustments which exceed the limit. These assets remain part of the Openreach asset base and are accessible by all users of the infrastructure.

Ancillary charges – other ancillary services

- A7.47 With respect to ancillary services other than network adjustments, these are not expected to be as material as network adjustment charges. However, in principle, we would interpret the no undue discrimination obligation in the same way. That is, Openreach should charge itself internal transfer charges which are consistent with the charges faced by competing telecoms providers using PIA (to the extent that a different approach cannot be justified). This means that where Openreach provides other ancillary services to support its own network deployments which are the same or similar to those provided to other telecoms providers, the costs of those services should be the same as those incurred by other telecoms providers and be attributed entirely to the relevant Openreach downstream products, and not spread across all users of the physical infrastructure.

A8. Guidance on geographic discounts and commercial terms

- A8.1 In Volume 3, Section 9, we set out our competition concerns in relation to geographic discounts and other commercial terms, and our remedies to address them.
- A8.2 SMP Condition 4.1 prohibits Openreach from unduly discriminating in relation to the provision of network access, except where Ofcom consents. SMP Conditions 4.4 to 4.7 make further specific provision in relation to Openreach charging different prices in different geographic areas. We refer to this in the remainder of this Annex as the “geographic discrimination prohibition”.
- A8.3 SMP Condition 8.6 requires Openreach to provide 120 days’ notice of any amendment to the charges, terms and conditions on which it provides network access where the price or other contractual conditions are conditional on the volume and/or range of services purchased. We refer to these terms in the remainder of this Annex as “conditional terms”.
- A8.4 In this Annex we set out our guidance on:
- a. our assessment of schemes under the WLA geographic discrimination prohibition;
 - b. our assessment of schemes under the LLA geographic discrimination prohibition; and
 - c. our assessment of conditional terms.
- A8.5 Although this guidance sets out the approach we expect to take, it does not have binding legal effect and does not fetter our discretion. We will consider each case on its own merits. In the event that we decide to depart from the guidance, we will set out our reasons for doing so. We may add to this guidance over time to reflect our experience in applying it or wider market developments. This guidance does not impact the wider application of competition law to Openreach.
- A8.6 We set out the consent process for WLA and LLA geographic offers, including the steps we plan to follow, in Volume 3, Section 9 (paragraph 9.148). While the timeframe for our assessment will depend on the specifics and complexity of each case, we are mindful that there may be benefits from any proposal, and so will seek to reach a view promptly and efficiently.
- A8.7 We set out the process for assessing conditional terms, including the steps we plan to follow, in Volume 3 Section 9 (paragraph 9.214).

Guidance on the assessment of schemes under the WLA geographic discrimination prohibition

- A8.8 This sub-section sets out guidance on how we will consider discount schemes which involve geographic price differentiation within WLA Area 2.
- A8.9 We have provided some indications of what we consider to be undue discrimination to aid clarity, recognising that we are unable to provide guidance which covers every eventuality,

given the wide range of possible pricing initiatives that Openreach could propose. We would also take into account our broader guidance on the general prohibition on undue discrimination (i.e. SMP Condition 4.1).²²⁸

Analytical framework for discount schemes involving geographic price differentiation within WLA Area 2

- A8.10 Where a discount scheme involves geographic price differentiation within WLA Area 2, it may amount to undue discrimination in breach of the prohibition if Openreach cannot demonstrate that there is an objective justification for the differential pricing. In assessing differential geographic pricing we would consider:
- a. whether there is any objective justification for the differential pricing;
 - b. if not, whether it is consistent with our overarching policy objectives, including our strategy to promote network competition. In this respect, we would consider whether the differential pricing is capable of harming competition in the long term.
- A8.11 For the avoidance of doubt, if there is an objective justification for the differential pricing then it does not amount to undue discrimination and we would not proceed to step (b). We expand on how we would assess steps (a) and (b) below.
- A8.12 We would expect Openreach to explain the purpose of the scheme, whether and why it believes there is an objective justification and, if there is no such justification, why it will not undermine network competition.²²⁹
- A8.13 We continue to adopt the view that we have previously taken that new-to-network offers are not captured by the geographic discrimination prohibition.²³⁰ However, if a new-to-network pricing scheme were to raise potential concerns, we would have the option to scrutinise it using our rules on fair and reasonable prices (SMP Condition 1.3) and our general rules on prohibiting undue discrimination (SMP Condition 4.1).²³¹
- A8.14 We will consider any scheme proposed by Openreach on a case-by-case basis reflecting the context and circumstances – we will not necessarily consent to a new scheme because Openreach has done something similar before.

Whether geographic price differences are objectively justified

- A8.15 In line with our 2005 guidance on undue discrimination, we may consider differences in geographic prices as objectively justified where they reflect relevant differences in the customers' circumstances. As explained in our 2005 guidance in most cases customers' circumstances will be relevant if they affect the costs of supplying to them.²³² We are unlikely to consider differences in competitive conditions in and of themselves to be an objective justification.

²²⁸ See Volume 3 Section 4 where we discuss the general prohibition on undue discrimination and set out how we interpret this, and the guidance set out in Ofcom. November 2005. [Undue discrimination by SMP providers](#).

²²⁹ In cases where Openreach considers there is an objective justification, it would nevertheless be prudent for it to explain why it will not undermine network competition.

²³⁰ New-to-network offers are discounts for ISPs where a premise has no existing Openreach products and services. Ofcom. September 2021. [Statement: Openreach proposed FTTP offer starting 1 October 2021](#) Paragraphs 3.115-3.118.

²³¹ See Section 4 and Volume 7.

²³² Ofcom. November 2005. [Undue discrimination by SMP providers](#). Paragraphs 3.7, 3.9, 5.10 and 5.11.

- A8.16 We therefore consider it less likely that price differences reflecting geographic variations in cost would be unduly discriminatory, particularly where:
- Openreach can provide clear evidence of the differences in cost of provision; and
 - Openreach applies any cost reflective pricing to all areas in an open and transparent manner. In particular, all areas with similar geographic costs are offered the same geographic price. We would be unlikely to find a proposal objectively justified if it allowed Openreach to pick and choose the areas where cost differences are reflected in prices.

Whether geographic price differences are consistent with our strategy to promote network competition

- A8.17 For geographic price differences that cannot be objectively justified (for example on cost grounds), we will consider whether they are nevertheless consistent with our objective to promote network competition. As set out above, we will consider whether the differential pricing is capable of harming competition in the long term.²³³ In doing so, we will consider the likelihood of events happening. Harm to competition needs to be plausible, not just a theoretical possibility. There could clearly be a range of different degrees of plausibility which might arise in particular scenarios. We will consider whether those scenarios are real enough to justify intervention, bearing in mind our wider duties and responsibilities.²³⁴
- A8.18 We also recognise that competition is likely to continue developing under the current regulatory framework. As competition develops, our competition concerns about geographic pricing may reduce during the review period. Therefore, we will take relevant competition developments into account at the time of our assessment of a geographic discount scheme for which Openreach seeks consent, as explained further below.
- A8.19 We have identified three ways in which geographic price differences are capable of harming network competition, which we discuss below.²³⁵

Discounts targeted at areas where rival networks plan to build (signalling)

- A8.20 We are likely to consider discounts are capable of harming network competition where they are targeted at areas where rival networks have plans to build. The greater the overlap between areas covered by the proposed scheme and rival network build plans, and the more certain the build plans, the more likely we are to consider this to be a concern.
- A8.21 If Openreach lowers its FTTP and/or FTTC prices in a selective geographic area where it faces potential build, this may reduce the returns to Openreach in that area. However, this strategy may benefit Openreach in the longer term. If Openreach targeted discounts in areas where a rival is planning new network build, this could reduce the rival's returns in the area and ultimately curtail its build plans in that area. It may also deter build plans in other areas as it could signal to rivals that further build will also be met with an aggressive price reduction which in turn may impact the rivals' expected returns and ability to raise funding for further build. If Openreach's actions deter rollout then it will face reduced

²³³ See Ofcom. November 2005. [Undue discrimination by SMP providers](#). Paragraphs 5.12 – 5.15.

²³⁴ This is in line with the Tribunal's view on the meaning of "potential barrier" to competition when assessing terms that are conditional. We consider that similar considerations are relevant here. [CityFibre Limited v Ofcom](#) [2022] CAT 33, paragraph 147.

²³⁵ As per paragraph A8.9, this is not necessarily exhaustive and there may be other ways in which geographic targeting could harm competition.

competition and benefit from a higher market share (and the ability to charge higher prices) over the longer term.

- A8.22 This concern does not depend on Openreach's prices being 'too low' (although we may consider price levels in any assessment of this concern). Openreach could deter competing investment in an area where a rival network plans to build by simply reducing prices (or announcing that it will do so). This kind of price signalling by Openreach could deter investment in that particular area as well as elsewhere in the UK.
- A8.23 In these cases, preventing Openreach from targeting geographic discounts may be a proportionate intervention that prevents harm to network competition in the longer term.
- A8.24 Whilst FTTP build by altnets and VMO2 has progressed significantly since 2021, we expect further build in the TAR26 review period. However, we recognise that this particular concern is likely to reduce as rival networks complete their FTTP build plans.

Discounts targeted at areas where a rival network is present but not yet ready to compete at the wholesale level due to temporary factors

- A8.25 We are likely to consider that geographic discounts are capable of harming competition where they are targeted at areas where a rival network is present but not yet ready to compete at the wholesale level due to temporary factors. Openreach could target low FTTP prices at these areas to encourage ISPs to migrate their existing customer bases on legacy broadband services to Openreach's FTTP network before rivals are able to compete for these migration volumes. If ISPs migrate their customers rather than wait for the temporary barriers to be overcome, this could undermine the development of network competition in the long term.
- A8.26 The migration of customers from legacy broadband products provides a particular window of opportunity to increase take-up. While many customers have already migrated to FTTP services where they are available, a significant share are still taking Openreach's legacy broadband services at the start of the 2026-31 review period. While rivals can compete for customers that have already migrated to FTTP, the barriers to migrating customers from legacy broadband services to FTTP are lower.
- A8.27 This concern does not depend on Openreach's prices being 'too low' (although we may consider price levels in any assessment of this concern).²³⁶ This is because a rival network may be able to compete with Openreach's prices once it has overcome temporary barriers – e.g. once wholesale deals are operationalised – but the targeted discounts are introduced to incentivise migration before this.
- A8.28 Examples of temporary barriers which may mean a rival network is not yet ready to compete at the wholesale level in areas targeted by the geographic discounts scheme include:
- a. The rival has signed a wholesale agreement to supply WLA services to an ISP but has not yet completed the operational steps (e.g. sales system integration) necessary for the ISP to place a substantial volume of orders with that altnet.

²³⁶ The price level does need to be sufficiently low to encourage ISPs to migrate their customers to Openreach rather than wait for an altnet when that would otherwise be their preference.

- b. There is evidence that the rival will imminently reach agreement to supply WLA services to an ISP (e.g. written offers have been exchanged and/or agreed; internal documents from both parties indicate that the deal is highly likely/imminent etc.)
- c. The rival network is very likely to imminently be acquired by another network that already has wholesale arrangements in place to supply WLA services to ISPs (e.g. the key merger transaction terms have been agreed).
- d. The rival network has been acquired by another network that already has wholesale arrangements in place to supply WLA services to ISPs. However, the operational steps (e.g. network integration) necessary for ISPs to place a substantial volume of orders within the acquired rival's footprint have not yet been completed.

A8.29 In the case of c) and d), the acquiring network may be ready to compete on its network footprint but not on the footprint it is imminently acquiring or has acquired but not yet operationalised.

A8.30 Our assessment focuses on temporary rather than enduring barriers to rivals being able to compete because we want to ensure that we only intervene when there is a clear prospect that rivals will be able to overcome those barriers. In these cases, preventing Openreach from targeting geographic discounts to encourage migration before the rivals are in a position to compete for these migration volumes may be a proportionate intervention that prevents harm to network competition in the longer term.

A8.31 For the avoidance of doubt, this concern does not extend to circumstances where an ISP is unable to use a rival network because it has not yet built in an area. It is not our aim to prevent Openreach from encouraging use of its network to allow more time for rivals to build to areas where they have not yet built. To do so would undermine the 'race to invest', which is an important part of the competitive dynamic, and was so in the package of remedies that we imposed in the WFTMR21.²³⁷

A8.32 We recognise that this particular concern is likely to reduce as the number of customers remaining on legacy broadband products declines over time.

Openreach targeting geographic areas with prices that do not allow rivals in those areas to compete

A8.33 We are likely to consider that geographic discounts are capable of harming competition if Openreach is differentiating by setting a localised price that is 'too low' for rivals to compete with in some areas while maintaining higher prices elsewhere. In other words, Openreach may be targeting certain geographic areas with prices that could undermine the development of network competition in the long term.

A8.34 This concern could arise where the above concerns are not present, or it could occur alongside the above concerns. If this concern arises in conjunction with the above concerns we may decide that the scheme is prohibited based on the other concerns rather than consider this concern in detail.

²³⁷ To the extent that Openreach targets areas where it knows or reasonably expects rival networks to have plans to build, this would be captured in our assessment of geographic discounts targeted at planned build areas (paragraphs A8.20-A8.24 above).

- A8.35 In making this assessment of whether the geographically differentiated pricing is capable of harming the development of network competition in the long term, we will typically consider two factors in parallel:²³⁸
- a. the strength of competition and the extent to which it has developed; and
 - b. the terms of the proposed geographic offer, including the localised price level.
- A8.36 The strength of competition and the extent to which it has developed is relevant to our assessment of whether a geographic pricing scheme is capable of harming long term network competition. The presence of a rival network alone is not sufficient to deliver material and sustainable competition in the long term. In particular, take-up is critical, as it underpins the ability of altnets to exert a strong competitive constraint in the long term, and so for competition to be sustainable.²³⁹ Geographically targeted price discrimination when competition is still developing risks depriving altnets of a reasonable opportunity to compete for take-up that is likely to result in them becoming strong long term competitors.
- A8.37 In these cases, preventing Openreach from targeting geographic discounts may be a proportionate intervention that prevents harm to network competition in the longer term. Conversely, once competition is more developed the risks posed by lower prices are likely to diminish.
- A8.38 To assess the strength of competition and the extent to which it has developed we will identify key altnets potentially affected by the proposed scheme and consider a range of evidence for each of these altnets. For example:
- a. altnet take-up (across their footprints, not just in targeted areas²⁴⁰);
 - b. altnet and Openreach market shares (across their footprints, not just in targeted areas);
 - c. altnet plans to further expand their network (through organic build and/or consolidation);
 - d. consideration of altnet routes to market i.e. retail and/or wholesale. In the case of wholesale we will consider the existence, terms and status of any wholesale agreements or negotiations;
 - e. altnet prices (retail and/or wholesale); and
 - f. altnet financial positions, including any further funding needs (e.g. for additional build).²⁴¹

²³⁸ There may be circumstances where such an assessment is not necessary, for example because the magnitude of price variations between geographic areas is very small and/or only applies for a short period of time.

²³⁹ See Volume 3, Section 1.

²⁴⁰ While altnets may have high take-up in the specific areas targeted by Openreach's geographic pricing, the average take-up across an altnet's entire network footprint is also relevant to its overall competitive strength in the long term.

²⁴¹ Our remedies are not designed to protect altnets' financial positions or guarantee a particular financial return for their investors. However, their financial position is relevant in considering the competitive constraint they exert (and therefore the strength of competition). As explained in Volume 3, Section 1, take-up means the networks are generating revenue which is necessary for them to become sustainable competitors. Furthermore, future build and the funding required to support that additional build depends on expectations of sufficient take-up on newly deployed network. Therefore, to the extent that altnets are not sustainable

- A8.39 We will consider the evidence that we think is necessary to reach a conclusion. It is also important to note that our concerns relate to the impact of the geographic discounts on the long term development of network competition – not individual competitors. Depending on the specific circumstances, it may not be necessary to consider all of the evidence above, or all altnets affected by the proposal.
- A8.40 When assessing the terms of the proposed geographic offer, our starting point in assessing the impact of the differentiated pricing will be to consider the localised price level. We will do this by comparing the weighted average FFTP rental price resulting from the geographically targeted price and our estimate of a reasonably efficient operator’s costs derived from the 2026 Fibre Cost Model (“the REO cost range”).^{242 243} We are likely to take a portfolio approach where we would consider the weighted average FFTP rental price across all of Openreach’s FFTP products in the area where those prices apply. This is because operators tend to compete across a range of different speed products at different price points. However, our decision on the appropriate product scope will ultimately depend on the competition concerns we are considering in the specific case. There are also likely to be other methodological choices we will need to make in an assessment such as the base for calculating weighted average charges and the relevant period over which to carry out the comparison between Openreach’s prices and the REO cost range. These are discussed in further detail in Volume 4, Section 1 (paragraph 1.179).
- A8.41 This assessment against the REO cost range, will not be based on a ‘bright line’ threshold. Instead, we will consider where Openreach’s proposed geographically discounted price sits within the REO cost range. All else equal, we are more likely to have concerns where localised prices are toward the mid to lower end of the range (although any assessment of whether it is capable of harming competition will also depend on the strength of competition as described above). This is because we would expect the risk that prices are ‘too low’ for an REO to compete with is likely to be greater the further they are into the REO range, increasing the risk of harm to long term competition. Given that the FCM generates a wide range of estimates based on different modelling assumptions, we may also evaluate other evidence in the round as relevant such as the actual wholesale prices charged by altnets.²⁴⁴
- A8.42 We will also consider whether the other terms of the geographic offer increase or reduce the extent to which the differentiated pricing is capable of harming competition in the long term. For example, we may consider whether the offer is limited to a certain set of circumstances, services or customers and/or whether it is available only for a limited duration.
- A8.43 When assessing whether a geographically targeted discount scheme is capable of harming competition, we will consider the evidence on factors a) and b) in paragraph A8.35 in the round, and reflecting market circumstances at the time. Market conditions are likely to develop throughout the review period, and as they do so, this competition concern may

and/or continue to plan further expansion of their networks and require additional funding to do so, they may be more vulnerable to Openreach behaviour that could undermine those take-up expectations.

²⁴² As explained in Volume 4, Section 1 we would be concerned about FFTP prices that undermine the opportunity for a reasonably efficient competitor to recover its costs.

²⁴³ As set out in Annex 11, the REO cost range used for this assessment will need to reflect the connection charges proposed under the geographic offer.

²⁴⁴ Further examples of other relevant considerations we may consider are provided in paragraph 1.179 of Volume 4, Section 1.

reduce. Where network competition in the long term appears strong, the risks of geographically targeted lower prices are likely to be reduced, and so we may take a more relaxed view on the level of geographically differentiated pricing than we might where network competition in the long term appears weak or is more uncertain.

Geographically targeted offers that have different effects on rival networks

A8.44 A geographic discount scheme may overlap with rivals in different competitive positions and have different effects on these rivals. For example, where rival networks overlap, it may be the case that an Openreach discount scheme negatively impacts the long-term competitive constraint that one rival exerts on Openreach but not the other(s). Our concern is about the impact on competitive conditions. Therefore in these circumstances, we will consider the impact on all rivals and what this means for the competitive constraint they exert, in order to assess if the scheme is capable of harming longer term network competition overall. We would be concerned if this is the case, even if the strongest competitor is not adversely affected. Conversely, if the available evidence indicates that the discount scheme may adversely affect a network which only makes a negligible contribution to competition but otherwise does not have the potential to have a material impact on the ability of other networks to compete, the scheme may be less likely to raise concerns that it could potentially harm long term network competition.

Geographically targeted offers that have different effects in different areas covered by the offer

A8.45 We may find that a discount scheme does not raise competition concerns in some areas of the proposed footprint, but it does in others. In such a case it may be feasible for Openreach to carve out geographic areas where the impact of the discount scheme is capable of harming competition. If so, we are likely to conclude that the scheme is capable of harming competition but that a redesigned scheme (carving out those problematic areas) is not.

Copper retirement second threshold notice

A8.46 In accordance with SMP Condition 4.4, the geographic discrimination prohibition will cease to apply to FTTC services in exchange areas where we have removed the charge control obligations on FTTC as part of our copper retirement rules.²⁴⁵

Guidance on the assessment of schemes under the LLA geographic discrimination prohibition

A8.47 This subsection sets out guidance on how we will consider discount schemes which involve geographic price differentiation within LLA Area 2.

A8.48 We have provided some indications of what we consider to be undue discrimination to aid clarity, recognising that we are unable to provide guidance which covers every eventuality, given the wide range of possible pricing initiatives that Openreach could propose. We would also take into account our broader guidance on the general prohibition on undue discrimination (i.e. SMP Condition 4.1).²⁴⁶

²⁴⁵ I.e. Where Openreach has published a Second Threshold Notice in relation to the exchange area.

²⁴⁶ See Volume 3 Section 4 where we discuss the general prohibition on undue discrimination and set out how we interpret this, and the guidance set out in Ofcom. November 2005. [Undue discrimination by SMP providers](#).

Analytical framework for discount schemes involving geographic price differentiation within LLA Area 2

- A8.49 Where a discount scheme involves geographic price differentiation within LLA Area 2, it may amount to undue discrimination in breach of the prohibition if Openreach cannot demonstrate that there is an objective justification for the differential pricing. In assessing differential geographic pricing we would therefore consider:
- a. whether there is any objective justification for the differential pricing;
 - b. if not, whether it is consistent with our overarching policy objectives, including our strategy to promote network competition. In this respect, we would consider whether the differential pricing is capable of harming competition in the long term.
- A8.50 For the avoidance of doubt, if there is an objective justification for the differential pricing then it does not amount to undue discrimination and we would not proceed to step (b). We expand on how we would assess steps (a) and (b) below.
- A8.51 We would expect Openreach to explain the purpose of the scheme, whether and why it believes there is an objective justification and, if there is no such justification, why it will not undermine network competition.²⁴⁷
- A8.52 We will consider any scheme proposed by Openreach on a case-by-case basis reflecting the context and circumstances – we will not necessarily consent to a new scheme because Openreach has done something similar before.

Whether geographic price differences are objectively justified

- A8.53 In line with our 2005 guidance on undue discrimination, we may consider differences in geographic prices as objectively justified where they reflect relevant differences in the customers' circumstances. As explained in our 2005 guidance in most cases customers' circumstances will be relevant if they affect the costs of supplying to them.²⁴⁸ We are unlikely to consider differences in competitive conditions in and of themselves to be an objective justification.
- A8.54 We therefore consider it less likely that price differences reflecting geographic variations in cost would be unduly discriminatory, particularly where:
- a. Openreach can provide clear evidence of the differences in cost of provision; and
 - b. Openreach applies any cost reflective pricing to all areas in an open and transparent manner. In particular, all areas with similar geographic costs are offered the same geographic price. We would be unlikely to find a proposal objectively justified if it allowed Openreach to pick and choose the areas where cost differences are reflected in prices.

Whether geographic price differences are consistent with our strategy to promote network competition

- A8.55 For geographic price differences that cannot be objectively justified (for example on cost grounds), we will consider whether they are consistent with our objective to promote network competition. As noted above, we would consider whether the differential pricing

²⁴⁷ In cases where Openreach considers there is an objective justification, it would nevertheless be prudent for it to explain why it will not undermine network competition.

²⁴⁸ Ofcom. November 2005. [Undue discrimination by SMP providers](#). Paragraphs 3.7, 3.9, 5.10 and 5.11.

is capable of harming competition in the long term.²⁴⁹ When considering whether the differential pricing is capable of harming competition, we will consider the likelihood of events happening. Harm to competition needs to be plausible, not just a theoretical possibility. There could clearly be a range of different degrees of plausibility which might arise in particular scenarios. We will consider whether those scenarios are real enough to justify intervention, bearing in mind our wider duties and responsibilities.²⁵⁰

- A8.56 We discuss below two issues that we may consider when assessing whether geographic price differences are capable of harming network competition.²⁵¹

Discounts targeted at areas where rival networks plan to build (signalling)

- A8.57 We are likely to consider discounts are capable of harming network competition where they are targeted at areas where rival networks have plans to build. The greater the overlap between areas covered by the proposed scheme and rival network build plans, and the more certain the build plans, the more likely we are to consider this to be a concern.
- A8.58 If Openreach lowers its leased line prices in a selective geographic area where it faces potential build (e.g. where an altnet plans to expand its network to cover a business district), this may reduce the returns to Openreach in that area. However, this strategy may benefit Openreach in the longer term. If Openreach targeted discounts in areas where a rival is planning new network build, this could reduce the rival's returns in the area and ultimately curtail its build plans in that area. It may also deter build plans in other areas as it could signal to rivals that further build will also be met with an aggressive price reduction which in turn may impact the rivals' expected returns and ability to raise funding for further build. If its actions deter rollout in that area then it will face reduced competition and benefit from a higher market share (and the ability to charge higher prices) over the longer term.
- A8.59 This concern does not depend on Openreach's prices being 'too low' (although we may consider price levels in any assessment of this concern). Openreach could deter competing investment in an area where a rival network plans to build by simply reducing prices (or announcing that it will do so). This kind of price signalling by Openreach could deter investment in that particular area as well as elsewhere in the UK.
- A8.60 Whilst fibre build by altnets and VMO2 has progressed significantly since 2021, we expect further build in the TAR26 review period. Also, as outlined in Volume 2, some LL-only operators have indicated that they intend to expand further in the 2026-31 review period.

Discounts targeted at areas where rival networks are present

- A8.61 When assessing the impact of discounts targeted at areas where rival networks are present, we will consider whether the proposed scheme is capable of harming network competition, taking into account the circumstances at the time. It is not possible to offer definitive guidance on how such an assessment might be conducted but it could involve considering whether Openreach's localised leased line prices are below an appropriate measure of costs whilst prices in other areas remain higher.

²⁴⁹ See Ofcom. November 2005. [Undue discrimination by SMP providers](#). Paragraphs 5.12 – 5.15.

²⁵⁰ This is in line with the Tribunal's view on the meaning of "potential barrier" to competition when assessing terms that are conditional. We consider that similar considerations are relevant here. [CityFibre Limited v Ofcom](#) [2022] CAT 33, paragraph 147.

²⁵¹ As per paragraph A8.9, this is not necessarily exhaustive and there may be other ways in which geographic targeting could harm competition.

Geographically targeted offers that have different effects on rival networks

A8.62 A geographic discount scheme may overlap with rivals in different competitive positions and have different effects on these rivals. For example, where rival networks overlap, it may be the case that an Openreach discount scheme negatively impacts the long-term competitive constraint that one rival exerts on Openreach but not the other(s). Our concern is about the impact on competitive conditions. Therefore, in these circumstances, we will consider the impact on all rivals and what this means for the competitive constraint they exert, in order to assess if the scheme is capable of harming longer term network competition overall. We would be concerned if this is the case, even if the strongest competitor is not adversely affected. Conversely, if the available evidence indicates that the discount scheme may adversely affect a network which only makes a negligible contribution to competition but otherwise does not have the potential to have a material impact on the ability of other networks to compete, the scheme may be less likely to raise concerns that it could potentially harm long term network competition.

Geographically targeted offers that have different effects in different areas covered by the offer

A8.63 We may find that a discount scheme does not raise competition concerns in some areas of the proposed footprint, but it does in others. In such a case it may be feasible for Openreach to carve out geographic areas where the impact of the discount scheme is capable of harming competition. If so, we are likely to conclude that the scheme is capable of harming competition but that a redesigned scheme (carving out those problematic areas) is not.

Guidance on conditional terms

A8.64 In this subsection we provide guidance on commercial terms where the price or other contractual conditions are conditional on the volume and/or range of services purchased (conditional terms).

Guidance on arrangements which deter telecoms providers from switching volumes to rival networks

A8.65 We consider that arrangements which deter telecoms providers from switching volumes to rival networks are likely to undermine the development of network competition.

A8.66 We have twice applied the analytical framework set out in the WFTMR21 to assess whether Openreach pricing offers could deter ISPs from switching to altnets. Ofcom's experience gained assessing the Equinox 1 and 2 Offers and the judgment of the Tribunal in the Equinox 1 Appeal inform our analytical framework for considering conditional terms which could deter telecoms providers from switching volumes to rival networks.

A8.67 A range of different pricing terms could potentially result in incentives which deter telecoms providers from switching to rival networks. Pricing schemes could be overtly loyalty inducing, in that they directly penalise telecoms providers for moving volumes to rival networks. Other schemes may operate with the indirect effect that obtaining discounts is in practice contingent on whether telecoms providers purchase from rival networks. Examples of the types of arrangements that are overtly loyalty inducing could include:

- a. Exclusivity discounts i.e. discounts conditional on the telecoms provider purchasing all or most of its requirements from Openreach.

- b. Retroactive rebates i.e. where a rebate is applied to all units purchased from Openreach over a reference period once a certain threshold is reached.
- c. Structures where the price paid in one geographic area where BT has SMP depends on whether the telecoms provider purchases all or most its requirements from Openreach in another area. For example, a geographic discount on leased line services in LLA Area 3 that is contingent on maintaining volumes with Openreach in LLA Area 2.

Analytical framework

A8.68 Consistent with the WFTMR21 approach, our assessment of notified commercial terms will begin by considering whether the arrangement creates a potential barrier to using rival networks. If we conclude that Openreach's proposed commercial terms create a potential barrier to using rival networks, our starting point would be that the creation of any barrier to using rival network operators would only be justified where:

- a. the impact on network competition is unlikely to be material; and
- b. the arrangements will generate clear and demonstrable benefits, such as:
 - i) the arrangements are essential to Openreach's business case for fibre roll-out; or
 - ii) the arrangements are necessary to offer more efficient prices that would deliver benefits for consumers.

A8.69 Consistent with the approach applied to the Equinox 1 and 2 Offers, when applying this framework to a set of notified commercial terms our analysis will consider up to three questions:

- a. Question 1: Do the notified commercial terms potentially create a barrier to using rival networks?
- b. Question 2: Are the notified commercial terms likely or unlikely to have a material impact on network competition?
- c. Questions 3: Are the notified commercial terms likely to generate clear and demonstrable benefits?

A8.70 When answering Question 1, we will consider the extent to which a notified offer might create a barrier for telecoms providers' use of rival networks. This requires the identification of a concern which is not just a theoretical possibility, but instead needs to be plausible given the evidence available and based on reasonable underlying assumptions. In making our assessment we will consider the likelihood of events happening (or not happening). As noted by the Tribunal, there could be a range of different degrees of plausibility which might arise in particular scenarios. We will consider whether scenarios are real enough to justify intervention, bearing in mind our wider duties and responsibilities.²⁵²

A8.71 To be clear, our expectation is that if we considered that the notified commercial terms potentially create a barrier to using rival networks, we would intervene unless we were satisfied that the impact on network competition would be unlikely to be material and the commercial terms would generate clear and demonstrable benefits (i.e. conditions a) and b) at paragraph A8.68 were both satisfied). Even if we considered that the potential impact

²⁵² [CityFibre Limited v Ofcom](#) [2022] CAT 33, paragraph 147.

on network competition would be unlikely to be material, we would still expect Openreach to demonstrate that the terms are likely to deliver clear benefits for consumers. Commercial terms would not be justified if there is likely to be a material impact on network competition, even if there are benefits to consumers.

A8.72 It is likely to assist our analysis if Openreach explains (i) its assessment of the likely impact of the commercial terms on rival networks; and (ii) the rationale for and/or anticipated benefits of the arrangements. This will help us to make an informed decision when evaluating whether to use our ex ante powers. The benefits should be clear and demonstrable, and it would be helpful if Openreach explains the extent to which these will accrue to consumers. For example:

- a. Why the arrangements are essential to supporting fibre rollout. We will consider the impact on both Openreach and other network operators (consistent with our policy objectives). With respect to Openreach's rollout, we would need to see evidence that the conditions of the offer were necessary over and above our regulation to support copper retirement; and/or
- b. Why the arrangements are necessary to offer more efficient prices that would deliver benefits for consumers. We would evaluate these benefits recognising that more efficient pricing structures of this type often can be achieved in a variety of ways that need not require large volume commitments on the part of wholesale customers.

A8.73 If we decide to use our ex ante powers to prevent Openreach from bringing its proposed commercial terms into force, then we will clearly set out our reasons for doing so, including the anticipated harm from the terms. In addition, we will set out how the intervention meets our legal tests.

Guidance on other concerns that may be raised by conditional terms

A8.74 Conditional terms that fall within the scope of our notification requirement may raise other concerns.

Arrangements that give preferential treatment targeted at larger telecoms providers

A8.75 We may be concerned about arrangements which give preferential treatment to certain types of telecoms providers. Our particular concern is terms that 'tie in' the largest and most valuable telecoms providers, encouraging them to stay on the Openreach network. If the volumes of larger telecoms providers are not contestable, it removes an opportunity for rival networks to win volumes and so could undermine the development of network competition in the long run.

A8.76 We note that our non-discrimination obligations (see Volume 3 Section 4) would prohibit Openreach from using commercial terms that unduly discriminate between customers when supplying access services and this would include terms that favour BT's downstream divisions.

Terms which may have a 'signalling' effect

A8.77 We may also be concerned about terms which do not currently impose restrictions on the use of rival networks but may do so in future. For example, commercial terms which allow telecoms providers to qualify for discounts providing their use and/or the size of rival networks remains below certain limits. This could provide a general signal to the market

that Openreach intends to limit the discounts available to telecoms providers unless the rival networks remain small. Such a signal could limit the opportunity for rival networks to grow or win volumes, and thus undermine the development of network competition in the long term.

A9. Quality of service performance and further analysis

A9.1 In this annex we cover the following:

- a) a review of Openreach's performance since the WFTMR21 using KPI information. As set out in Volume 5, this informs our assessment of existing performance, including how well the WFTMR21 regulations worked; and
- b) further analysis of Openreach WLA repair and provisioning data. As set out in Volume 5, this informs our assessment of whether changes in the proportion of rural customers should lead to changes in our minimum QoS standards for FTTC as well as our minimum QoS standards for FTTP in WLA Area 3.²⁵³ We also set out our analysis in relation to arguments that Openreach presented on WLA Area 3 FTTP QoS standards in its consultation response. Specifically, Openreach's view that:
 - i) a difference in the proportion of complex faults explains most of the difference we found between rurality-adjusted WLA Area 2 and WLA Area 3 repair performance;²⁵⁴
 - ii) we should lower repair standards to account for MBORC events;²⁵⁵
 - iii) we should lower repair standards to account for it rolling out FTTP to increasingly hard-to-serve premises;²⁵⁶ and
 - iv) we should adjust provisioning standards to account for the rollout of Openreach's Customer Journey Optimisation (CJO) process.²⁵⁷

Overview of Openreach's KPI performance

Overview

A9.2 This subsection gives an overview of Openreach's performance in the 2021-26 review period. We have reviewed performance across FTTC, FTTP and leased line services.²⁵⁸

A9.3 The data used here is from the monthly KPI data we receive from Openreach. Openreach's compliance with our QoS obligations is evaluated on a yearly basis, but we have shown data on a monthly basis for transparency, so performance can be viewed on a more granular basis. We have assessed performance from April 2021 to December 2025 for FTTP and FTTC and August 2021 to December 2025 for leased lines.²⁵⁹ In each graph where we

²⁵³ Unless stated otherwise, calculations relating to WLA Area 2 and WLA Area 3 reflect our final decision on the market boundaries as set out in Volume 2, rather than the proposed market definitions that were used in the TAR26 March 2025 Consultation.

²⁵⁴ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 51-56.

²⁵⁵ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 82 and 83.

²⁵⁶ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 86-90.

²⁵⁷ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 106-111.

²⁵⁸ Unless expressed otherwise, in this annex references to FTTC include G.fast, SOGEA and SOGfast i.e., as currently defined in Direction 3 of the [QoS Directions](#).

²⁵⁹ August 2021 is the first available data for leased lines (in the same format as WLA KPIs), as the reporting requirements for leased line services were only introduced in the WFTMR21.

plot KPI performance, we show Openreach average performance across all its customers, including both downstream BT and third parties. This is referred to in the graphs as the ‘Openreach Average’. The regulatory QoS standard is indicated in each graph by a horizontal green line, which demonstrates how Openreach is performing in each month relative to the annual QoS standard.²⁶⁰

- A9.4 Both FTTC and FTTP performance have tended to steadily improve in the period 2021-2025. Yearly average FTTC performance has consistently remained above the minimum QoS standard after a period of industrial action in 2022 (discussed below). For leased lines the data indicates that performance has generally been improving against most of the existing leased line standards, and Openreach has been able to meet its yearly obligations for each leased line minimum QoS standard apart from one occasion in 2022/23. However, performance on two standards fell from mid-2024 to autumn 2025 and Openreach’s monthly performance fell outside of the monthly equivalent of the required annual standards for several months in 2025 across both of these standards.

Impact of industrial action on performance

- A9.5 Between Q2 and Q4 2022/23 Openreach faced industrial action which had a significant negative impact on its performance across FTTC, FTTP and leased lines.²⁶¹
- A9.6 Performance for FTTP declined more sharply than FTTC and also recovered more slowly. FTTC KPIs fell below the minimum standard in 2022 but recovered within 5-6 months for repairs within SML1 and SML2, and within 2 months for installations. We did not have a minimum standard against which to compare FTTP performance over this period, but the ‘first available date (FAD)’ FTTP KPI took around 6 months before it returned to pre-industrial action performance levels. This difference in recovery may be due to Openreach wanting to avoid performing below the minimum standard we set for the regulated FTTC product and therefore diverting resources which would have otherwise been used for FTTP provisions/repairs.
- A9.7 Performance on regulated leased line products also dropped around the industrial action period. Leased line KPIs show it took 5-8 months for Openreach to consistently perform back above the QoS standards, depending on the standard being measured against.
- A9.8 On 18 March 2024 Ofcom concluded an own-initiative investigation into Openreach’s compliance with its QoS obligations in the LLA and WLA markets during 2022/23. We found that Openreach had contravened its SMP conditions by failing to meet three of its obligations. There were a number of factors that meant we did not impose a penalty or other remedies on this occasion.²⁶²

WLA performance

- A9.9 Table A9.1 sets out the minimum standards we imposed in the WLA market in the WFTMR21.²⁶³ These are applied on copper-based products, but we focus our assessment in

²⁶⁰ Openreach’s performance experiences seasonality due to factors such as storms and other adverse weather.

²⁶¹ When referring to quarters in this annex we mean financial quarters e.g.: Q1 2022/23 means April-June 2022.

²⁶² Ofcom, March 2024. [Confirmation Decision served on BT by Ofcom for contravention of SMP Condition 10.1](#)

²⁶³ In the WFTMR21 we applied a different standard in year 1 of the review period due to the impact of Covid-19. When graphing KPIs in the section below we have included a horizontal line showing the minimum QoS standard we set for years 2-5.

this Annex on FTTC.²⁶⁴ Openreach had to meet these minimum QoS standards on both a UK wide basis and for each UK management region.

Table A9.1: WFTMR21 minimum WLA QoS standards²⁶⁵

Standard	Level (Year 1)	Level (Years 2-5)
Repair within 2 working days (SML1)	83%	85%
Repair within 1 working day (SML2)		
Repair within 7 working days (SML1)	96%	97%
Repair within 6 working days (SML2)		
Installations to be completed by Committed Date	91%	94%
First Available Date (FAD) for installations requiring an engineer visit - working days within which first date offered for installation appointments	12 days	10 days
Quality standards in relation to the FAD - Frequency with which regulated installation appointment date must be offered	89%	89%

A9.10 All these measures are covered by the KPI transparency requirements. These KPIs are the main data source that we use to review Openreach's performance.

A9.11 Openreach has met the minimum QoS standards for FTTC for each year over the period except 2022/23 where three of its QoS obligations were not met. Other than this period of industrial action Openreach has generally exceeded the relevant minimum QoS standard. Below, we look at how Openreach performed in each month relative to the annual minimum QoS standards.

Openreach's performance against FTTC quality of service standards - repair

A9.12 Figure A9.1 shows the percentage of orders during the relevant month in which Openreach achieved a restored service by the Repair Service Level Commitment for repair service maintenance level 1 ('SML1') and service maintenance level 2 ('SML2').²⁶⁶

A9.13 Both service levels followed a similar pattern of performance across the period shown. Both SMLs performed on average above the minimum QoS standard of 85% across the period, with SML1 at 88.4% and SML2 at 86.6%²⁶⁷. However, in 9 of the 57 months at least one of the SMLs went below the equivalent of the annual minimum QoS standard of 85%. This occurred for 5-6 consecutive months from August 2022 depending on the SML. This prolonged period of underperformance in comparison to the QoS standard occurred during

²⁶⁴ We focus on FTTC due to the higher number of premises with FTTC products compared to MPF products. We have also reviewed MPF performance and have not observed materially different results from those seen for FTTC.

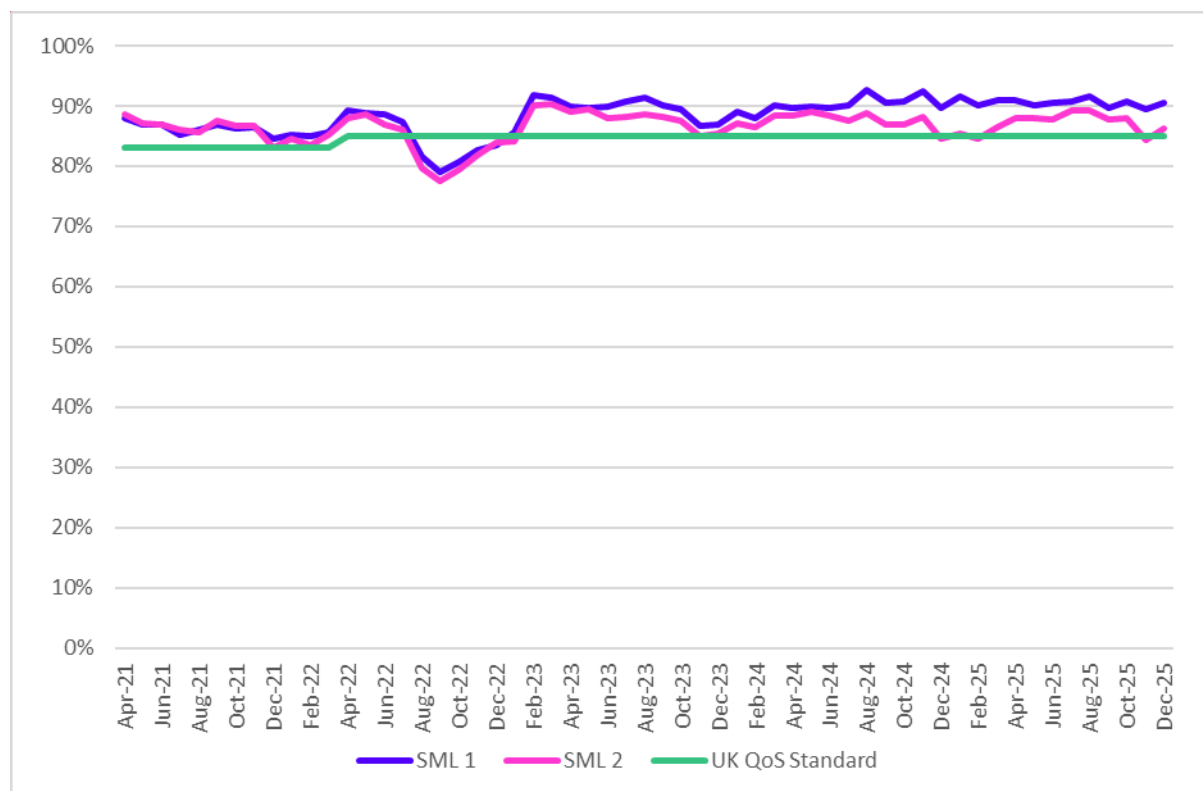
²⁶⁵ Standards must be met individually in all of Openreach's Management Regions, aside from the "Repair within 6/7 working days standard", which must be met nationally. Openreach can also exclude some repair or provisioning orders impacted by MBORC events from the calculation in up to two regions.

²⁶⁶ SML1 means a consumer can expect repair within 2 working days of the fault being recorded. SML 2 means a consumer can expect repair within 1 working day of the fault being recorded.

²⁶⁷ Calculated on a monthly average basis.

and following the period of industrial action mentioned above.²⁶⁸ Openreach's monthly average performance met the equivalent of the annual QoS standard for every remaining month after that period besides December 2024, February 2025 and November 2025 for SML2.

Figure A9.1: FTTC percentage of repairs completed within SML1 or SML2²⁶⁹



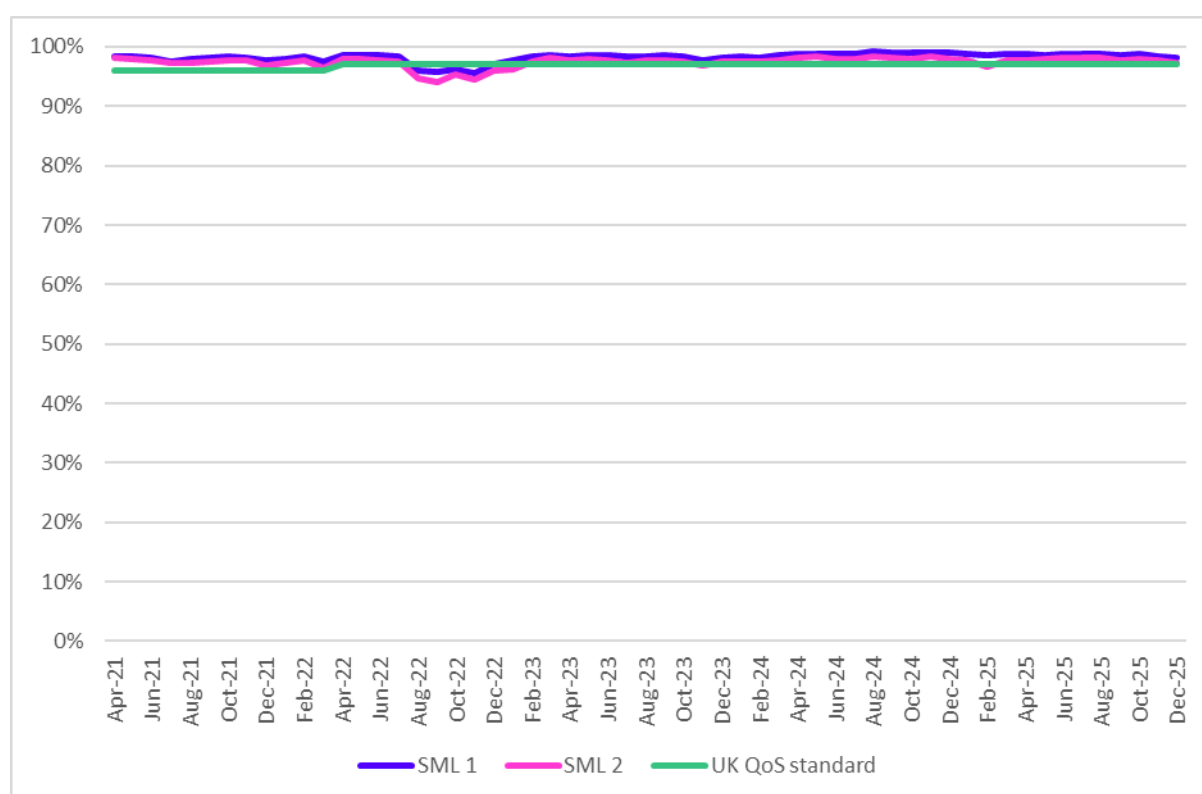
Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

A9.14 Figure A9.2 shows the percentage of orders during the relevant month in which Openreach achieved a restored service 5 days beyond the Repair Service Level Commitment for SML1 and SML2. These KPIs followed a similar pattern to the KPIs in Figure A9.1 above.

²⁶⁸ We comment upon this in Paragraph A9.6 of this annex.

²⁶⁹ The two different KPIs shown are i) 'FTTC - KPI 3 (a) (i) Percentage Repair completion: Restored Service during the relevant month within: the Repair Service Level Commitment (SML1)'; and ii) 'FTTC - KPI 3 (b) (i) Percentage Repair completion: Restored Service during the relevant month within: the Repair Service Level Commitment (SML2)'.

Figure A9.2: FTTC Percentage of repairs completed 5 days beyond SML1 or SML2²⁷⁰



Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

A9.15 Both KPIs illustrate that on average Openreach has been able to perform above its repair service maintenance level agreements and its QoS obligations on a monthly basis outside of the period affected by industrial action.

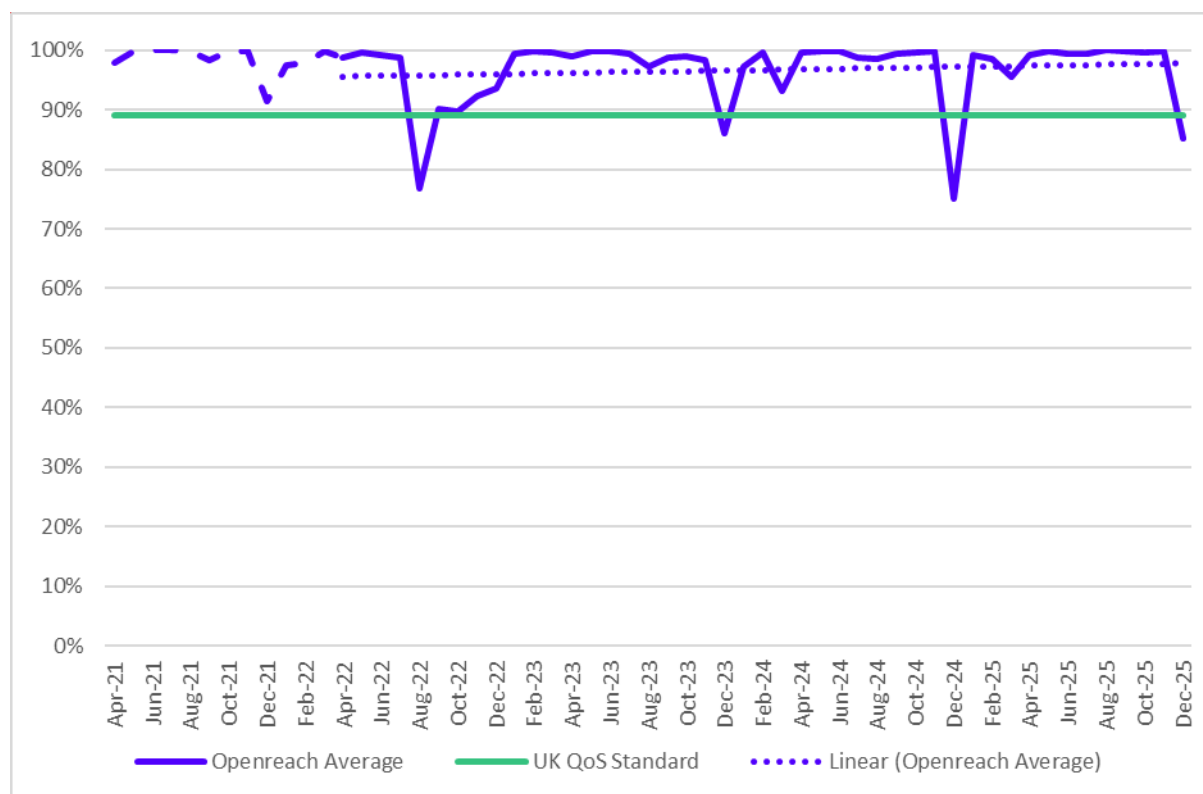
Openreach's performance against FTTC quality of service standards – provisioning

A9.16 Figure A9.3 shows the percentage of appointments which have been offered on or before the required first appointment date (FAD).²⁷¹ Monthly performance for this metric fell below the equivalent monthly minimum QoS standard on four occasions, August 2022, December 2023, December 2024 and December 2025. There is also a seasonal dip in performance in winter with monthly performance being generally below the annual mean.

²⁷⁰ The two different KPIs shown are i) 'FTTC - KPI 3 (a) (iv) Percentage Repair completion: Restored Service during the relevant month within: five working days beyond the Repair Service Level Commitment (SML1)'; and ii) 'FTTC - KPI 3 (b) (iv) Percentage Repair completion: Restored Service during the relevant month within: five working days beyond the Repair Service Level Commitment (SML2)'.

²⁷¹ 12 days was the FAD for the first year of WFTMR21 and 10 days was the FAD for years 2-5.

Figure A9.3: FTTC Percentage of times Openreach provides a first appointment within 10 working days (12 working days in 2021/22)²⁷²



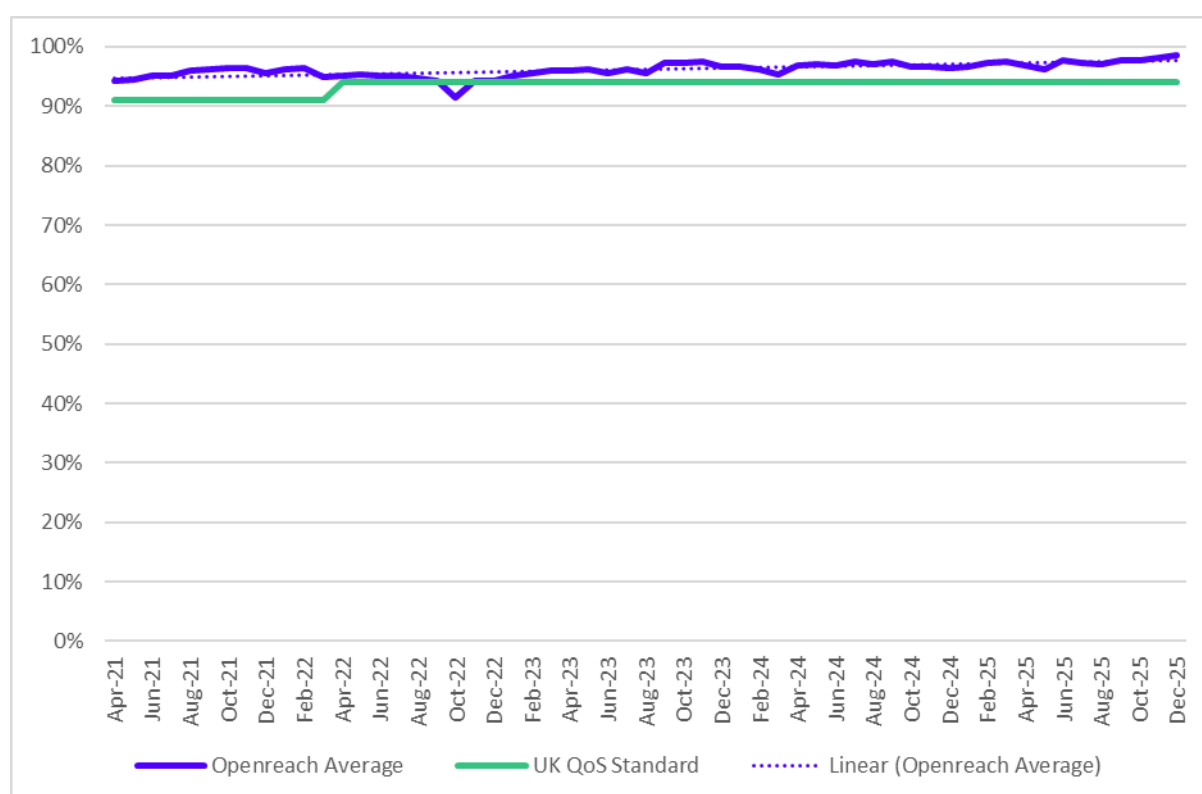
Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

A9.17 Figure A9.4 shows the percentage of all completed installation orders which are completed by the date Openreach commits to.²⁷³ This KPI was largely stable over the period, and the monthly equivalent of the minimum standard of 94% was consistently met on a monthly basis, with the exception of one month (October 2022).

²⁷² FTTC - KPI 1a Percentage first available date appointment availability: on or before the Required First Appointment Date.

²⁷³ Orders completed by the committed date include those (more complex) orders where a committed date was provided after a survey (the KCI2 Assure process) to allow further works to be completed.

Figure A9.4: FTTC Percentage of installation completion: by the committed date²⁷⁴



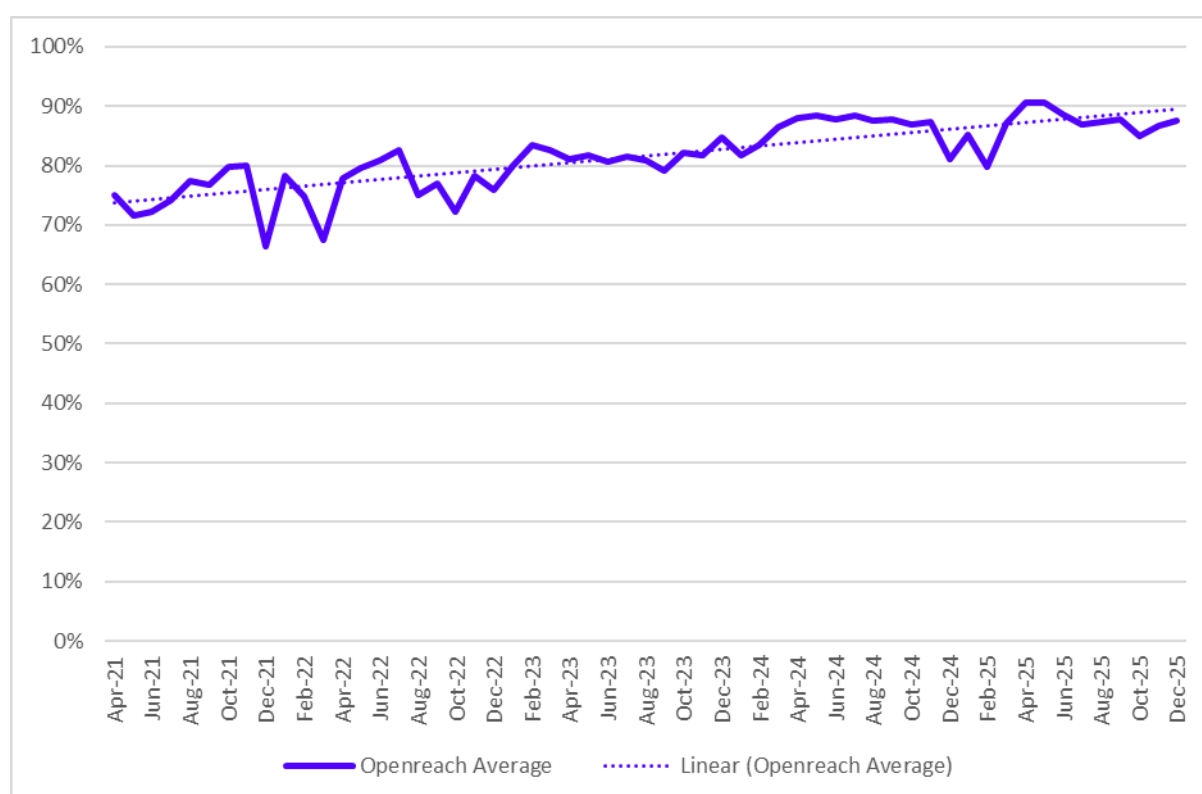
Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

FTTP performance

- A9.18 For the major FTTP repair KPIs and one of two major FTTP provision KPIs, average performance has improved across the period measured. For the other major provision FTTP KPI, performance has been generally declining since mid-2024 but is close to its long term average. For the 2021-26 review period we did not have minimum QoS standards for FTTP, therefore we do not include a QoS standard line in the graph like we do above.
- A9.19 Figure A9.5 shows that repair performance has been on a steadily increasing trend across the time period.

²⁷⁴ FTTC - KPI 2a Percentage installation completion: by the committed date.

Figure A9.5: FTTP Percentage of repairs completed within 1 working day (SML2)²⁷⁵



Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

A9.20 Figure A9.6 shows FTTP’s performance in offering a first appointment within 10 working days for provisions (12 working days in 2021/22). [X] Installing FTTP for the first time usually takes longer and can be more uncertain than FTTC.²⁷⁶ To recognise this, Openreach has a longer 18 day First Available Date (FAD) agreement in its service level agreement for FTTP and has an internal ambition to meet this timescale 90% of the time. Our understanding is that it has been consistently meeting this internal ambition.²⁷⁷

Figure A9.6: FTTP Percentage of times Openreach provides a first appointment within 10 working days (12 working days in 2021/22)²⁷⁸

[X]

Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

A9.21 Figure A9.7 shows Openreach’s performance in installing FTTP by its committed date. This has historically been around 90%, but has been falling since Q2 2024/25, and was around 89% across 2025. The early part of this decline will have been at least partly caused by storms Darragh and Eowyn which impacted the UK in December 2024 and January

²⁷⁵ FTTP - KPI 3 (b) (i) Percentage Repair completion: the Repair Service Level Commitment for Service Maintenance Level 2.

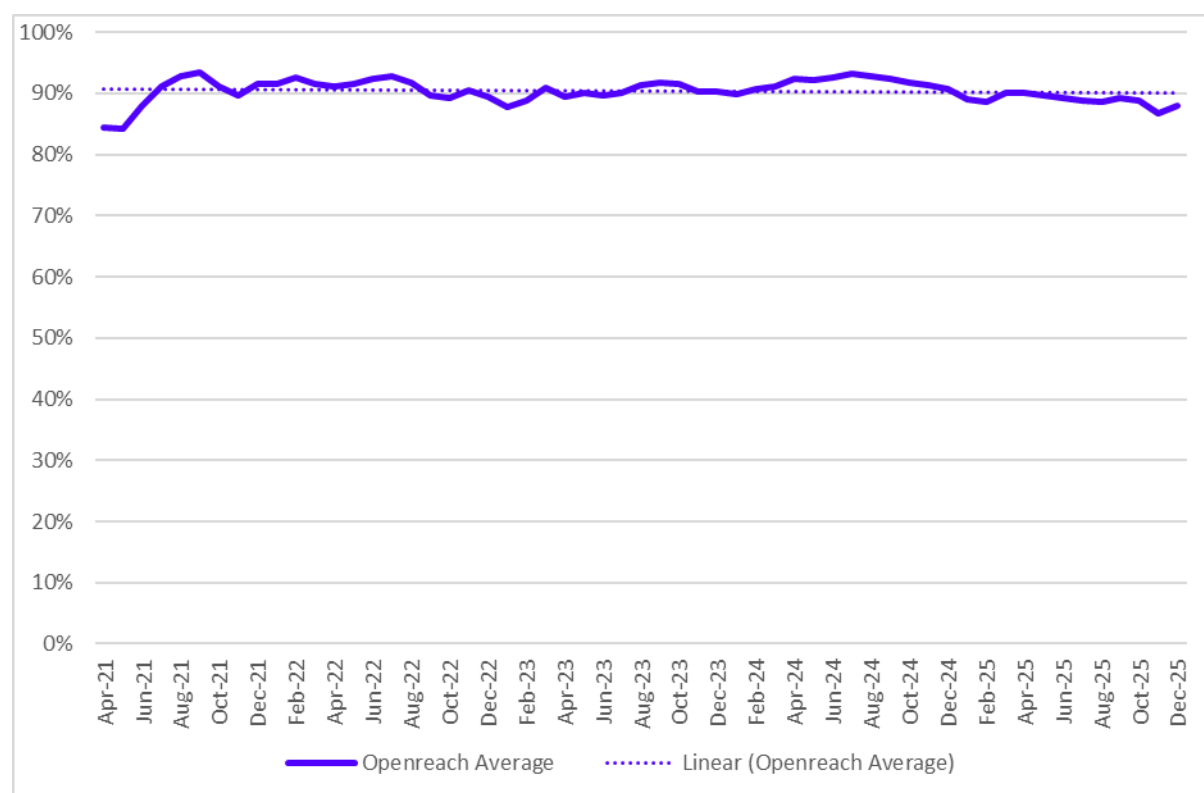
²⁷⁶ Our evidence on this is set out in Volume 5, Section 3, Paragraph 3.15.

²⁷⁷ [X]

²⁷⁸ FTTP - KPI 1a Percentage first available date appointment availability: on or before the Required First Appointment Date.

2025.^{279 280} Some of this decline will also have been driven by Openreach’s rollout of CJO, as explained in A9.84 onwards.

Figure A9.7: FTTP Percentage installation completion by the committed date²⁸¹



Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

Comparing FTTC performance to FTTP

- A9.22 We assessed how Openreach’s performance on FTTC products compares to performance on FTTP on equivalent KPI parameters. [3<]²⁸²
- A9.23 FTTP also tended to be subject to higher volatility across all KPIs. We understand that one reason for this is due to FTTP undergoing major rollout across the UK during this period leading to volumes being lower for the early part of this period.
- A9.24 Monthly FTTP repair completion performance, measured by KPI 3(b)(i) sat below the equivalent of the annual FTTC standard of 85% until 2024. Since then, FTTP repair performance has been at a very similar level to the equivalent FTTC KPI.

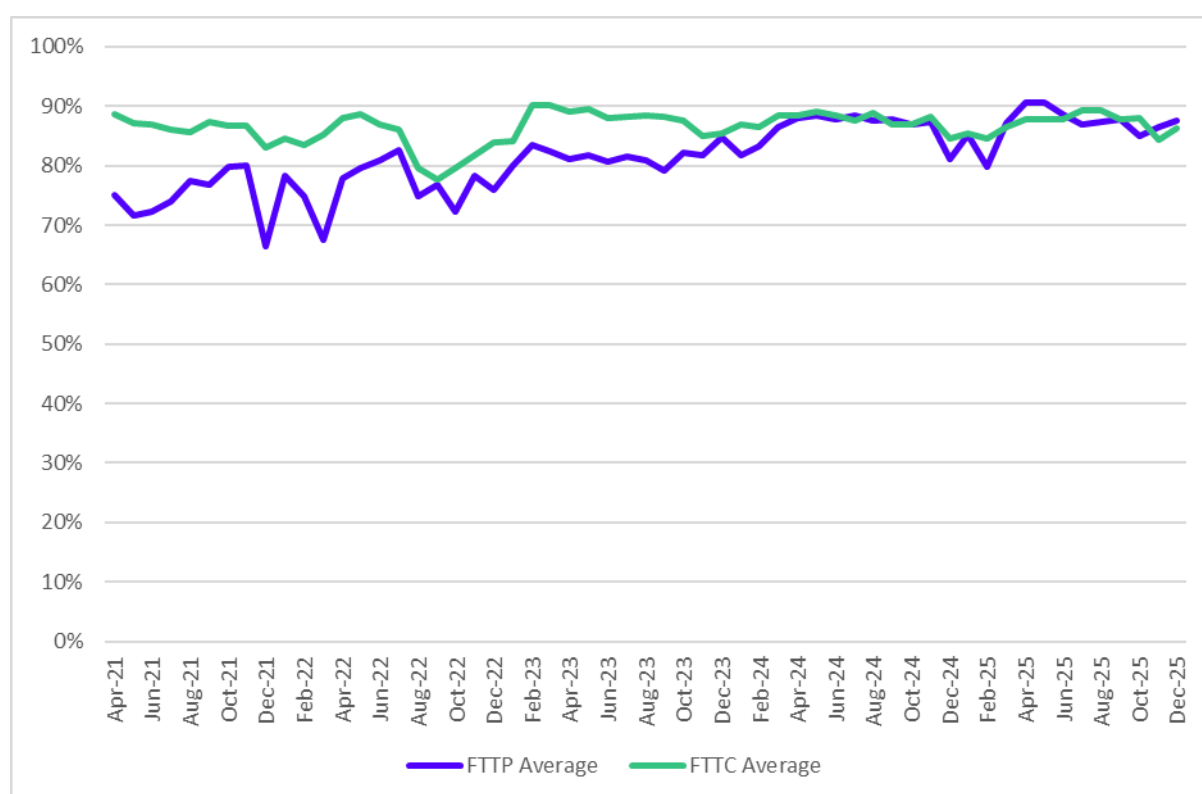
²⁷⁹ Met Office. <https://weather.metoffice.gov.uk/warnings-and-advice/uk-storm-centre/uk-storm-season-2024-25>. Accessed on 24 November 2025.

²⁸⁰ Evidence for the impacts of these storms is shown in Figure A9.20 with Q3 and Q4 2024/25 having historically high amounts of regional MBORC repairs.

²⁸¹ FTTP - KPI 2a Percentage installation completion: by the committed date. Orders completed by the committed date include those (more complex) orders where a committed date was provided after a survey (the KC12 Assure process) to allow further works to be completed.

²⁸² These KPIs do not give a full picture of performance, because they do not recognise that a) installing FTTP for the first time usually takes longer and can be more uncertain than FTTC because it is a more complex provisioning process; and b) FTTP has materially lower fault rates.

Figure A9.8: FTTP & FTTC Percentage Repair completion by SML2²⁸³



Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

A9.25 [X].

A9.26 Installing FTTP for the first time usually takes longer and can be more uncertain than FTTC because it is a more complex provisioning process. A fibre connection needs to be made into the premises and a new optical network terminal (ONT) installed.²⁸⁴ FTTC provisioning is unlikely to be as complex. In many cases an existing copper line from the premises to be served can be connected by an engineer at the FTTC cabinet often without requiring a visit to the premises.²⁸⁵

A9.27 [X] and A9.10 illustrates how performance of completed installations by the committed date has also been lower.

Figure A9.9: FTTP & FTTC Percentage of times Openreach provides a first appointment within 10 working days (12 working days in 2021/22)²⁸⁶

[X]

²⁸³ KPI 3 (b) (i) Percentage Repair completion. In respect of services subject to Service Maintenance Level 2, the percentage of Faults whereby the Dominant Provider achieved a Restored Service during the relevant month within: the Repair Service Level.

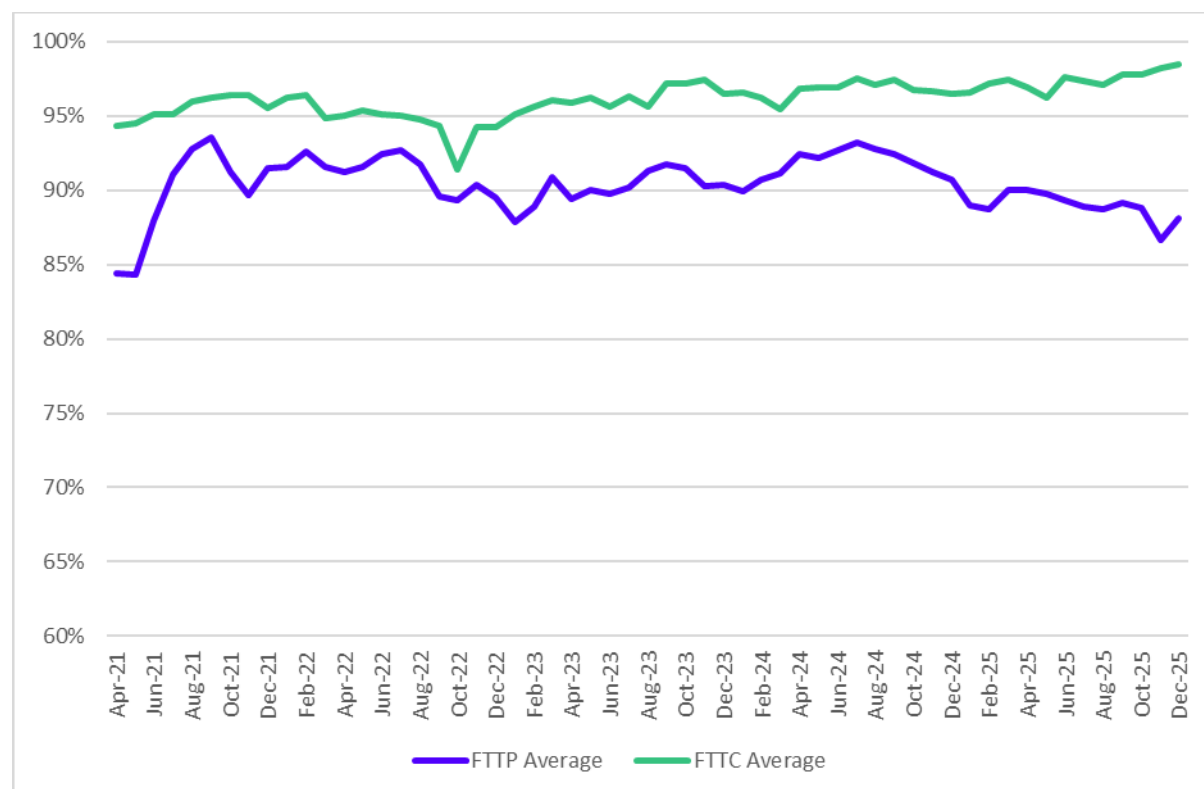
²⁸⁴ Either overhead from a nearby pole or buried from a nearby flex point e.g., in the pavement and then into the premises through a drilled hole. In a minority of cases, additional civil works are needed to extend the fibre network to reach the premises to be served. Unlike the network termination equipment (NTE) for copper connections, the ONT for FTTP requires power.

²⁸⁵ So, in many cases, no appointment needs to be organised with the end customer.

²⁸⁶ KPI 1a Percentage first available date appointment availability: on or before the Required First Appointment Date.

Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

Figure A9.10: FTTP & FTTC Percentage installation completion: by the committed date²⁸⁷



Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

Non-discrimination requirement review

- A9.28 As part of the reporting requirement, we receive information on how Openreach’s performance on the service it provides to downstream BT customers compares with the average service it provides to other telecoms providers.
- A9.29 We have reviewed how Openreach’s service compares across the WLA market for BT and non-BT consumers using the data we have available to us. Table A9.2 details the average performance across key KPIs. In these KPIs, average performance levels and trends across the period for FTTP and FTTC have been very similar between BT and non-BT consumers for provisioning and repairs. On the basis of this data, it does not appear that Openreach is systematically providing its downstream divisions with materially better services than other telecoms providers.

²⁸⁷ KPI 2a Percentage installation completion: by the committed date.

Table A9.2: Openreach WLA KPI performance for BT and non-BT customers²⁸⁸

WLA Standard	FTTC Monthly Average Performance (BT)	FTTC Monthly Average Performance (non-BT)	FTTP Monthly Average Performance (BT)	FTTP Monthly Average Performance (non-BT)
Repair within 2 working days (SML1)	88.79%	88.13%	N/A	N/A
Repair within 1 working day (SML2)	87.29%	86.07%	80.47%	83.67%
Installations to be completed by Committed Date	96.80%	95.36%	89.66%	91.09%
Quality standards in relation to the FAD - Frequency with which regulated installation appointment date must be offered	96.93%	97.24%	[<]%	[<]%

Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR WLA KPI Report – December 2025.

Leased lines performance

A9.30 Table A9.3 sets out the standards we applied to the regulated leased line markets over the period 2021 to 2026.²⁸⁹

Table A9.3: Current leased line standards

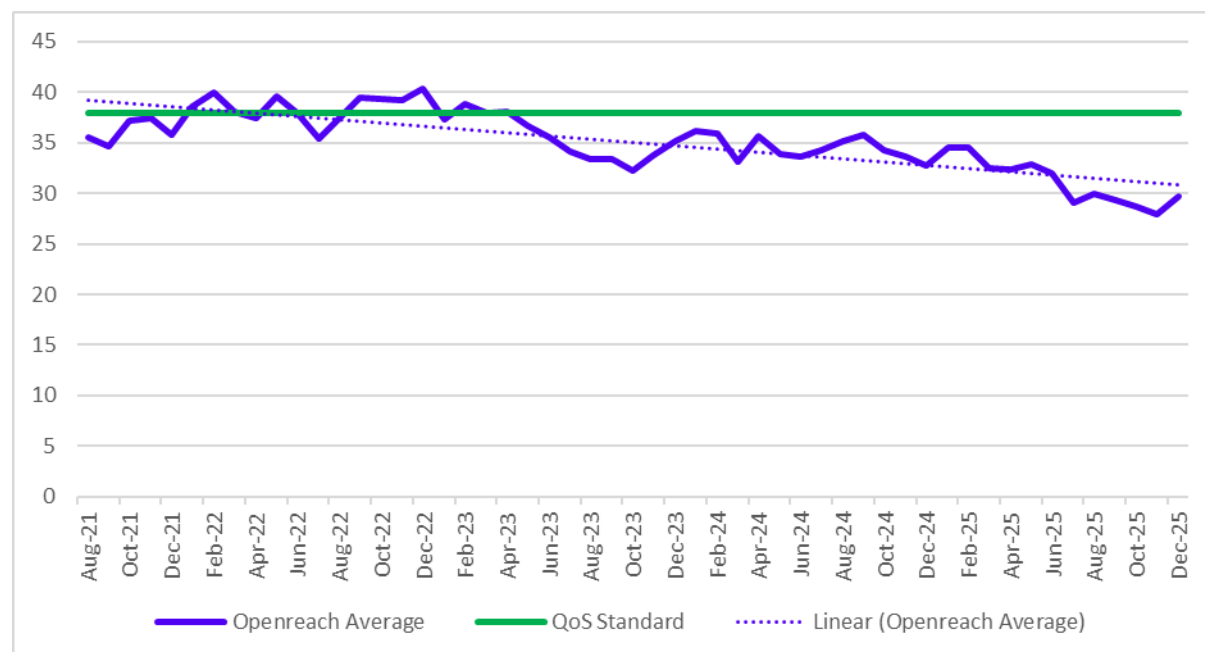
Standard	Level
MTTP (Mean Time To Provide) across orders	No more than 38 working days
Upper percentile limit for provisions	No more than 4.5% of orders older than 133 working days
Certainty: Percentage of orders completed on or before the initial contractual delivery date (iCDD)	86%
Certainty cross-link: Maximum mean period for the iCDD	No more than 53 working days
Faults repaired within the service level agreement (SLA)	94%

²⁸⁸ The is the average from April 2021 to December 2025.

²⁸⁹ These minimum QoS standards apply to both leased line Area 2 and Area 3 but not the HNR Area or the CLA.

A9.31 In the financial year 2022/23 Openreach marginally missed the MTTP standard of 38 working days.²⁹⁰ This can be seen in Figure A9.11 where before Q1 2023/24 the KPI monthly value commonly lies above the green QoS standard line. Since Q1 2023/24 we have observed an improving trend in performance (i.e. a decreasing Mean Time To Provide) and Openreach has been able to meet the equivalent of the annual standard on a monthly basis.²⁹¹

Figure A9.11: LLA Mean Time To Provide across orders²⁹²



Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR Leased Line KPI Report – December 2025.

A9.32 Figure A9.12 below shows the percentage of open orders that are older than 133 working days and how that complies with the QoS standard of this being no more than 4.5%.²⁹³ From August 2021 through to June 2025 Openreach met the relevant annual QoS standard every month i.e. its monthly performance was below 4.5%. Then from Q2 2024/25 to September 2025 the percentage of open orders older than 133 working days increased, eventually rising above the 4.5% annual standard. However, this percentage fell towards the end of 2025, and monthly performance just met the monthly equivalent of the annual standard in December 2025.

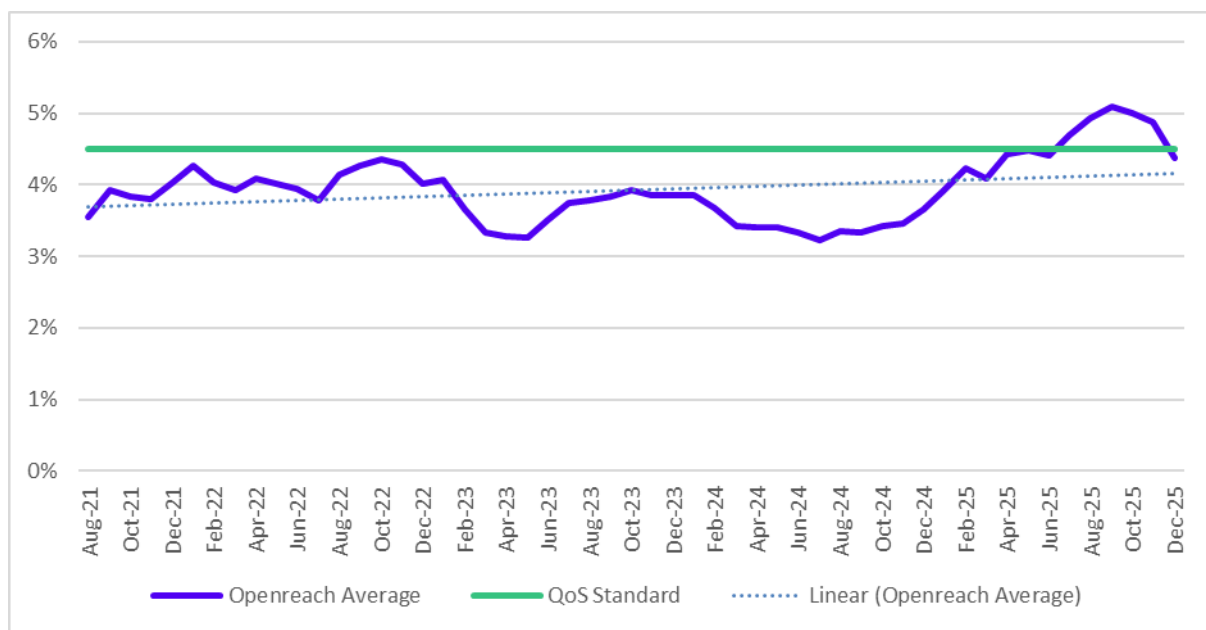
²⁹⁰ Ofcom, March 2024. [Confirmation Decision served on BT by Ofcom for contravention of SMP Condition 10.1](#)

²⁹¹ We comment upon Openreach missing its obligations in the 'Industrial Action' section of this annex.

²⁹² LLA - KPI A Mean Time To Provide across orders.

²⁹³ In Figure A13.12 of the March 2025 Consultation we incorrectly mapped the 4.5% upper percentile limit against the monthly percentage of closed orders that were older than 133 working days. We should have instead mapped the percentage of open orders that were older than 133 working days, as this is what the 4.5% standard applied to. We also commented on the graph as if the 4.5% limit applied to closed orders rather than open orders. These issues have been corrected in Figure A9.12.

Figure A9.12: LLA Time to provide upper percentile limit²⁹⁴

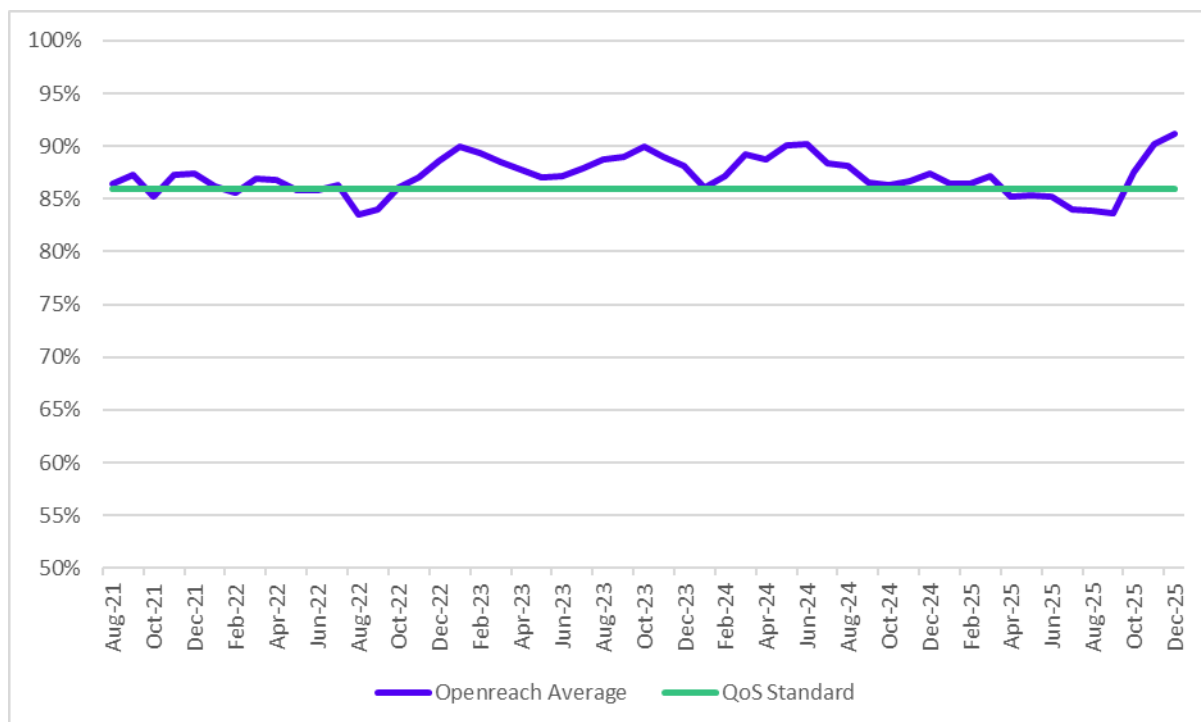


Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR Leased Line KPI Report – December 2025.

A9.33 Figure A9.13 shows the percentage of orders which are completed on or before the initial contractual delivery date (iCDD). Between August 2021 and September 2022 there were six months where the average monthly percentage dipped slightly below the monthly equivalent of the minimum QoS standard of 86%. Following this, Openreach met the minimum standard every month until April 2025 with monthly performance falling below the minimum annual standard for six months. However, monthly performance then increased and was above the monthly equivalent of the annual standard at the end of 2025.

²⁹⁴ LLA – KPI E Time to provide upper percentile limit.

Figure A9.13: LLA Percentage of orders completed on or before the initial contractual delivery date (iCDD)²⁹⁵

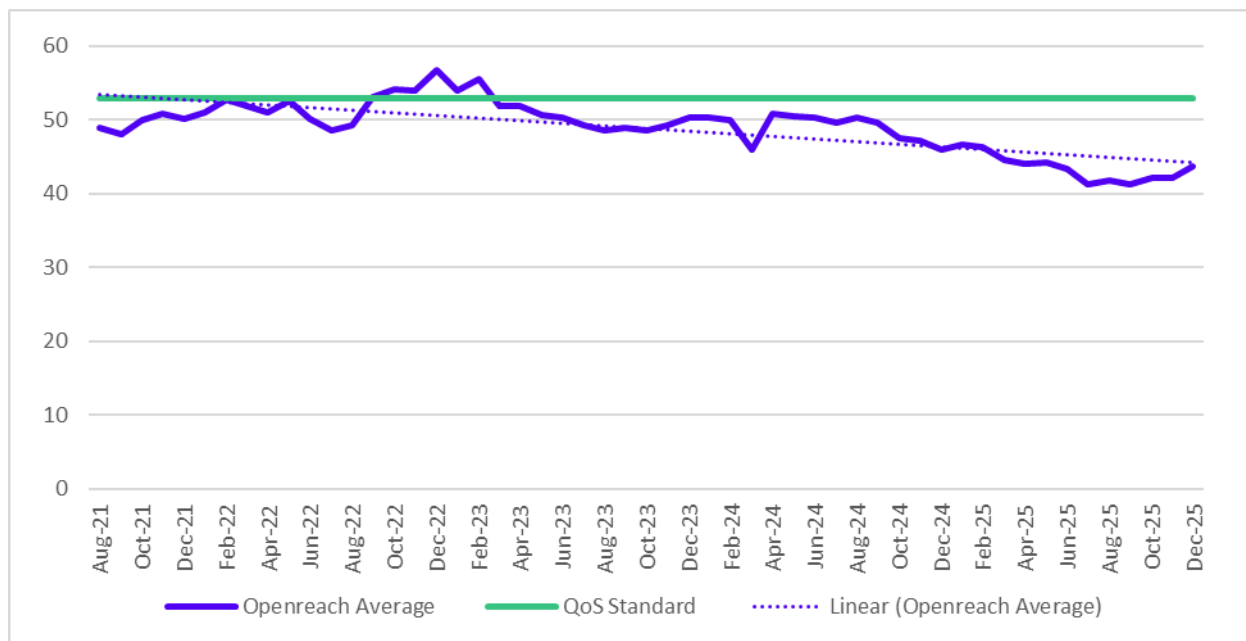


Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR Leased Line KPI Report – December 2025.

A9.34 Figure A9.14 below shows the mean numbers of working days between an order being accepted and the order's initial contractual delivery date (iCDD). Openreach's monthly average was worse than the monthly equivalent of the standard for 4 months of 2022/23 (i.e. took longer) but it has performed better than the standard for the rest of the period and has been improving throughout the period.

²⁹⁵ LLA - KPI C Certainty: Percentage of orders completed on or before the initial contractual delivery date (iCDD).

Figure A9.14: LLA Mean initial contractual delivery period²⁹⁶

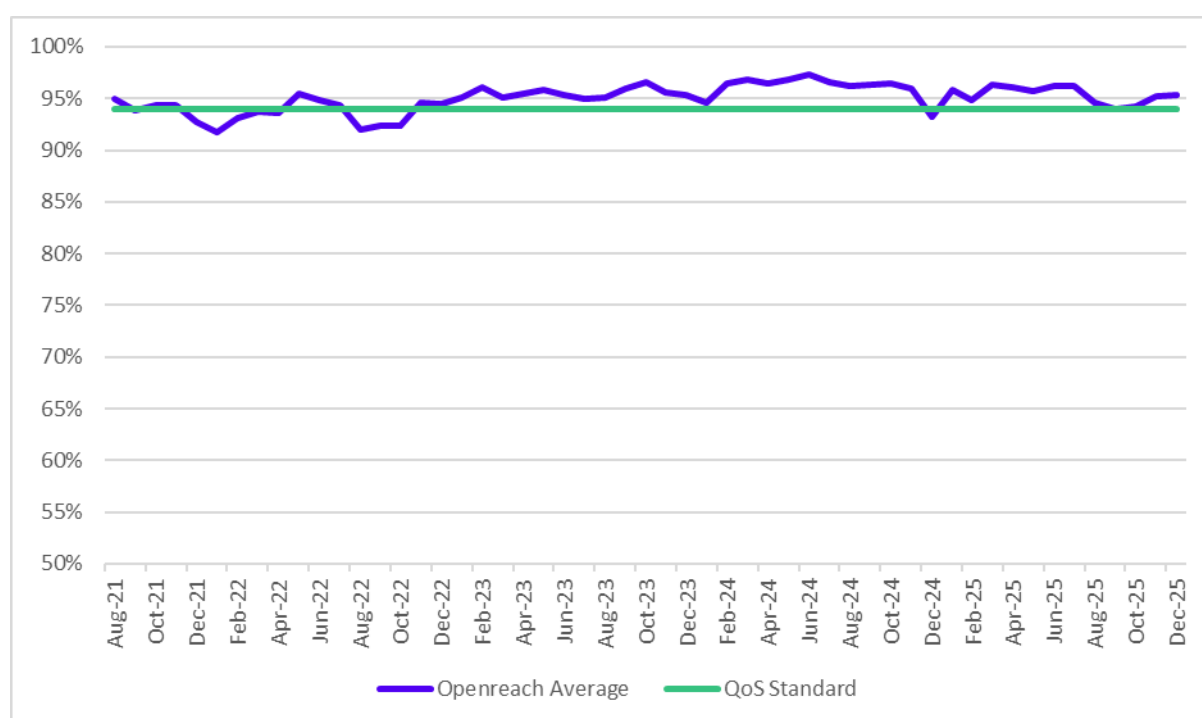


Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR Leased Line KPI Report – December 2025.

A9.35 Figure A9.15 shows the percentage of faults which are repaired by the times stated in the relevant service level agreement. Openreach’s monthly average dropped below the equivalent monthly minimum QoS standard in 10 of the 53 months in the period shown. However, these were largely in the period before December 2022, and since then, performance has generally improved, with the monthly equivalent minimum standard being met in every month except one.

²⁹⁶ LLA – KPI F Mean initial contractual delivery period.

Figure A9.15: LLA Faults repaired within the service level agreement (SLA)²⁹⁷



Source: Ofcom analysis of Openreach reports to Ofcom. WFTMR Leased Line KPI Report – December 2025.

Further analysis of Openreach WLA repair and provisioning data

- A9.36 The WLA KPI data above is monthly aggregated information covering the whole of the UK. However we also wanted to understand:
- Differences in performance between both rural and urban areas of the UK, in order to consider whether a change in the proportion of rural customers should lead to changes to the QoS minimum standards; and
 - FTTP performance in WLA Area 3, to help set FTTP minimum QoS standards specific to that area.
- A9.37 This subsection is structured as follows:
- Data sources used in this analysis;
 - Classifying urban and rural locations;
 - Analysing the impact of a changing rurality mix for FTTC QoS standards;
 - Supporting evidence on standards for FTTP repairs in WLA Area 3; and
 - Supporting evidence on standards for FTTP provisioning in WLA Area 3.

Data sources

- A9.38 We obtained WLA data from Openreach on individual provisions and repair orders over the period from April 2021 to March 2025.

²⁹⁷ LLA - KPI B Faults repaired within the service level agreement (SLA).

- A9.39 Each data point included:
- WLA product;
 - Postcode (which allows us to segment orders into geographical regions);
 - Relevant dates for the order to allow calculation of performance (date order accepted, order received, estimated delivery date provided to wholesale provider);
 - A unique customer reference number; and
 - Factors which may have affected the order (site survey, engineering visit, MBORC).

Classifying urban and rural locations

A9.40 We evaluated urban and rural locations using the Bluewave rurality system. This is a locale classification in which postcodes are segmented into a number of geographical groupings based on different population and spatial conditions. The Bluewave locale groups are described in Table A9.4.

Table A9.4: Bluewave locale classifications²⁹⁸

Locale Group	Type	Condition
A	Large City	Population: >500,000
B	Medium City/Large Town	Population: 100,000-500,000
C	Small City/Medium Town	Population: 15,000-100,000
D	Accessible Small Town	Small Towns that have populations between 2,000 and 15,000 and within 10 miles or so of one of the large urban areas defined in Locale Groups A, B and C.
E	Remote Small Town	Small Towns that have populations between 2,000 and 15,000 and are more than 10 miles or so from the large urban areas defined in Locale Groups A, B and C.
F	Accessible Rural Area	Villages with populations between 500 and 2,000 and areas that have populations of less than 500 (hamlets, open countryside and town fringes) and are within 10 miles or so of a larger urban area defined in Locale Groups A, B and C.
G	Remote Rural Area	Villages that have population between 500 and 2,000 and areas that have population less than 500 (hamlets and open countryside) and are more

²⁹⁸ [Bluewave Geographics. Locale classification. Accessed on 4th March 2025.](#) Accessed on 4 March 2025.

		than 10 miles or so from a large urban area defined in Locale Groups A, B and C

A9.41 For our analysis we created an urban/rural split in which we classified any postcode in locale groups A-E as urban and any postcode in groups F and G as rural. This is the same approach we adopt when analysing urban and rural areas in our Connected Nations report.²⁹⁹

Analysing the impact of changing rurality for FTTC

A9.42 The transition from copper-based broadband to FTTP is likely to proceed at a different pace in different places, for a variety of reasons.³⁰⁰ Openreach told us that copper provision and repair volumes will [§<].³⁰¹ While the exact pattern is uncertain, we recognise that this transition may change the proportion of provision orders and/or repairs that are in rural areas. Due to the remoteness of some rural premises making them harder and more costly to service, this may make the existing FTTC QoS standards harder to achieve.

A9.43 To estimate how rurality could affect Openreach's performance we assigned each repair or provision order as either in an urban or rural location using the postcode associated with each order.³⁰²

A9.44 Our analysis of FTTC provisions showed that there is only a small difference in performance between urban and rural areas. We thus consider that an increasing rural proportion of FTTC customers should have little impact on FTTC provisions.

A9.45 FTTC repairs however, showed worse performance in more rural areas. We have thus considered repairs in further detail.

A9.46 Figure A9.16 shows that there was a 4 percentage point difference in FTTC repair completion within service level agreement timelines between urban and rural areas in the period April 2021 to March 2025.³⁰³ This 4 percentage point difference in performance suggests that on average, we might expect the on time repair performance to decrease by approximately 1 percentage point (e.g. from 87% to 86%) every time the proportion of rural customers increases by about 25 percentage points (e.g., from 25% to 50%).

²⁹⁹ Ofcom. November 2025. <https://www.ofcom.org.uk/phones-and-broadband/coverage-and-speeds/connected-nations-20252>.

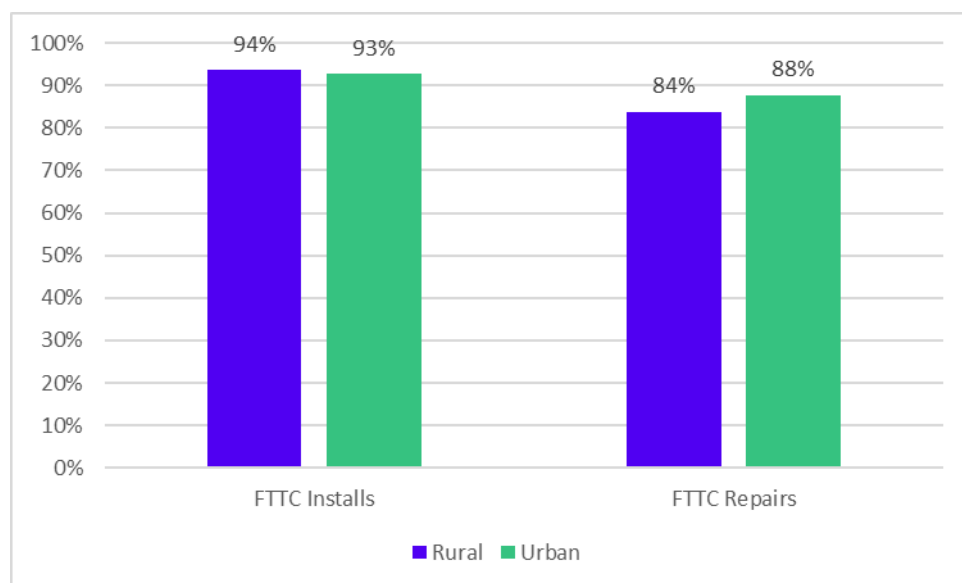
³⁰⁰ Relevant factors include (i) the pace of Openreach's FTTP deployment in urban and rural areas; (ii) the extent to which rival networks (including VMO2) are present in urban and rural areas; and (iii) any differences between urban and rural consumers' propensity to purchase FTTP where it is available. The interplay between these factors may also change over the course of the 2026-31 review period.

³⁰¹ [§<]

³⁰² See Paragraph A9.41 on how we classified each data point as urban or rural.

³⁰³ For installations, the completion rate represents the percentage of orders completed by the Committed Date. For repairs, the completion rate represents the percentage of repairs completed within the Repair Service Commitment for Service Maintenance Level 2.

Figure A9.16: FTTC repair and installation completion by Urban/Rural areas April 2021 – March 2025



Source: Ofcom analysis of Openreach s135s to Ofcom. Openreach response dated 14 November 2024 to s135 notice dated 10 July 2024, questions A&B and Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

A9.47 We conducted analysis to see how a changing rurality mix over the 2026-31 review period with a higher proportion of rural areas may impact Openreach’s ability to meet the FTTC repairs standards based on its historic performance.

A9.48 We created a weighted average order completion rate through the equation below. The percentage of orders in the urban locale is multiplied by the urban KPI performance level (i.e. 88%), and the percentage of orders in the rural locale is multiplied by the rural KPI performance level (i.e. 84%).

$$\text{Weighted KPI} = (\text{Urban \%} * 0.88) + (\text{Rural \%} * 0.84)$$

A9.49 In our example below, we use all FTTC repair orders from April 2021 to March 2025. 82% of orders are from urban areas and 18% from rural areas.³⁰⁴

$$\text{Weighted KPI} = (0.82*0.88) + (0.18*0.84) = 0.86$$

A9.50 We then adjusted the weighting of rural/urban orders to reflect potential future scenarios where a greater proportion of rural orders would exist to understand how overall performance might be affected.

A9.51 Table A9.5 below shows how historic performance could have changed with different urban/rural weightings. The weightings shown in the first column show the volume of FTTC repair orders which are classified as urban or rural. For example, the weighting 82/18 is a scenario in which 82% of repair orders are urban and 18% are rural. We find that under all rurality split scenarios in which the percentage of rural orders does not rise above 80%, the

³⁰⁴ The figures in this equation and in Tables A9.5 and A9.6 below are presented to the nearest whole number. Unrounded percentages were used in our calculations. For this reason, attempting to replicate our calculations using rounded percentages sometimes results in different figures to those presented in the document. Source: Ofcom analysis of Openreach s135s to Ofcom. Openreach response dated 14 November 2024 to s135 notice dated 10 July 2024, questions A&B and Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

weighted KPI did not fall below the existing minimum standards. Only in the '20/80', '15/85' and '5/95' split scenarios does the weighted KPI figure fall slightly below the WFTMR21 minimum standard of 85%.

- A9.52 We consider that although there is some difference in FTTC repair performance between urban and rural areas, the gap is not big enough to suggest major concerns with Openreach's ability to meet the UK-wide minimum QoS standards during this review period as a result of an increasing rural proportion of FTTC customers.
- A9.53 The same result holds within each management region, as shown in Table A9.6. There would need to be extreme swings in the rurality split of customers for performance to fall below existing minimum standards based on current performance.

Table A9.5: Rurality split scenarios for FTTC repairs and the relevant KPI outcome

Urban/Rural Scenario	Weighted KPI
82/18	88%
50/50	86%
20/80	85%
15/85	85%
5/95	84%

Source: Ofcom analysis of Openreach s135s to Ofcom. Openreach response dated 14 November 2024 to s135 notice dated 10 July 2024, questions A&B and Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

Table A9.6: Management region rurality split scenarios for FTTC repairs and the relevant KPI outcome

Management Region	Rurality split 2021-2025	Rurality split at which weighted KPI drops below 85% (based on existing performance)
London and South East	92/8	55/45
Northern England	86/14	25/75
Wales and Midlands	79/21	15/85
Wessex	74/26	25/75
East Anglia	73/27	Never
Scotland	77/23	Never
Northern Ireland	49/51	Never

Source: Ofcom analysis of Openreach s135s to Ofcom. Openreach response dated 14 November 2024 to s135 notice dated 10 July 2024, questions A&B and Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

Supporting evidence on standards for FTTP repairs

A9.54 Below we discuss evidence relevant to the minimum repair standards for FTTP in WLA Area 3. Firstly, we set out analysis that we have conducted since the March 2025 Consultation on the drivers of the difference in Openreach's repairs within one working day performance between WLA Area 2 and WLA Area 3.³⁰⁵ We then explain how we have calculated Openreach's historic performance for repairs within one working day. We then provide analysis in response to Openreach's submissions that we should apply an adjustment for MBORC events and for changes to future rurality. Finally, we then set out some analysis underpinning our decision to set the second minimum repair standard using a metric of repairs within 11 working days (i.e. 10 working days after the original SLA) and a 95% standard.

Drivers of the difference between Openreach's WLA Area 2 and WLA Area 3 repair performance

- A9.55 In the March 2025 Consultation we noted a difference in Openreach's on time repair standards performance between WLA Area 2 and WLA Area 3 but recognised that part of this difference could be down to the fact that repairs in WLA Area 3 were more rural than in WLA Area 2. We therefore proposed setting FTTP on time repair standards by estimating the repair performance we would have expected to have observed in WLA Area 2 if it had a similar rurality profile to WLA Area 3. We said that this would reduce the risk of Openreach providing a lower level of performance in WLA Area 3 due to the weaker competitive pressures.
- A9.56 As set out in Volume 5, Paragraph 3.104, one of the reasons that we have decided to not to use this approach is because of additional analysis that we conducted in response to Openreach's reply to that consultation.
- A9.57 In its consultation response Openreach said WLA Area 3 had a higher proportion of complex repairs than WLA Area 2, even after adjusting for rurality differences.^{306 307} Openreach said that this, rather than differences in competitive pressures, explained the majority of the gap between its performance in WLA Area 2 and WLA Area 3 (after rurality is taken into account).
- A9.58 In order to analyse this issue, we requested data from Openreach on all of its FTTP repairs from April 2021 through to March 2025, including whether each repair was "complex".
- A9.59 Figure A9.17 shows, for the 2024/25 financial year, the percentage of repairs that were complex, broken down by WLA Area and whether the repair was in an urban or rural locale.³⁰⁸

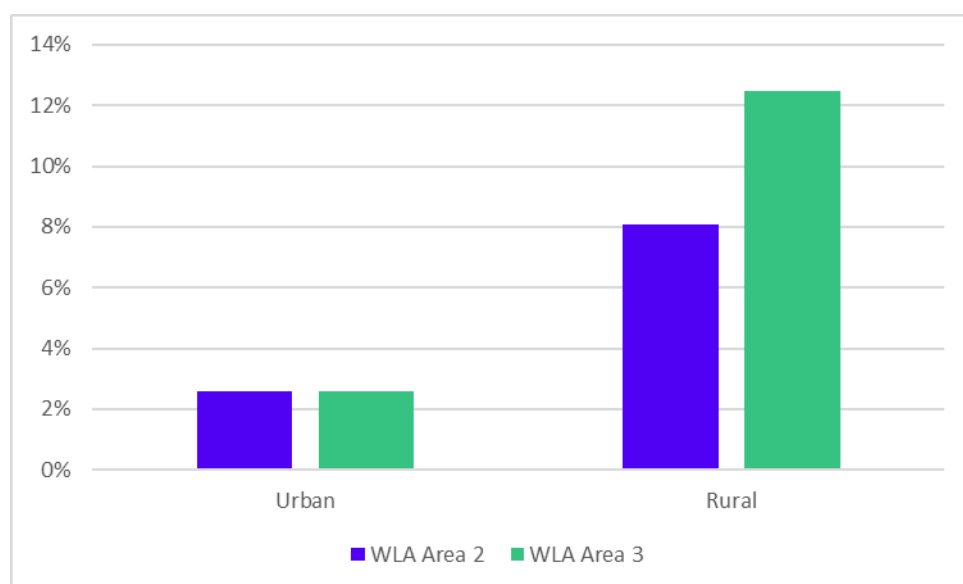
³⁰⁵ Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#).

³⁰⁶ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 51-56.

³⁰⁷ By a "complex repair" we refer to any repair that requires an "estimate". Repairs are classified as requiring an estimate when additional work is required to fix a fault. An estimate specifies the materials and the additional work required in order to rectify the fault, and does not necessarily mean a specialist engineer visit is required to fix the fault. Openreach s135 to Ofcom. Openreach response dated 13 August 2025 to s135 notice dated 12 September 2025, question 4.

³⁰⁸ Using the definition of urban and rural locales in A9.41.

Figure A9.17: Percentage of FTTP repairs that are complex, by rurality and WLA Area

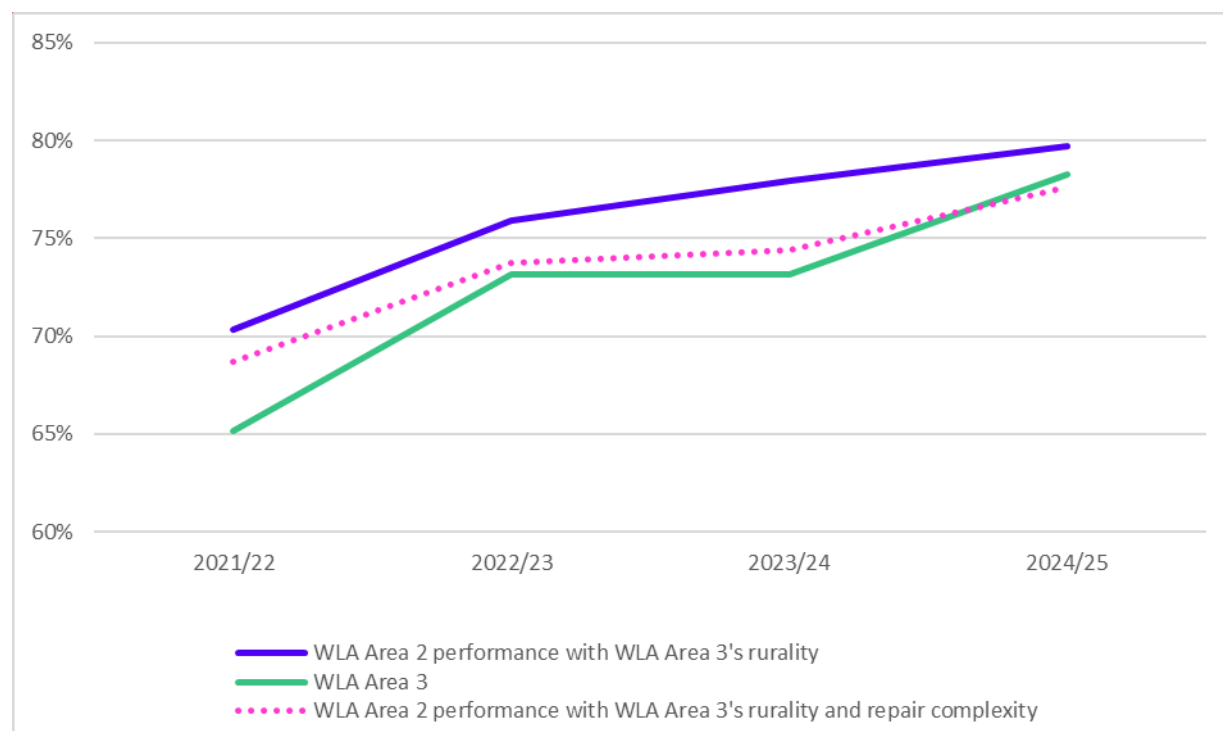


Source: Ofcom analysis of Openreach s135 to Ofcom. Openreach response dated 12 September 2025 to s135 notice dated 13 Aug 2025, questions 1&4.

- A9.60 The proportion of complex repairs is similar across WLA Area 2 and WLA Area 3 within urban locales, with 2.6% of repairs being complex for both areas. However, within rural locales a higher proportion of repairs are complex in WLA Area 3 than in WLA Area 2.
- A9.61 Using the data we collected from Openreach we therefore expanded the approach proposed in the March 2025 Consultation, explained in A9.55, to estimate what Openreach’s WLA Area 2 repair performance would have been if WLA Area 2 repairs matched both the rurality and complexity of WLA Area 3 repairs.
- A9.62 Figure A9.18 compares the performance of Openreach using the different approaches explained above. These are:
- observed WLA Area 3 performance;
 - observed WLA Area 2 performance adjusted to be consistent with the rurality profile of WLA Area 3; and
 - observed WLA Area 2 performance adjusted to be consistent both with the rurality profile of WLA Area 3, and the greater complexity of orders seen in WLA Area 3.³⁰⁹

³⁰⁹ To do this we took the observed performance in WLA Area 2 for individual Bluewave rurality groupings (see Table A9.4) for both complex and non-complex orders. Then to calculate the overall performance estimate, we weighted these different groupings based on the rurality profile and proportion of complex orders seen in WLA Area 3.

Figure A9.18: Actual WLA Area 3 FTTP repair performance and adjusted WLA Area 2 performance³¹⁰



Source: Ofcom analysis of Openreach s135 to Ofcom. Openreach response dated 12 September 2025 to s135 notice dated 13 Aug 2025, questions 1&4.

A9.63 We estimate that if WLA Area 2 had both been as rural as WLA Area 3 and had contained as many complex repairs as WLA Area 3, then over the last three financial years Openreach's next working day repairs performance would have been similar in WLA Area 2 and WLA Area 3. Adjusting for the proportion of complex repairs in addition to the rurality of repairs appears to account for most of the gap we identified between WLA Area 3 and WLA Area 2 performance in our March 2025 Consultation.³¹¹

Setting the standard for repair within 1 working day

Calculating Openreach's WLA Area 3 historical performance

A9.64 In order to compute Openreach's average next working-day repairs performance for 2024/25 in WLA Area 3, we used the postcode information that we have for every fault observation to divide our dataset into faults which occurred in the geographic markets we define in this Statement (WLA Area 2 and WLA Area 3). This allows us to measure the average performance separately for each area.

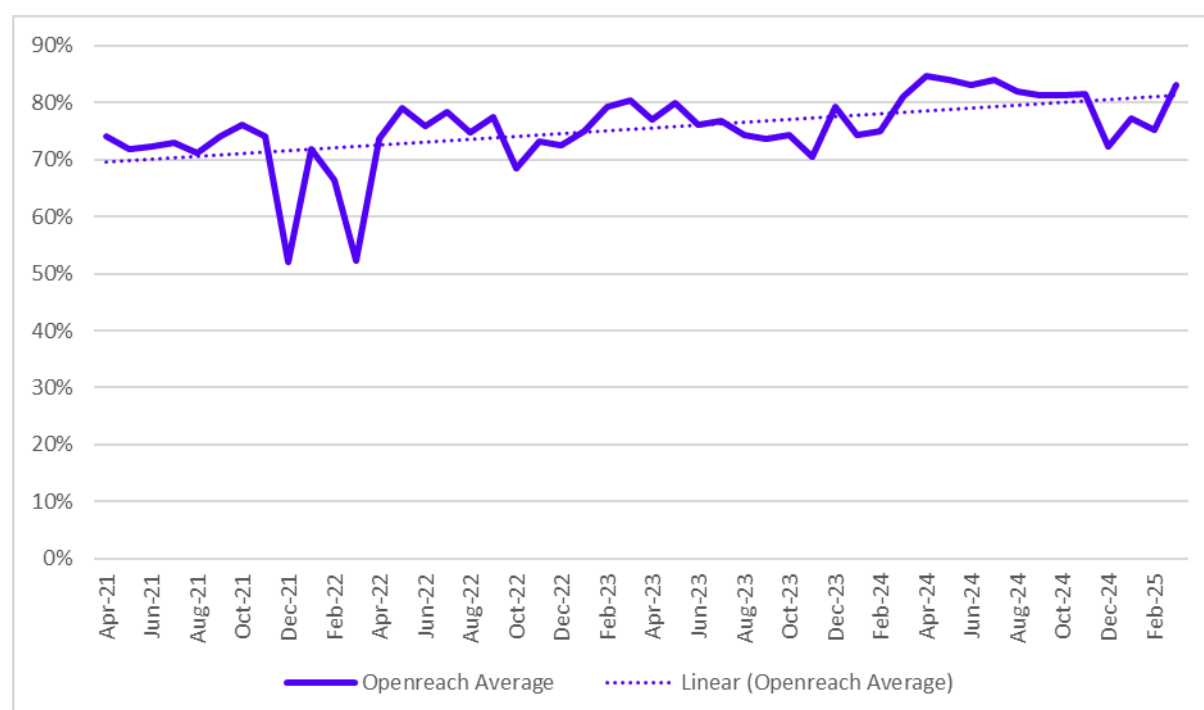
A9.65 We calculated the repair performance metric by taking the difference between the day the fault was reported and the day it was closed and comparing this against the service maintenance level standard.

³¹⁰ This figure was computed using the proposed WLA Area 2 and WLA Area 3 market definitions from the March 2025 Consultation. Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Schedule 2 WLA postcode sectors.

³¹¹ Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Volume 5, Page 22.

A9.66 Openreach’s average monthly performance in WLA Area 3 for this metric is shown in Figure A9.19. Openreach’s next working day repair performance exhibits seasonal patterns, often falling in winter, but generally increased from 2021 to 2025.

Figure A9.19: Mean repairs completed within the SLA for FTTP in WLA Area 3



Source: Ofcom analysis of Openreach s135s to Ofcom. Openreach response dated 14 November 2024 to s135 notice dated 10 July 2024, questions A&B and Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

A9.67 Table A9.7 shows the annual average for repairs completed within the SLA for WLA Area 3 over the time period. This again shows how Openreach’s WLA Area 3 next working-day repair performance has increased from 2021/22 to 2024/25.

Table A9.7: Mean repairs completed within the SLA for FTTP – Annual Average

	2021/22	2022/23	2023/24	2024/25
WLA Area 3	67%	76%	76%	81%

Source: Ofcom analysis of Openreach s135s to Ofcom. Openreach response dated 14 November 2024 to s135 notice dated 10 July 2024, questions A&B and Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

Analysis of MBORC events

A9.68 In its consultation response Openreach said that we should explicitly account for MBORC events in our FTTP standards.³¹²

A9.69 Openreach presented evidence that the UK experienced two major storms in the 2024/25 financial year, with each major storm reducing Openreach’s annual next working day repair performance by around 1 percentage point, and its annual next working day plus 10 repair performance by around 0.5 percentage points. It suggested that we allow for four major storms a year and that we should therefore lower the next working day repair performance

³¹² [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 65-85.

standard by 2 percentage points, and the next working day plus 10 repair performance standard by 1 percentage point.

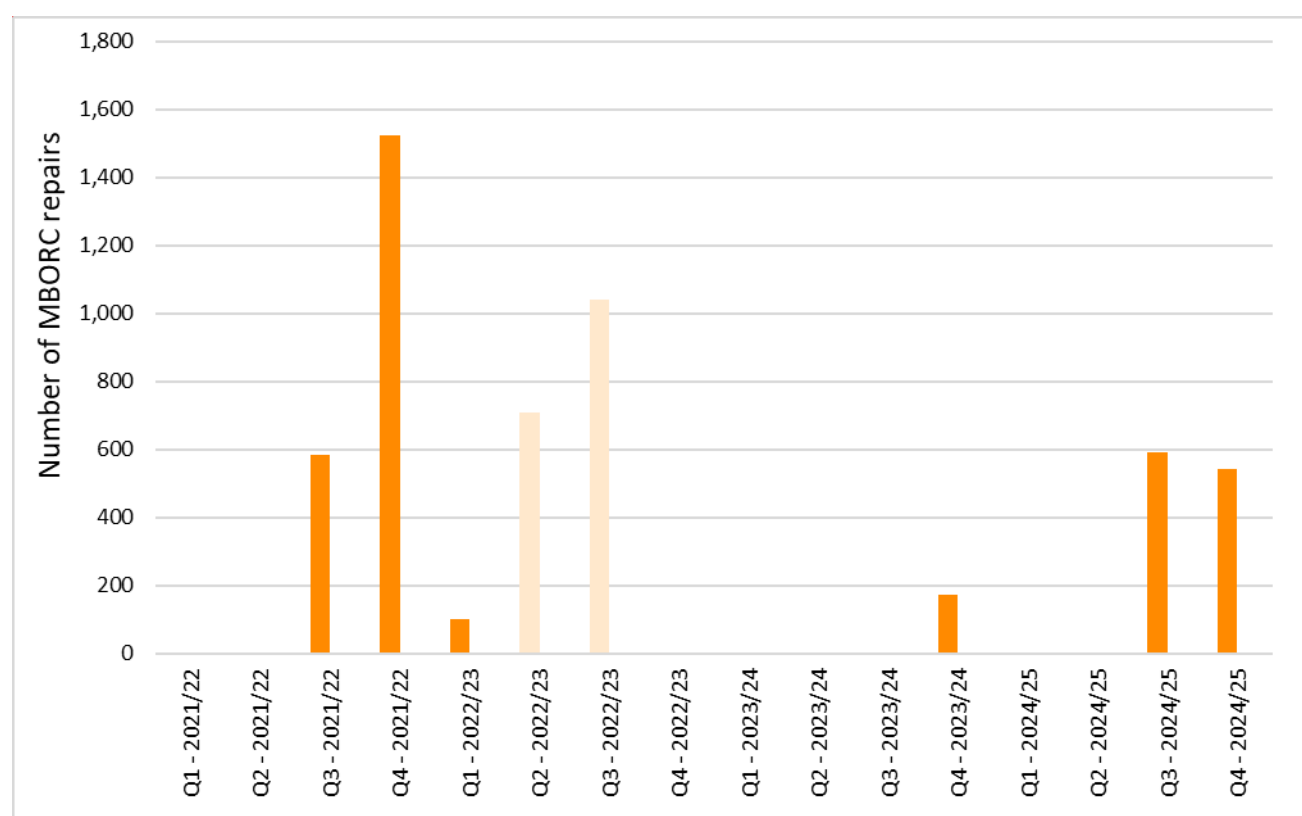
- A9.70 In order to analyse this evidence, we requested data from Openreach on all of its FTTP repairs from April 2021 through to March 2025, including whether each repair was classified as MBORC, and what type of MBORC.
- A9.71 When Openreach declares MBORC across an entire region,³¹³ all open repairs within that region become regional MBORC repairs. All MBORC events caused by storms are classified as regional MBORC events and our understanding is that after excluding periods of industrial action, the vast majority of regional MBORC events are caused by storms.³¹⁴ Figure A9.20 maps the number of WLA Area 3 FTTP regional MBORC repairs.³¹⁵ Repairs for Q2 and Q3 2022/23 are presented in a lighter colour as we understand the majority of these MBORC repairs were related to industrial action.

³¹³ Our understanding is that there are seven regions for which a regional MBORC can be declared consistent with Openreach's seven defined management regions. Namely, East Anglia; London and South East; Northern England; Northern Ireland; Scotland; Wales and Midlands; and Wessex. Legal Instrument. Volume 7. Part E. Schedule 4. Direction 4. Paragraph 11 (a) xxvi).

³¹⁴ All MBORC events are either local or regional. Local MBORC describes events located to a specific network element, e.g. a smashed cabinet or third party damage. Storm related MBORCs are therefore captured within regional MBORCs.

³¹⁵ By "named storms" we refer to storm that were given names by the Met Office. Met Office. <https://weather.metoffice.gov.uk/warnings-and-advice/uk-storm-centre/index>. Accessed on 24 November 2025.

Figure A9.20: WLA Area 3 FTTP regional MBORC repairs^{316 317}



Source: Ofcom analysis of Openreach s135 to Ofcom and publicly available information. Openreach response dated 12 September 2025 to s135 notice dated 13 Aug 2025, questions 1&5.

A9.72 The figure shows that the impact of regional MBORC events varies considerably from year to year with 172 regional MBORC related repairs occurring in the 2023/24 financial year, compared to 1,133 in the 2024/25 financial year. Additionally, after removing the regional MBORC events related to industrial action, the 2024/25 financial year has a higher than average number of repairs affected by storm-related regional MBORC declarations.

The extent to which rurality changes in the future

A9.73 In its consultation response Openreach said that over the 2026-31 review period it will roll out FTTP to increasingly remote premises within WLA Area 3.³¹⁸ It suggested that we should lower the next-day repair standard by 2 percentage points, and the next-day-plus-10 repairs standard by 1 percentage point to account for this.

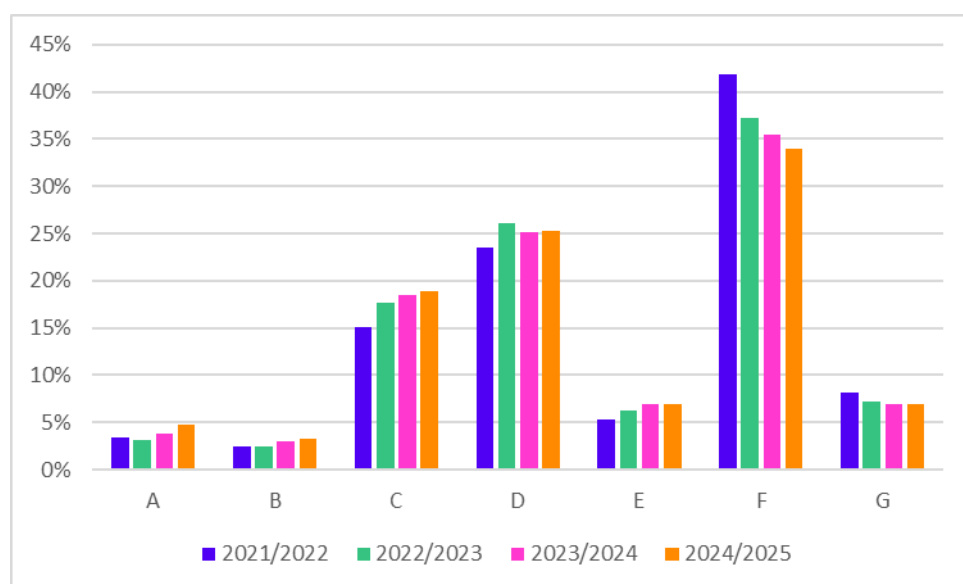
A9.74 Figure A9.21 shows how the rurality of premises provisioned with FTTP in WLA Area 3 changed over the WFTMR21 period. Over time, FTTP provisioning became more urban, with provisions falling in locale classification F and G, and rising in locale classifications A, B, C, D and E.

³¹⁶ A regional MBORC refers to a repair related to an MBORC event when MBORC was declared across the whole of an Openreach management region.

³¹⁷ This figure was computed using the proposed WLA Area 2 and WLA Area 3 market definitions from the March 2025 Consultation. Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Schedule 2 WLA postcode sectors.

³¹⁸ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 86-90.

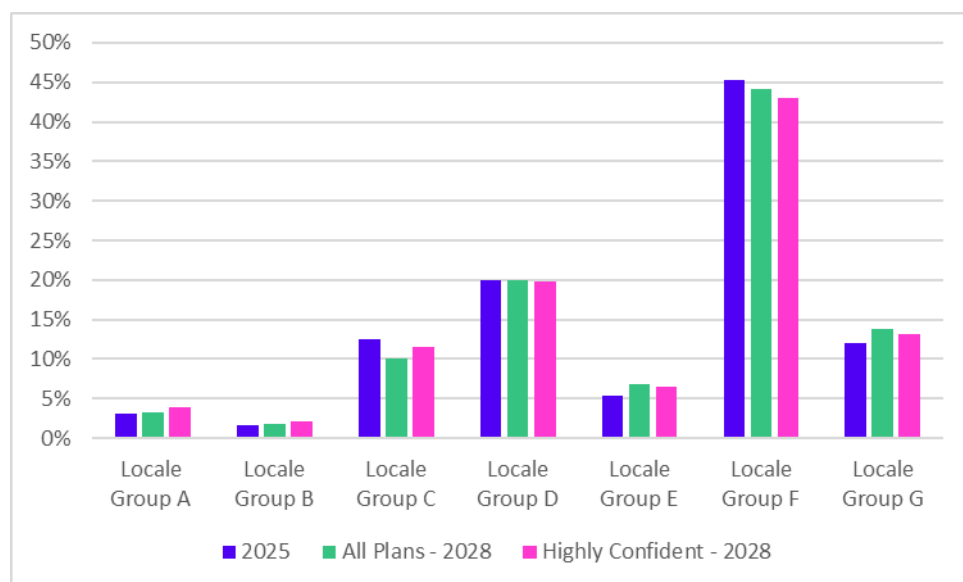
Figure A9.21: The rurality of FTTP WLA Area 3 provisioning over the WFTMR21 period



Source: Ofcom analysis of Openreach s135 to Ofcom. Openreach response dated 14 November 2024 to s135 notice dated 10 July 2024, questions A&B and Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

A9.75 Figure A9.22 compares the rurality of the postcode sectors within Openreach’s FTTP network as of January 2025, alongside the rurality of the postcode sectors that Openreach plans have within its FTTP network by 2028. This is presented both for the plans that Openreach is highly confident of completing, and for all of its FTTP build plans.

Figure A9.22: Rurality of Openreach’s FTTP network



Source: Ofcom analysis of Connected Nations data. Ofcom. 8 May 2025. [Connected Nations update: Spring 2025](#) and Ofcom. 8 May 2025. [Connected Nations – Planned Network Deployments 2025](#).

A9.76 Using the urban and rural split explained in A9.42, we classify 42.7% of the postcode sectors within Openreach’s FTTP network in January 2025 as urban. Under the plans that Openreach are highly confident of completing, this percentage will rise slightly to 43.9% of postcode sectors. However, including the build plans which it is less confident of completing, this percentage instead falls slightly to 42.0%. It thus does not appear that the

rurality of Openreach's FTTP network will significantly change over the 2026-31 review period.

Setting the standard for repair within 11 working days

- A9.77 The second repair standard we set is for repairs which have failed to meet the service maintenance level by a specified number of working days beyond the SLA.³¹⁹
- A9.78 We have explored several different options to inform our decision about the most appropriate number of days to set, and the percentage of repairs which must be completed within this timeframe for FTTP.
- A9.79 Table A9.8 shows what percentage of faults are repaired for different numbers of working days past the SLA in WLA Area 3.

Table A9.8: Percentage of faults fixed within a varying number of working days of the SLA (FTTP in WLA Area 3)

Working days after the SLA	Percentage of Repairs completed by x working days after the SLA
0	81%
1	85%
2	87%
3	89%
4	91%
5	92%
6	93%
7	94%
8	95%
9	95%
10	96%
11	96%
12	97%
13	97%

³¹⁹ This is 11 days for SML2.

Working days after the SLA	Percentage of Repairs completed by x working days after the SLA
14	97%

Source: Ofcom analysis of Openreach s135 to Ofcom. Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

A9.80 In the March 2025 Consultation, we proposed that this standard should relate to Openreach’s performance within SLA +10 days. Due to the volume of repairs being covered under the FTTP repair measure being smaller than FTTC, we have also investigated whether volatility was a potential issue with our proposal. In particular, we considered whether underperformance at relatively few premises could cause the proposed QoS standard to be missed. Table A9.9 shows the fluctuation in performance over the 2024/25 financial year in WLA Area 3. While there was some variation in performance across the year, monthly results stay within a 4.0 percentage point range (94.4-98.4%), with the exception of January and February 2025, when the UK faced its most powerful storm in over a decade.³²⁰ From these monthly results we have inferred that impact of volatility on a year-to-year basis is likely to be small. We also expect volatility to further decrease as FTTP volumes increase.

Table A9.9: Percentage of faults which are repaired by SLA + 10 in WLA Area 3 in 2024/25

Month	Percentage
04/2024	98.4%
05/2024	97.1%
06/2024	97.1%
07/2024	96.7%
08/2024	97.4%
09/2024	96.0%
10/2024	96.9%
11/2024	97.3%
12/2024	94.4%
01/2025	90.3%
02/2025	93.2%
03/2025	96.1%

Source: Ofcom analysis of Openreach s135 to Ofcom. Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

³²⁰ Met Office. <https://weather.metoffice.gov.uk/warnings-and-advice/uk-storm-centre/uk-storm-season-2024-25>. Accessed on 24 November 2025.

Supporting evidence on standards for FTTP provisioning

A9.81 Below we discuss evidence relevant to the minimum provisioning standards for FTTP in WLA Area 3.

Comparing FTTP provisioning in WLA Area 2 and WLA Area 3

A9.82 Table A9.10 shows the percentage of FTTP provisions that were completed by the committed date in 2024/25, split by WLA Area, including the overall, national average.

Table A9.10: Percent of provisions completed by the committed date - 2024/25

WLA Area	Percentage
WLA Area 2	91%
WLA Area 3	90%
National Average	91%

Source: Ofcom analysis of Openreach s135 to Ofcom. Openreach response dated 30 May 2025 to s135 notice dated 30 April 2025, questions A&B.

A9.83 We set out in Volume 5, Section 3 why we have decided to set the FTTP standard for on-time provisioning for WLA Area 3 based on Openreach’s 2024/25 performance in WLA Area 3, rather than the national average.

The impact of CJO rollout

A9.84 In its consultation response Openreach told us that it had implemented a process called Customer Journey Optimisation (CJO). It said that the key change introduced by CJO was Openreach providing customer commitment dates (CCD) at day one of an order to a higher proportion of end customers. This results in orders being completed quicker on average (meaning customers get a better service), but fewer orders being completed by their commitment date. This would lower Openreach’s performance in terms of FTTP WLA Area 3 “Installations to be completed by Committed Date”.³²¹

A9.85 As the CJO process was rolled out nationwide in March 2025, the potential impacts of the CJO process are not fully observed in the 2024/25 financial year’s data, from which the standards are set.³²² Openreach therefore said that we should lower the FTTP WLA Area 3 “Installations to be completed by Committed Date” standard to account for the CJO process. Openreach stated that it had modelled that the rollout of CJO negatively impacted its FTTP WLA Area 3 provisioning performance by 1.4 percentage points, but that about half of this is mitigated by changes made to the metric used to assess performance (“The on-time provision adjusted metric”).^{323 324}

A9.86 In order to assess this evidence, we requested it alongside the underlying data it was constructed from.

A9.87 Openreach presented analysis that without the rollout of CJO, CJO orders would instead have been classified as KCI2 Assure orders and would have met their on-time provision

³²¹ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 106-108.

³²² Openreach response dated 4 September 2025 to s135 notice dated 13 Aug 2025, question 8.

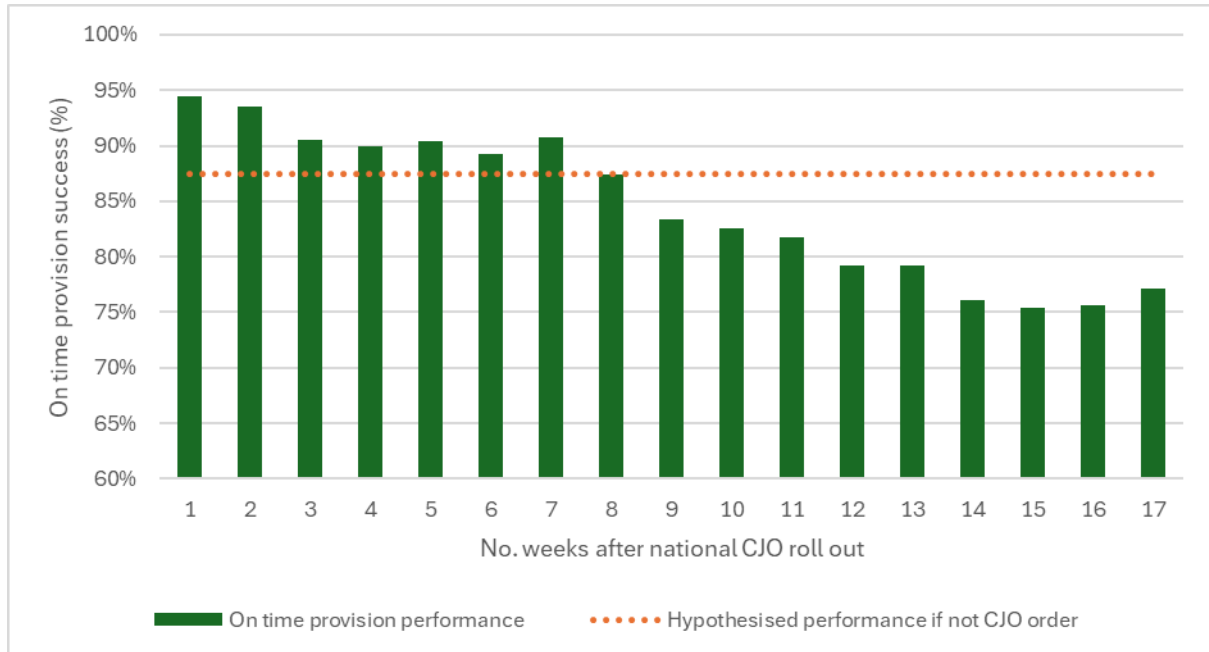
³²³ [Openreach](#) response to TAR26 March 2025 Consultation. Document 5. Paragraphs 109-111.

³²⁴ Openreach’s calculations were done using the proposed WLA Area 2 and WLA Area 3 market definitions from the March 2025 Consultation. Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Schedule 2 WLA postcode sectors.

adjusted target 87.5% of the time. Figure A9.23 maps the percentage of CJO orders that would have met their on-time provision adjusted metric, against this counterfactual 87.5% figure. Orders are broken down by the week that they were completed, for the 17 weeks after CJO was rolled out nationally.³²⁵

- A9.88 In the first few weeks following CJO’s rollout, these orders were provisioned on time around 90% of the time. However, from week eight onwards this percentage fell until reaching approximately 75%, between weeks 14 and 16.

Figure A9.23: The on-time provision adjusted performance of WLA Area 3 FTTP CJO orders³²⁶



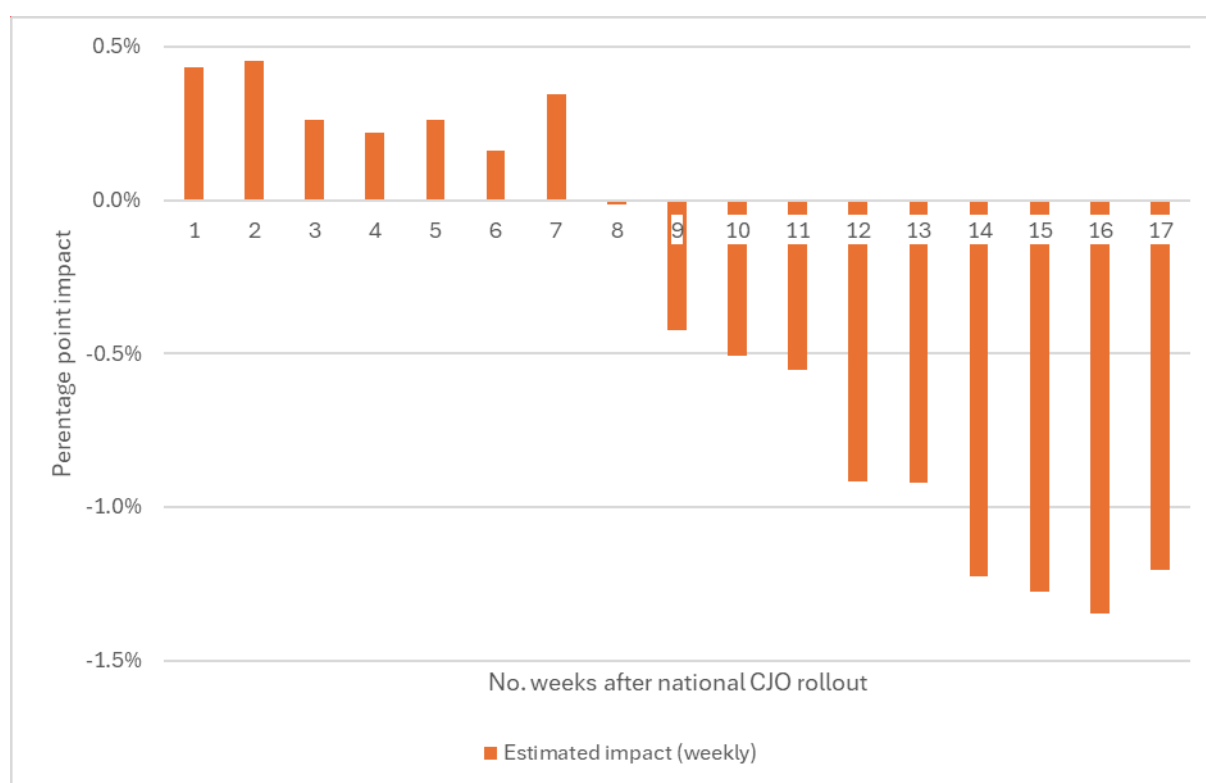
Source: Ofcom analysis of Openreach s135 and clarifications to Ofcom. Openreach response dated 4 September 2025 to s135 notice dated 13 Aug 2025, questions 1, 8&9.

- A9.89 Figure A9.24 shows the difference between Openreach’s overall WLA Area 3 FTTP on-time provision adjusted performance and what it would have been if CJO orders had a 87.5% success rate. In other words, this figure shows the impact of CJO rollout on Openreach’s performance.

³²⁵ The data in this analysis is from orders that have been completed.

³²⁶ This figure was computed using the proposed WLA Area 2 and WLA Area 3 market definitions from the March 2025 Consultation. Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Schedule 2 WLA postcode sectors.

Figure A9.24: The impact of CJO rollout on WLA Area 3 FTTP on time provision performance³²⁷



Source: Ofcom analysis of Openreach s135 and clarifications to Ofcom. Openreach response dated 4 September 2025 to s135 notice dated 13 Aug 2025, questions 1, 8&9.

- A9.90 The graph shows that from eight weeks after the national rollout of CJO, Openreach's WLA Area 3 FTTP on-time provision adjusted performance was worse compared to the scenario where CJO was not introduced (in that scenario CJO orders are assumed to be completed on time 87.5% of the time). The exact impact of this change varies from -0.01 percentage points in week 8 to -1.35 percentage points in week 16. We have disregarded results in the first eight weeks following the national rollout because only easier-to-provide CJO orders would have been completed within the first few weeks of CJO rollout, making the success rate artificially high. We judge that data from week nine onwards should be more representative of the long-run impact that we expect from CJO rollout.
- A9.91 The negative CJO impact shown in Figure A9.24 has been growing stronger over time, falling below an average of -1 percentage point in week 14-17. However, we expect the CJO on time provision success rate may increase over time as Openreach improves its processes. For example, Openreach told us that following the rollout of CJO it was training contractors to better deal with complex orders, and as a result it expected CJO on time performance to improve.³²⁸ For this reason we might expect the performance of CJO orders to improve from that seen in weeks 14-17 and the negative impact to weaken.
- A9.92 In our view, given the limited amount of data that we have to date and the wider context, we estimate that the overall impact from CJO rollout is likely to be in the region of -1ppt.

³²⁷ This figure was computed using the proposed WLA Area 2 and WLA Area 3 market definitions from the March 2025 Consultation. Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Schedule 2 WLA postcode sectors.

³²⁸ Openreach response dated 13 February 2026 to s135 notice dated 3 February 2026, question 4.

A10. Revenue and cost modelling for active legacy services

- A10.1 We have undertaken modelling to understand the likely evolution of future revenues and efficient costs of the relevant services³²⁹ over this review period. The purpose of the modelling is to:
- Provide the cost inputs for copper services for our Area 3 RAB modelling (see Annex 12).
 - Provide the 2025/26 and 2030/31 cost inputs for the EAD and EAD LA services that are used as the starting points within our dark fibre cost modelling (see Annex 13).
 - Calculate our cost-based (CPI-X) charge control to be applied to Ethernet services of bandwidths 1 Gbit/s and below in LLA Area 3 (see Volume 4, Section 2).
- A10.2 We have calculated the cost of services in Area 2 and Area 3 by forecasting the unit cost by service on a national basis and then applying our forecast volumes for Area 2 and Area 3 respectively to these national costs.
- A10.3 We have used the WFTMR21 top-down cost model as a starting point and largely follow forecasting methodologies used within the WFTMR21. We have updated the WFTMR21 top-down cost model to take into account market developments as outlined in the rest of this annex. We refer to this model as the ‘cost forecast model’.
- A10.4 In this annex we set out:
- a summary of the price controls for regulated services included in the cost forecast model;
 - net cost recovery estimates for services included in the cost forecast model from the WLA and Wholesale Fixed Analogue Exchange Line (WFAEL)³³⁰ market, LLA market and IEC market respectively;
 - the overall approach to cost modelling;
 - the key modelling assumptions; and
 - a summary of outturn profitability evidence for the LLA and IEC markets.

³²⁹ Within this annex we refer to relevant services. This comprises: MPF rentals and connections (WLA market); FTTC rentals and connections (WLA market); G.fast/SOG.fast rentals and connections (WLA market); SOGEA rentals and connections (WLA market); SMPF rentals and connections (WLA market); Wholesale Line Rental (WLR) rentals and connections (WFAEL market); Ethernet basket services including rentals, connections and main link (LLA market; IEC market); WDM (Optical) services including rentals, connections and main link (LLA market; IEC market).

³³⁰ The WFAEL market (which was deregulated in 2021) concerns the provision of wholesale analogue voice services; the product offered by BT in this market is called WLR. We forecast volumes and costs for WLR rental and connection services because (1) they share a significant proportion of fixed and common costs with WLA services and (2) non single order FTTC services are sometimes purchased with WLR so WLR is still relevant for downstream FTTC provision.

Summary of price controls

A10.5 Tables A10.1, A10.2, A10.3, A10.4 and A10.5 below summarise our charge controls specifically for services included in the cost forecast model across the WLA, LLA and IEC markets. We set out our charge controls for the following geographic markets:

- WLA Area 2
- WLA Area 3
- LLA Area 2
- LLA Area 3
- IEC BT Only exchanges and IEC BT+1 exchanges

Table A10.1: Charge controls for WLA Area 2

	Charge control
MPF SML1 rentals	CPI-0% [see Section 1 of Volume 4]
80/20 FTTC rentals and 80/20 SOGEA rentals	CPI-0% [see Section 1 of Volume 4]

A10.6 We are also setting charge controls for various types of WLA connection service. Further detail is provided in Volume 4, Section 5.

A10.7 For context, we are also setting a CPI-0% charge control on 80/20 FTTP rentals in areas where a copper-based 80/20 service is not available. Further detail is provided in Volume 4, Section 1.

Table A10.2: Charge controls for WLA Area 3

	Charge control
MPF SML1 rentals	CPI-0% [see Section 1 of Volume 4]
80/20 FTTC rentals and 80/20 SOGEA rentals	CPI-0% [see Section 1 of Volume 4]

A10.8 We are also setting charge controls for various types of WLA connection service. Further detail is provided in Volume 4, Section 5.

A10.9 For context, we are also setting a CPI-0% charge control on 80/20 FTTP rentals in areas where a copper-based 80/20 service is not available. Further detail is provided in Volume 4, Section 1.

Table A10.3: Charge controls for LLA Area 2

	Charge control
Ethernet services at all bandwidths (basket charge control)	CPI-0% [see Section 2 of Volume 4]
WDM services	CPI-0% [see Section 2 of Volume 4]

Table A10.4: Charge controls for LLA Area 3

	Charge control
Ethernet services of bandwidths 1 Gbit/s and below (basket charge control)	Year 1: CPI – 0% Year 2: CPI – 5.00% Years 3-5: CPI – 1.50% [see Section 2 of Volume 4]
Ethernet services of bandwidths above 1 Gbit/s (basket charge control)	CPI-0% [see Section 2 of Volume 4]
WDM services	CPI-0% [see Section 2 of Volume 4]

A10.10 For context, we are also setting cost-based charge controls on dark fibre access (DFA) services in LLA Area 3. DFA services are not directly included in the cost forecast model: we have estimated their costs in a separate dark fibre cost model (consistent with the approach used in the WFTMR21). Further details are provided in Annex 13.

Table A10.5: Charge controls for IEC BT Only exchanges and IEC BT+1 exchanges

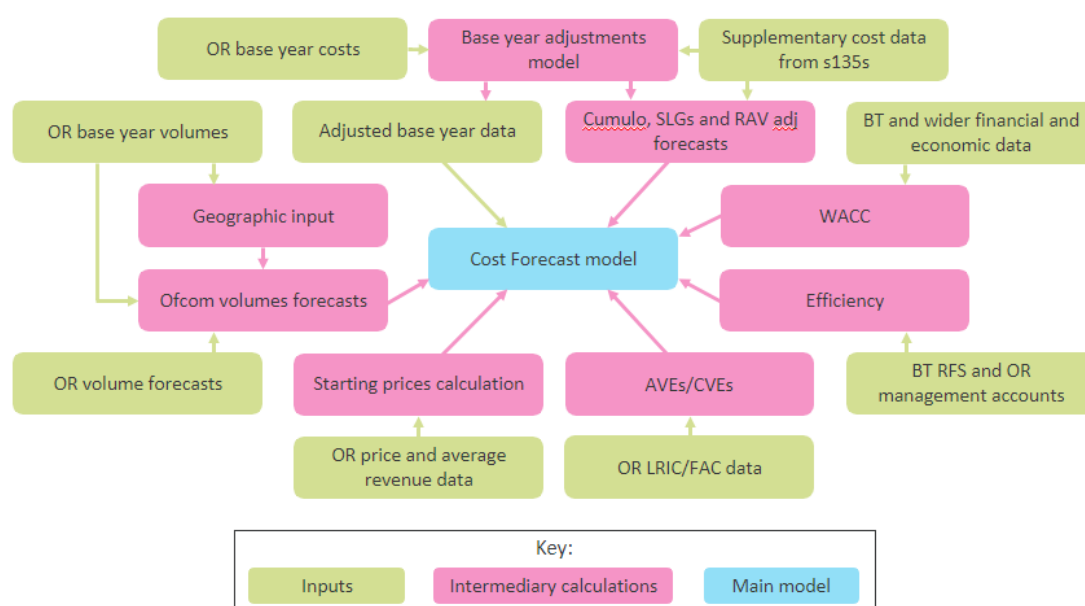
	Charge control
Ethernet services at all bandwidths (basket charge control)	CPI-0% [see Section 3 of Volume 4]
WDM services	CPI-0% [see Section 3 of Volume 4]

A10.11 For context, we are also setting cost-based charge controls on dark fibre inter-exchange (DFX) services at BT Only exchanges and BT+1 exchanges. DFX services are not directly included in the cost forecast model: we have estimated their costs in a separate dark fibre cost model (consistent with the approach used in the WFTMR21). Further detail is provided in Annex 13.

Overall approach to cost modelling

A10.12 The objective of our modelling exercise is to forecast BT's efficient costs of providing copper-based WLA services (e.g. MPF and FTTC/SOGEA services) and leased line services over the charge control period. We have structured our model as illustrated in Figure A10.1 below.

Figure A10.1: The Cost forecast model structure



Note: in this Figure 'OR' refers to Openreach. Other acronyms are described later in this annex.

Approach to modelling

A10.13 Consistent with the March 2021 Statement and previous reviews, we have built our model using a top-down cost modelling approach based on cost data from BT's regulatory financial reporting systems. The top-down modelling approach is an accounting approach that forecasts how BT's efficiently incurred costs may change over time relative to the base year.

Cost standard

- A10.14 Our typical approach to setting charge controls on BT has been to allow it to recover the incremental costs of provision plus an appropriate allowance for the recovery of common costs.³³¹ This is based on forward-looking costs plus some relevant sunk costs, such as the cost of duct.
- A10.15 As in previous reviews of leased line and WLA charge controls³³², we consider Current Cost Accounting (CCA) Fully Allocated Cost (FAC) to be the most appropriate standard for estimating the cost of providing leased lines, WLA and WFAEL services.
- A10.16 The use of a CCA FAC approach values BT's assets on the basis of an estimate of their current replacement costs. We consider that a CCA FAC approach has the advantages of being transparent and practicable to implement as BT's costs are known and are based on its Regulatory Financial Statements (RFS) which are publicly available to stakeholders each year. We consider that current costs give better signals for efficient investment and entry than historical costs. Using BT's costs also has the benefit of leading to consistent cost

³³¹ Common costs are those which arise from the provision of a group of services, but which are not incremental to the provision of any individual service.

³³² Ofcom. March 2021. [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#). Ofcom. 2019. [Promoting competition and investment in fibre networks: review of the physical infrastructure and business connectivity markets](#). Volume 2. Ofcom. 2018. [Wholesale Local Access Statement](#).

recovery decisions, both over time and between other regulated markets. We therefore use BT's CCA FAC as the cost standard in our model.

Key steps in our cost modelling

A10.17 Our modelling approach consists of six key steps:

- First, we calculate the base year costs for each set of relevant services. These costs use BT's RFS as a starting point, with some adjustments.
- Second, we forecast costs for each year until the end of the charge control period. We forecast operating and capital costs starting from the base year, taking into account our volume forecasts, efficiency assumptions, input price changes, asset volume and cost volume elasticities (AVEs and CVEs), as well as our view of the appropriate forward-looking weighted average cost of capital (WACC).
- Third, to reduce the risk of asset stranding due to copper retirement, we add in our estimate of the accelerated depreciation cost for stranded copper assets capitalised within our control period.
- Fourth, we remove any costs that were subject to accelerated depreciation in the previous control period to ensure these are not recovered twice.³³³
- Fifth, we forecast revenues in each year (assuming that there was no charge control).
- Finally, we compare revenues and costs for each set of relevant services.

A10.18 We describe each of the steps and key assumptions used in more detail below.

Base year costs

A10.19 The first step in our top-down modelling is establishing the relevant costs in the base year. These base year costs are based on regulatory accounting data provided by BT.

A10.20 For this Statement, we use BT's 2024/25 RFS costs, as the starting point for our base year costs. We then adjust BT's RFS data to make it consistent with our approach to modelling, correct errors in BT's data, and to reflect our view of BT's efficiently-incurred costs. These adjustments are quantified in Tables A10.6 and A10.7 and discussed separately below.

A10.21 For some of the adjustments discussed below, we did not receive any stakeholder comments. In these cases, we have decided to retain the same approach as we proposed in Annex 14 of the March 2025 Consultation (explained for each adjustment below).

A10.22 The exceptions are our November 2025 Consultation proposals to incorporate BT's fibre cost reallocations and remove mobile network licence costs, for which we summarise and address the stakeholder comments we received below.

A10.23 We also received comments from Openreach regarding the use of national unit costs in our top-down cost modelling. As this topic relates to base year cost estimation, we also summarise and address these comments below.

A10.24 Tables A10.6 and A10.7 summarise the impacts of each of our adjustments on base year costs. The equivalent table published in the March 2025 Consultation largely applied the

³³³ This step was not required in the WFTMR21 as that was the first review period where we had accelerated depreciation.

definition of relevant services used in the March 2021 Statement (with some minor differences)³³⁴, rather than the wider definition mentioned in Annex 14 of the March 2025 Consultation. For completeness, we have added two tables below: Table A10.6 applies the same definition of relevant services as used in the March 2025 Consultation (for comparability with that Consultation), and Table A10.7 applies the definition of relevant services mentioned at the start of this annex.³³⁵

Table A10.6: Summary of adjustments to our base year model on relevant services (£m) - using the same definition of relevant services as Annex 14 Table A14.9 of the March 2025 Consultation

	PI* Operating costs (opex) ³³⁶ (£m)	PI CCA Depreciation (£m)	PI Mean Capital Employed (MCE) (£m)	Active Operating costs (opex) ³³⁷ (£m)	Active CCA Depreciation (£m)	Active Mean Capital Employed (MCE) (£m)
2024/25 RFS total (adjusted for CJF cost reallocation)	48.4	152.0	2,726.1	655.7	646.0	4,030.1
Remove mobile network licence costs	-0.2	-1.0	-	-5.7	-0.2	-3.4
Remove cumulo costs ³³⁸	-	-	-	-104.2	-	-
Remove Ethernet SLG costs	-	-	-	-26.1	-	-
Leavers and Restructuring charges smoothed for 5-year average	-10.4	-	-	-7.4	-	-

³³⁴ The relevant services definition used in the March 2021 Statement was: all Ethernet and Optical rentals and connections including main link outside of the CLA, all FTTC rentals covering all bandwidths and MPF SML1 rentals. The definition used in the March 2025 Consultation was similar, except that it included Ethernet and Optical services in the CLA market and at BT+2 exchanges. These definitional differences are relatively minor.

³³⁵ This definition of relevant services comprises: MPF rentals and connections (WLA market); FTTC rentals and connections (WLA market); G.fast/SOG.fast rentals and connections (WLA market); SOGEA rentals and connections (WLA market); SMPF rentals and connections (WLA market); Wholesale Line Rental (WLR) rentals and connections (WFAEL market); Ethernet basket services including rentals, connections and main link (LLA market; IEC market); WDM (Optical) services including rentals, connections and main link (LLA market; IEC market).

³³⁶ Excluding holding gains and losses and other CCA adjustments.

³³⁷ Excluding holding gains and losses and other CCA adjustments.

³³⁸ Aside from the CJF cost reallocation and the removal of mobile network licence costs, the removal of all cumulo costs is the first adjustment made to the 2024/25 RFS base data. All other adjustments in the subsequent rows of this table have been made excluding cumulo.

	PI* Operating costs (opex) ³³⁶ (£m)	PI CCA Depreciation (£m)	PI Mean Capital Employed (MCE) (£m)	Active Operating costs (opex) ³³⁷ (£m)	Active CCA Depreciation (£m)	Active Mean Capital Employed (MCE) (£m)
Reallocate ECC costs ³³⁹	-	-	-	3.0	-	-
Separate different SOGEA connections	-	-	-	-	-	-
2024/25 revised total (following all adjustments)	37.8	151.0	2,726.1	515.3	645.8	4,026.7

* PI refers to physical infrastructure, such as Openreach's ducts and poles

Source: Ofcom figures calculated from analysis on BT data

Table A10.7: Summary of adjustments to our base year model on relevant services (£m) - using definition of relevant services applied in this annex

	PI* Operating costs (opex) ³⁴⁰ (£m)	PI CCA Depreciation (£m)	PI Mean Capital Employed (MCE) (£m)	Active Operating costs (opex) ³⁴¹ (£m)	Active CCA Depreciation (£m)	Active Mean Capital Employed (MCE) (£m)
2024/25 RFS total (adjusted for CJF cost reallocation)	108.0	339.4	6,085.6	1,302.4	1,085.7	6,799.0
Remove mobile network licence costs	-0.4	-2.2	-	-8.0	-0.2	-5.0
Remove cumulo costs ³⁴²	-	-	-	-209.1	-	-
Remove Ethernet SLG costs	-	-	-	-26.1	-	-

³³⁹ Although the reallocation is a net zero reallocation, costs are being moved from ECC services (non-relevant services) to EAD connections (relevant services).

³⁴⁰ Excluding holding gains and losses and other CCA adjustments.

³⁴¹ Excluding holding gains and losses and other CCA adjustments.

³⁴² Aside from the CJF cost reallocation and the removal of mobile network licence costs, the removal of all cumulo costs is the first adjustment made to the 2024/25 RFS base data. All other adjustments in the subsequent rows of this table have been made excluding cumulo.

	PI* Operating costs (opex) ³⁴⁰ (£m)	PI CCA Depreciation (£m)	PI Mean Capital Employed (MCE) (£m)	Active Operating costs (opex) ³⁴¹ (£m)	Active CCA Depreciation (£m)	Active Mean Capital Employed (MCE) (£m)
Leavers and Restructuring charges smoothed for 5-year average	-23.1	-	-	-12.3	-	-
Reallocate ECC costs ³⁴³	-	-	-	3.0	-	-
Separate different SOGEA connections	-	-	-	-3.8	-0.6	-1.8
2024/25 revised total (following all adjustments)	84.4	337.2	6,085.6	1,046.1	1,084.9	6,792.2

* PI refers to physical infrastructure, such as Openreach's ducts and poles

Source: Ofcom figures calculated from analysis on BT data

Incorporation of BT's fibre cost reallocations

Our proposals

- A10.25 On 3 October 2025, BT published a 'Part 1' Change Control Notification (CCN) for 2026.³⁴⁴ This document sets out details of BT's planned changes to its methodology for allocating core junction fibre (CJF) costs and access spine fibre ('spine fibre') costs. In relation to CJF costs, it said cost allocation would be based on actual lengths of CJF cables used across Main Links, FTTP and FTTC. For spine fibre, it proposed using the number of utilised fibres by product to inform the allocation of costs, whereas the existing methodology uses the maximum capacity of the fibre cables associated with a given product (regardless of whether they are utilised or unutilised). BT intends to apply the new methodology for the 2026 RFS.
- A10.26 In Section 5 of our November 2025 Further Consultation, we proposed to incorporate BT's planned fibre cost reallocations in our charge control modelling for the TAR Statement. This would in effect require an adjustment to the base year costs used in our top-down modelling, which would affect the results of the cost forecast model and the dark fibre cost model. Table 5.2 of the November 2025 Consultation set out the impact of incorporating BT's fibre cost reallocations on the cost-based charge control outputs from our March 2025 Consultation models (which used restated 2022/23 RFS costs to inform the base year costs).

³⁴³ Although the reallocation is a net zero reallocation, costs are being moved from ECC services (non-relevant services) to EAD connections (relevant services).

³⁴⁴ BT Group. 2025. [Change Control Notification: Part 1 – 3 October 2025](#).

Stakeholder responses

A10.27 We have grouped the stakeholder responses we received into themes. Some responses relating to CJF cost allocation also relate to the issue of spine fibre cost allocation.

CJF cost reallocation

A10.28 VodafoneThree acknowledged that it may be reasonable to remove allocations of interexchange cable (i.e. CJF cable) costs from WLA services which do not use this cable.³⁴⁵ However, it raised concerns about how BT's planned CJF cost reallocation involves a change from calculating estimated lengths of CJF cable for FTTP, FTTC and main link services based on straight-line distances to using the actual reported lengths of CJF cable (based on actual route distances) used by these services.³⁴⁶ It considered that this change disrupts the established system of charging based on radial distances for main link services and introduces geographically de-averaged prices for main link services without adequate policy consultation and Ofcom oversight. It stated that purchasers have no control over Openreach's route design and cannot ensure the most efficient (rather than most convenient) engineering choice. It considered that charging based on actual route distances embeds inefficiency, undermines optimisation incentives, and exposes purchasers to costs outside their control.

A10.29 INCA set out its understanding that Openreach engineers have in some cases chosen to provide the main link components of EAD and DFX services using spine fibres rather than the CJF fibres running between exchanges.³⁴⁷ It considered that any improvements that Openreach chooses to make to its network should be funded by the improvements sought and that the pricing of existing regulated services should not be inflated to reflect such changes. INCA said it considers this an example of Openreach choosing to not use 'legacy' fibres despite those fibres being fit-for-purpose and likely to remain in place for a considerable period of time (at the very least until after the expiry of the TAR regulations in March 2031). It said it would be inappropriate for the regulated operator to be able to design suboptimal network configurations and engineering practices and be able to pass the costs of those designs and practices on to its competitors through wholesale access services. FullFibre et al raised similar concerns.³⁴⁸

A10.30 Openreach agreed that the proposed methodological changes will correct erroneous assumptions and improve the accuracy of BT's reporting and thereby, when adopted to forecast costs, will improve the accuracy of the costs considered for the relevant charge control services.³⁴⁹ It considered that not incorporating the fibre cost reallocations within the TAR Statement modelling would result in charges being set below efficient costs, which would encourage inefficient build/buy decisions, potentially crowding out efficient investment via alternative services.

A10.31 In a further submission, Openreach said that VodafoneThree's submission (specifically the report produced by Frontier Economics for VodafoneThree) contained a presumption that the previous cost allocation approaches for CJF costs and spine fibre costs were correct.³⁵⁰ It considered that VodafoneThree had not addressed the possibility that the previous

³⁴⁵ [VodafoneThree Frontier Report](#) response to TAR26 November 2025 Consultation. Pages 26-27.

³⁴⁶ [VodafoneThree](#) further response to TAR26 November 2025 Consultation. Pages 3-4.

³⁴⁷ [INCA](#) response to TAR26 November 2025 Consultation. Paragraphs 63-66.

³⁴⁸ [FullFibre, Zoomm, Ogi, GoFibre and Commsworld](#) response to TAR26 November 2025 Consultation. Paragraphs 15-16.

³⁴⁹ [Openreach](#) response to TAR26 November 2025 Consultation. Paragraphs 108-111.

³⁵⁰ [Openreach](#) further response to TAR26 November 2025 Consultation. Paragraphs 8-11.

allocation approaches were less cost causal than the new allocation approaches. Openreach set out several reasons why it considers that the change in CJF cost allocation accurately reflects the use of the network. It specifically mentioned that:

- The previous allocation method was designed prior to scale FTTP build, and was based on a flawed assumption that FTTC and FTTP services always use CJF cables to connect child exchanges to parent exchanges.
- CJF cables are only used in exceptional cases to connect child exchanges to parent exchanges for FTTP and FTTC services, as evidenced by (i) Openreach planning policy and (ii) Openreach engineering routing data.
- The scale network build programme is now mostly finished and the cables installed to the cables installed to connect passive optical network (PONs) to distant headends are now generally built and unalterable, which means there is little risk of extensive use of CJF cables for FTTP services in future.
- The new methodology calculates CJF cost allocations based on actual lengths of CJF cables used across Main Link, FTTC and FTTP services.

Spine fibre cost reallocation

- A10.32 Several stakeholders (FullFibre et al, INCA, GoFibre and VodafoneThree) considered that the future utilisation of spine fibre by FTTP services was likely to increase substantially relative to the utilisation of these fibre cables by leased line services, so that the current utilisation levels in the TAR Statement modelling would understate the extent to which future spine fibre costs are driven by FTTP services (as opposed to leased line services).³⁵¹ FullFibre et al also considered that in future different services may require different level of planned spare capacity (and utilisation), and that each service should bear the costs of its own required spare capacity.³⁵²
- A10.33 VodafoneThree also considered that moving from a capacity based allocation to a fibre utilisation approach for spine fibre costs would misattribute shared transport costs.³⁵³ It considered that capacity is the cost driver for shared spine fibre reinforcement, rather than fibre count. It suggested that shared spine upgrades are driven by bandwidth growth rather than the number of fibre strands that are lit.
- A10.34 VodafoneThree stated that because spine fibre cables are often used to connect child exchanges to parent exchanges for FTTC and FTTP services, this implies that the newer spine fibre cables used to support FTTC and FTTP services are longer on average than the older spine fibre cables used to support Ethernet services.³⁵⁴ It also stated that the newer spine fibre cables (which bypass child exchanges) must be physically distinct from the older spine fibre cables (which terminate at child exchanges). It suggested that BT should separately identify the costs of different spine fibre cable types, and that if this is not

³⁵¹ [FullFibre, Zoomm, Ogi, GoFibre and Commsworld](#) response to TAR26 November 2025 Consultation. Paragraphs 18-28. [INCA](#) response to TAR26 November 2025 Consultation. Paragraphs 67-73. [GoFibre](#) response to TAR26 November 2025 Consultation. Page 3. [VodafoneThree](#) response to TAR26 November 2025 Consultation. Pages 10 and 27-28.

³⁵² [FullFibre, Zoomm, Ogi, GoFibre and Commsworld](#) response to TAR26 November 2025 Consultation. Paragraphs 25.

³⁵³ [VodafoneThree](#) further response to TAR26 November 2025 Consultation. Pages 4-5.

³⁵⁴ [VodafoneThree Frontier Report](#) response to TAR26 November 2025 Consultation. Pages 26-27.

possible, then any cost allocation should reflect the different lengths of cables used for FTTP and FTTC services compared to Ethernet services.

- A10.35 Openreach said that its planned new cost allocation methodology for access spine fibre costs will better reflect the actual relative usage of these cables by revenue-generating services, because it is matched to the number of fibres used to provide the services.³⁵⁵ It also stated that its planned new methodology is not based on the number of live customers connected to the FTTP network; rather, once a fibre is deployed to carry FTTP services it attracts an allocation of costs, regardless of whether it is supporting a live customer or not.³⁵⁶

Procedural considerations

- A10.36 PXC said that Ofcom should not incorporate BT's planned fibre cost reallocations in the charge control modelling for TAR Statement and that Ofcom should instead examine Openreach's proposals as part of a broader cost allocation review of BT's regulatory accounts.³⁵⁷ It suggested that this could take place after there is certainty on the dates for the rollout of EAD 2.0 products.
- A10.37 PXC considered that the November 2025 Consultation denied industry stakeholders sufficient time and opportunity to complete a detailed financial assessment.³⁵⁸ FullFibre et al³⁵⁹ and GoFibre raised similar concerns that stakeholders did not have the necessary time to analyse the proposed changes in detail and seek additional information.^{360 361}
- A10.38 PXC also said that issues relating to material changes in data, which significantly impact proposed charge controls, should be disclosed when they are first disclosed to Ofcom.
- A10.39 INCA said the CCN published by BT did not provide sufficiently detailed data, nor sufficient information about the justification, rationale or impact of the proposed fibre cost reallocations, so as to enable proper scrutiny by stakeholders.³⁶² UKCTA and VodafoneThree raised similar concerns that the CCN lacks the detail found in BT's Accounting Methodology Documentation, and they highlighted that the CCN gave 'BT's judgement' as the motivation for the change.³⁶³
- A10.40 FullFibre et al said that to meaningfully review the proposed changes it would need access to an impact analysis of the changes at service level (rather than market level), a breakdown of the impact into the different cost allocation changes, and detail of the changes Ofcom plans to make to relevant charge control models for the TAR Statement.³⁶⁴ VodafoneThree made similar points, and also considered that a revised cost model (accounting for BT's planned fibre cost reallocations) should have been published alongside

³⁵⁵ [Openreach](#) further response to TAR26 November 2025 Consultation. Paragraphs 6 and 13.

³⁵⁶ [Openreach](#) further response to TAR26 November 2025 Consultation. Paragraph 12.

³⁵⁷ [PXC](#) response to TAR26 November 2025 Consultation. Paragraphs 3.1, 3.10-3.11 and 3.18.

³⁵⁸ [PXC](#) response to TAR26 November 2025 Consultation. Paragraphs 3.2-3.9.

³⁵⁹ For brevity, this annex uses 'FullFibre et al' to refer to the response to the TAR26 November 2025 Consultation which was jointly submitted by FullFibre, Zoommm, Ogi, GoFibre and Commsworld.

³⁶⁰ [FullFibre, Zoommm, Ogi, GoFibre and Commsworld](#) response to TAR26 November 2025 Consultation. Paragraph 8.

³⁶¹ [GoFibre](#) response to TAR26 November 2025 Consultation. Page 3.

³⁶² [INCA](#) response to TAR26 November 2025 Consultation. Paragraphs 55 and 58-62.

³⁶³ [UKCTA](#) response to TAR26 November 2025 Consultation. Paragraph 20. [VodafoneThree](#) response to TAR26 November 2025 Consultation. Paragraph 44.

³⁶⁴ [FullFibre, Zoommm, Ogi, GoFibre and Commsworld](#) response to TAR26 November 2025 Consultation. Paragraph 10.

the November 2025 Consultation.³⁶⁵ FullFibre et al and GoFibre noted that the proposed cost allocation changes had not been fully audited by BT's auditors.³⁶⁶

- A10.41 Substantial Group asked Ofcom to provide additional transparency in the TAR Statement on the magnitude of cost shifts from the WLA market to LLA and IEC markets, and how these shifts affect aggregate returns across Openreach's regulated portfolio.³⁶⁷
- A10.42 Several stakeholders (PXC, VodafoneThree, UKCTA and [X]) raised concerns about information asymmetries in regulatory financial reporting.³⁶⁸ They suggested that Ofcom should take a similar approach to its decision in the 2014 Fixed Access Market Reviews (FAMR) Statement, when it disregarded BT's 2013 RFS attribution changes in their entirety and instead based its cost models on what it judged to be efficient forward-looking costs.³⁶⁹
- A10.43 In a submission provided in February 2026, Openreach said that it had initially brought our attention to the issues ("errors") affecting its allocation of some fibre costs in December 2024 and that these had not been taken into account in the March 2025 Consultation. It said this "omission" was addressed in the November 2025 Consultation.³⁷⁰

Forecasting the future cost of LLA and IEC services

- A10.44 VodafoneThree considered that even if the base year cost estimates (following BT's planned fibre cost reallocations) were an accurate reflection of Openreach's costs in that year, projecting these costs forward using Ofcom's cost forecast model will not produce accurate estimates of the cost of service delivery at the end of the charge control period.³⁷¹ It considered that significant changes are happening in the underlying cost structure of Openreach LLA and IEC services, including the forthcoming closure of 108 local (child) exchanges and the introduction of EAD 2.0 products. VodafoneThree considered that these changes will ultimately result in efficiencies in the delivery of EAD services, as these services are migrated to an access network that connects directly with Openreach Handover Point (OHP) exchanges (i.e. parent exchanges). It also considered that the use of CJF cables by LLA and IEC services will fall over time and that the costs of maintaining these cables (with falling utilisation) should not be loaded onto LLA and IEC services, given that many of the benefits of the full fibre network accrue to WLA customers.³⁷²
- A10.45 VodafoneThree considered that Ofcom should review the base year cost inputs to its LLA and IEC charge controls and if necessary reduce them to reflect anchor pricing principles during an ongoing network transition.³⁷³ It specifically suggested that:

³⁶⁵ [VodafoneThree](#) response to TAR26 November 2025 Consultation. Page 24.

³⁶⁶ [FullFibre, Zoomm, Ogi, GoFibre and Commsworld](#) response to TAR26 November 2025 Consultation.

Paragraph 8. [GoFibre](#) response to TAR26 November 2025 Consultation. Page 3.

³⁶⁷ [Substantial Group](#) response to TAR26 November 2025 Consultation. Page 15.

³⁶⁸ [PXC](#) response to TAR26 November 2025 Consultation. Paragraphs 3.14-3.18. [UKCTA](#) response to TAR26 November 2025 Consultation. Paragraph 20-24. [VodafoneThree Frontier Report](#) response to TAR26 November 2025 Consultation. Pages 25-26 and 31-32. [X] confidential response to TAR26 November 2025 Consultation. Pages 5-6. [VodafoneThree](#) response to TAR26 November 2025 Consultation. Paragraphs 40-52.

³⁶⁹ Ofcom. 2014. [Fixed Access Market Reviews Statement](#). Annex 22 Paragraphs A22.50-A22.52.

³⁷⁰ [Openreach](#) further response to TAR26 November 2025 Consultation. Paragraph 1.

³⁷¹ [VodafoneThree Frontier Report](#) response to TAR26 November 2025 Consultation. Pages 10-11 and 28-29.

³⁷² [VodafoneThree Frontier Report](#) response to TAR26 November 2025 Consultation. Page 27.

³⁷³ [VodafoneThree Frontier Report](#) response to TAR26 November 2025 Consultation. Pages 11-12.

- Ofcom should downward adjust spine fibre cable cost allocations to LLA and IEC markets, to reflect differences in the length of spine fibre cables for FTTP and FTTC services compared to Ethernet services.
- Ofcom should adjust the CJF cost allocations based on forecast reductions in utilisation over time, to avoid prices increasing as usage of CJF cables decreases.

A10.46 VodafoneThree considered that CJF cables are becoming functionally redundant in their historic role linking child exchanges to parent exchanges.³⁷⁴ It considered that changing the allocation approach for CJF costs would therefore risk distorting the charges. It stated that legacy costs should be eliminated.

Impacts of the fibre cost reallocations on charge control levels

A10.47 VodafoneThree considered that the charge control levels proposed in the November 2025 Consultation disrupt the price differentials between dark fibre main link services and EAD main link services.³⁷⁵ It said that the effectiveness of the dark fibre remedy depends on dark fibre being a genuinely lower-cost, pro-competitive option. It said that Ofcom should set or monitor a minimum price differential between dark fibre main link services and EAD main link services as a regulatory safeguard.

A10.48 Substantial Group asked Ofcom to calibrate the dark fibre charge controls towards the lower end of the indicative ranges in Table 5.2 of our November 2025 Consultation, particularly for DFX main link rental and DFA rental.³⁷⁶

A10.49 Other stakeholders considered that the charge control levels proposed in the November 2025 Consultation could impact competitive dynamics in the markets for LLA and IEC services. We explain these stakeholder comments in Volume 4.

Our reasoning and decisions

A10.50 For the reasons set out below, we have decided to:

- Include BT's planned reallocation of CJF costs in our charge control modelling for the TAR Statement
- Exclude BT's planned reallocation of spine fibre costs in our charge control modelling for the TAR Statement

A10.51 To enable us to implement this approach, we have formally obtained 2024/25 adjusted cost data from BT which takes account of BT's new methodology (as set out in the 'Part 1' 2026 CCN) for allocating CJF costs and uses BT's existing (2025 RFS) methodology for allocating spine fibre costs. We have used this data as the starting point for our base year cost modelling.

A10.52 Of the two adjustments, the reallocation of CJF costs has the much larger impact on the cost base of relevant services. Table A10.8 reports the combined impact of the two adjustments on 2024/25 CCA operating costs in each of the Openreach SMP markets, relative to BT's 2025 RFS (as reported in BT's October 2025 CCN).^{377 378} For comparison

³⁷⁴ [VodafoneThree](#) further response to TAR26 November 2025 Consultation. Pages 1-3.

³⁷⁵ [VodafoneThree](#) response to TAR26 November 2025 Consultation. Paragraphs 70-75.

³⁷⁶ [Substantial Group](#) response to TAR26 November 2025 Consultation. Page 15.

³⁷⁷ BT Group. 2025. [Change Control Notification: Part 1 – 3 October 2025](#).

³⁷⁸ BT response dated 19 February 2026 to s135 notice dated 3 February 2026, question 6.

purposes, it also reports the standalone impacts of the CJF cost reallocation and spine fibre cost reallocation on CCA operating costs, relative to BT's 2025 RFS.³⁷⁹

Table A10.8: Impact of each fibre cost reallocation on 2024/25 CCA operating costs in each of the Openreach SMP markets

	2025 RFS cost (£m)	Combined fibre cost reallocation impact (£m)	CJF cost reallocation impact (£m)	Spine fibre cost reallocation impact (£m)
Physical Infrastructure	279	0	0	0
WLA Area 2	2,087	-59	-57	-8
WLA Area 3	1,187	-35	-34	-5
LLA Area 2	369	+25	+23	+2
LLA Area 3	192	+30	+30	+1
LLA High Network Reach	30	+1	+1	0
IEC BT only exchanges	44	+18	+18	+4
IEC BT+1 exchanges	31	+4	+4	0
Shared ancillaries	102	-	0	0
Total SMP³⁸⁰	4,321	-16	-14	-5

A10.53 We consider that adjustments to base year costs (the starting point for which is BT's 2025 RFS) should only be made when there is clear evidence in support of making an adjustment. Below we explain why we have included the CJF reallocation and excluded the spine fibre reallocation. We then respond to other comments raised by stakeholders in relation to i) procedural considerations, ii) forecasting the future cost of LLA and IEC services and iii) impacts of the fibre cost reallocation on charge control levels.

CJF reallocation

A10.54 CJF is used to provide main links for leased lines services, backhaul services like EBD and, in some cases, to connect child to parent exchanges for FTTP and FTTC.

³⁷⁹ BT response dated 19 February 2026 to s135 notice dated 3 February 2026, question 6. As noted above, we have used this 2024/25 adjusted cost data (which enables us to incorporate BT's new methodology for allocating CJF costs but use BT's existing (2025 RFS) methodology for allocating spine fibre costs) as the starting point for our base year cost modelling. We note that the sum of the disaggregated impacts (for the two reallocations) does not precisely equal the combined impact of the fibre cost reallocations. This difference reflects interactive effects on cost allocations when the two reallocations are combined.

³⁸⁰ The impacts shown for each individual SMP market are rounded to the nearest £ million, which is why the total SMP impact (as shown above) may not precisely match the sum of the (rounded) individual SMP market impacts.

- A10.55 BT's existing cost allocation methodology assumes that FTTP and FTTC always use CJF cables to connect child and parent exchanges.³⁸¹ In fact, evidence provided by Openreach indicates that for some time spine fibre cables, rather than CJF cables, have been used to support FTTC and FTTP connectivity to parent exchanges in many cases.
- A10.56 Evidence provided by Openreach indicates that actual usage of CJF by FTTC and FTTP has been significantly less than assumed in the existing methodology since at least 2022/23.³⁸² As noted earlier in this section, Openreach's February 2026 submission explained that the previous CJF allocation method was designed prior to scale FTTP network build.
- A10.57 Further, Openreach has estimated that approximately 94% of the fibre routes used by FTTP services actually use spine fibre to support connectivity between child and parent exchanges, with only 6% using CJF.³⁸³ Openreach's February 2026 submission also mentioned that its engineering routing data shows that CJF cables are used for FTTP and FTTC services infrequently rather than all of the time.³⁸⁴
- A10.58 We therefore consider that the existing CJF allocation methodology has for some time allocated too much cost to FTTP and FTTC and too little cost to main links and other services that are delivered using CJF.
- A10.59 BT's proposed methodology allocates CJF costs between services based on the actual length of CJF cables that those services use. This results in more cost being allocated to main links and other backhaul services compared to FTTP and FTTC, in line with the relative usage of CJF cables. We consider that BT's approach is consistent with the correction of erroneous assumptions in the existing methodology³⁸⁵ and we have decided to incorporate BT's planned reallocation of CJF costs into our base year cost modelling for the TAR Statement.
- A10.60 We also disagree with the following comments from stakeholders:
- We consider that INCA and FullFibre et al have misunderstood the use of spine fibre cables by services in the LLA and IEC markets. It is not correct to say that main link components of EAD and DFX services use spine fibre cables. This is why BT does not allocate spine fibre cable costs to main link services. We understand that CJF cables are extensively used by Openreach to provide connectivity between child and parent exchanges for LLA and IEC services (such as EAD), and that, as explained at Paragraph A10.76 below, this will remain the case over the 2026-31 period given that there will be a relatively small number of exchange closures over that period.
 - We disagree that the use of spine fibre cables to support FTTP and FTTC connectivity to parent exchanges is a suboptimal or inefficient network configuration. Openreach has provided evidence of network route planning rules which show that its investment in FTTC and FTTP drives demand for greater capacity to parent exchanges, with new NGA spine

³⁸¹ Where we refer to CJF cables being used by FTTC and FTTP to connect child and parent exchanges, we mean that FTTC cabinets, and FTTP fibre infrastructure providing broadband services in the footprint of the child exchange use CJF cables to connect back to the parent exchange. The connection does not necessarily pass through the child exchange itself.

³⁸² Openreach response dated 27 October 2025 to s135 notice dated 20 October 2025, questions E4 and E5.

³⁸³ Openreach response dated 27 October 2025 to s135 notice dated 20 October 2025, question E4.

³⁸⁴ [Openreach](#) further response to TAR26 November 2025 Consultation. Paragraph 10.

³⁸⁵ The existing methodology allocates CJF costs based on derived fibre km lengths while the proposed methodology uses actual fibre km lengths.

fibres being built in most circumstances to deliver this.³⁸⁶ Given this evidence, we do not consider that FTTP and FTTC connectivity back to parent exchanges could be supported by CJF cables alone.

- A10.61 We disagree with VodafoneThree's suggestion that the CJF cost reallocation will result in main link charging being set based on actual route lengths. Although the new methodology attributes CJF costs based on actual (rather than derived) CJF cable lengths, main link prices will continue to be expressed on a per metre basis, with the metre distance of the main link calculated as the radial distance between the relevant serving exchanges. As a result, we do not consider that this approach introduces geographically de-averaged prices for main link services.

Spine fibre reallocation

- A10.62 Costs associated with access spine fibres are currently allocated based on the maximum capacity (in terms of potential fibre count) of the fibre cables associated with a given product, regardless of whether they are utilised or not. BT's planned methodology instead allocates costs associated with access spine fibre based on the number of utilised fibres associated with a given product.
- A10.63 In our November 2025 Consultation we considered that BT's planned change would better reflect the relative usage of access spine fibre and result in more costs being allocated to FTTP over time as the relative usage of FTTP services increases compared to other services that use access spine fibre (such as FTTC and Ethernet services). However, in their responses on this proposal, stakeholders have suggested some other factors (fibre length, capacity etc) which may be appropriate to take into account in the cost allocation as well as, or instead of, BT's proposal to base the allocation on fibre utilisation.
- A10.64 We think there is merit in exploring whether it would be appropriate to take account of these factors. However, this will require further information from BT, for example about how it records spine fibre costs and the data it holds that could inform the cost allocation, and analysis. Given the timing of our review, and in particular the need to conclude it by mid-March 2026, it was not practicable for us to carry out that work in advance of this Statement. In Volume 6 we said we intend to review some of BT's cost allocation methodologies during the review period covered by this Statement (2026-31). We think this would be a good opportunity to review how spine fibre is allocated to ensure it remains appropriate in future.
- A10.65 We said above that base year adjustments should only be made where there is clear evidence in favour of an adjustment. In light of the above, we do not consider that there is sufficiently clear evidence at this point to incorporate BT's proposal for the allocation of spine fibre in our modelling for the charge controls.

Procedural considerations

- A10.66 Although BT raised the potential reallocations with us too late for them to be taken into account in the March 2025 Consultation,³⁸⁷ we have exercised close regulatory oversight to

³⁸⁶ Openreach response dated 13 February 2026 to s135 notice dated 3 February 2026, question 13.

³⁸⁷ Openreach is incorrect to characterise this as an omission. While it informed us in December 2024 about its suspicion that FTTP build largely did not use CJF and that the issue was under investigation, it did not provide any further information (such as supporting evidence or internally approved methodology change proposals) until February 2025. As explained above, we required Openreach to carry out a number of actions so that we could consider whether a consultation might be appropriate and it took Openreach several months to complete these.

obtain the necessary data to assess the impact of the reallocations for its base year cost data and ensure that BT secured appropriate external assurance in relation to the accuracy of its data. We also required BT to publish a CCN in advance of the November 2025 Consultation to give stakeholders transparency about the impact of the proposed reallocations and the justifications for them.³⁸⁸

- A10.67 This process and the information provided in the CCN is in line with BT's regulatory reporting obligations when it makes changes to its regulatory accounting methodology. In line with these obligations, we consider that transparency for stakeholders is secured via the publication of a CCN, rather than at an earlier stage, as PXC has suggested, when proposals may be embryonic and data incomplete. In relation to the external audit of the reallocations, KPMG has now run agreed upon procedures testing and based on the results, Ofcom is satisfied that BT has followed its documented process for implementing the fibre cost reallocations.
- A10.68 While stakeholders are able to provide us with comments on BT's published CCNs ahead of their incorporation into the RFS, there is generally no formal consultation inviting them to do so. Therefore, contrary to the usual process, the November 2025 Consultation provided them with an explicit opportunity to scrutinise and comment on the proposed reallocations and their potential implications for the LLA and dark fibre charge controls.
- A10.69 In relation to the duration of the consultation period – 30 days – this is consistent with the statutory requirements in section 48A of the Act. The consultation was narrowly focused and in light of the number, volume and detail of respondents' comments, we are satisfied that stakeholders have had sufficient information and time to comment meaningfully on the proposals it contained.
- A10.70 In relation to Substantial Group's request, we are publishing alongside the Statement non-confidential cost models which provide additional detail on how our decision to incorporate the CJF cost reallocation has affected the charge controls.
- A10.71 In relation to stakeholders' comments about the information asymmetries in BT's regulatory financial reporting, we do not consider that it is possible for this to be eliminated, given the commercial confidentiality of BT's cost data. That said, the regulatory financial reporting regime is designed to secure published information on regulated services and markets and provide reasonable confidence to stakeholders that BT has complied with its SMP conditions.
- A10.72 We note that the current regulatory financial reporting regime was implemented in 2014 following a detailed review³⁸⁹ and after Ofcom's decisions in the 2014 FAMR Review highlighted by PXC, VodafoneThree and others. For this reason, and noting that those decisions were specific to the circumstances of the 2014 FAMR, we do not agree that they provide a relevant precedent for the treatment of these fibre cost reallocations.
- A10.73 As noted in Volume 6, as BT's network transitions from copper to fibre, it will be necessary to review some of BT's allocation bases to ensure costs are appropriately allocated to regulated services and markets in accordance with the regulatory accounting principles. We intend to work with BT to review some of its cost allocation methodologies during the

³⁸⁸ This was published on 3 October 2025: BT Group. 2025. [Change Control Notification: Part 1 – 3 October 2025](#).

³⁸⁹ [Ofcom, Financial Reporting Statement](#), 20 May 2014.

review period covered by this Statement (2026-31) and involve stakeholders, as appropriate.

Forecasting the future cost of LLA and IEC services

A10.74 We acknowledge the point made by VodafoneThree that there will be changes in the network architecture and cost structure for LLA and IEC services. However, we disagree that attempting to incorporate these changes in our charge control modelling would improve the accuracy of our cost forecasting. In particular:

- regarding the introduction of Openreach EAD 2.0 products, we note that these services are currently in development and they have not yet been launched. This means that there is no outturn cost information available for EAD 2.0 products;
- regarding the future closure of local (child) exchanges, we recognise that Openreach intends to close 108 of these exchanges by the end of 2030. This indicates that most child exchanges are expected to remain open by the end of the 2026-31 charge control period, with most Openreach exchange closures happening in later charge control periods.

A10.75 Given the considerations set out above, we consider that attempting to capture these trends in our cost forecasting at this time would introduce substantial uncertainties. By contrast, our existing top-down charge control modelling approach is well-established, and it has informed our charge control decisions for business connectivity services in several past market reviews.

A10.76 We also consider that CJF cables will remain highly relevant for providing connectivity between child and parent exchanges for LLA and IEC services throughout the 2026-31 charge control period, given that most child exchanges are expected to remain open during this period. We therefore do not agree with VodafoneThree's suggestion that CJF cables are becoming functionally redundant or that costs associated with usage of CJF cables (including usage by WLA services) should be eliminated. As mentioned above, we consider that the CJF cost reallocation improves the accuracy of BT's reporting.

A10.77 Overall, we do not consider that changing our charge control modelling approach in the ways suggested by VodafoneThree would improve the accuracy of our cost forecasting. We have therefore decided to retain the top-down charge control modelling approach proposed in our March 2025 Consultation.

Impacts of the fibre cost reallocations on charge control levels

A10.78 We do not agree with VodafoneThree that the charge control levels proposed in the November 2025 Consultation disrupt the price differentials between dark fibre main link services and EAD main link services.

A10.79 We consider that single fibre variants of dark fibre main link services should be available at lower per kilometre prices than EAD main link services. As explained in Annex 13, we have set a cost-based charge control on dark fibre services with reference to the costs of relevant components of Openreach's underlying passive infrastructure. We have used RFS data for benchmark active Ethernet services to estimate the unit FAC for dark fibre services, and as part of this we have excluded active component costs.

A10.80 In our November 2025 Consultation, we noted that retaining CPI-0% sub-caps for Ethernet main link service charges would likely result in Ethernet main link prices being held below their forecast unit fully allocated costs (unit FAC) over the 2026-31 period, and we considered that this would be overly restrictive given the use of Ethernet basket charge controls. We proposed to amend the level of the sub-cap for Ethernet main link service charges to CPI+5%. As set out in Volume 4 of this Statement, we have decided to set the

level of the sub-cap at CPI+5%. This avoids Main Link prices being held below their forecast unit FAC over the 2026-31 period, while providing protection from the risk of sharp increases in charges.

- A10.81 If Openreach increases charges to the full extent permitted under the cost-based charge control for DFX main link services and the CPI+5% sub-cap for Ethernet main link services, then DFX main link services are forecast to remain cheaper than EAD main link services throughout the 2026-31 charge control period (including after subtracting the forecast costs of active equipment from EAD main link prices). We do not agree with VodafoneThree's comment that Ofcom should set or monitor a minimum price differential between dark fibre main link services and EAD main link services. We consider that the charge control approach set out above is proportionate.
- A10.82 We recognise that our decision to incorporate BT's planned reallocation of CJF costs results in material movements of costs between Openreach SMP markets, and therefore results in a material impact on some of the cost-based charge controls we have decided to set in the LLA and IEC markets. We consider that our decision to incorporate BT's planned reallocation of CJF costs in our charge control modelling for the TAR Statement is necessary to allow BT to recover its forecast efficiently incurred costs.
- A10.83 In response to Substantial Group's comments, our November 2025 Consultation explained how the ranges for our cost-based charge controls (including those for dark fibre services) were informed by the high cost, base cost and low cost scenarios from our top-down cost modelling. As set out in Annex 14 of our March 2025 Consultation, we developed low cost and high cost scenarios for the following parameters: WACC, efficiency (operating costs and capital costs), volume forecasts and operating cost inflation. For this Statement, we have updated these parameters for outturn data and new evidence, to generate the final parameter values used in our top-down cost models, which are then used to determine our cost-based charge controls. We explain the parameter values we have chosen (and why) later in this annex. We set out the dark fibre charge control levels we have set in this Statement in Annex 13.
- A10.84 The dark fibre charge controls we have set in this Statement are also affected by our decisions relating to the use of starting charge adjustments (SCAs) at the start of the charge control period. We explain our decisions relating to SCAs in Volume 4.
- A10.85 As noted above, some stakeholders considered that the charge control levels proposed in the November 2025 Consultation could impact competitive dynamics in the markets for LLA and IEC services. We address these stakeholder comments in Volume 4.

Adjustment to remove cumulo costs

- A10.86 BT's cumulo rate costs are the non-domestic rating costs BT pays on its rateable network assets.
- A10.87 BT's rates bill is expected to increase over the charge control period at a faster rate than other operating costs, explained in more detail in the cumulo section below. Due to this, we have removed the cumulo costs from the base year data and forecast them separately in the cost forecast model. This is consistent with the approach taken in the March 2021 Statement.

Adjustment to remove Ethernet Provision SLG costs

- A10.88 BT's Ethernet Provision SLG costs are the costs BT pays on delayed provisioning of connections.

A10.89 BT's Ethernet Provision SLG costs are linked to the monthly rental prices of the underlying Ethernet service and would be expected to be correlated to volumes growth/decline of the service, explained in more detail in the Ethernet SLG section below. Due to this, we have removed the Ethernet Provision SLG costs from the base year data and forecast them separately in the cost forecast model. This is consistent with the approach taken in the March 2021 Statement.

Adjustment to smooth restructuring charges and leaver charges

A10.90 Restructuring costs and leaver costs are associated with changes in BT's organisational structure that result in employee redundancies (with costs from redundancies known as leaver payments).

A10.91 As in the March 2021 Statement, we consider that leaver payments and restructuring costs are forward looking and efficiently incurred if they produce future efficiency benefits and reduce future property related costs (and we are not aware of any information suggesting these costs may be inefficient). These costs fluctuate year on year therefore these costs have been included in the base year by smoothing them over a five-year period.³⁹⁰

Adjustment to reallocate Excess Construction charges (ECCs)

A10.92 As set out in Volume 4, Section 5, we are fixing the ECC threshold for the duration of this review period at £3,680. Within BT's current RFS, costs are allocated to EAD connection services using actual ECC capex spend, actual relevant EAD lines and a threshold of £2,800.

A10.93 Changing the threshold should not result in the total ECCs for a given year changing but will alter the allocation of costs to EAD connections and ECC services in the RFS. Increasing the threshold will mean that more ECCs will be captured by the threshold and so more costs will flow to EAD connections and less to ECC services.³⁹¹ The base year adjustment we have made reflects this net zero reallocation.

A10.94 We have used Openreach's 2024/25 ECC balancing charge compliance submission and updated the threshold used in the calculations to use the ECC threshold of £3,680. This captures an additional £3m of costs, which we have reallocated from ECC services to EAD connection services in our adjustment.

Adjustment to separate different SOGEA connections

A10.95 We have made an adjustment to the costs and revenues for SOGEA connection services in our base year data. This is to reflect the fact that the unit cost and our volume forecasts for (i) new connections requiring installation at the customer premises or cabinet and (ii) start of stopped line connections are materially different. Our adjustment approximates the split of costs between the different connection types. Specifically, we have assumed that the unit FAC for start of stopped line connections is equivalent to the price for this type of connection currently being charged by Openreach³⁹² and multiplied this by SOGEA start of stopped line connection volumes to estimate a base year FAC. The remaining FAC within

³⁹⁰ BT response to s135 notice dated 3 February 2026, questions 1, 8, 9 and 10. BT response to s135 notice dated 27 October 2025, question E1. BT response to s135 notice dated 2 May 2024, questions A6 and A7. BT response to s135 notice dated 19 August 2024, question C1.

³⁹¹ ECC services record the costs and revenue for ECCs that are above the £2,800 threshold.

³⁹² £3.81 per connection from April 2025. [https://www.openreach.co.uk/cpportal/products/pricing-pmf/pricing-details?target=%5B%22Superfast%20and%20Ultrafast%20Fibre%20Access%20Pricing%22%2C%22Single%20Order%20\(SO\)%22%2C%22Single%20Order%20GEA%20\(SOGEA%20and%20SOGFast\)%22%5D](https://www.openreach.co.uk/cpportal/products/pricing-pmf/pricing-details?target=%5B%22Superfast%20and%20Ultrafast%20Fibre%20Access%20Pricing%22%2C%22Single%20Order%20(SO)%22%2C%22Single%20Order%20GEA%20(SOGEA%20and%20SOGFast)%22%5D)

the SOGEA connection, after subtracting this approximated amount for start of stopped line connections, is assumed to be the FAC for connections requiring installation.

- A10.96 Table A10.7 shows that this separation of different SOGEA connections results in a small decrease in active costs. This is because we include estimated SOGEA start of stopped line connections FAC in our separate modelling of forecast cost recovery for WLA ancillary services, rather than in the cost forecast model.

Adjustment to remove mobile network licence costs

Our proposals

- A10.97 BT has identified that in its published 2025 RFS, some of BT Group's costs associated with mobile network licences were inadvertently allocated to services within Openreach SMP markets.³⁹³ In Section 5 of our November 2025 Consultation, we explained that we intended to adjust our base year cost modelling to remove mobile network licence costs ahead of the TAR Statement.

Stakeholder responses

- A10.98 Openreach agreed that mobile network licence costs should be removed from Ofcom's cost modelling.³⁹⁴ VodafoneThree stated that it supports the removal of costs that have been misreported as BT SMP instead of BT Group.³⁹⁵

Our reasoning and decisions

- A10.99 We do not consider that mobile network licence costs should be included in our cost modelling for regulated Openreach services for the TAR Statement.
- A10.100 We have therefore made an adjustment to remove mobile network licence costs from the base year costs. We have collected 2024/25 cost data from BT which provides detailed estimated impacts of reallocating mobile network licence costs from services in Openreach SMP markets to the rest of BT.³⁹⁶ We have used this data to inform our adjustment.

Additional points relevant to base year cost estimation

Use of national unit costs in our top-down modelling

Our proposals

- A10.101 In our March 2025 Consultation, we proposed to use national unit costs for each service in our top-down cost modelling, as opposed to geographically disaggregated unit costs.³⁹⁷

Stakeholder responses

- A10.102 In its response to our March 2025 Consultation, Openreach disagreed with the use of national average costing (national unit costs) to inform our cost-based charge controls in the LLA and IEC markets.³⁹⁸ It said that prior to the March 2021 Statement, RFS reporting for BCMR markets used geographically disaggregated unit costs, and it was understood that costs of supply in less dense areas are higher than those in dense areas. Openreach also presented analysis based on the 2020 RFS, which showed that the CI BT Only market

³⁹³ BT response dated 27 October 2025 to s135 notice dated 20 October 2025, question E9.

³⁹⁴ [Openreach](#) response to TAR26 November 2025 Consultation. Paragraphs 126-127.

³⁹⁵ [VodafoneThree](#) response to TAR26 November 2025 Consultation. Paragraph 82.

³⁹⁶ BT response dated 13 November 2025 to s135 notice dated 20 October 2025, questions A1 and A2.

³⁹⁷ Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Annex 14, Paragraph A14.2.

³⁹⁸ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 81-91, 97 and 113-114.

(which Openreach said is analogous to LLA Area 3 in principle) had higher unit FAC than the CI BT+1 and HNR markets.

A10.103 In relation to the proposed cost-based charge control for Ethernet services of bandwidths 1 Gbit/s and below in LLA Area 3, Openreach considered that the costs of supply in LLA Area 3 would be higher than the national average.³⁹⁹ Openreach also noted that the same concern applied to the proposed cost-based charge controls for DFA services in LLA Area 3.⁴⁰⁰⁴⁰¹

A10.104 Similarly, in relation to the proposed cost-based charge controls for DFX services at IEC SMP exchanges (i.e. BT Only and BT+1 exchanges), Openreach considered that the costs of supply at IEC SMP exchanges would be higher than the national average.⁴⁰²

A10.105 Openreach considered that we should apply geographically disaggregated unit costs for cost modelling purposes, and it offered to work with Ofcom to develop a method for doing this.⁴⁰³

A10.106 In its response to our November 2025 Consultation, Openreach again set out its view that the costs of supply in LLA Area 3 would be higher than the national average, and that we should apply geographically disaggregated unit costs for cost modelling purposes.⁴⁰⁴ Openreach also submitted new analysis which provided an estimated geographic disaggregation of unit costs for a standard EAD circuit in 2024/25.⁴⁰⁵ Its methodology used data on relative fibre lengths, relative fibre sizes (i.e. number of fibres in cable sections) and the utilisation of fibres (i.e. number of fibres in use) to inform the geographic disaggregation. Openreach said its analysis shows that circuits in LLA Area 3 cost 13% more to provide than the national average.

A10.107 In its response to our March 2025 Consultation, VodafoneThree considered that if Ofcom were to apply geographically disaggregated unit costs in its cost modelling, then it should do so consistently across all geographic markets rather than adjusting unit costs only for the geographic markets with a higher estimated cost of supply.⁴⁰⁶

Our reasoning and decisions

A10.108 We continue to consider that it is appropriate to use national unit costs in our top-down cost modelling, and we have decided to retain this approach for our Statement modelling.

A10.109 We recognise that in principle unit costs could vary by geographic market. For example, differences in cable size, cable length, network density and input costs (e.g. pay rates, wayleaves, traffic management) could result in unit costs varying between geographic SMP

³⁹⁹ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 89-90.

⁴⁰⁰ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraph 97.

⁴⁰¹ We have included stakeholder responses relating to DFA and DFX services here, even though (as noted earlier in this annex) these services are not directly included in the cost forecast model. This is because the base year costs applied in the cost forecast model influence the estimation of dark fibre costs in the dark fibre cost model. Therefore, our reasoning and decisions regarding the use of national unit costs in our top-down modelling apply to all cost-based charge controls in the LLA and IEC markets, including those for DFA and DFX services.

⁴⁰² [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 113-114.

⁴⁰³ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraph 91.

⁴⁰⁴ [Openreach](#) response to TAR26 November 2025 Consultation. Paragraphs 136-138.

⁴⁰⁵ [Openreach](#) response to TAR26 November 2025 Consultation. Annex 3 (Paragraphs 182-190).

⁴⁰⁶ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Comments on Comments submission (October 2025). Paragraph 31.

markets. However, for the reasons set out below we do not consider it necessary or proportionate to estimate unit costs on a geographic basis in our cost modelling.

A10.110 BT's comments on our approach focused on the consequences for our cost-based controls in the LLA and IEC markets. We do not consider it is necessary to estimate unit costs on a geographic basis in these markets to provide Openreach with the opportunity to recover i) its total FAC associated with LLA and IEC markets or ii) its forward looking incremental costs in LLA Area 3 and IEC SMP exchanges.

- In relation to i), our modelling of expected cost recovery over the 2026/27 to 2030/31 period, which is explained in Section 5 of Volume 4, indicates that our charge control decisions (i.e. a CPI-0% control on some services and a cost-based control on others) give Openreach the opportunity to recover its total FAC associated with LLA and IEC markets.
- In relation to ii), we consider that setting cost-based charge controls based on national costs will allow for recovery of forward-looking incremental costs specifically in LLA Area 3 and at IEC SMP exchanges and therefore will not undermine investment incentives in these areas.⁴⁰⁷

A10.111 It would also be highly complex to robustly estimate differences in unit costs between geographic markets for cost modelling purposes. For example, some types of cost could be higher in urban areas and other types of cost could be higher in rural areas, and this could vary over time. We consider that it would be necessary to conduct a comprehensive assessment of unit cost differences between geographic markets, taking account of all relevant factors. We would also need to take account of changes in the forward-looking scope of geographic markets between our Consultation proposals and Statement decisions, which inevitably arise as a result of updating our input data. We consider that trying to set cost-based controls by reference to geographic unit costs would make the task of setting the controls unnecessarily complex and disproportionate given we consider national unit costing meets our cost recovery objectives set out above.

A10.112 We also agree with VodafoneThree's comment that geographic unit cost disaggregation should not be applied to one geographic market without it also being applied to all other relevant SMP geographic markets for consistency (for example, in the context of the LLA market a geographic approach to estimating unit costs in LLA Area 3 would also need to be consistently reflected in unit cost estimates for the LLA Area 2 and HNR SMP markets).

Forecasting costs

Overall approach

A10.113 BT's costs consist of operating and capital costs (opex and capex). We forecast each of these cost types separately. We have taken a similar approach to forecasting costs as we took in the March 2021 Statement.⁴⁰⁸

A10.114 While we are ultimately interested in service-level costs, our cost forecasts are calculated at a network component level. We consider that this is more robust than forecasting at a service level as BT's services are made up of a common pool of network components such

⁴⁰⁷ This is consistent with the position we set out in relation to LLA Area 3 costs in the March 2021 Statement, as explained in Annex 17, Paragraph A17.30 of that Statement.

⁴⁰⁸ Ofcom. March 2021. [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#). Annex 14.

as lengths of fibre. By forecasting how the costs of these ‘building blocks’ are expected to change, we can build up the costs of each service. This allows our forecasts to account for economies of scale due to volume growth where multiple services use a single component (i.e. share the same underlying costs). These economies of scale might be missed were we to treat each service as separate.

A10.115 We forecast costs in each year until the end of the charge control period. We do this in two steps after we have established the base year costs:

- First, we forecast costs assuming volumes remain constant in all years. This takes into account changes in input prices and expected efficiency gains.
- Second, we add the effects of our volume forecasts. We use AVEs and CVEs to estimate the impact of changes in volumes on costs.

Key modelling assumptions

Volume forecasts

A10.116 Service volume forecasts are required for our top-down cost model, driving both cost and revenue forecasts. For costs, service volumes are converted into component volumes by using service and component specific cost usage factors. Costs are then forecast at a component level. For a description of how service volumes are used in our revenue forecasts, please see Paragraphs A10.300 to A10.301.

A10.117 For leased lines, there is a long list of services, so we base our volume forecasts initially on Openreach’s own forecasts. We consider that Openreach’s forecasts of service volumes provide the best starting point for our leased line forecasts.

A10.118 For our WLA and WFAEL volume forecasts, where the list of services is significantly shorter than leased lines, we consider it appropriate to determine our own input assumptions which then drive our service volume forecasts. For WLA and WFAEL services, we then cross-check our forecasts against those provided by Openreach and several communications providers ([X]).

WLA and WFAEL forecasts

A10.119 We forecast WLA and WFAEL service volumes, by geographic area and up to 2035/36, to be used as an input into the top-down cost forecast model and our RAB model. We forecast single order and G.fast services separately from FTTC, and estimate rental and connection volumes but do not forecast ancillary services.⁴⁰⁹

A10.120 An important driver of our forecasts is the rate of migration from copper to fibre services over the review period. Another important element is the impact that competing networks will likely have on the number of Openreach lines. Both are subject to a high degree of uncertainty. We have collected data from a range of sources to estimate the impact of these elements on WLA and WFAEL line volumes.

A10.121 We have used the following sources of information:

⁴⁰⁹ We do not consider it necessary to add further complexity to the volumes model by forecasting ancillary services given that we have found revenues and costs for ancillary services to be broadly aligned. See Volume 4, Section 5 for more detail on our charge controls for ancillaries.

- Copper and GEA service volume data and forecasts from Openreach for the financial years 2021/22 through to 2029/30 using our statutory information gathering powers.⁴¹⁰
- Forecasts provided by several communications providers ([<]) which, alongside Openreach’s forecasts, are used to cross-check against our modelled forecasts. This allows us to test the robustness of our model and whether our modelling assumptions are reasonable.

A10.122 We have projected volumes of WLR, MPF, SMPF, and GEA rentals⁴¹¹ using the following steps in our volumes model:

- **Step 1 – forecast the number of Openreach lines:** calculating the number of Openreach residential and business lines and applying annual growth rates for household and business growth to each, respectively.⁴¹² We then make an adjustment to this forecast to account for the impact of future competitor network roll-out.
- **Step 2 – forecast individual rental volumes:** we forecast broadband penetration, decline in copper-only broadband services (i.e. ADSL), migration to SOGEA, and take-up of FTTP services to estimate how our Openreach line forecasts are split between its WLA and WFAEL rental services.
- **Step 3 – forecast rentals by bandwidth:** we estimate how FTTC, SOGEA, and G.fast rentals are split by bandwidth primarily based on historic trends but cross-checked against Openreach and ISP forecasts. For FTTP, we largely base our bandwidth forecasts on Openreach’s Medium Term Plan (MTP) forecasts.⁴¹³
- **Step 4 – forecast connection volumes:** we forecast connection volumes based on our rental forecasts. For legacy copper connections, we apply the percentage change for the relevant legacy copper rental to the legacy copper connections.⁴¹⁴ For FTTP connections we apply a similar approach except we keep FTTP connections flat from 2029/30 onwards. For SOGEA connections we strip out Start of Stopped Lines and forecast these separately.
- **Step 5 – forecast geographic split consistent with our new boundary:** we have used service volumes by postcode sector (as of August 2025) provided by Openreach to

⁴¹⁰ Actuals for 2021/22 to 2024/25, including a recent snapshot of rental volumes by postcode sector, from the Openreach response dated 19 June 2024 to s135 notice dated 14 May 2024, questions A4, A6, and A8; and its response dated 27 August 2025 to s135 notice dated 5 August 2025, questions A2, A4, and A6. Forecasts for 2025/26 to 2029/30 from the Openreach response dated 27 August 2025 to s135 notice dated 5 August 2025, questions A3, A5, and A7.

⁴¹¹ This includes FTTC, SOGEA, G.fast, SOG.fast, and FTTP rentals broken down by their available bandwidths.

⁴¹² BT’s RFS based volume data does not differentiate between business and residential lines. We therefore split them into business and residential lines using the split at the overall industry level.

⁴¹³ However, given that our total FTTP forecasts do differ from Openreach’s we have estimated our own forecasts for the 160 Mbit/s FTTP services which capture any differences between our total FTTP forecasts and Openreach’s. We have chosen this service as [<].

⁴¹⁴ Over the review period, we think this strikes the right balance of ensuring our connection forecasts are consistent with our rental forecasts without having to forecast the uncertain volatility of legacy connection volumes or needing to forecast ancillary services, e.g. ceases.

adjust the Area 2 and Area 3 service volumes to reflect our definition of these geographic areas.⁴¹⁵

A10.123 In summary, we estimate the following key trends at a national level from 2024/25 to 2030/31, and further trends for Area 3 up to 2035/36:

- broadband penetration on Openreach's network will reach 100% by 2030/31 and the proportion of Openreach broadband lines that use fibre (i.e. FTTC, G.fast and FTTP) will increase from 91% to 99% by 2030/31 (and 100% by 2031/32);⁴¹⁶
- the proportion of Openreach broadband lines that are FTTP will increase from 27% to 81% in 2030/31 (and 100% by 2033/34); and
- the total number of Openreach lines in Area 2 will fall from [§<] in 2024/25⁴¹⁷ to [§<] by 2030/31 (primarily driven by line loss to network competition net of any growth in the market) and also fall in Area 3, from [§<] in 2024/25 to [§<] by 2030/31 (due to growth in households and businesses being offset by line loss).

A10.124 Table A10.9 and A10.10 below set out 2024/25 actuals and our forecasts of the main rental volumes.⁴¹⁸ These volumes are for the average number of lines in each year, to be consistent with BT's RFS.

Table A10.9: Summary table of 2024/25 WLA and WFAEL national volumes broken down by service (mid-year rentals)

2024/25 Actuals	Number of lines (millions)	Share of all Openreach lines excl. WLR and SOG.fast
MPF	5.3	33%
WLR	[§<]	n/a
SOG.fast	[§<]	n/a
SOGEA	5.4	33%
FTTP	5.6	34%

⁴¹⁵ On 6 March 2026, an error was identified in the allocation of 61 postcode sectors to WLA geographic markets. 61 postcode sectors were incorrectly classified as WLA Area 3, when they should have been classified as WLA Area 2. This error has been corrected in Schedule 2 for the Statement, and in any references to the results of Schedule 2 throughout the Statement, except where specified otherwise. We have assessed that this error does not have a material impact on the results derived from affected charge control models (i.e. our cost forecast model, fibre cost model and WLA Area 3 RAB model). Given the immaterial impact of this error, we have not corrected it in our charge control modelling for the Statement as this would not have been practicable in time for publication.

⁴¹⁶ These forecasts are higher than those presented in the March 2025 Consultation, due to updated data provided by Openreach showing higher penetration than previously forecasted.

⁴¹⁷ Figures reported at the Area 2 and Area 3 level for 2024/25 are allocated to areas based on the forward-looking area definition set out in this Statement, for comparability of line volumes over time.

⁴¹⁸ FTTC, SMPF and G.fast lines (excluding single-order services) are supported by MPF and WLR. These volumes are not included in this table (or Table A10.10 below), to avoid double-counting lines. However, FTTC and G.fast combined total 7.6 million lines in FY2025.

2024/25 Actuals	Number of lines (millions)	Share of all Openreach lines excl. WLR and SOG.fast
Total Openreach lines excl. WLR and SOG.fast	16.3	100%

Source: Ofcom 2025 WLA Volumes Module

Table A10.10: Summary table of 2030/31 national and Area 3 WLA and WFAEL volume forecasts broken down by service (mid-year rentals)

2030/2031 forecasts	2030/31 national Openreach volumes (millions)	2030/31 national shares	2030/31 Area 3 Openreach volumes (millions)
MPF	0.2	1%	<0.5m
WLR	0.1	<0.5%	<0.5m
SOG.fast	0.1	1%	<0.5m
SOGEA	3.2	17%	0.8
FTTP	15.0	81%	2.9
Total Openreach lines	18.6	100%	3.7

Source: Ofcom 2025 WLA Volumes Module

Leased line forecasts (LLA and IEC markets)

Our proposals

A10.125 In Annex 14 of our March 2025 Consultation, we set out our proposed approach to forecasting volumes for leased line services in the LLA and IEC markets.

Adjustments to the DFA forecast

A10.126 As noted above, for leased lines we base our volume forecasts initially on Openreach's own forecasts. One of the adjustments we proposed to make to Openreach's leased line forecasts (under the heading 'Adjustments to the DFA forecast') was to remove all forecast growth in DFA rentals (in effect holding DFA rentals constant at their 2023/24 level through to 2028/29), and make a proportionate uplift to EAD rentals and EAD LA rentals at bandwidths of 10 Mbit/s, 100 Mbit/s and 1 Gbit/s. We then added a revised forecast growth trajectory for external DFA rentals through to 2028/29 (based on an assumed share of VHB external active LLA rentals in Area 3 which migrate to DFA), with a proportionate downward adjustment to external VHB active LLA rentals in Area 3. Our last step for this particular set of adjustments was to make a corresponding adjustment to the external DFA connections forecast for consistency with the revised external DFA rentals forecast.

Treatment of LLA circuits used for FTTP aggregation

- A10.127 In Volume 3 of our March 2025 Consultation, we noted that during the 2021-26 period, Openreach chose to offer LLA circuits for FTTP aggregation purposes commercially.⁴¹⁹ Openreach sets pricing for these circuits by applying a rental surcharge on top of the existing regulated rental price for the leased line circuits. We proposed to continue to interpret the network access obligations in the WLA and LLA markets as not requiring Openreach to provide active leased line circuits or DFA circuits where they would be used to aggregate FTTP to multiple premises for the purposes of deploying a fibre access network.
- A10.128 In our March 2025 Consultation, our top-down modelling included volumes of LLA circuits used for FTTP aggregation. As noted on Openreach's price list, the purchasing communications provider (CP) of a circuit used for this purpose is required to self-certify orders for this use case (and Openreach may seek clarification where it believes a purchasing CP has omitted to self-certify an order for this use case).⁴²⁰ As can be seen in BT's published 2025 Wholesale Catalogue Annex, LLA for FTTP aggregation products are captured within RFS service codes that also include regulated LLA products.⁴²¹ Taken together, this means that there is not an exact record of outturn product volumes for LLA circuits used for FTTP aggregation.
- A10.129 In our top-down modelling for the March 2025 Consultation, we included revenues and costs associated with LLA circuits used for FTTP aggregation (although we did not include revenue associated with the FTTP aggregation rental surcharge for these circuits, i.e. we only included revenue associated with the standard rental prices).

Treatment of EAD Rugged circuits

- A10.130 As can be seen in BT's published 2025 Wholesale Catalogue Annex, EAD Rugged price list products are captured within RFS service codes that also include regulated LLA products.⁴²² In our March 2025 Consultation, we proposed that EAD Rugged circuits should be included in the definition of the Ethernet charge control baskets within our draft SMP conditions.⁴²³ Consistent with this proposal, we did not exclude revenues and costs associated with EAD Rugged products in our top-down modelling.

Adjustment to internal IEC volumes

- A10.131 In our March 2025 Consultation, we proposed to adjust our internal IEC volumes forecasts to use BT's forecast annual volumes growth between 2023/24 and 2028/29 (instead of Openreach's forecast volumes growth) for some IEC services. This adjustment specifically applied to EAD connections and circuit rentals at all bandwidths, EBD connections and circuit rentals at all bandwidths, WDM (Optical) services connections and circuit rentals, DFX connections and circuit rentals.

⁴¹⁹ Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Volume 3. Paragraphs 7.112-7.126.

⁴²⁰ Openreach price list. [Ethernet Access Direct \(EAD\) including EAD Enable](#). Accessed on 10 March 2026. Note 31.

⁴²¹ BT. 31 July 2025. [Wholesale Catalogue Annex 2025](#). Accessed on 10 March 2026.

⁴²² BT. 31 July 2025. [Wholesale Catalogue Annex 2025](#). Accessed on 10 March 2026.

⁴²³ Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Volume 7 Part A. Annex to Condition 12E.

Stakeholder responses

Adjustments to the DFA forecast

- A10.132 Openreach disagreed with our proposed adjustments to the DFA volumes forecast.⁴²⁴ It considered that our adjustments to external DFA volumes did not take account of the role that the expanded availability of DFA (due to the increased scale of LLA Area 3 relative to 2021-26) or the application of our proposed charge controls would have in encouraging take-up of DFA as a substitute for active services at bandwidths up to and including 1Gbit/s (i.e. lower bandwidth (LBW) services). It also considered that once an ISP productises DFA as a substitute for active services at bandwidths above 1Gbit/s (i.e. VHB services), it will be in a position to expand its use of DFA as a substitute for LBW services.
- A10.133 Openreach also disagreed with our proposed removal of forecast growth for internal DFA rentals. It considered that once one CP adopts dark fibre, other CPs (including BT downstream) are likely to follow to avoid being at a competitive disadvantage.
- A10.134 VodafoneThree stated its disagreement with Openreach's view that Ofcom has overestimated demand for EAD services and underestimated volumes for DFA services.⁴²⁵

Treatment of LLA circuits used for FTTP aggregation

- A10.135 Openreach disagreed with the treatment of LLA circuits used for FTTP aggregation in our top-down modelling.⁴²⁶ It considered that the inclusion of revenue for these circuits in our modelling (including relevant charge control baskets) inappropriately inflated the revenue forecast for regulated LLA services, and that this inflated the scale of the price reduction needed to bring revenue into alignment with costs by 2030/31, including for the proposed cost-based charge control on LBW services in LLA Area 3.
- A10.136 Openreach said it was appropriate to include LLA circuits used for FTTP aggregation in our cost modelling, as they should take a share of the costs like any other LLA service. It proposed that we remove the impact of these circuits from our modelling and charge controls by setting the price of these circuits at cost, to remove any profits (margin contribution) associated with these circuits.
- A10.137 VodafoneThree considered that LLA circuits used for FTTP aggregation should be included in our top-down modelling.⁴²⁷ It said that if Openreach receives revenue from FTTP backhaul EAD circuits, then that revenue must be matched to the cost base in the regulated model, and that excluding these services creates a distorted picture of profitability.

Treatment of EAD Rugged circuits

- A10.138 Openreach disagreed with the proposed inclusion of EAD Rugged circuits in the definition of the Ethernet charge control baskets.⁴²⁸ It considered that EAD Rugged should be excluded from the SMP market in the same way that Street Access services (which Openreach considered to be the predecessor service for EAD Rugged services) is excluded.

⁴²⁴ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 72-80.

⁴²⁵ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Comments on Comments submission (October 2025). Paragraph 24.

⁴²⁶ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 68-71.

⁴²⁷ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Comments on Comments submission (October 2025). Paragraph 28.

⁴²⁸ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 99-101.

A10.139 VodafoneThree considered that EAD Rugged volumes should be included in our charge controls.⁴²⁹ It said that because these services run over the same physical infrastructure as other EAD services and share the network with them, excluding their volumes would understate actual network usage and distort cost allocation.

MTO volumes forecast

A10.140 In October 2025, Openreach provided an update to its forecast for EAD lower bandwidth circuit volumes, which is based on its September 2025 'MTO' forecast.⁴³⁰ Openreach considered that if we retain the cost-based charge control on LBW services in LLA Area 3 for the Statement, we should take this updated volumes evidence into account in our top-down modelling.⁴³¹

Adjustment to internal IEC volumes

A10.141 Openreach stated that it had not been able to exactly replicate Ofcom's adjustment for internal supply, but said that it results in a small but significant increase in forecast volumes, all other things equal.⁴³² Openreach stated that the precise nature of the adjustments made by Ofcom is not disclosed, and it requested further clarity about this from Ofcom.

Our reasoning and decisions

A10.142 In the following sub-sections, we explain in detail our approach to forecasting leased line volumes for the Statement. We address stakeholders' comments as part of this explanation.

A10.143 Openreach provided us with the following volumes forecast data:

- For leased line access (LLA) services, a forecast of national connection and rental volumes from 2024/25 to 2029/30, split by internal and external volumes. The forecast splits LLA services into various product categories.⁴³³ This forecast comes from Openreach's annual medium term plan (MTP) forecast from 2025, known as the 'MTP25'.
- For interexchange only (IEC) services, a forecast of national connection and rental volumes from 2024/25 to 2029/30, split by internal and external volumes. The forecast splits IEC services into various product categories.⁴³⁴ This forecast also comes from the MTP25.
- A suggested mapping of (i) the individual Regulatory Financial Statements (RFS) service codes for LLA and IEC services (which are used for outturn RFS volumes) and (ii) the product categories shown in Openreach's LLA and IEC volume forecasts. The output of this mapping is a concatenated product category for each of the relevant RFS service

⁴²⁹ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Comments on Comments submission (October 2025). Paragraph 29.

⁴³⁰ [Openreach](#) response to TAR26 March 2025 Consultation. Document 9 (Leased line forecasts and trends). Paragraphs 1.9-1.11.

⁴³¹ [Openreach](#) response to TAR26 March 2025 Consultation. Document 9 (Leased line forecasts and trends). Paragraphs 1.22.

⁴³² [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraph 122.

⁴³³ Openreach response dated 19 June 2025 to s135 notice dated 29 May 2025, question A1.

⁴³⁴ Openreach response dated 19 June 2025 to s135 notice dated 29 May 2025, question A1.

codes.⁴³⁵ The use of concatenated product categories allows for the Openreach forecasts to be applied to individual RFS service codes, despite most of the forecast data being provided at a more aggregated level than this.

- An additional update to the forecast of EAD lower bandwidth circuits, which is based on its September 2025 'MTO' forecast.

A10.144 We requested volumes forecasts to 2030/31 (the final year of the next charge control period) from Openreach, but Openreach only had forecast data available up to 2029/30.⁴³⁶

A10.145 Our general forecasting approach has been to start with outturn volumes by RFS service code taken from BT's 2024/25 RFS data, and to apply Openreach's forecast annual growth in national volumes (for the relevant concatenated product category associated with each RFS service code) to generate forecast volumes for each RFS service code for 2025/26 to 2029/30.

A10.146 We have decided not to incorporate Openreach's September 2025 'MTO' update for EAD lower bandwidth circuit volumes within our forecasting approach. We consider that it is more robust to use Openreach's latest available MTP forecast (MTP25)⁴³⁷, which covers the full range of regulated LLA and IEC services (except main link services), and which runs up to 2029/30. The MTP25 forecast has also been approved by the Openreach Board.⁴³⁸

A10.147 We recognise that the 2025 MTO forecast is more recent than the MTP25 forecast. However, we note that using the MTP25 forecast requires fewer assumptions (because it is [§<] than the MTO forecast) and less use of [§<]. We also consider that the MTP25 forecast trajectory is sufficiently aligned with outturn EAD lower bandwidth circuit volumes data from the 2025 RFS.

A10.148 Given the considerations set out above, we consider that the advantages of the MTP25 forecast outweigh the recency of the 2025 MTO forecast, and therefore we have decided to use the MTP25 forecast without any MTO adjustments in our forecasting approach for EAD lower bandwidth circuits.

A10.149 Our volumes model needs to output volumes data from 2024/25 to 2030/31 for each relevant RFS service code, as this is the timespan of the cost forecast model. The sources of our volumes outputs are as follows:

- For 2024/25 the model captures outturn volumes by RFS service code. These volumes were taken from BT's 2024/25 RFS data as explained above.
- For 2025/26 to 2029/30 the model outputs volume forecasts which are informed by Openreach's forecasts to 2029/30 under our 'general forecasting approach', as explained above.
- For 2030/31 we use a forecast extrapolation approach to extend the forecast time series through to 2030/31. We explain this further below.

⁴³⁵ Openreach response dated 30 June 2025 to s135 notice dated 29 May 2025, question A3. An example of a concatenated product category is 'EAD 1000ConnectionExt' for LLA services, which maps to all RFS service codes that relate to external EAD 1 Gbit/s connections in the LLA market.

⁴³⁶ Openreach response dated 19 June 2025 to s135 notice dated 29 May 2025, question A1.

⁴³⁷ The MTP25 forecast was the latest available comprehensive medium term plan (MTP) forecast at the time of producing our Statement volume forecasts.

⁴³⁸ Openreach response dated 19 June 2025 to s135 notice dated 29 May 2025, question A1.

A10.150 Next, we explain several adjustments that we have made to Openreach's leased line forecasts to generate our volumes outputs.

Adjustments to Openreach's leased line forecasts

A10.151 We have identified some areas where we consider adjustments are needed to Openreach's leased line forecasts to make them appropriate for use in our cost forecast model:

- extrapolation of forecast volumes to 2030/31;
- a bespoke forecast of main links;
- an adjustment to the forecast for dark fibre access (DFA) rentals and DFA connections in LLA Area 3, which also impacts the forecasts for active services at all bandwidths;
- an adjustment to the forecast for DFX services and active services in the IEC market, to reflect the introduction of DFX at additional BT Only exchanges and BT+1 exchanges from the 2026-31 period onwards.

A10.152 We have considered whether to continue to apply an adjustment to internal IEC volumes, as was proposed in our March 2025 Consultation. Having since gathered further IEC volumes data from Openreach and BT, we are no longer of the view that it is more robust to use BT's forecasts for internal IEC volumes.⁴³⁹ We have also taken into account that our 'general forecasting approach' for LLA and IEC services more broadly involves using Openreach's forecast annual growth in national volumes for 2025/26 to 2029/30 to inform our own volume forecasts. Given the considerations above and the limited stakeholder comments we received, we have decided not to apply an adjustment to internal IEC volumes in our Statement volumes forecast.

Extrapolation of forecast volumes to 2030/31

A10.153 The cost forecast model requires forecasts to 2030/31, which is the final year of the upcoming charge control period. As noted above, Openreach's forecasts end at 2029/30.

A10.154 We have extrapolated our forecasts to 2030/31 by starting with our forecast volumes for each RFS service code for 2025/26 to 2029/30, and then applying linear trend extrapolation (at the RFS service code level) to generate forecast volumes for 2030/31.

Main link forecast

A10.155 Openreach's volume forecasts do not include forecasts for main link services. However, the concatenated product categories provided by Openreach's suggested mapping do include main link services: they assign a given main link RFS service code the same concatenated product category as the relevant circuit rental RFS service code which drives use of that main link service.

A10.156 To forecast main link volumes, we have therefore applied the national forecast growth rates for the corresponding circuit rental service to the outturn 2024/25 volume for each main link RFS service code. We consider this is a reasonable predictor for the growth of main link services because they are always purchased alongside other services and the

⁴³⁹ We note in particular that unlike Openreach's internal DFX forecasts, BT's internal DFX forecasts [3<], which we understand was due to [3<]. Sources: Openreach response dated 24 June 2024 to s135 notice dated 14 May 2024, question A1. BT response dated 10 December 2024 to s135 notice dated 25 November 2024, question A1. Openreach response dated 19 June 2025 to s135 notice dated 29 May 2025, question A1. BT response dated 14 October 2025 to s135 notice dated 10 September 2025, questions G2 and G3.

average main link length per circuit appears to have remained relatively constant over the past five years.

Adjustments to the DFA forecast

A10.157 Openreach's volume forecast includes a projection that DFA circuit rental volumes will grow to [X] external circuits and [X] internal circuits. Openreach has informed us that its forecast assumes a proportion (around [X]%) of annual new demand (connections) for EAD services of bandwidth [X] across the UK will instead become DFA circuit orders in LLA Area 3 by 2029/30.⁴⁴⁰

A10.158 We have engaged with communications providers (CPs) about their future plans for purchasing DFA in LLA Area 3. We have identified from this engagement that:

- BT's downstream business [X].⁴⁴¹
- For external telecoms providers, as we explain in Volume 3, Section 7 and Volume 4, Section 2, our evidence indicates that DFA is likely to be more attractive for users who need – or expect to need – VHB circuits, i.e. circuits of bandwidths above 1 Gbit/s.

A10.159 We have considered the comments received from Openreach regarding adjustments to the DFA forecast. The evidence we have gathered from CPs continues to indicate significant differences between the expectations of Openreach and CPs regarding future DFA take-up and substitutability with active services.

A10.160 Regarding the substitutability of DFA services and LBW active services in LLA Area 3, we do not agree with Openreach's comments that we should uplift our DFA volumes forecasts to assume substitution between these services. As we explain in Volume 4, Section 2, the cost advantages of using DFA appear to be lower where the customer only needs a LBW circuit, and so we are concerned that the constraint from cost-based DFA will continue to be limited for LBW LLA across this review period (and potentially longer term). Given this finding, and relatively limited outturn take-up of DFA up to 2024/25, we consider that there is insufficient evidence to include an assumption about the level of future substitution between DFA services and LBW active services. We have therefore decided to maintain our assumption from the March 2025 Consultation that forecast growth in DFA services is driven by migration from VHB active services to DFA services, with no forecast migration from LBW active services to DFA services.

A10.161 Regarding the substitutability of DFA services and VHB active services, we explain in Volume 4, Section 2 how we consider that over time DFA will increasingly constrain VHB services (directly and indirectly). We therefore consider that there is sufficient evidence to assume some future substitution between DFA services and VHB active services. For internal DFA demand from BT's downstream business, we acknowledge Openreach's point that there will likely be some competitive pressure on BT to purchase DFA circuits over the 2026-31 period. In our Statement modelling we have therefore forecast some future substitution between DFA services and VHB active services for both external and internal demand. We set out the specific adjustments we have made to the forecast for DFA rentals and DFA connections in the following paragraph.

⁴⁴⁰ Openreach response dated 9 October 2025 to s135 notice dated 10 September 2025, question G4.

⁴⁴¹ BT response dated 17 July 2024 to s135 notice dated 19 June 2024, questions B2 and B3. BT response dated 25 February 2025 to s135 notice dated 10 February 2025, question 2. BT response dated 14 October 2025 to s135 notice dated 10 September 2025, question G1.

A10.162 In summary, we have made the following adjustments to the forecast for DFA rentals and DFA connections in LLA Area 3 (which also impacts the forecasts for active services at all bandwidths):

- First, we have removed all forecast growth in internal and external DFA rentals, which implies that DFA rentals remain constant at their 2024/25 level through to 2029/30. We have reallocated the removed DFA rentals by making a corresponding proportionate uplift to EAD LA rentals and EAD rentals at bandwidths of 10 Mbit/s, 100 Mbit/s and 1 Gbit/s. The combined aggregate uplift to EAD LA rentals and EAD rentals exactly matches the reduction in DFA rentals.
- Second, we have added a revised forecast growth trajectory for external DFA rentals through to 2029/30. This trajectory is based on an assumed share of VHB external active LLA rentals in Area 3 which migrate to DFA. In our base case, we have assumed that DFA rentals reach around 60% of combined external DFA rentals and external >1 Gbit/s active rentals in Area 3 by 2029/30.⁴⁴² As part of this step, we have made a proportionate downward adjustment to external VHB active LLA rentals in Area 3 such that the total volume of DFA rentals and >1 Gbit/s active rentals is unchanged.
- Third, we have adjusted the external DFA connections forecast for consistency with the revised external DFA rentals forecast. We have assumed no ceases, implying that the annual volume of external DFA connections matches the annual increase in external DFA rentals.
- Fourth, we have added a revised forecast growth trajectory for internal DFA rentals through to 2029/30. This trajectory is based on an assumed share of VHB internal active LLA rentals in Area 3 which migrate to DFA. In our base case, we have assumed that DFA rentals reach around 51% of combined internal DFA rentals and internal >1 Gbit/s active rentals in Area 3 by 2029/30.⁴⁴³ As part of this step, we have made a proportionate downward adjustment to internal VHB active LLA rentals in Area 3 such that the total volume of DFA rentals and >1 Gbit/s active rentals is unchanged.
- Fifth, we have adjusted the internal DFA connections forecast for consistency with the revised internal DFA rentals forecast. We have assumed no ceases, implying that the annual volume of internal DFA connections matches the annual increase in internal DFA rentals.

Adjustment to DFX forecast (reflecting extension of the DFX remedy to additional BT exchanges)

A10.163 As set out in Volume 3, Section 8, we have decided to extend the DFX remedy to additional BT Only exchanges and BT+1 exchanges. We have assumed that Openreach's forecasts for DFX volumes do not account for potential extensions in DFX availability across BT exchanges, and we have therefore made an upward adjustment to forecast DFX connection volumes and DFX circuit rental volumes.

⁴⁴² We have applied judgement to produce this estimate. We note that the impact of any forecasting error in this external DFA growth assumption on the forecast profitability of external VHB active LLA services and external LBW active LLA services in LLA Area 3 (in our top-down cost modelling) is small.

⁴⁴³ We have applied judgement to produce this estimate. In doing so, we have taken account of the fact that BT's downstream business did not purchase any DFA services up to and including 2024/25. We note that the impact of any forecasting error in this internal DFA growth assumption on the forecast profitability of internal VHB active LLA services and internal LBW active LLA services in LLA Area 3 (in our top-down cost modelling) is small.

A10.164 Specifically, we have assumed that from 2026/27 to 2029/30⁴⁴⁴, the per-exchange growth in DFX circuit rental volumes is 2.5 times higher at new DFX exchanges than at existing DFX exchanges. This assumption has been informed by the outturn growth of DFX circuit rental volumes at existing DFX exchanges, and it reflects significant anticipated demand for DFX at new DFX exchanges. We have also adjusted forecast DFX connection volumes to align with our adjusted profile for DFX circuit rental volumes.

A10.165 We have additionally made a downward adjustment to active IEC services which evidence suggests are substitutable for DFX. This reflects some assumed migration away from active IEC services towards DFX at new DFX exchanges. For simplicity we have made proportionate downward adjustments to the affected active IEC services such that the combined reduction in rental and connection volumes across all of these services approximately matches the combined increase in DFX rental and connection volumes.^{445 446}

A10.166 The net increases in annual DFX volumes and the net decreases in IEC active volumes are applied to the relevant RFS service codes relating to BT Only exchanges and BT+1 exchanges. This results in revised forecast volumes for each affected service code for 2026/27 to 2029/30.

Adjustments to our leased line forecasts for changes in geographic market classifications

A10.167 As noted above, our general forecasting approach has been to start with outturn volumes by RFS service code taken from BT's 2024/25 RFS data. The RFS is prepared based on the existing geographic market classifications from the WFTMR21.

A10.168 As set out in Volume 2, Section 5 and Volume 2, Section 6, we have updated the LLA and IEC geographic market classifications for 2026-31. For LLA, this means we have updated the allocation of UK postcode sectors to create new geographic market boundaries. For IEC, this means we have updated the categorisation of BT exchanges (each of which is a distinct geographic market) into BT Only, BT+1 and BT+2 exchanges.

A10.169 We have adjusted the forecast 2025/26 volumes for each LLA RFS service code (each of which relates to a specific LLA geographic market) to better account for the new boundaries. We have done this by first calculating the national volumes for each service, and then re-allocating those volumes between the relevant RFS service codes using information about the number of postcode sectors within each of the new geographic market boundaries.⁴⁴⁷ Our approach ensures that the national forecast 2025/26 volumes for a given service remain the same following our adjustment.

A10.170 For IEC services, we have made a similar adjustment. We have first calculated the national volumes for each service, and then re-allocated those volumes between the relevant RFS service codes using information about the new count of exchanges within each of the

⁴⁴⁴ In our March 2025 Consultation modelling this assumption only ran up to 2028/29. We have extended it to 2029/30 in our Statement modelling, consistent with the fact that the Openreach MTP25 volumes forecast runs up to 2029/30.

⁴⁴⁵ This implies an assumption of one-to-one substitution from active IEC circuits to DFX circuits.

⁴⁴⁶ The match is approximate only because the initial downward adjustment resulted in some small negative volumes across a few active IEC service codes for 2029/30, and we have adjusted these volumes upwards to zero, resulting in an approximate rather than exact match.

⁴⁴⁷ Our approach uses information about the change in the scale (meaning the share of total postcode sectors) of each LLA geographic market, comparing between the March 2021 Statement and this Statement, to inform the re-allocation of volumes.

categorisations (BT Only; BT+1; BT+2).⁴⁴⁸ As with LLA services, our approach ensures that the national forecast 2025/26 volumes for a given service remain the same following our adjustment.

A10.171 By adjusting the 2025/26 volumes of LLA services and IEC services in this way, we automatically adjust the forecasts for each RFS service code in 2026/27 to 2029/30 (as well as the extrapolated forecasts to 2030/31). This is because having re-allocated 2025/26 volumes using information about new market boundaries, we then apply the national forecast growth rate to determine volumes in each market out to 2030/31, as per our 'general forecasting approach' which is described earlier in this section.⁴⁴⁹

Exclusion of LLA circuits used for FTTP aggregation from our charge controls

A10.172 We have considered Openreach's comments regarding the treatment of LLA circuits used for FTTP aggregation within our top-down modelling. We acknowledge that these circuits are provided commercially rather than being required by regulation (and as mentioned in Volume 3, Section 7, we have decided to continue to interpret the network access obligations in the WLA and LLA markets as not requiring Openreach to provide active leased line circuits or DFA circuits where they would be used to aggregate FTTP to multiple premises for the purposes of deploying a fibre access network).

A10.173 Given the points noted above, we consider that it is most robust to exclude costs and revenues associated with LLA circuits used for FTTP aggregation from our charge controls.

A10.174 As noted earlier in this annex, LLA for FTTP aggregation price list products are captured within RFS service codes that also include regulated LLA products. We have excluded these circuit volumes after generating unit cost forecasts for each service code in the cost forecast model, by subtracting their estimated outturn and forecast product volumes from total volumes for affected service codes (which then informs the calculation of aggregate cost forecasts for each service code). We have also ensured that the basket charge control tabs in the cost forecast model use these final adjusted volumes. This approach ensures that estimated volumes of LLA for FTTP aggregation circuits are not included in either the revenue base or cost base for our charge controls.

A10.175 To achieve the above approach, we have used estimated 2024/25 outturn product volumes data supplied by Openreach.⁴⁵⁰ For simplicity and transparency, we have forecast these product volumes by using the same forecast volume growth rates as the corresponding service codes.

Exclusion of EAD Rugged circuits from our charge controls

A10.176 As mentioned in Volume 2, Section 5, we have excluded leased lines used for specialist applications (such as EAD Rugged services) from the product market for LLA services. Consistent with this, in Annex 5 we explain that EAD Rugged circuits have been excluded from the data used in our leased lines market definition analysis.

⁴⁴⁸ Similar to LLA, our approach uses information about the change in the share of BT exchanges within each exchange categorisation (BT Only; BT+1; BT+2), comparing between the March 2021 Statement and this Statement, to inform the re-allocation of volumes.

⁴⁴⁹ We have not adjusted the outturn 2024/25 volumes for changes in geographic market classifications. This is because our wider cost modelling approach requires base cost year service volumes, i.e. 2024/25 service volumes, to align with the outturn RFS service volumes data used in our base year cost model.

⁴⁵⁰ Openreach response dated 13 February 2026 to s135 notice dated 3 February 2026, question 11.

- A10.177 We have therefore removed EAD Rugged circuits from the definition of the Ethernet charge control baskets in the relevant SMP conditions which we have set (see Volume 7 of this Statement). For consistency, we have excluded these circuits from our charge control modelling.
- A10.178 Because EAD Rugged price list products are captured within RFS service codes that also include regulated LLA products, we have followed the same exclusion approach as used for LLA circuits used for FTTP aggregation (as explained above).
- A10.179 To achieve the above approach, we have used 2024/25 outturn product volumes data supplied by Openreach.⁴⁵¹ For simplicity and transparency, we have forecast these product volumes by using the same forecast volume growth rates as the corresponding service codes.

Efficiency

- A10.180 As part of our cost forecasting, we take a view on the cost savings (efficiency) we expect BT to achieve over the review period.

Our proposals

- A10.181 In the March 2025 Consultation we proposed that the following modelled efficiency rates be used:

For WLA services:

- 1% to 4% per annum for our operating cost efficiency target; and
- 1% to 5% per annum for the capital cost efficiency target.

For business connectivity services:

- 4% to 7% per annum for our operating cost efficiency target; and
- 3% to 6% per annum for the capital cost efficiency target.

Stakeholder responses

- A10.182 Openreach stated in its response to the March 2025 Consultation that it disagreed with our proposed operating cost efficiency rates in an environment of declining line volumes.⁴⁵² In particular, it noted that as “costs tend to be stickier when volumes decline”, the AVEs and CVEs used to model how costs would be expected to move when volumes decrease should be lower than those used when volumes are increasing. It argued that, since the AVEs and CVEs used by Ofcom were similar to those used in the context of increasing volumes (within the WFTMR21), our estimated efficiencies were too high in the context of declining volumes and would result in Openreach needing to make efficiency gains solely to reduce costs in line with the CVEs used by Ofcom.
- A10.183 VodafoneThree suggested that Ofcom’s 6% central estimate of operating cost efficiency was low relative to the evidence published in the March 2025 Consultation. It pointed to BT’s publicly stated aims of reducing its staff numbers, stating that its target workforce reduction from 116,000 in 2025 to between 75,000 and 90,000 in 2030 translates into a CAGR of around 8%.⁴⁵³

⁴⁵¹ Openreach response dated 4 September 2025 to s135 notice dated 29 May 2025, question E1. Openreach response dated 13 February 2026 to s135 notice dated 3 February 2026, question 12.

⁴⁵² [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 92-94, 97, 113 and 115.

⁴⁵³ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Paragraphs 242-247.

A10.184 It also suggested that efficiency forecasts do not reflect the “clear economies of scope between delivering WLA and LLA products over a common FTTP network”. Elaborating, it described the LLA asset base as having “been inflated by the attribution of lots of ‘new’ (i.e. lightly depreciated) fibre cable to serve WLA subscribers while most LLA customers are still served by heavily depreciated cables”.⁴⁵⁴

Our reasoning and decisions

A10.185 When updating our operating cost efficiency targets for this statement we have:

- analysed changes in component costs via sets of ‘pairwise’ comparisons over the period 2021/22 to 2024/25 using BT regulatory accounting information;⁴⁵⁵
- analysed both historical and forecast Openreach management accounting information over the periods 2020/21 to 2024/25 and 2025/26 up to 2029/30; and
- considered the evidence put forward by stakeholders in their consultation responses, described above.

BT regulatory accounting pairwise comparisons

A10.186 The basic methodology that underpins our analysis has not changed from that used in the March 2021 Statement. We analysed sets of pairwise⁴⁵⁶ component cost movements from BT’s RFS by estimating the impact of inflation and changes in volumes on the annual movement in component costs and assuming efficiency accounts for any remaining movement. We have again used the formulae that underpin the cost forecast model, estimating the effects of volumes using CVEs⁴⁵⁷ and specific inflation assumptions for each year.

A10.187 Consistent with previous charge controls, our regulatory accounting pairwise comparison analysis provides an important source of evidence when assessing efficiency levels Openreach has achieved in the past and we attach a relatively high weight to it in forming our efficiency assumptions. This analysis has the benefit that it is consistent with the way we model costs and covers the same services. The cost savings achieved between 2020/21 and 2024/25 represented an estimated compound annual growth rate (CAGR) of 4.4% for copper services and 10.9% for leased line services.⁴⁵⁸

A10.188 Our analysis showed, for leased line related components, there were large cost decreases in 2022/23 and 2024/25. Based on evidence from BT, this is due to:

For 2022/23:

- cost decreases related to [X]; and

⁴⁵⁴ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Paragraph 248.

⁴⁵⁵ Consistent with how we have modelled costs, cumulo and Service Level Guarantee (SLG) costs have been removed from this analysis.

⁴⁵⁶ We look at both the published data and the restated data in each RFS e.g. within the 2023 RFS we have compared cost movement between 2022/23 published and 2021/22 Restated data. The reason for looking at the movements to restated numbers is that both sets of numbers will be prepared under the same methodologies. Were we to compare the 2022/23 published data (from the 2023 RFS) with 2021/22 published data (within the 2022 RFS), cost movements arising from methodology changes would be incorrectly picked up in our efficiency numbers.

⁴⁵⁷ CVEs have been calculated in the same way as discussed in Paragraphs A10.223 to A10.246.

⁴⁵⁸ Based on information from BT responses dated 29 May 2024 and 11 June 2024 to s135 notice dated 02 May 2024, questions B1, B2 and B3. BT response dated 17 September 2024 to s135 notice dated 19 August 2024, questions in Section B.

- [X].⁴⁵⁹

For 2024/25:

- [X].⁴⁶⁰

A10.189 These appear to be justified efficiency gains and so have been included in our CAGR calculation. However, we might not expect to see continued efficiency gains in future years at a similar level.

A10.190 We note that for other cost components investigated, cost movements between years could not be attributed to efficiency gains. These included, for example, changes to the way in which costs were allocated to components despite the absence of a corresponding change to the causal relationship between activities and costs.⁴⁶¹ In those cases, we made specific adjustments to our approach at the component level (for example, excluding components from our analysis) to ensure that our pairwise comparisons were undertaken on a like-for-like basis.^{462 463}

Openreach management accounting analysis

A10.191 We consider our analysis of Openreach's historical and forecast internal management accounting data should also provide relevant and reliable evidence for forming our efficiency assumptions for this review period.

A10.192 This analysis provides a view of both Openreach's recent past efficiency achievements and its forecast internal efficiency and cost transformation targets out to 2029/30.^{464 465}

A10.193 We have reviewed Openreach's unadjusted PVEO⁴⁶⁶ analysis and have also restated the results using our estimates of inflation.⁴⁶⁷

A10.194 Openreach's unadjusted analysis suggested efficiency of 5.1% p.a. has been achieved historically and forecasts efficiencies of 4.5% p.a. going forward.⁴⁶⁸ Restating inflation to be consistent with the assumptions in the cost forecast model and removing Openreach's assumptions for 'other'⁴⁶⁹ suggested an estimated efficiency of 8.1% p.a. has been achieved historically and results in a forecast of 3.6% p.a. going forward. We take account

⁴⁵⁹ BT response dated 17 September 2024 to s135 notice dated 19 August 2024, questions B12 and B13.

⁴⁶⁰ BT response dated 13 February 2026 to s135 notice dated 3 February 2026, question 4.

⁴⁶¹ In these cases, changes were made over time for a number of reasons, including to improve the accuracy of cost allocations and to comply with changes to accounting standards.

⁴⁶² For example, requesting information from BT to allow us to compare costs as if they had been allocated to components on a consistent basis between pairwise years.

⁴⁶³ For the avoidance of doubt, the results presented in this section reflect adjustments where we considered them to be appropriate.

⁴⁶⁴ Consistent with the March 2025 Consultation and the March 2021 Statement, we have not performed the analysis required to weight the management accounts to attempt to make them specific to our relevant services as has been done in other earlier charge controls.

⁴⁶⁵ Openreach response dated 30 June 2025 to s135 notice dated 29 May 2025, questions D1 and D2.

⁴⁶⁶ PVEO analysis breaks down movements in costs between two periods into cost changes caused by price (P), volume (V), efficiency (E) and other (O).

⁴⁶⁷ We have overwritten the inflation assumptions to ensure consistency with the inflation assumptions used within the forecast model.

⁴⁶⁸ Historical efficiency gains are measured over four years; forecasts are based on five years.

⁴⁶⁹ Historically we have found that 'other' does not relate to one-off items which we might want to exclude from our efficiency calculations. Were we to not remove 'other' from the PVEOs the analysis would suggest 7.4% historical and 3.1% forecast efficiency.

of this analysis in forming our efficiency assumptions but recognise that these efficiencies are levels achieved by Openreach as a whole and are not specific to our relevant services.

Review of stakeholder responses

A10.195 While Openreach is correct that the AVEs and CVEs used for our TAR26 modelling are similar to those used during the WFTMR21 analysis, we disagree that they are any less relevant for the purposes of modelling the relationships between volumes and network costs. We note that for the purposes of our efficiency modelling only CVEs, and not AVEs, are relevant.

A10.196 As explained in Paragraph A10.228, we estimated CVEs (and AVEs) using outputs derived from BT's own 2021 LRIC model. This is a granular model that allows costs to be modelled at a component-specific level and has been updated to capture changes since 2021, and so we consider it an informative and appropriate tool in the context of our historic efficiency analysis which considers the five-year period to 2024/25. We note that Openreach did not propose an updated modelling tool that it considered to be more accurate for the purposes of our analysis.

A10.197 Also in Paragraph A10.228 we acknowledge that in the short term, some costs can be lumpy in the way Openreach describes.⁴⁷⁰ However, we are concerned with long-run cost-volume relationships and the LRIC:FAC ratios used to inform our CVE assumptions are therefore appropriate in that context.

A10.198 Regarding our use of the LRIC model-informed CVEs to estimate the impact of declining volumes on costs, we note that – as with many similar models – the LRIC model takes a 'decremental' approach to calculating what we refer to as incremental costs. That is, it considers the impact of declining volumes by its very nature. As such, the CVEs based on that model are implicitly appropriate in the context of declining volumes.⁴⁷¹

A10.199 Furthermore, our efficiency modelling uses static (rather than dynamic) CVEs to estimate the extent to which cost changes can be ascribed to efficiency changes. As explained below, this implies that our CVEs result in conservative estimates of historic efficiency:

A10.200 As explained in Paragraph A10.186, our pairwise analysis seeks to estimate the extent to which cost changes over time are driven by efficiencies, as opposed to volume changes (which are impacted by CVE assumptions) or inflation.

A10.201 Static CVEs are likely to represent relatively high elasticities estimates where volumes are falling, because they do not adjust for the declining proportion of costs that are variable over time.

A10.202 Higher elasticity estimates means that our modelling attributes a higher proportion of cost changes to volume effects, implying that a lower proportion of cost changes is explained by efficiencies. This implies that our use of static, rather than dynamic, CVEs in our efficiency

⁴⁷⁰ For example, some small increases (or decreases) in volumes may trigger the need for additional (or fewer) units of equipment in the network whereas others may result in little or no need (or opportunity) to vary the level of equipment in a way that impacts costs.

⁴⁷¹ In Paragraphs A10.238 to A10.240 we comment on the relative suitability of using the AVEs and CVEs from BT's LRIC model to estimate how costs are expected to change in response to volume increases versus decreases. While we make an upwards adjustment to the elasticities from BT's LRIC model in the case of a limited number of components, we note that those adjustments relate to Access Fibre costs alone, and in any case are applied only to AVEs rather than CVEs (as noted, only CVEs are relevant for our efficiency modelling).

modelling results in more conservative estimates of efficiencies, contrary to Openreach's concerns.

A10.203 As described above, we already consider our approach to be appropriate due to the decremental nature of the LRIC model that underpins our CVEs. However, we suggest that our use of static CVEs in our efficiency modelling further supports the suitability of our estimated CVEs for modelling falling volumes.

A10.204 Given our conclusion in relation to CVEs, we do not consider there to be a need to make any downward adjustment to our overall efficiency targets, which rely on the pairwise analysis as supporting evidence, as they are already suitable for estimating the impact of declining volumes on costs. As such, we have not amended our approach to estimating efficiency in response to Openreach's comment.

A10.205 We consider that caution should be exercised when interpreting the figures quoted by VodafoneThree in highlighting the potential scope for Openreach efficiencies over the review period.

A10.206 While Openreach has already achieved significant headcount reductions between FY2023 and FY2025, its targets do not guarantee that staff numbers will continue to reduce at a similar rate.⁴⁷² As VodafoneThree itself acknowledges, there is no guarantee that headcount reductions at the BT Group level will be reflective of what Openreach, which is the subject of our efficiency analysis, is likely to see.⁴⁷³

A10.207 VodafoneThree's 8% CAGR figure appears to have been calculated based on numbers towards the lower end of the target headcount range. If BT were to achieve the higher end of the range (i.e. reducing headcount to 90,000), the corresponding CAGR would be below 5%.

A10.208 It is important not to assume percentage headcount reductions will translate into equivalently proportionate cost reductions; the extent to which will depend on several factors⁴⁷⁴ and BT has stated that cost savings associated with staff leavers will have offsetting costs that must be incurred.⁴⁷⁵

A10.209 Additionally, costs associated with historically achieved headcount reductions will already be reflected in the management accounts analysis we have undertaken, so we must be careful not to over-weight these savings in our assessment. Nevertheless, the data to date on BT's transformation and reorganisation efforts does support the view that BT is able to continue to improve its efficiency over time.

A10.210 Our understanding of VodafoneThree's economies of scope argument is that:

- a) WLA customers are, on average, served by fibre cables that were installed more recently than those which serve LLA customers, and have therefore depreciated to a lesser extent.
- b) The costs of the entire fibre network are spread across all customers that purchase fibre-based services.

⁴⁷² Targets announced to investors or published in annual reports are often 'stretch' targets that are ambitious and difficult to meet, for example.

⁴⁷³ See the note to the chart above Paragraph 249.

⁴⁷⁴ This will depend, for example, on the relative pay of leavers compared to the BT average and the extent to which the staff concerned work part-time contracts (the targets refer to the number of staff, not FTEs).

⁴⁷⁵ BT's annual report explicitly states that it expects the 'cost to achieve' its target £3bn cost savings (through its transformation programme) to be around £1bn. See [BT annual report 2025](#). Page 162.

- c) If LLA services are, on average, delivered over assets that are more heavily depreciated, the price of those services should not reflect the cost associated with new assets used to extend the network to deliver new services over the same technology.

A10.211 We do not consider the issue VodafoneThree highlighted regarding economies of scale to have a sound economic basis. Assets within telecoms networks are frequently subject to preventative and reactive maintenance, and replaced as necessary. Under the principle of cost causality, the costs of a shared network used to provide a range of services are shared across those services taking account of the relative usage of different network components and borne by customers accordingly. While the age of assets across the network will vary, it is the average age of assets and their corresponding book values or replacement costs that impact the cost base used to set cost-based prices. Since the majority of assets in the network support the delivery of many types of communications services, we do not consider that costs should be disproportionately recovered from one group of services rather than another based on the age of network assets.

Our decision

A10.212 We have taken account of the assessments above in determining our operating cost efficiency assumptions, by updating our 'pairwise' and management accounts-based efficiency analyses and taking account of stakeholder comments. While some evidence points to recent efficiency gains above the levels we have assumed for the review period, and the potential for strong efficiencies in the coming years across BT as a whole, we acknowledge that caution should be exercised in extrapolating past observations into the review period and taking targets or forecasts as a given, particularly when applied to a subset of regulated services offered by a provider. This is particularly the case given efficiency targets should not only be ambitious but also achievable.

A10.213 Capital cost efficiency has an immaterial impact on the outputs and no stakeholder responses were received in relation to these parameters. We have therefore adopted the same capital cost efficiency targets as those proposed in the March 2025 Consultation.

A10.214 The resulting assumptions are outlined below.

For WLA services:

- i) 4% per annum for our operating cost efficiency target; and
- ii) 3% per annum for the capital cost efficiency target.

For business connectivity services:

- i) 7% per annum for our operating cost efficiency target; and
- ii) 4.5% per annum for the capital cost efficiency target.

Asset Lives

Our proposals

A10.215 In informing the asset lives in our top-down cost modelling, and in any cost modelling exercise for charge control purposes more generally, we are interested in understanding the economic life of the modelled network assets. This represents the time period over which we would expect an efficient operator to use an asset in light of the asset's physical

life as well as the possible technological developments which could accelerate the asset's replacement.⁴⁷⁶

A10.216 Consistent with previous charge controls, we are largely of the view that depreciation as a proportion of the gross replacement cost (GRC) of the asset is a reasonable proxy for the economic life of the modelled assets. The exception to this in previous controls has been for GEA DSLAMs and Poles.⁴⁷⁷

A10.217 In the 2018 WLA⁴⁷⁸ we undertook analysis to assess the actual replacement time of GEA DSLAM cabinets and concluded that instead of using the proxy approach above (i.e. GRC divided by OCM depreciation), the appropriate asset life to use for this asset was within the range of 7.1 to 9.1 years. In our March 2025 Consultation we proposed to continue to adjust the asset life for GEA DSLAM cabinets from [X] years (which is the implied asset life from the proxy approach above) to instead be within the range of 7.1 to 9.1 years.

A10.218 In our March 2025 Consultation we also proposed to not use the implied asset life of [X] years for Poles, which would be based on 2022/23 GRC divided by 2022/23 OCM depreciation, and instead assumed a 40-year asset life, consistent with our approach in Annex 17 of the Consultation.

Stakeholder responses

A10.219 No stakeholders commented on our proposed approach to adjusting the asset lives of GEA DSLAM cabinets and Poles for our top-down cost modelling. We note that Volume 4, Section 4 of this Statement considers stakeholder responses relating to the 40-year asset life assumption for Poles assets in our PIA charge modelling.

Our reasoning and decisions

A10.220 We have decided to maintain the approach proposed in our March 2025 Consultation.

A10.221 For GEA DSLAM cabinets we have therefore adjusted the asset life from [X] years (which is the implied asset life from the proxy approach above) to instead be within the range of 7.1 to 9.1 years.

A10.222 For Poles we have therefore not used the implied asset life of [X] years, which would be based on 2024/25 GRC divided by 2024/25 OCM depreciation, and instead assume a 40-year asset life, consistent with our approach in Volume 4, Section 4 and Annex 14 of this Statement.

Asset volume elasticities (AVEs) and cost volume elasticities (CVEs)

Our proposals

A10.223 In Annex 14, Paragraphs A14.102 to A14.122 of our March 2025 Consultation, we set out our proposed approach to calculating AVEs and CVEs in our top-down modelling.

⁴⁷⁶ This reference to the efficient economic life of a network asset is distinct from the concept of 'asset stranding', which refers to assets losing their remaining value before their asset life has elapsed. Later in this section, we discuss potential asset stranding for copper assets in the context of BT's copper retirement programme (i.e. accelerated copper depreciation).

⁴⁷⁷ Ofcom March 2021 Statement Annex 14. Paragraph 109.

⁴⁷⁸ See Annex 14, paragraphs A14.143 to A14.148 of the 2018 WLA Statement. See also Annex 14, paragraphs A14.108 to A14.109 of the March 2021 Statement.

Stakeholder responses

A10.224 No stakeholders commented specifically on our proposed approach to calculating AVEs and CVEs.

A10.225 Openreach commented briefly on the relevance of AVEs and CVEs in its response to our March 2025 Consultation efficiency targets, which it said were high in the context of declining line volumes. We address Openreach's comments about efficiency targets in the Efficiency sub-section of this annex.

Our reasoning and decisions

Overall approach to calculating AVEs/CVEs

A10.226 We would expect changes in the volume of a service provided to impact the costs associated with providing that service. However, where fixed or common costs are incurred, costs may not change by the same proportion as volumes. Therefore, when we forecast costs, we need to appropriately reflect the underlying relationship between forecast changes in service volumes and changes in the number of assets and costs of providing those services.

A10.227 We employ usage factors to convert forecast changes in service volumes to changes in network component volumes. We then use AVEs and CVEs to determine the impact that the forecast changes in network component volumes (as calculated) have on forecast costs (before considering the impact of inflation or cost savings).

A10.228 Consistent with the approach taken in the March 2021 Statement, we have used LRIC to FAC ratios as a proxy for AVEs and CVEs based on BT's LRIC model outputs. In the short run marginal costs can be lumpy, but they are less so in the long run; many inputs that in the short run may have been fixed for certain output ranges are treated as fully variable and scalable in the long run. For the purposes of charge controls, we focus on the long-run marginal costs, which thus abstract from a degree of the lumpiness that may be observed in the short run.⁴⁷⁹

A10.229 The underlying principle of how we calculate CVEs and AVEs using BT's LRIC data remains the same as that in previous reviews. However, within the March 2021 Statement Ofcom removed the regulatory requirement for BT to maintain its LRIC model from 2021/22 inclusive. The result of this is that the last available LRIC data is from 2020/21. As our LRIC data source is from 2021, we need to capture i) newly introduced components and ii) any change in cost mixes that might have occurred in existing components.⁴⁸⁰

A10.230 As a starting point we have taken the LRIC to FAC ratios for key cost categories from BT's 2021 LRIC model.⁴⁸¹ Our next step is to map these key cost categories from BT's LRIC model through to the key cost categories BT now uses within its RFS. This mapping allows us to generate 2021 LRIC:FAC ratios for the cost categories within BT's current RFS. These

⁴⁷⁹ While this long-run approach may imply that, for certain points in time and levels of volume, the modelled marginal cost exceeds the likely short-run marginal costs relevant to the control period, at other times the converse will be true. Therefore, these impacts should, to some extent, offset each other over time.

⁴⁸⁰ Different cost types have a different LRIC:FAC ratio so where a cost mix within a component changes we would also expect the weighted average LRIC:FAC ratio for that component to change.

⁴⁸¹ BT defines a 'cost category' within its LRIC model as a "Grouping of costs into unique cost labels by identical cost driver for use in the LRIC model." See page 33 of BT, 2016, *Long Run Incremental Cost Model: Relationships & Parameters*.

RFS costs category ratios are calculated both at a market level and a component specific level.

A10.231 We then weight the LRIC:FAC ratios for the RFS cost categories to reflect the fact that each component will have a different amount of costs within each RFS cost category and these proportions may change in each year. For components that existed in 2021 we use the component specific RFS cost category LRIC:FAC ratios and for new components we use the relevant market specific RFS cost category LRIC:FAC ratios.^{482 483}

Cross checks and adjustments to the 2021 LRIC model

A10.232 We have checked that all the estimated CVEs and AVEs are between zero and one.⁴⁸⁴ In a small number of cases the estimated CVEs and AVEs are outside of this range. In these cases, we have adjusted any negative CVEs or AVEs to zero and we have adjusted any CVEs or AVEs which are above one down to one.

Adjustment for cumulo

A10.233 We have excluded cumulo costs when calculating non-pay CVEs as these are forecast separately to other non-pay costs in the cost forecast model.

Adjustment to non-pay CVE for Openreach Admin Fee component

A10.234 As in the March 2021 Statement, we set the non-pay CVE for the component Openreach Admin Fee (CO801) to one. This is because the Openreach Admin Fee costs are attributed to service revenues⁴⁸⁵ and we would therefore expect that, in the long run, changes to these costs (after removing inflation) are likely to be closely correlated to changes in revenues and hence to changes in service volumes.

Adjustment to AVE FTTC Fibre Rollout Funding component

A10.235 The component 'FTTC Fibre Rollout Funding' works in combination with the component 'FTTC Funded Fibre Rollout Spend' to capture the cost and subsidy of the non-commercial FTTC build.⁴⁸⁶

A10.236 Within the March 2021 Statement we decided to set the AVE for the component FTTC Fibre Rollout Funding to zero as we did not anticipate there to be any further subsidised FTTC build and hence no further funding associated with any changes in FTTC rentals

⁴⁸² There are some instances where a single component that existed in 2021 has since been separated into two components. In these instances, we determine the 2021/22, 2022/23, 2023/24 and 2024/25 AVEs and CVEs for the two current components based on the RFS cost category LRIC:FAC ratios of the single original component.

⁴⁸³ There are some cases where a component existed in 2021 but some of its component specific RFS cost category LRIC:FAC ratios are zero, solely because both LRIC and FAC were zero in 2021. Applying these zero ratios when calculating component CVEs and AVEs can skew the overall component CVEs and AVEs downwards. Therefore, in these cases we have replaced these 'pure zero' LRIC:FAC ratios with the RFS cost category LRIC:FAC ratios for the market associated with the 2021 component.

⁴⁸⁴ We generally expect that the relationship between component volumes and costs is, as a maximum, equi-proportionate (i.e. a 10% increase in volume for a component leads to a maximum increase of 10% in cost for that component). We also expect that the relationship is, as a minimum, zero (i.e. an increase in volumes for a component should not lead to a decrease in total cost for that component).

⁴⁸⁵ See the description of the base LICENCEFEE in BT's 2017 AMD, page 47.

⁴⁸⁶ The 'FTTC Fibre Rollout Funding' component captures the funding received by BT for its subsidised non-commercial FTTC build, while the 'FTTC Funded Fibre Rollout Spend' component captures the costs incurred by BT for its spending of this funding (on subsidised non-commercial FTTC build) as well as costs incurred from the clawback (repayment) of some of this funding.

volumes. We have decided to make this same adjustment in this Statement for the same reason.

A10.237 By setting the AVE of the component that captures the subsidy to zero while keeping the AVE of the component that captures the spend and clawback of the subsidy as non-zero will result in an increase in the cost base for FTTC lines. This is consistent with what we would expect in the event that demand for FTTC continues to increase in these areas: activity that had been funded will eventually become more “commercial” and require repayment of previously received subsidies.

Adjustment to AVEs for Access Fibre cost category

A10.238 We make an adjustment to the AVEs for access fibre similar to, and for the same reasons as, the one we made in the March 2021 Statement and 2019 BCMR Statement.⁴⁸⁷ We have restated the explanation of the adjustment (which aligns with these past Statements) below.

A10.239 Access fibre costs are used by a number of Ethernet and FTTC components and are an important element of the respective baskets’ cost stacks. Using BT’s LRIC model outputs and our standard methodology, the estimated AVE for access fibre costs used by the following components is very low suggesting costs are very inelastic to volumes; see column 1 in Table A10.11 below.

A10.240 We consider that our standard approach of using BT’s LRIC model outputs is likely to understate the AVEs in these cases, as we consider that the decremental approach used in BT’s LRIC model approach is not suitable for estimating the access fibre elasticity. We consider costs are likely to respond differently to volume increases than to volume decreases: while volume increases would be likely to require an increase in the footprint of the network, volume decreases would be unlikely to result in assets being completely removed. Instead, we would expect less intensive use of existing assets.

A10.241 In this Statement we have decided to use the adjusted AVEs below (column 2 in Table A10.11) for access fibre. The estimates shown in column 2 capture the adjusted AVEs specifically for access fibre costs used by each of the components. Column 3 shows the overall AVE for each component, which is a weighted average across all cost category specific AVEs relevant to that component (including the adjusted access fibre cost category AVEs shown in column 2). We present a range for confidentiality reasons.

A10.242 Using our adjusted point estimates for the AVE of access fibre costs used by the affected components (from column 2) results in a revised estimate of the overall AVE for the affected components (in column 3) of:

Table A10.11: Adjusted component AVEs

	2020/21 BT LRIC model Component AVE output ⁴⁸⁸	Ofcom Calculated AVE Access Fibre	Ofcom Calculated Component AVE 2024/25
Legacy Ethernet – Spine fibre and Legacy Ethernet – Distribution fibre	([<]) 0-0.1	([<]) 0.6-0.8	([<]) 0.6-0.8

⁴⁸⁷ See Paragraphs A18.75 of the 2019 BCMR Statement.

⁴⁸⁸ Ofcom calculations on BT LRIC model.

	2020/21 BT LRIC model Component AVE output ⁴⁸⁸	Ofcom Calculated AVE Access Fibre	Ofcom Calculated Component AVE 2024/25
Legacy FTTC – DSLAM	([<]) 0-0.1	([<]) 0.2-0.4	([<]) 0.2-0.4
Legacy FTTC – Distribution fibre	([<]) 0-0.1	([<]) 0.4-0.6	([<]) 0.4-0.6
Legacy FTTC – OLT	([<]) 0-0.1	([<]) 0.4-0.6	([<]) 0.8-1.0
Legacy FTTC – Spine fibre	([<]) 0.4-0.6	([<]) 0.4-0.6	([<]) 0.4-0.6

A10.243 We have used these values across all our cost modelling scenarios.

Adjustment to CVEs and AVEs for PIA components

A10.244 For all components relating to PIA services, we do not have suitable cost data available for each RFS cost category with which to weight LRIC:FAC ratios. For all output years (2020/21 to 2024/25) we have therefore set the CVEs and AVEs for each PIA component equal to the CVEs and AVEs calculated for the Physical Infrastructure super-component based on 2020/21 data from BT's LRIC model. This approach ensures that all PIA components have the same pay CVEs, non-pay CVEs and AVEs.

Dynamic AVEs/CVEs

A10.245 If the same set of component AVEs and CVEs are used to forecast the impact of changes in volumes on costs in each year of the charge control period (i.e. 'static' AVEs and CVEs), then this assumes that fixed and common costs are a constant proportion of total costs throughout the review period. Forecast changes in volumes would therefore result in forecast changes in the level of fixed and common costs. This may be a reasonable simplifying assumption if volume growth is likely to be low over the charge control period.

A10.246 However, as volumes are forecast to change quite significantly, then this approach will assume significant change in costs that should be fixed. To ensure that this does not occur, we have implemented 'dynamic' AVEs and CVEs which allow our elasticity assumptions to vary year-on-year and maintain a fixed level of fixed and common costs across all years. This is the same approach taken in the WFTMR21. In the presence of rising volumes, our AVEs/CVEs will grow over time, representing the smaller proportion of total costs that fixed and common costs represent over time. The reverse is true when volumes are falling.

Input price inflation

A10.247 In our model, costs in each year are adjusted using our estimates of the impact of inflation, changes in volumes and cost savings (efficiency). In this subsection, we describe the inflation assumptions we have used for the different cost items. We consider pay operating cost inflation, non-pay operating cost inflation, and asset price inflation separately. This approach to forecasting inflation is consistent with that adopted in the March 2021 Statement.

Our proposals

A10.248 In our March 2025 Consultation, we proposed to:

- Adopt a pay operating cost inflation rate with a compound annual growth rate of 3.1% per annum across the forecast period (or equivalently, 2.3% per annum over the 2026-31 market review period).

- Adopt a non-pay operating cost inflation rate with a compound annual growth rate of 0.6% per annum across the forecast period (or equivalently, 0.0% per annum over the 2026-31 market review period).
- Align our asset price inflation assumptions with our proposed changes to the RFS CCA indexation methodology for duct, copper and pole assets, as set out in Volume 6 of our March 2025 Consultation. For these assets, we therefore proposed to use OBR forecast RPI inflation for all years up to and including 2025/26, and flat 2% inflation for all years from 2026/27 onwards.
- Adopt a 0% inflation forecast (i.e. no change in nominal asset prices) for all other assets, including fibre assets.

Stakeholder responses

A10.249 No stakeholders commented on our proposed approach to input price inflation.

Our reasoning and decisions

A10.250 We have decided to adopt a consistent methodology to that proposed in our March 2025 Consultation. We have updated our pay cost inflation and non-pay cost inflation assumptions to incorporate more recent outturn and forecast data into this methodology, as described below. For asset price inflation, we have amended our assumptions to align with our Statement decisions on future current cost accounting (CCA) indexation of these assets, as described below.

Pay operating cost inflation

A10.251 We consider a range of evidence when setting our pay cost inflation assumptions, including historical and forecast BT data and external pay cost indices. We have also made adjustments to reflect the National Insurance changes which were announced within the October 2024 UK Budget and which came into effect in April 2025. We have decided to adopt a pay cost inflation rate within our forecasts which has a compound annual growth rate of 2.8% per annum across the forecast period.

Non-pay operating cost inflation

A10.252 To estimate non-pay cost inflation assumptions that reflect the cost mix for the services in the top-down model, we weight separate inflation estimates for energy, accommodation and all other non-pay costs. We adopt a non-pay cost inflation rate within our forecasts which has a compound annual growth rate of -0.1% per annum across the forecast period.⁴⁸⁹

Asset price inflation

A10.253 For duct, copper and pole assets, we have decided to adopt asset price change assumptions that ensure duct, copper and pole assets are valued consistently with how they are revalued for CCA purposes in BT's RFS. Historically from 2012/13, RFS duct, copper and pole assets have been indexed using the Retail Price Index (RPI). From 2026/27 we have decided to change the CCA methodology to index duct, copper and pole assets using a flat 3% rate, instead of the flat 2% rate proposed in our March 2025 Consultation. The reasons for this decision are set out in Volume 6.

⁴⁸⁹ This non-pay growth rate includes a negative CAGR for electricity over the period which is the driver for the low non-pay cost inflation.

A10.254 Reflecting these changes, within our forecasts for the period up to and including 2025/26, we have used the OBR's latest RPI forecasts.⁴⁹⁰ For all forecast years from 2026/27 inclusive we have used 3% per annum.

A10.255 For all other assets including those for fibre assets⁴⁹¹, we have modelled these assets to stay constant in nominal terms.

WACC

A10.256 The cost forecast model requires an estimate of the appropriate forward-looking weighted average cost of capital (WACC) for active services. The WACC is also an important input to our estimates of both inter-exchange and access dark fibre prices.

Our proposals

A10.257 In our March 2025 Consultation, we proposed to use a pre-tax nominal WACC base case of 7.6% for Other UK Telecoms, which would cover LLA actives, IEC actives and FTTP (including G.Fast), and a pre-tax nominal WACC base case of 7.1% for Openreach, which would cover copper access lines, DFA, DFX, PIA and FTTC services.

A10.258 For the purposes of the low cost and high cost scenarios in the cost forecast model, we proposed to use a range of 6.6% to 8.6% for the Other UK Telecoms WACC and 6.1% to 8.1% for the Openreach WACC.

Stakeholder responses

A10.259 We explain our estimation of the WACC for these services, along with our responses to stakeholder comments, in Annexes 15 and 16.

Our reasoning and decisions

A10.260 We have decided to use a pre-tax nominal WACC of 7.9% for Other UK Telecoms, which will cover LLA actives, IEC actives and FTTP (including G.fast), and a pre-tax nominal WACC of 7.5% for Openreach, which will cover copper access lines, DFA, DFX, PIA and FTTC services.

Costs forecast separately

Cumulo

A10.261 Cumulo rates are the non-domestic rates BT pays on its rateable assets (primarily passive assets such as duct, fibre, copper and exchange buildings) in the UK. It is called a 'cumulo' assessment because all the rateable assets are valued together. They are usually calculated by multiplying a Rateable Value (RV) for the property by a 'rate in pound'.⁴⁹² RVs are specific to each property and are assessed by the relevant rating authority in each nation, for example, the Valuation Office Agency (VOA) in England and Wales. They are reassessed

⁴⁹⁰ OBR Economic and fiscal outlook – November 2025, [Detailed forecast tables: economy](#) (RPI forecast)

⁴⁹¹ Fibre assets have been forecast to stay constant in nominal terms to align with our decision in the BCMR 2019 Statement to use a HCA value for the CCA valuation.

⁴⁹² Rates in the pound are set centrally by each nation and are the same for all ratepayers in a nation. By rate in the pound (sometimes also called the rate poundage) we mean the standard non-domestic rating multiplier. For an introduction to how rates liabilities are calculated see <https://www.gov.uk/introduction-to-business-rates>. Northern Ireland is different in that the rate poundage in each of the 11 districts is made up of two separate rates: a regional rate poundage that is the same in each district and a district rate poundage that is different for each district. Accessed on 10 March 2026.

every few years, with the latest reassessment in England, Wales and Scotland and Northern Ireland in 2023. The next reviews for all nations are expected to take effect in 2026.⁴⁹³

Forecasts of BT's cumulo rates costs

Our proposals:

A10.262 We proposed to forecast BT's cumulo rates costs using the same approach adopted in the March 2021 Statement: taking BT's latest published RVs, applying assumptions about rates in the pound, and estimating the impact of the English, Welsh and Scottish transition scheme.⁴⁹⁴

A10.263 The 2023 revaluation in England, Wales, Scotland and Northern Ireland increased BT's cumulo RVs from £602m at 1 April 2017 to £671m from 1 April 2023.⁴⁹⁵ We proposed to assume these rateable values remain the same during the control period up to 2030/31. Based on information received from BT, we do not expect any material changes in circumstances (MCCs). Our assumption is that BT's cumulo RVs are not revised as a result of future reviews – for example in the future revaluations of 2026 and 2029.

A10.264 We proposed to use the rates in the pound published over the period 2017/18 to 2024/25 and forecast them forward as we did in the March 2021 Statement by indexing by CPI out to 2030/31.

A10.265 Consistent with WFTMR21 we estimated the effect of the English, Welsh and Scottish transition scheme. The transitional scheme limits increases on a ratepayer's bill, compared to their payments in the previous rating list. We assumed the transitional relief will not affect BT's payments in England and Scotland, but they will result in a small reduction in Wales.

Stakeholder responses:

A10.266 Openreach commented on our proposed approach for forecasting BT's cumulo rates costs, stating that a UK-wide business rates revaluation was currently in progress and that the updated rateable values were published with the compiled rating list in late autumn 2025. They said that we should commit to update our cost forecast prior to final statement to reflect on the Valuation Office (VOA) proposals.

Our reasoning and decisions:

A10.267 We have considered the compiled rating lists published by the UK nations and we have also evaluated the potential impact that the updated RVs may have on cumulo rates costs.

A10.268 The RVs published in late autumn of 2025 are in draft form. Therefore, there is uncertainty whether these RVs will take effect from April 2026.

A10.269 For example, in England and Wales, during the period between the publication of the draft rating list and the implementation of the final rating list, adjustments will be made through

⁴⁹³ See for example England: [Greater transparency in valuation information – Valuation Office Agency](#); Wales: [Non-domestic rates stakeholder update: October 2024 | Business Wales](#); Scotland: [Revaluation of rateable value - mygov.scot](#).

⁴⁹⁴ See for example: England The Non-Domestic Rating (Chargeable Amounts) Regulation: [The Non-Domestic Rating \(Chargeable Amounts\) \(England\) Regulations 2016](#); Wales Non-Domestic Rates – Transitional Rates Relief for the 2023 Revaluation: [Non-Domestic Rates – Transitional Rates Relief for the 2023 Revaluation | Business Wales](#); Scotland Transitional Reliefs: [Transitional Reliefs - mygov.scot](#). Accessed on 10 March 2026.

⁴⁹⁵ The values in England and Wales, for example, can be found on the Central list pages of the OVA website here: <https://www.gov.uk/government/collections/the-central-rating-list>. Accessed on 10 March 2026.

the process of 'dual list maintenance', primarily reflecting adjustments to the 2023 rating list.⁴⁹⁶

A10.270 In Scotland, the Scottish Assessors Association (SAA) will continue to review proposed values in response to new information received and to property changes submitted between 30 November 2025 and 15 March 2026.

A10.271 The final RVs are also subject to challenge.

A10.272 We have assessed the potential impact of adopting the draft 2026 RVs on our cumulo cost forecast. Our analysis suggests that applying the draft 2026 RVs will increase our forecasts of BT's cumulo rates costs over the charge control period through 2030/31, however, we expect it will have minimal impact on the FTTP and FTTC cost per line.

A10.273 Given these uncertainties and the limited potential cost impact we have decided to retain BT's cumulo RVs based on the 2023 revaluation, maintaining our assumption that these values will remain unchanged during the control period up to 2030/31.

A10.274 Overall, we forecast BT's cumulo costs increased from around c£310m⁴⁹⁷ in 2021/22, to c£360m⁴⁹⁸ in 2024/25 and will increase further to c£367m in 2025/26 and then to c£402m in 2030/31.

Attributions of BT's cumulo costs

Our proposals:

A10.275 We proposed to update our approach for attributing BT's cumulo costs to align with updated information received from BT regarding their modified attribution model.⁴⁹⁹ This approach is similar to the one adopted in the March 2021 Statement. Rather than allocating cumulo costs to network components costs and then onto services, we attribute them directly to services.

A10.276 We proposed to attribute cumulo costs across services using the Profit Weighted Net Replacement Methodology (PWNRM).⁵⁰⁰ This requires forecasts of NRCs for all BT's services that attract attributions of BT's cumulo costs. For services within the cost forecast model, we used the forecast growth in service NRCs generated from the cost forecast model. For services outside the cost forecast model, we derived growth rates from a simple analysis of trends in NRCs for the relevant markets based on information from BT's RFS.⁵⁰¹

⁴⁹⁶ See for example: [England Non-domestic rating: Revaluation 2026 draft list](#).

⁴⁹⁷ Page 21 BT 2023 RFS <https://www.bt.com/bt-plc/assets/documents/about-bt/policy-and-regulation/our-governance-and-strategy/regulatory-financial-statements/2023/regulatory-financial-statements-2023.pdf>.

⁴⁹⁸ Page 24 BT 2025 RFS <https://www.bt.com/bt-plc/assets/documents/about-bt/policy-and-regulation/our-governance-and-strategy/regulatory-financial-statements/2025/regulatory-financial-statements-2025.pdf>

⁴⁹⁹ BT response dated 13 February 2026 to s135 notice dated 3 February 2026, question 11.

⁵⁰⁰ This methodology attributes BT's cumulo costs across the rateable assets in proportion to the share of the net replacement costs (NRC) of the asset multiplied by the return for that asset (the profit weight). The return is the ratio of profit to capital employed, which is measured in BT's regulatory accounts. Multiplying the return by the NRC produces an estimate of the relative "profit" likely to be generated by that rateable asset. This approach is consistent with that adopted by the rating authorities when valuing BT's assets.

⁵⁰¹ Some cumulo costs are attributed to services outside the cost forecast model, which are in non-SMP (non-regulated) markets. To generate an appropriate growth rate for NRCs for these non-SMP services we have analysed the average annual change in the total non-current assets attributed to their associated non-SMP markets over the period 2020/21 to 2024/25 in additional data requested from BT based on the Attribution of Wholesale Current Cost Mean Capital Employed schedules published annually in BT's RFS. We have calculated the overall average annual growth rate for the associated markets, and we have used that as the annual

Stakeholder responses:

A10.277 No stakeholders commented on our proposed approach to the attribution of BT's cumulo costs.

Our reasoning and decisions:

A10.278 We have decided to attribute cumulo costs in line with our proposals set out in the March 2025 Consultation and described above. The results are as follows.

Table A10.12: Attributions of BT's cumulo costs:

	2026/27	2027/28	2028/29	2029/30	2030/31
MPF	[<]£50m to £100m	[<] £50m to £100m	[<] £0m to £50m	[<] £0m to £50m	[<] £0m to £50m
FTTC	[<] £50m to £100m	[<] £50m to £100m	[<] £50m to £100m	[<] £50m to £100m	[<] £50m to £100m
FTTP	[<]	{<}	[<]	[<]	[<]
Other	[<] £50m to £100m	[<] £50m to £100m	[<] £50m to £100m	[<] £50m to £100m	[<] £50m to £100m
Total	£374m	£381m	£388m	£395m	£402m

Ethernet provision Service Level Guarantee (SLG) costs

Our proposals

A10.279 Ethernet provision SLG costs are directly correlated to Ethernet connection volumes and prices. We would expect more connections overall to lead to more connections that incur a SLG payment and, because SLG payments are a function of monthly rental prices⁵⁰², we would also expect higher SLG payments if monthly rental prices increase. Because these operating costs are not driven directly by efficiency and cost inflation, we proposed in our March 2025 Consultation to forecast them at a service level rather than component level.

Stakeholder responses

A10.280 No stakeholders commented on our proposed approach to forecasting Ethernet provision SLG costs.

Our reasoning and decisions

A10.281 Consistent with the decision made in the March 2021 Statement, and with our March 2025 Consultation proposals, we have removed Ethernet provision SLG costs from the base data and then added our forecasts of Ethernet SLG costs back into our total operating cost for each year in the model at a service level. This results in each service being forecast individually with its own forecast volume and forecast price changes driving the cost.

growth in NRCs over the charge control period for all of the non-SMP services that are outside the cost forecast model.

⁵⁰² We note that this introduces an endogenous element to our calculations, as forecast rental prices are an output of the model. We ran the model to get an initial output (assuming no rental price change for the SLG forecast) and then used this output to inform the input assumption of rental prices for SLG forecasts in final runs of the model.

A10.282 Our treatment of Ethernet provision SLG costs is similar to our treatment of BT's cumulo costs, except that Ethernet provision SLG costs also form part of the costs for dark fibre services.

Sale of scrap copper

Our proposals

A10.283 To ensure that BT does not double recover costs that have previously been recovered through rental and connection charges, consistent with the March 2021 Statement, in our March 2025 Consultation we proposed to make an adjustment to the copper line services to reflect the other operating income BT will receive when they sell any scrap copper.

Stakeholder responses

A10.284 No stakeholders commented on our proposed approach to forecasting operating income from sales of scrap copper.

Our reasoning and decisions

A10.285 Within the 2018 WLA Statement⁵⁰³ we explained that historically, BT has received proceeds from the sales of copper recovered from its core network where that copper was no longer required or had been replaced. We concluded that it was copper in the E-side⁵⁰⁴ network where value could be achieved from copper extraction as costs of extracting copper from the D-side⁵⁰⁵ network would outweigh any possible other operating income.

A10.286 We remain of the view that it is the E-side where value extraction can occur as customers migrate away from copper services. We have obtained the latest forecast⁵⁰⁶ from Openreach of the expected net benefit from the sale of scrap copper⁵⁰⁷ out until 2029/30 and forecast this forward for the remainder of the control period. The amount of operating income in nominal terms for the five year review period which has been added to our cost forecasts (as a negative cost) is [£<]. We have allocated this other operating income to copper line services based on volumes.

Accelerated copper depreciation

A10.287 BT's full copper retirement means that there is a possibility not all capital expenditure spent on copper assets, which have an asset life of 20 years on average,⁵⁰⁸ will be able to be recovered through depreciating assets over their useful lives (this is commonly referred to as 'asset stranding').

Our proposals

A10.288 We proposed that it would be appropriate and in line with our objectives to give Openreach the opportunity to recover any efficiently incurred costs which may become stranded.

⁵⁰³ 2018 WLA Statement, Annex 22.

⁵⁰⁴ Exchange side - network linking the local exchange to the primary cross connection point.

⁵⁰⁵ Distribution side - network linking the primary cross connection point to the distribution point.

⁵⁰⁶ The Openreach forecast reflects estimates for copper available for extraction, extraction costs and copper prices.

⁵⁰⁷ Openreach response dated 19 June 2025 to s135 notice dated 29 May 2025, question H1.

⁵⁰⁸ Copper assets are assumed to have asset lives of 12 years and 27 years for dropwire and non-dropwire assets respectively.

A10.289 To allow BT to fully recover its forward-looking capital expenditure on copper assets, we proposed to accelerate the depreciation and return on capital profiles for all copper assets capitalised from 2026/27 through to the end of the charge control in 2030/31.⁵⁰⁹

Stakeholder responses

A10.290 No stakeholders commented on our proposed approach to accelerated copper depreciation.

Our reasoning and decisions

A10.291 Consistent with our March 2025 Consultation proposal, we model the recovery of any additional depreciation that is required to bring the assets' net book value to zero after 2030/31 in this review period.⁵¹⁰ We refer to the recovery of these additional required costs⁵¹¹ as 'accelerated depreciation'.

A10.292 In our implementation of the accelerated depreciation modelling, we have taken into account the following:

- Within this review period we have adjusted the costs to ensure that any accelerated depreciation for copper assets capitalised pre-2026/27 that had costs fully accelerated in the March 2021 Statement have been removed from our cost stack.
- We have ensured that the net present value of these costs is equal to the net present value of the remaining costs yet to be recovered were the assets to be recovered over their normal book lives, such that full recovery of the accelerated depreciation is brought into the review period.
- In our March 2025 Consultation, we acknowledged that the presence of a glide path would negatively impact our cost recovery objective if costs were spread evenly across the review period. Our modelling for this Statement revealed that such an approach would result in the over-recovery of costs in present value terms, given the forecast trajectory of costs and volumes over the review period. To correct for this, we have allocated these costs across the review period in such a way that the glide path does not result in the over-recovery of costs.
- We have assumed that the accelerated depreciation is spread across all copper line services based on volumes.
- To avoid over-recovery, to the extent we set charge controls in the future, we would not allow any further recovery of this capital expenditure post 2030/31.

A10.293 Table A10.13 below shows the accelerated fully allocated costs (FAC) for the relevant stranded assets that have been brought into the review period, offset by the removal of previously accelerated FAC from the March 2021 Statement for the review period, taking account of the glide path described above.⁵¹²

⁵⁰⁹ Forecast copper capital expenditure has been calculated using actual copper capital expenditure for 2024/25 (Openreach response dated 30 June 2025 to s135 notice dated 29 May 2025, question F1), forecast forward using our assumed copper efficiency, inflation and the AVEs calculated from BTs 2020/21 LRIC model for components 'D-side copper capital', 'E-side copper capital', Dropwire capital & analogue NTE' and 'NGA E-side copper capital' applied to our forecast copper volumes.

⁵¹⁰ We do not expect these assets to become stranded in 2031. However, we have decided to allow Openreach to recover all costs relating to these assets in this review period.

⁵¹¹ Both depreciation and return on capital.

⁵¹² FAC costs are presented in nominal terms and include both return on capital and depreciation.

Table A10.13: Modelled accelerated FAC brought into the review period

£m	2026/27	2027/28	2028/29	2029/30	2030/31	NPV (base year FY25)
Net Accelerated Costs	45	39	34	24	13	121

RAV adjustment

Our proposals

A10.294 BT's RAV adjustment was introduced to avoid BT over-recovering the value of assets when the valuation change from HCA to CCA occurred for Duct and Copper assets in 1997. In our March 2025 Consultation, we proposed to forecast the costs associated with the RAV adjustment at a service level, rather than at a component level. This proposal was consistent with our approach in the March 2021 Statement.

Stakeholder responses

A10.295 No stakeholders commented on our proposed approach to forecasting the RAV adjustment.

Our reasoning and decisions

A10.296 The impact of the RAV adjustment is to reduce the value of BT's duct assets. As copper assets have an accounting life of 20 years, all pre 1997 assets would have a zero net book value in our current review period. However, as Duct assets have an accounting life of 40 years there will still be pre 1997 assets with values, and the associated RAV adjustment (credits) required to reduce these assets values, in BT's accounts.

A10.297 We would expect that the size of the (negative) RAV adjustment should reduce between the base year and 2030/31 as the assets to which the RAV adjustment relate would only have 6 years or less left of their asset lives compared to 12 years or less in our base year cost stack for 2024/25. Forecasting at a component level the same as all other components would result in the RAV adjustment increasing which is why we have forecast these costs separately at a service level.

A10.298 Consistent with our proposal in the March 2025 Consultation, we have calculated the RAV adjustment by:

- First, forecasting forward the total RAV adjustment for our relevant services at a total level for the charge control period.
- Next, we forecast the RAV adjustment forward for each individual service using the change in the individual service volumes.
- Finally, we scale the individual service level RAV forecasts from (ii) to ensure that the total RAV adjustment for our relevant services is the same as that calculated in (i).

A10.299 This method ensures that the change in service mix is captured. While also ensuring that, at a total level, the RAV adjustment is declining as would be expected.

Revenue forecasting

A10.300 In the cost forecast model, we also forecast revenue in each year until the end of the review period. These forecasts are based on two inputs: the charges for each service that we expect to be in place during the period and the projected volumes of each service.

A10.301 We forecast revenues to the final year of the review period (2030/31) by applying our volume forecasts for each year to the forecast prices at the beginning of the period (i.e. by assuming prices would remain constant over the period in real terms, accounting for CPI inflation). We then compare the projected revenues and costs in the final year of the period to work out the value of X that is needed for revenues to glide into alignment with costs by that year, under a cost-based CPI-X charge control.⁵¹³

A10.302 We have explained our method for producing volume forecasts above. Our approach to forecasting service level prices is described below.

Prices

Our proposals

A10.303 The price forecasting model forecasts prices from their estimated year-average levels in either 2024/25 or 2025/26 (as explained below, depending on the service) through to the start of 2026/27.

A10.304 Openreach currently offers unconditional price discounts for some of the WLA services in the cost forecast model (specifically, there are discounts for some bandwidths of FTTC rentals, G.fast rentals, SOGEA rentals and SOG.fast rentals).⁵¹⁴ These discounted prices are indexed with CPI inflation and are due to expire on 31 March 2026, although Openreach has announced new unconditional price discounts for 55/10 and 160/30 bandwidths of FTTC rentals and SOGEA rentals which will be effective from 1 April 2026 to 31 March 2027.⁵¹⁵

A10.305 In our March 2025 Consultation, we recognised that we need to calculate two different price forecasts for our modelling. The first we refer to as the ‘headline price’ and the second the ‘discounted price’.

- The headline price is needed to calculate the ‘X’ for which the list prices on the Openreach price list need to change under a cost-based charge control.
- The discounted price is the price we should look at when considering Openreach’s potential over- or under- recovery as this is the average price Openreach is expected to actually charge.

A10.306 We set out our proposed approach to forecasting headline prices and discounted prices in Annex 14, Paragraphs A10.160 to A10.171 of our March 2025 Consultation.

Stakeholder responses

A10.307 No stakeholders commented on our proposed approach to modelling prices.

⁵¹³ In cases where a starting charge adjustment (SCA) is applied, additional steps are required. We first forecast revenues assuming that an SCA applies on 1 April 2026 and that following the SCA prices remain constant in real terms thereafter throughout the period (2026-31). We then compare the projected revenues and costs in the final year of the period (2030/31) to work out the value of X that is needed for revenues to glide (from their post-SCA position) into alignment with costs by that year, under a cost-based CPI-X charge control.

⁵¹⁴ Openreach response dated 29 July 2025 to s135 notice dated 29 May 2025, question G1.

⁵¹⁵ Information about the discounted prices available for the period 1 April 2025 to 31 March 2026 can be found here. Information about the discounted prices available for the period 1 April 2026 to 31 March 2027 can be found here.

Our reasoning and decisions

Headline prices

- A10.308 For most services in the cost forecast model, Openreach provided the list price as of 1 April 2025.⁵¹⁶ For services (i.e. RFS service codes) encompassing multiple products on the price list, Openreach provided a volumes-weighted average list price (using 2024/25 outturn volumes for the weighting). We have assumed that the list prices on 1 April 2025 are representative of the average list prices that will be charged in 2025/26.⁵¹⁷
- A10.309 For some services, Openreach was not able to provide a 1 April 2025 volumes-weighted list price and instead provided average 2024/25 prices based on the 2024/25 RFS.⁵¹⁸
- A10.310 For all services, we have derived the headline 2026/27 start prices by forecasting that prices will increase by CPI⁵¹⁹ in 2026/27. For those services whose base prices are from 2024/25, we have forecast that prices will increase by CPI⁵²⁰ in 2025/26. This approach is consistent with the CPI-0% charge controls imposed across many services in the WFTMR21.
- A10.311 In Volume 4, Section 1 and Volume 4, Section 6 of this Statement, we explain the charge controls that we will apply to GEA FTTC 80/20 rental services and SOGEA 80/20 rental services for the first time. We explain how we have decided to use the prevailing discounted market prices (as of 1 April 2026⁵²¹) as the starting headline prices in the charge control.
- A10.312 We have therefore adjusted the forecast headline 2026/27 start prices of the relevant RFS service codes (which include FTTC 80/20 and SOGEA 80/20 services) downwards, to reflect our decision to use the prevailing market discounted prices as the starting prices in the charge control. This approach ensures that forecast revenue is not overstated for FTTC and SOGEA services in the cost forecast model.

Discounted prices

- A10.313 Our approach to forecasting the discounted prices for a given RFS service code depends on whether there are any Openreach pricing special offers currently applicable to that service code.
- A10.314 For those RFS service codes which do not have any associated Openreach pricing special offers, we set the forecast discounted prices equal to the forecast headline prices for all years, thereby ensuring consistency between the headline prices and discounted prices.
- A10.315 For those RFS service codes which do have associated Openreach pricing special offers (which were also in effect during 2024/25⁵²²), we apply the following approach:

⁵¹⁶ Openreach response dated 4 September 2025 to s135 notice dated 29 May 2025, question E1.

⁵¹⁷ We note that Openreach adjusted many of its list prices for inflation on 1 April 2025, and has since made relatively few changes to its 2025/26 list prices.

⁵¹⁸ Openreach response dated 4 September 2025 to s135 notice dated 29 May 2025, question E1.

⁵¹⁹ ONS October 2025 CPI (3.6%) (source: ONS, CPI ANNUAL RATE 00: ALL ITEMS 2015=100).

⁵²⁰ ONS October 2024 CPI (2.3%) (source: ONS, CPI ANNUAL RATE 00: ALL ITEMS 2015=100).

⁵²¹ As explained in Volume 4, Section 1 of this Statement, we have decided to calculate the prevailing discounted market price for 2026/27 by taking the FTTC 80/20 discounted price (or for SOGEA services, the SOGEA 80/20 discounted price) in 2025/26 and uplifting it by CPI (using 2025's October 12 month CPI rate).

⁵²² We have only taken account of current pricing special offers which were also in effect during 2024/25, because only these offers are reflected in the 2024/25 average RFS prices data. It is not possible to incorporate pricing special offers launched more recently (such as those launched in late 2025 or early 2026) because there is little outturn information available at this time.

- As a starting point for our discounted price forecasts, we have used the 2024/25 average RFS⁵²³ prices for each relevant RFS service code.
- Consistent with our approach to forecasting headline prices, we have forecast that discounted prices will increase by CPI⁵²⁴ in 2025/26 and 2026/27.

Outturn profitability evidence

A10.316 The outturn profitability of Openreach services is of contextual relevance for our revenue and cost modelling for active legacy services.

A10.317 We have reviewed the level of profitability of LLA and IEC services in 2021-25, as measured via the Return on Capital Employed (ROCE)⁵²⁵, using BT's published Regulatory Financial Statements (RFS)⁵²⁶ and Regulatory Financial Commentary (RFC).⁵²⁷

LLA market profitability

A10.318 Table A10.14 below shows BT's unadjusted ROCE for the total LLA market in the HNR Area, Area 2 and Area 3. It also shows BT's adjusted ROCE for the total LLA market across the HNR Area, Area 2 and Area 3 combined.

A10.319 Adjusted ROCEs are reported in BT's RFC, and they adjust ROCE to account for fluctuations in RPI inflation, specifically through a re-calculation of in-year holding gains on copper and duct assets assuming that RPI inflation had been 2.4% in each year. As we discuss further in Volume 6, a limitation of unadjusted ROCEs is that they can be significantly impacted by annual movements in RPI inflation, which can obscure the underlying profitability trends in markets such as LLA. However, in those cases where adjusted ROCE data is unavailable,⁵²⁸ we consider that unadjusted ROCE still provides some useful information about relative levels of profitability across geographic markets in a given year.

A10.320 For clarity, the ROCE data shown for each LLA geographic market uses the geographic market boundaries defined in Schedule 3 to the Notification in Volume 7 of the March 2021 Statement.

Table A10.14: Unadjusted ROCE and adjusted ROCE for the LLA market, 2023-25

	Unadjusted ROCE		Adjusted ROCE	
	2023/24 (restated)	2024/25	2023/24 (restated)	2024/25

⁵²³ BT's 2025 RFS.

⁵²⁴ As done for the headline price forecasts, we have applied the ONS recorded rates for CPI in October 2024 (2.3%) and October 2025 (3.6%).

⁵²⁵ Return on Capital Employed (ROCE) means the ratio of accounting profit to capital employed.

⁵²⁶ By published RFS, we mean the published annual statements which BT is required to produce under the obligations contained in its SMP conditions.

⁵²⁷ By published RFC, we mean the commentary on the RFS that BT has published annually since 2018. The content of this document and its publication do not form part of BT's regulatory reporting obligations arising from its SMP conditions.

⁵²⁸ Adjusted ROCE data is only published within BT's RFC for the combination of LLA geographic markets in which BT was found to have SMP by the WFTMR21 (i.e. the HNR Area, Area 2 and Area 3).

	Unadjusted ROCE		Adjusted ROCE	
LLA market (HNR Area, Area 2 and Area 3 combined)	15.4%	19.9%	14.7%	19.6%
LLA market (HNR Area)	12.9%	15.1%	N/A	N/A
LLA market (Area 2)	13.0%	17.4%	N/A	N/A
LLA market (Area 3)	20.8%	25.8%	N/A	N/A

Source: BT 2025 RFS and BT 2025 RFC.

IEC market profitability

A10.321 Table A10.15 shows BT's unadjusted ROCE for the total IEC market at BT Only exchanges and BT+1 exchanges. It also shows BT's adjusted ROCE for the total IEC market across BT Only exchanges and BT+1 exchanges combined. We have reported both unadjusted ROCE and adjusted ROCE (where available) for similar reasons as those mentioned for LLA market profitability above.

A10.322 For clarity, the ROCE data shown for BT Only exchanges and BT+1 exchanges uses the BT exchange classifications defined in Schedule 4 to the Notification in Volume 7 of the March 2021 Statement.

Table A10.15: Unadjusted ROCE and adjusted ROCE for the IEC market, 2023-25

	Unadjusted ROCE		Adjusted ROCE	
	2023/24 (restated)	2024/25	2023/24 (restated)	2024/25
IEC market (all SMP exchanges)	85.5%	95.7%	84.1%	94.9%
IEC market (BT Only exchanges)	97.6%	109.0%	N/A	N/A
IEC market (BT+1 exchanges)	69.4%	78.3%	N/A	N/A

Source: BT 2025 RFS and BT 2025 RFC.

Impact of the CJF fibre cost reallocation on LLA market profitability and IEC market profitability

A10.323 As set out earlier in this annex, we have decided to incorporate BT's planned reallocation of CJF costs in our charge control modelling for the TAR Statement. We have decided not to incorporate BT's planned reallocation of spine fibre costs in this charge control modelling.

A10.324 BT's October 2025 CCN set out the estimated impact of BT's planned fibre cost reallocations on 2024/25 costs and returns in each of the Openreach SMP markets (relative to the 2025 RFS, which did not incorporate BT's planned fibre cost reallocations). Although we have decided not to incorporate BT's planned reallocation of spine fibre costs in our Statement charge control modelling, we explain earlier in this annex how evidence collected from BT shows that the cost impact of BT's planned fibre cost reallocations was

largely driven by the CJF cost reallocation, with the spine fibre cost reallocation having a relatively small impact on 2024/25 costs.

A10.325 We have therefore reported the unadjusted 2024/25 ROCE from BT's October 2025 CCN, for comparison against the unadjusted 2024/25 ROCE from BT's 2025 RFS (as reported above).

Table A10.16: Unadjusted ROCE for the LLA market, 2024/25

	Unadjusted ROCE
	2024/25
LLA market (HNR Area, Area 2 and Area 3 combined)	16.0%
LLA market (HNR Area)	13.7%
LLA market (Area 2)	14.6%
LLA market (Area 3)	19.1%

Source: BT October 2025 CCN.

Table A10.17: Unadjusted ROCE for the IEC market, 2024/25

	Unadjusted ROCE
	2024/25
IEC market (all SMP exchanges)	70.1%
IEC market (BT Only exchanges)	72.0%
IEC market (BT+1 exchanges)	67.2%

Source: BT October 2025 CCN.

A11. Fibre network cost modelling

- A11.1 We developed a bottom-up cost model for the WFTMR21 (the 2021 Fibre Cost Model) that allowed us to estimate the costs of deploying a fibre network in different geographic areas and at different scales and network configurations.
- A11.2 In this annex we summarise the approach we have taken in the Fibre Cost Model for the 2026 TAR (the 2026 Fibre Cost model) and set out how we have used it to inform our decisions relating to price regulation in WLA markets, set out in Volume 4, Section 1. The main purposes of the 2026 Fibre Cost Model are:
- to inform our assessment of our overall approach against our objectives in WLA Area 2, including the impact on competitive network investment. In Volume 4, Section 1 we consider whether a pricing continuity approach would undermine rival networks' investments made to date and provides incentives for future investment, including the significant investment that will be needed over the 2026-31 review period as competing networks connect customers and grow their customer base;
 - to provide one of the inputs to our assessment of whether Openreach's charges are fair and reasonable; specifically, with a view to considering the margin between Openreach's PIA and downstream FTTP prices; and
 - to help estimate the potential returns for Openreach in WLA Area 3 by adopting a forecast RAB approach⁵²⁹ following investment in a fibre network;
 - as an input to our assessment of whether a geographic discount within WLA Area 2 is unduly discriminatory because it may harm long term competition.
- A11.3 This annex is structured as follows:
- our general modelling approach;
 - the model structure; and
 - our 2026 Fibre Cost Model assumptions and outputs, including:
 - > our approach to updating the model; and
 - > WLA Area 2 REO cost range.

Our general modelling approach

- A11.4 The general approach and structure of the 2026 Fibre Cost Model is largely consistent with the 2021 Fibre Cost Model. Below, we summarise the general modelling approach.

Bottom-up approach to cost modelling

- A11.5 The model is based on a bottom-up modelling approach. A bottom-up model estimates how much network equipment is needed for a forecast level of volumes or traffic based on technical assumptions in relation to network capacity and dimensioning algorithms. It then

⁵²⁹ As set out in Volume 4, Section 1 we decided to adopt a forecast RAB approach in WLA Area 3, which continues the approach we adopted in WFTMR21. The RAB approach is a cost-based charge control that will support Openreach's incentive to invest while also protecting consumers and competition based on access to Openreach's network.

calculates total network costs using evidence of the capital and operating costs of each piece of equipment. In contrast, a top-down model uses total network cost data and allocates these costs to services based on service usage factors.⁵³⁰

- A11.6 We consider that a bottom-up approach provides better flexibility to assess the costs across different geographies and for different scales of deployment.

Services and network scope

Services in scope

- A11.7 The model dimensions a fibre network that offers FTTP services and has the functionality to dimension a network of varying scales and geographic areas.
- A11.8 The model also had the functionality to dimension a fibre network that could offer leased line services, dark fibre and DPA services. However, as stated in our March 2025 Consultation, we do not consider that this is needed and therefore we have switched-off this functionality in the 2026 Fibre Cost Model. This is because:
- it is unlikely that a competing network provider would offer DPA services so for our REO cost range estimate we assume that no DPA services are offered.
 - network elements specific for supplying leased lines (and dark fibre) are incremental to FTTP deployment and likely to be driven by take-up (as opposed to coverage). However, we have not included demand for leased lines in our estimated REO cost range.

Network scope

- A11.9 The model spans the following network segments:
- The access segment, which we model for all the services in scope. This is split into three segments: Segment 1 is from the Access Node to the Splitter Node; Segment 2 is from the Splitter Node to the Distribution Point; and Segment 3 is from the Distribution Point to the Customer Premises.
 - The segment from the Access Node to an Aggregation Node (i.e. inter-exchange fibre connections to deliver dedicated business services using leased lines or dark fibre). However, as noted above, we are not modelling leased lines so the inter-exchange fibre costs are not captured in our analysis.

Network coverage

- A11.10 The model offers the flexibility of estimating the costs of deploying a fibre network with national or subnational footprints (i.e. particular geographic areas only).
- A11.11 We have used postcode sectors as the geographic unit for our cost modelling. This aligns with our approach to assessing competition in geographic areas as set out in Annex 3.

Scorched node/scorched earth approach

- A11.12 Given we are interested in understanding the costs of deploying a fibre network at different scales and for different footprints, the model can support both a scorched node and a scorched earth approach.

⁵³⁰ A top-down model does not rely on detailed assumptions about how the network is constructed, instead it is based on estimated cost-volume elasticities which determine how network costs change as demand changes.

- Under the scorched node approach, the fibre network is deployed assuming the location of existing Access Nodes remain fixed. This has the advantage of being more grounded in reality; recognising that network operators are likely to place importance on the topology of their existing networks when deciding how to deploy a new fibre network.
- Under a scorched earth approach, the network is dimensioned so that the location of the Access Node minimises the costs of deployment. A scorched earth approach may be more appropriate when modelling the costs of deploying a fibre network for a new entrant which starts with a network of limited scale or has no network at all.

A11.13 We have used a scorched node approach for our WLA Area 3 RAB calculation and scorched earth for our REO cost range in WLA Area 2.

A11.14 We found that in the March 2025 Consultation model there was an error with the sequencing of the postcode sectors according to a scorched earth or scorched node approach as the ranking of the postcode sectors was hardcoded in the model. We have corrected this error to ensure that the ranking of the postcode sectors follows the chosen network deployment approach, leading to a small decrease in the rental cost per line.

Reuse of existing physical infrastructure

A11.15 Physical infrastructure, such as ducts and poles, is a key input in the building of a fibre network.

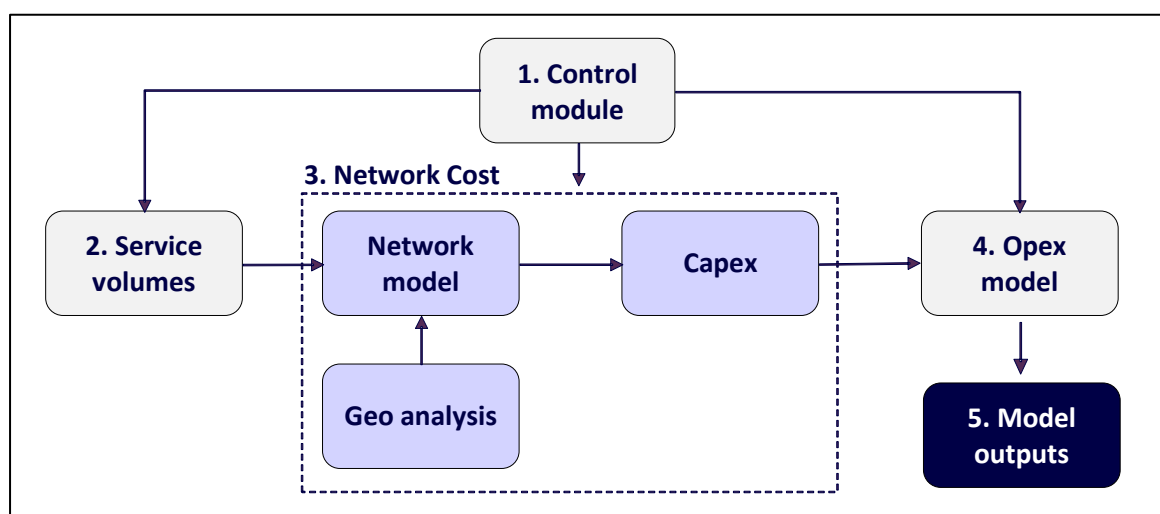
A11.16 An operator deploying a fibre network can either: (i) reuse Openreach's existing physical infrastructure; (ii) build new physical infrastructure; or (iii) a combination of both. Our model allows the functionality to estimate the costs of deploying a fibre network under any of these scenarios.

A11.17 We consider that in most cases an operator planning to build a fibre network would seek to reuse as much physical infrastructure as possible (given the higher costs of building new physical infrastructure). Therefore, our general approach is to model a fibre network which reuses existing Openreach physical infrastructure where it exists and spare capacity is available and only builds new physical infrastructure where this is not available or feasible.

Model structure

A11.18 The model comprises four modules. These are 'Control', 'Service Volumes', 'Opex' and 'Network Cost'. The 'Network Cost' module was originally developed by Cartesian for the 2021 Fibre Cost Model. The module structure for the 2026 Fibre Cost Model is shown in the figure below.

Figure A11.1 Module structure for the 2026 Fibre Cost Model



A11.19 Each module is responsible for the following:

- iii) Control – this consolidates the key assumptions that are used across all the other modules. It is used to calculate the final outputs under different scenarios and assess the sensitivity of our modelled assumptions.
- iv) Service Volumes – computes the speed of fibre deployment to end customers by geographic area (i.e. premises passed) and calculates the associated volumes of each relevant fibre service (e.g. number of rentals, connections, and ancillary services) in each modelled year.
- v) Network Cost – combines the service volumes with network capacity and coverage parameters to dimension the fibre network. It then calculates the capital expenditure required to build the dimensioned fibre network.
- vi) Opex – uses the outputs from the Network Cost module (along with the Service Volumes module) to calculate the ongoing costs of running the modelled network.
- vii) Model outputs – Combines the outputs from all modules to calculate model outputs for the WLA Area 2 REO cost range and the WLA Area 3 RAB calculation.

A11.20 We set out more information on the workings of these modules below.

Service volume forecasts

A11.21 Service volumes are a function of the network deployment and take-up of the modelled operator. In our approach to forecasting service volumes, we first make assumptions about the scale of FTTP network deployment, i.e. how many premises are reached in the long run, and the speed of network deployment (which we discuss further below). This allows us to determine the coverage of the network in each year. We then apply a take-up profile to the modelled deployment to determine the number of connections.

A11.22 We expect take-up to vary by geographic area because of differing levels of network competition. For example, we expect the long-run take-up for the reasonably efficient entrant to be between 30-40% in WLA Area 2, i.e. a roughly equal share for three competing networks, and 80% for Openreach in WLA Area 3, accounting for mobile-only households and altnet build in commercially viable premises.⁵³¹

⁵³¹ When modelling costs for Openreach in WLA Area 3, the Fibre Cost Model excludes the premises falling under the public subsidy areas and only assumes deployment to commercial WLA Area 3 premises. As stated in

- A11.23 We set out later in this annex our 2026 Fibre Cost Model deployment and take-up assumptions for our WLA Area 2 REO cost range.

Network costs and dimensioning

- A11.24 The Network Cost module dimensions the size of the fibre network based on the service volume forecasts and network deployment assumptions; and estimates the capital expenditure (capex) for the dimensioned network.
- A11.25 The Network Cost model was originally built by Cartesian for our 2021 Fibre Cost Model, and further details of this can be found in the Cartesian report that was published as part of the WFTMR21.⁵³²
- A11.26 The Network Cost model comprises four inter-related modules. These are the geospatial analysis, the infrastructure module, the network module and the capex module. These modules are summarised below.

Geospatial analysis

- A11.27 The geospatial analysis processes the location of all the premises in the UK, road topologies and relevant network assets to calculate a set of output parameters which are consumed by the network model to dimension the target network appropriately.
- A11.28 We have not updated the geospatial analysis for the 2026 Fibre Cost Model since we consider that the analysis used in our 2021 Fibre Cost Model is sufficiently robust and accurate for our purposes.

The infrastructure module

- A11.29 The infrastructure module takes the outputs from the geospatial analysis, the service demand and the premises coverage forecast (both provided by Ofcom), to dimension the underground physical infrastructure, i.e. new duct and existing duct, in Segments 1 and 2.
- A11.30 We have retained the rules for dimensioning physical infrastructure from the 2021 Fibre Cost Model. Our cross-check with Openreach's internal FTTP modelling tool indicates that these continue to be robust and accurate.

The network module

- A11.31 The network module takes the outputs from the geospatial analysis, the service demand, the premises coverage forecast and the infrastructure module to dimension the network.
- A11.32 We have reviewed the network dimensioning rules using an updated version of Openreach's internal FTTP modelling tool. Based on that review, we consider that the 2021 network module is consistent with this evidence. Therefore, the 2026 network module is unchanged from the 2021 version.

The capex module

- A11.33 The capex module calculates the capital expenditure required to build the dimensioned network.

Annex 12 – WLA Area 3 RAB modelling, excluding 0.8m premises of the total 4.4 million premises in WLA Area 3 that fall under the public subsidy areas and hence are not commercially viable, the Fibre Cost Model assumes deployment to 3.6 million commercially viable premises.

⁵³² Ofcom. March 2021. [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#). Annex 26.

A11.34 We set out below our approach to updating the capex module in the 2026 Fibre Cost Model.

Network dimensioning

A11.35 The size of the FTTP network is first dimensioned based on coverage and then capacity.

A11.36 The model can sequence network deployment by ranking the postcode sectors from lowest to highest cost to deploy. It then uses the geospatial analysis to calculate the number of metres of fibre cable, splitter nodes and aggregation nodes required to pass all premises within each postcode sector. However, in 2021 we considered this approach to sequencing deployment to be too simplistic and unlikely to reflect how networks are deployed in the real world.

A11.37 Alternatively, the model can sequence network deployment by ranking whole exchange areas from lowest to highest cost to deploy (i.e. an exchange area approach). More specifically, the model includes a ranking of groups of postcode sectors by exchange area and assumes that the network is deployed from the lowest to most expensive exchange area. This is aimed to better reflect how an operator might deploy its network.

A11.38 Network elements such as fibre and duct can span across multiple postcode sectors. For example, to connect a customer to an Access Node, a network operator may need to deploy duct and fibre across more than one postcode sector.

A11.39 The model also has the functionality to estimate the costs for any possible coverage scenario, i.e. coverage scenarios are not predefined in the model. Such flexibility comes at a cost as there is the risk that network elements which span across multiple postcode sectors are counted more than once when selecting a broader coverage scenario.

A11.40 To deal with this issue, the model dimensions the network across the whole of the UK first and then apportions the network infrastructure elements to each postcode sector based on the relative length of the underlying infrastructure. Although this reduces the accuracy of our cost estimates for smaller geographic areas, it avoids the problem of double counting costs when assessing the costs for broader geographic areas. We consider this to be an acceptable trade off given the primary aim of the model is to assess relatively broad geographic deployments for an entrant in WLA Area 2 or Openreach in WLA Area 3.

A11.41 Below, we set out our specific 2026 Fibre Cost Model coverage assumptions for the WLA Area 2 REO cost range.

Determining the amount of new physical infrastructure

A11.42 Once the total amount of fibre cables needed to satisfy the demand of the FTTP network is calculated, the model calculates the amount of physical infrastructure required to carry these fibre cables. Physical infrastructure, such as ducts and poles, is a key input in the building of a fibre network.

A11.43 An operator deploying a fibre network can either: (i) reuse existing physical infrastructure; (ii) build new physical infrastructure; or (iii) a combination of both. As noted above, in general, we assume that an operator planning to build a fibre network would seek to reuse as much physical infrastructure as possible (given the higher costs of building new physical infrastructure).

A11.44 The model has the flexibility to change the balance of new physical infrastructure versus reuse of physical infrastructure by varying the assumptions around spare existing capacity. These assumptions are applied at the Exchange Geotype level.

- A11.45 To work out the amount of new infrastructure, we have maintained the 2021 assumptions whereby the model compares the amount of physical infrastructure required against the capacity assumed to be available in existing infrastructure. This is done at a postcode sector level. If enough capacity is found to be available, the model assumes no new physical infrastructure is required. If there is not enough capacity, the model assumes new physical infrastructure will need to be built.
- A11.46 Where the modelled network reuses existing physical infrastructure, we include the costs of renting the space used in the physical infrastructure as an operating cost at the level of Openreach's Physical Infrastructure Access (PIA) charges.
- A11.47 Below, we set out our specific assumptions on duct and pole re-use for the WLA Area 2 REO cost range estimate.

Opex model

- A11.48 Once the Network Cost model has dimensioned the network and calculated capex, we calculate the opex required for running the network.
- A11.49 We have assumed the following opex costs are incurred by the modelled network:
- Repair costs – costs of repairing network faults arising at both the passive and active layers of the network;
 - Maintenance costs – costs associated with maintenance activities across the network, including those associated with the monitoring of network performance;
 - Power and accommodation – costs in relation to the power and physical space taken by the equipment located at the network node/exchange;
 - General Management – corporate overheads such as management, finance and legal costs;
 - PIA payments – costs associated with the use of Openreach's PIA services;
 - Systems and per order processing costs – costs associated with processing and recording new orders;
 - Provisions costs – costs associated with the provisioning of new services not captured in the capex model;
 - Service Level Guarantee (SLG) costs – costs faced by the network provider when it fails its service level guarantees; and
 - Cumulo – the business rates operators need to pay in deploying a fibre network.
- A11.50 For operating costs where we have identified a clear driver – PIA payments, systems and per order processing costs, provisions costs, SLG costs and cumulo – we have combined those drivers with model unit costs to calculate the total operating costs for those network elements. We set out those drivers and updated unit costs in Table A11.2 below.
- A11.51 For the costs for which a clear cost driver could not be identified, we have modelled these as a percentage of the network's Gross Replacement Cost (GRC), i.e. the cumulative network investment in a given year. These 'other opex' costs include repairs, maintenance, power and general management costs. We consider this approach is appropriate given that we expect these costs to be proportionate to the size of the network, which can be proxied by the GRC.

A11.52 To estimate PIA payments for the modelled network we have used the following approach.

- PIA Duct: we use Openreach's PIA rental charges, in line with our PIA charge control, for different duct types. For Segment 1, we use the two bore PIA rental charge for multi-bore duct. For Segment 2, we use the PIA rental charge for single-bore duct. For Segment 3, we use the PIA rental charge for lead-in duct with a revised method for calculating those charges (as explained below). For other costs associated with the use of PIA (e.g. facility hosting, ancillary PIA charges), we load these costs into our per metre cost assumptions by applying a 40% uplift based on the FAC estimates in our PIA model.
- PIA Poles: we use Openreach's PIA rental charges, in line with our PIA charge control, for single and multi-user pole attachments.⁵³³ We then divide this unit cost by 50 metres to convert to a per metre cost.

Efficiency

A11.53 Having estimated base year (2024/25) opex costs, we take into account expected efficiencies in future years by applying Modern Equivalent Asset (MEA)⁵³⁴ cost trends. In our base case we assume:

- an efficiency factor of 1.5% for capex cost elements such as fibre, duct, passive components and civils⁵³⁵, and
- an efficiency factor of 3% for opex cost elements such as SLG, system and processing costs.

A11.54 For opex cost elements modelled as a percentage of GRC, we have not applied an efficiency factor but note that the change to the assumed opex cost trend results in these costs reducing by 1% per annum.⁵³⁶

2026 Fibre Cost Model assumptions and outputs

Our approach to updating the model

A11.55 We have developed our 2026 Fibre Cost Model to inform our decisions relating to price regulation in WLA markets, set out in Volume 4, Section 1. In this sub-section, we summarise the changes we have made to the 2021 Fibre Cost Model in respect to the following:

- Geographic area boundaries;
- Network element unit costs; and
- Opex costs.

A11.56 Within this discussion, we also highlight where we have made changes to the model since the March 2025 Consultation.

⁵³³ We calculate a blended charge based on the national profile of single and multi-user pole attachments.

⁵³⁴ The MEA approach sets charges by basing costs and asset values on what is believed to be the most efficient available technology that performs the same function as the current technology.

⁵³⁵ Efficiency factors relating to capex for network equipment are not applied since these are already captured in the price trends assumed for these network assets.

⁵³⁶ The GRC measure captures efficiencies applied to capex elements which then indirectly gets applied to 'other opex'.

Geographic area boundaries

A11.57 We updated the geographic boundaries to reflect the new WLA Area 2/Area 3 split set out in Volume 2, Section 4, reflecting that WLA Area 2 will be considerably larger than in 2021-2026 with 27.8m premises (representing c. 86% of premises), with WLA Area 3 being considerably smaller with 4.4m premises (representing 14% of premises).⁵³⁷

Network element unit costs

A11.58 We updated the Network Cost Model to a new base year of 2024/25 and forecast the trend in costs as follows:

- **Rebasing input cost:** where we were able to obtain comparable information on Openreach's 2024/25 network element costs⁵³⁸ under formal information gathering powers,⁵³⁹ we updated on this basis (see Table A11.1 below). For all other network elements, we inflated the 2019/20 costs by the annual CPI in October for each year until 2024/25.⁵⁴⁰ We note that these elements comprise a small proportion of the total capex and hence the factor by which their costs are inflated has a minimal impact on the final rental cost per line.
- **Costs post 2024/25:** to forecast unit costs for network elements for years after 2024/25, we apply capex cost trends that account for MEA trend, general efficiency, and inflation.
- **Prior year costs:** for years prior to 2024/25, we assume the network element unit costs to be as forecast in the 2021 Fibre Cost Model.

Table A11.1: Network elements rebased using Openreach information (£, nominal)

Network Element	Unit Cost (2021)	Unit Cost (2024/25)	Unit
EXCH_FFTP_OLT_SBCard	[REDACTED]	[REDACTED]	Each
EXCH_OCR_Tie_Cable	[REDACTED]	[REDACTED]	Per cable
EXCH_CCJ_Tie_Cable	[REDACTED]	[REDACTED]	Per cable
BCKH_Business_Serv_Mainlink_Fibre	[REDACTED]	[REDACTED]	Per metre
BCKH_Business_Serv_Mainlink_Fibre_Testing	[REDACTED]	[REDACTED]	Per fibre

⁵³⁷ On 6 March 2026, an error was identified in the allocation of 61 postcode sectors to WLA geographic markets. 61 postcode sectors were incorrectly classified as WLA Area 3, when they should have been classified as WLA Area 2. This error has been corrected in Schedule 2 for the Statement, and in any references to the results of Schedule 2 throughout the Statement, except where specified otherwise. We have assessed that this error does not have a material impact on the results derived from affected charge control models (i.e. our cost forecast model, fibre cost model and WLA Area 3 RAB model). Given the immaterial impact of this error, we have not corrected it in our charge control modelling for the Statement as this would not have been practicable in time for publication.

⁵³⁸ Specifically, Openreach's internal FFTP modelling tool entitled [REDACTED] It replaced the Openreach document "Modelling Rules & Costs, Fibre to the Cabinet (FTTC), Fibre to the Premises (FTTP), Fibre to the Remote Node (FTRN)" commonly referred to as the Chief Engineer's NGA model assumptions which became obsolete in December 2019.

⁵³⁹ Openreach response dated 4 September 2025 to s135 notice dated 31 July 2025.

⁵⁴⁰ OBR, [Economic and fiscal outlook – November 2025](#). CPI forecasts can be found in the '[November 2025 Economic and fiscal outlook - detailed forecast tables: economy](#)', tab 1.7.

Network Element	Unit Cost (2021)	Unit Cost (2024/25)	Unit
Business_Serv_UG_Fibre (Segments 1, 2 and 3)	[X]	[X]	Per metre
Business_Serv_OH_Fibre (Segments 1 and 2)	[X]	[X]	Per metre
SEG1_Aggregation_Node	[X]	[X]	Each
SEG1_Footway_Duct in New_Duct	[X]	[X]	Per linear metre
SEG1_Carriageway_Duct in New_Duct	[X]	[X]	Per linear metre
SEG1_FootwayBox_Aggreg_Node	[X]	[X]	Each
SEG1_FootwayBox_UG_Track_Joint	[X]	[X]	Each
SEG1_Sub-duct in Existing_Duct	[X]	[X]	Per linear metre
SEG1_Soft_Duct in New_Duct	[X]	[X]	Per linear metre
SEG2_FootwayBox_Splitter_1:32	[X]	[X]	Each
SEG2_Splitter_Node_1:32	[X]	[X]	Each
SEG2_FootwayBox_Splitter_1:16	[X]	[X]	Each
SEG2_Splitter_Node_1:16	[X]	[X]	Each
SEG2_FootwayBox_UG_DP	[X]	[X]	Each
SEG2_OH_Distribution_Point	[X]	[X]	Each
SEG2_UG_Distribution_Point	[X]	[X]	Each
Fibre Testing (Segments 1 and 2)	[X]	[X]	Per fibre
FTTP_UG_Fibre (Segments 1 and 2)	[X]	[X]	Per metre
FTTP_OH_Fibre (Segments 1 and 2)	[X]	[X]	Per metre
SEG3_Business_Serv_Fibre_Testing	[X]	[X]	Per fibre
SEG3_FTTP_Connection_Civils	[X]	[X]	Per connection

Source: Ofcom Fibre Cost Model

A11.59 nexfibre has said that while the Fibre Cost Model reflects a move from GPON to XGSPON by introducing an increase in the GRC, it does not include the cost of removing the GPON

kit and replacing with the XGSPON kit, nor does it include the cost of replacing PON technology over the remainder of the modelled period (approximately 25 years). ⁵⁴¹

A11.60 As stated in the WFTMR21 Annex 26 ⁵⁴² over the 40-year timespan of the model we expect network operators to deploy higher capacity versions of PON (for example, 10G-PON) as bandwidth demand grows over time. The Fibre Cost Model captures these dynamics by:

- adjusting the unit cost of GPON equipment which is estimated as a blend of GPON and 10G-PON equipment, reflecting the transition from GPON to 10G-PON. Specifically, the model assumes the GPON/10G-PON mix changes from GPON-only in year 1 to 10G-PON-only in year 10.
- assuming an asset lifespan of 20 years for the PON equipment thus including the cost of replacing the equipment over the modelled 40-year period when calculating total capex.

A11.61 Further, in line with all other network elements, we have decided to maintain our approach of updating unit costs for the relevant network elements to 2024/25 terms based on information obtained from Openreach through our formal information gathering powers as previously mentioned. We apply a blended capex cost trend accounting for the changing mix of GPON/10G-PON equipment over time, MEA trend, general efficiency, and inflation to forecast unit costs for years after 2024/25.

A11.62 We accept that demand for higher speeds may increase over time but we do not have clear evidence that this will result in costs beyond those already captured and we do not think incorporating future costs based on speculative assumptions would be robust. Hence, we maintain our approach of modelling and updating the network element costs as per the March 2025 Consultation.

Opex costs

A11.63 In line with the Network Cost Model, we have also updated the base year in the Opex Model to 2024/25. This included updating some of the parameters in the Opex model: (i) PIA and cumulo costs; (ii) SLG costs, system and processing costs and provisions costs; and (iii) 'Other opex' costs (costs for which we could not identify a clear driver), as explained below.

(i) PIA and cumulo costs

A11.64 We have updated PIA costs from 2024/25 onwards as per the 2026 version of the PIA Charges Model. See Volume 4, Section 4 and Annex 14 for details on cost-based PIA charges.

A11.65 We have also updated the cumulo cost from 2024/25 onwards as per the 2026 version of the Cumulo Model. See Annex 10 for details on our approach to forecasting cumulo costs.

A11.66 The 2021 Fibre Cost Model calculated the PIA charges for lead-in duct by multiplying a unit price per metre by the estimated metres of duct in Segment 3 nationally. However, reuse of Openreach's lead-in duct is charged on a per-line basis. In the March 2025 Consultation, we proposed to amend the calculation of PIA Duct Segment 3 costs so that it is based on the per-line lead-in duct charge, multiplied by the number of lead-ins where PIA is used.

⁵⁴¹ nexfibre. 10 November 2025. nexfibre letter to Ofcom re Openerach FTTP proactive upgrades special offer NGA2014_25.

⁵⁴² Ofcom. March 2021. [Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26](#). Annex 26.

We are maintaining this approach for the 2026 Fibre Cost Model. We consider that this will increase the accuracy of the PIA Duct Segment 3 (lead-in) cost calculations, particularly for sub-national deployment scenarios as the metres of Segment 3 duct varies by geo-type.

A11.67 In response to the March 2025 Consultation, INCA identified an error in the Fibre Cost Model relating to the calculation of PIA lead-in costs. It noted that the Fibre Cost Model multiplied the number of new connections by the PIA lead-in rental price instead of multiplying the number of total connections by the PIA rental price to determine the annual cost of PIA lead-ins. This has now been corrected in the 2026 Fibre Cost Model so that the annual cost of PIA lead-ins is calculated by multiplying total connections (cumulative) by the PIA lead-in rental price.⁵⁴³

A11.68 For years prior to 2024/25, we assume the unit costs to be as forecast in the 2021 Fibre Cost Model, which was based on 2019/20 opex unit costs, calibrated with operator information, and captured the impact of inflation, general efficiency, and opex cost trends.

(ii) SLG costs, system and processing costs and provisions costs

A11.69 These are the operating cost categories for which we have identified a clear driver. We combine the drivers for each of the cost categories (summarised in Table A11.2 below) with modelled unit costs to calculate the total operating costs for these network elements.

A11.70 To update these opex unit costs to 2024/25 terms, we assume the costs to be as forecast by the 2021 Fibre Cost Model which was based on 2019/20 opex unit costs, calibrated with operator information, and captured the impact of inflation, general efficiency, and opex cost trends.

(iii) 'Other opex' costs (costs for which we could not identify a clear driver)

A11.71 In the March 2025 Consultation, we proposed to adjust 'other opex' costs in the Fibre Cost Model to reflect that FTTP has on average lower repair and maintenance costs than FTTC. Based on information we gathered, we estimated that FTTP repair and maintenance costs are [3<] per annum lower than for FTTC.⁵⁴⁴ To reflect this, we reduced the level of 'other opex' costs.

A11.72 We have maintained this approach for the 2026 Fibre Cost Model and for the WLA Area 2 REO cost range estimate scenarios (described below) we model 'other opex' costs as follows:

- 'other opex' costs assumed to be 2% of GRC from 2025 onwards in the 'high cost' scenarios;
- 'other opex' costs assumed to be 3% of GRC from 2025 onwards in the 'low cost' scenario'.

A11.73 For the WLA Area 3 RAB modelling (discussed in Annex 12), we assume other opex costs to be 3% of GRC by 2025 for all scenarios.

A11.74 nexfibre said that assessing 'other opex' as a declining percentage of the GRC of the assets is a flawed approach as it implies that staff levels and costs would reduce based on falling GRC, which is not credible.⁵⁴⁵ We consider it is appropriate to maintain our assumption

⁵⁴³ INCA response to TAR26 March 2025 Consultation. Paragraph 210.

⁵⁴⁴ [3<].

⁵⁴⁵ nexfibre. 10 November 2025. nexfibre letter to Ofcom re Openreach FTTP proactive upgrades special offer NGA2014_25.

that ‘other opex’ as a proportion of GRC decreases over time as activity related to build and connection will reduce. The steady state proportion of GRC that constitutes ‘other opex’ will be largely driven by repair and maintenance costs which are estimated to be lower for FTTP as compared to FTTC as mentioned above. Hence, we have decided to maintain our approach proposed in the March 2025 Consultation model.

A11.75 Consistent with operator data we assume ‘other opex’ is a higher proportion of GRC in the initial years of deployment. In line with our approach to capex, we have also updated the opex unit costs to 2024/25 prices. Table A11.2 below shows the updated opex unit costs in the base year for the Openreach national deployment scenario.

Table A11.2: Opex cost elements, drivers and unit costs (£ per year)

Opex cost element	Driver	Unit cost (2024/25)
SLG costs	New connections	£5.33
	Line rentals	£0.38
System and processing costs	Software configuration volumes	£2.28
Provisions costs	New connections	£15.23
PIA Duct – Segment 1	Metres of duct using PIA (seg 1)	£0.36
PIA Duct – Segment 2	Metres of duct using PIA (seg 2)	£0.52
PIA Duct – Segment 3	Line rentals using PIA	£11.64
PIA Poles	Metres of poles using PIA	£0.07
Cumulo	Line rentals	£10.77
Other opex: repair, maintenance, power and general management	% of GRC	£1.00

Source: Ofcom estimates

Modelling of the WLA Area 2 REO cost range

Our TAR26 March 2025 Consultation proposals

A11.76 In our March 2025 Consultation, we set out our proposed approach to estimating the WLA Area 2 REO cost range estimate. Our main assumptions centred around the scale of network coverage by altnets, take-up level for altnets, infrastructure reusage by altnets, and WACC.

A11.77 In terms of the scale of deployment, in our March 2025 Consultation we assumed the following:

- In our base case, the entrant rolls out to 5 million premises by 2028/29;
- In our low-cost scenario, the entrant rolls out to 2 million premises by 2025/26; and
- In our high-cost scenario, the entrant rolls out to 8 million premises by 2028/29.

A11.78 In regard to take-up we assumed that, after 5 years of build, a hypothetical entrant would achieve:

- a take-up of 40% in our low-cost scenario,

- a take-up of 33% in our base-case scenario, and
 - a take-up of 30% in our high-cost scenario.
- A11.79 We assumed that an entrant's physical infrastructure re-usage would range from 69% across all three segments in our low-cost scenario to 64% across all three segments in our base-case and high-cost scenarios.
- A11.80 We recognised a new entrant WACC could differ from the OUKT WACC estimated for BT and hence, we proposed to uplift the OUKT WACC (proposed to be 7.6% in Annex 20 of the March 2025 Consultation) in our base-case and high-cost scenarios from 2026/27 onwards as well as include an adjustment to asset lives for electronic and passive equipment (effectively increasing the WACC by a further 0.5pp). In summary we proposed:
- In our low-cost scenario, the entrant WACC was 8.1%;
 - In our base-case scenario, the entrant WACC was 8.6%;
 - In our high-cost scenario, the entrant WACC was 9.1%.

Stakeholder responses

Geographic footprint and design of network

- A11.81 CityFibre, nexfibre, and INCA raised concerns over the scale and nature of network deployment under the three scenarios designed by Ofcom – low cost, base case, and high cost.
- A11.82 CityFibre said that Ofcom should place no weight on the low-cost scenario in the 2026 Fibre Cost Model as major altnets which can be expected to drive competition have already exceeded the two-million coverage threshold assumed in the low-cost scenario and have business plans relying on significant further expansion. In support, CityFibre cited current coverage for itself (4.3 million premises), Netomnia (2.4 million premises), and nexfibre (2.2 million premises), as well as plans for significant expansion.
- A11.83 CityFibre also said that the 'low-cost' scenario is not representative of costs faced by an altnet that can drive competition, further adding that this scenario is based on cost structures and network characteristics achievable under unusually favourable circumstances.⁵⁴⁶
- A11.84 nexfibre stated that altnets have not achieved the level of rollout that was expected to be achieved by 2025/26 (five million homes passed by 2025/26) and hence, the Fibre Cost Model should be adjusted to have a meaningful rollout start in 2022/23, rising to approximately 2.5 million homes passed by 2025/26 and not reaching five million until 2032/33.⁵⁴⁷
- A11.85 nexfibre and INCA raised issues with the sequencing of network deployment by lowest-cost to higher-cost postcode sectors, calling it an unrealistic assumption. nexfibre said that the Fibre Cost Model made unrealistic assumptions about an REO's network build as an REO would not build from lowest cost postcode sector to higher cost postcode sector by exchange.⁵⁴⁸

⁵⁴⁶ [CityFibre](#) response to TAR26 March 2025 Consultation. Annex 2. Section 2.5.

⁵⁴⁷ nexfibre. 10 November 2025. Nexfibre letter to Ofcom re Openerach FTTP proactive upgrades special offer NGA2014_25.

⁵⁴⁸ [nexfibre](#) response to TAR26 March 2025 Consultation. Question 4.1.

- A11.86 INCA said that due to the Fibre Cost Model assuming sequential deployment from lowest-cost postcode sectors to highest-cost postcode sectors, most of the build in the ‘low cost’ scenario is in central London but also includes a small number of postcode sectors in other cities across the country which is an extremely unlikely deployment approach for an altnet.⁵⁴⁹ INCA further added that even the ‘high-cost’ scenario excludes 19.7 million higher-cost premises (71% of Area 2), despite altnets already covering over 16 million premises.⁵⁵⁰
- A11.87 INCA believed that adjustments are required to the scale of the geographical footprint or the composition of the postcode sectors where a hypothetical entrant has built its network in order to reflect realistic average costs incurred by altnets. In support of this, INCA estimated the monthly cost per line under three alternative scenarios:
- Central footprint (deployment to 8m premises selected from the central segment of Ofcom’s ranking of postcode sectors by cost from lowest to highest) - £20.14 per month.
 - High-cost footprint (deployment to 8m premises selected from the higher end of Ofcom’s ranking of postcode sectors by cost from lowest to highest) - £24.36 per month.
 - Full Area 2 deployment: (deployment to all 26 million least-cost premises, excluding 1.7m highest-cost premises likely subsidised) - £20.13 per month.
- A11.88 CityFibre further stated that altnets face higher upfront costs as they more commonly use ‘ring-based’ architecture in backhaul and core layers to enhance resilience and reduce downtime in case of faults, as opposed to the ‘tree and branch’ design used by Openreach. CityFibre said that attributes such as lower latency, greater capacity, and enhanced scalability to accommodate future demand growth offered by alternative network designs are important to attract ISPs onto its network.⁵⁵¹

Take-up

- A11.89 BT said that fibre take-up grows the longer fibre infrastructure has been available, stating that fibre take-up grows from 12% after one year of build to [REDACTED] after four years of build. BT said it expects altnet take-up to grow significantly over the TAR review period on the back of recent rapid build and recommended that Ofcom reflects this correctly in our assessment.⁵⁵²
- A11.90 [REDACTED].
- A11.91 [REDACTED].⁵⁵³
- A11.92 [REDACTED].⁵⁵⁴
- A11.93 nexfibre stated that the Fibre Cost Model’s take-up assumptions severely underestimate the challenges associated with a lack of “Tier 1” retail ISPs using altnets at volume and recommended a slower take-up rate for our hypothetical entrant, achieving 10% within 12

⁵⁴⁹ [INCA](#) response to TAR26 March 2025 Consultation. Paragraph 219.

⁵⁵⁰ [INCA](#) response to TAR26 March 2025 Consultation. Paragraph 230 - 239.

⁵⁵¹ [CityFibre](#) response to TAR26 March 2025 Consultation. Annex 2. Section 2.4.

⁵⁵² [BT Group](#) response to TAR26 March 2025 Consultation, paragraph 2.34-2.35.

⁵⁵³ [REDACTED].

⁵⁵⁴ [REDACTED].

months of deployment gradually rising to reach 20% at the end of five years and 33% by the end of ten years after deployment.⁵⁵⁵

- A11.94 nexfibre also stated that the Fibre Cost Model's assumption that a hypothetical entrant will be able to connect to 33% of homes passed (as in the base case scenario) implies that an entrant that achieves a lower share would not be reasonably efficient.

Build Capex

- A11.95 CityFibre⁵⁵⁶ stated that the Fibre Cost Model understates the build capex per premises passed for an REO by omitting relevant cost categories and assuming unrealistically low unit costs for network elements. In a report from RBB commissioned by CityFibre, it argued that CityFibre's higher build capex should not be misinterpreted as inefficiencies but instead the strategic choice to deliver a superior network capable of meeting the demands of ISPs and end-users. The following are cited as reasons for CityFibre's high build capex:

- a. [X].
- b. The Fibre Cost Model omits the cost of initial network design and the IT systems needed to support and operate a full fibre network. The new entrant module built on a scorched earth approach assumes that a hypothetical operator starts building from scratch and on that basis, it is inconsistent to omit upfront costs such as design work, planning, and systems required for ongoing operations.
- c. Openreach benefits from significant purchasing advantages that are unavailable to altnets (regardless of the altnet's efficiency). National scale, extensive build activity, and long-standing supplier relationships allow Openreach to negotiate more favourable terms for labour, materials, and equipment leading to lower per-unit costs and more secure access to resources.
- d. The Fibre Cost Model is based on a simplified network design that fails to capture the additional costs of deploying a future-proofed, resilient network architecture used by CityFibre.

Cost standard

- A11.96 Openreach raised concerns over the fact that the REO cost range includes full cost recovery of ongoing and sunk costs. It said that it expects some altnets to move closer to marginal cost pricing during the TAR26 review period as they write off upfront investments and to drive volumes, adding that efficient altnets would be sustainable where they can recover their forward-looking costs.⁵⁵⁷ We discuss this point in Volume 4, Section 1.

Approach to updating the WLA Area 2 REO cost range

- A11.97 The aim of our cost modelling is to estimate the efficient costs of a hypothetical reasonably efficient operator deploying a fibre network (as opposed to the costs of any specific operator). Our cost modelling does not seek to determine the costs of particular operators in order to support specific business models.
- A11.98 We recognise that, in reality, operators will have made their own choices around their networks and business models - such as those relating to network design and configuration. This means evidence on actual network deployments will vary across

⁵⁵⁵ nexfibre. 10 November 2025. nexfibre letter to Ofcom re Openreach FTTP proactive upgrades special offer NGA2014_25.

⁵⁵⁶ CityFibre response to TAR26 March 2025 Consultation. Annex 2. Section 2.1 and Section 2.4.

⁵⁵⁷ Openreach response to TAR26 March 2025 Consultation. Document 4, page 12.

operators. Given our aim is not to model the costs of a specific operator, there is no single correct approach to updating assumptions such as those relating to network design; scale of build; passive infrastructure re-usage; and customer take-up.

A11.99 However, to ensure our modelling continues to inform our assessment of our overall approach against our objectives, including the impact on competitive network investment, we need to check that our approach reflects the latest market developments, and ultimately, is grounded in reality. As detailed below, it is on this basis that we have updated our REO cost estimate to reflect further information and stakeholder comments since the March 2025 Consultation. In particular, the changes we have made in producing the REO cost range estimate in the 2026 Fibre Cost Model include:

- As described above, we have updated network element costs and opex which take into account the latest available cost information;
- In light of stakeholder comments, we have updated our WACC assumption to take into account evidence on the costs of capital that a hypothetical entrant is likely to face;
- In light of stakeholder comments, we reviewed our assumptions on the geographical footprint of a reasonably efficient operator and have updated our assumptions to reflect the increase in the size of WLA Area 2 since the WFTMR21 and the nature of the network build we have seen in the market (from Openreach and altnets).

A11.100 In addition, we have corrected modelling errors identified in the 2021 Fibre Cost Model to reflect our intention at the time. As detailed below, we identified an error within the take-up assumptions. We have also corrected modelling errors identified in the March 2025 Consultation Fibre Cost Model with sequencing of postcode sectors according to a scorched earth or scorched node approach, and with the calculation of PIA lead-in costs. Explanations of these corrections are as above.

A11.101 In terms of the presentation of the modelling outputs, in the 2026 Fibre Cost Model, we have decided to not include a 'base-case' scenario while estimating the REO cost range. The REO cost range is a hypothetical modelled cost range based on current prices and market conditions faced by a hypothetical entrant. As stated above, the purpose of estimating the range is to:

- inform our assessment of our overall approach against our objectives in WLA Area 2, including the impact on competitive network investment. In Volume 4, Section 1 we consider whether a pricing continuity approach would undermine rival networks' investments made to date and provides incentives for future investment, including the significant investment that will be needed over the 2026-31 review period as competing networks connect customers and grow their customer base.
- to provide one of the inputs to our assessment of whether Openreach's charges are fair and reasonable; specifically, with a view to considering the margin between Openreach's PIA and downstream FTTP prices.
- use as an input to our assessment of whether a geographic discount within WLA Area 2 is unduly discriminatory because it may harm long term competition.

A11.102 We do not believe that a base-case scenario adds value given the above-mentioned purposes of the REO cost range. We do not intend to use the REO cost range or any value within the range based on a set of intermediate assumptions as a bright line test for the above-mentioned purposes of the REO cost range and hence, have decided that a base-case scenario does not need to be modelled.

A11.103 We summarise below the assumptions we have made in relation to the approach to cost recovery, cost standard, geographic footprint and network design, take up, infrastructure reusage, WACC, and build capex.

Approach to cost recovery

A11.104 We have calculated the monthly rental charge that our hypothetical altnet would have to set in order to recover its modelled costs. To do so, we have converted our modelled capex and opex to a cost per line by calculating a flat real annuity⁵⁵⁸ over the modelled period.

A11.105 We have excluded some costs from the annuity calculation. This is to mimic the price structure that we currently observe in the market where operators recover a portion of their costs upfront in the form of a one-off connection charge. We have updated our assumption on how much of FTTP costs are recovered through a one-off connection charge to reflect the average connection charge set by Openreach across WLA Area 2.⁵⁵⁹

A11.106 We have assumed that c.£40.04 (in 2026/27 prices) of the final drop capex is recovered through connection charges. For years before and after 2026/27, the connection charge is adjusted by CPI annually.⁵⁶⁰ We have based the level of the assumed connection charge on Openreach's average FTTP connection charge in WLA Area 2 as of 1 February 2026. All other FTTP costs are assumed to be recovered from rental charges.

A11.107 We believe that the above figure is appropriate for estimating the REO cost range. However, when assessing a potential margin squeeze or a geographic discount in WLA Area 2 in the future, we would likely amend the connection charges in the model to reflect Openreach's pricing at that time.

Geographic footprint and design of network

Geographic footprint

A11.108 Several stakeholders raised concerns that our assumption that the reasonably efficient operator would build its network in the cheapest 2m to 8m premises (grouped by exchange area) would not realistically reflect the average costs faced by altnets.

A11.109 We have carefully considered these points and agree that adjustments are required to the assumptions around scale of deployment to better capture the average cost of deploying fibre network across WLA Area 2 for a hypothetical reasonably efficient operator. In particular, we consider that it is appropriate to adjust our network rollout assumptions to align with our updated definition of WLA Area 2 and reflect that network build is across lower- and higher-build cost areas:

- We have expanded WLA Area 2 to 27.8m premises (86% of UK premises) as opposed to 70% of UK premises as per WFTMR21. One of the drivers of this change is the fact that we expect a higher level of potentially competitive build across a wider area than we expected in 2021. Therefore, we think it is appropriate to adjust our network rollout assumptions to reflect a higher level of network build and align with our updated definition of WLA Area 2.⁵⁶¹

⁵⁵⁸ A fixed cost per line an entrant must charge its customers monthly over the modelled period.

⁵⁵⁹ Openreach charges higher connection charges in premises that were categorised as Area 3 in WFTMR21 but have now been categorised as WLA Area 2.

⁵⁶⁰ The connection charge of £40.04 is calculated as a weighted average charge to reflect the higher connection charge in premises that were categorised as Area 3 in 2021 but are now categorised as Area 2. We use discounted prices published by Openreach under the [Equinox Offers from 1 February 2026](#).

⁵⁶¹ See Volume 2, Section 4 for more details on the TAR26 WLA Area 2 and WLA Area 3 boundaries.

- This higher level of network build has been observed across WLA Area 2 from altnets as well as Openreach and this has been across lower- and higher-cost premises. Based on latest Connected Nations data on coverage, c.22 million premises of the 27.8 million premises in WLA Area 2 (79%) are already covered by at least one provider excluding VMO2 and we expect this to increase during the review period.

A11.110 There are different ways we could adjust the geographic footprint in our modelling to more realistically capture the costs of a reasonably efficient operator deploying in WLA Area 2. For example, similar to INCA's suggested 'Central footprint' scenario, for the high cost scenario we could retain the 8m coverage assumption but only include premises that are within a segment of WLA Area 2 with medium unit costs (i.e. excluding some lower-cost and higher-cost premises). We consider that a simpler approach is to adjust the coverage assumption to reflect the average cost we think is appropriate for the reasonably efficient operator (similar to INCA's 'Full Area 2 deployment' scenario).⁵⁶²

A11.111 For our high cost scenario, we have adjusted the geographic footprint by setting the coverage assumption to include the **20m lowest cost premises** in WLA Area 2. We have used our regulatory judgement in deciding to exclude the most expensive 7.8 million of the 27.8m WLA Area 2 premises from our analysis (accounting for 28% of WLA Area 2). We have excluded these premises because we would expect a reasonably efficient operator to avoid building a fibre network in the most expensive or harder to reach premises in a postcode sector absent public subsidy. Indeed, evidence on planned coverage of the largest five altnets shows that they do not deploy to all premises in an area, as shown in Table A11.3 below. While individual altnets' coverage varies considerably (in part reflecting their build strategies), we consider that our assumption that a reasonably efficient operator does not deploy to the most expensive 28% of WLA Area 2 is reasonable in light of the range, in particular the coverage for the altnets towards the top of the range.

Table A11.3: Coverage data for largest 5 altnets in WLA Area 2

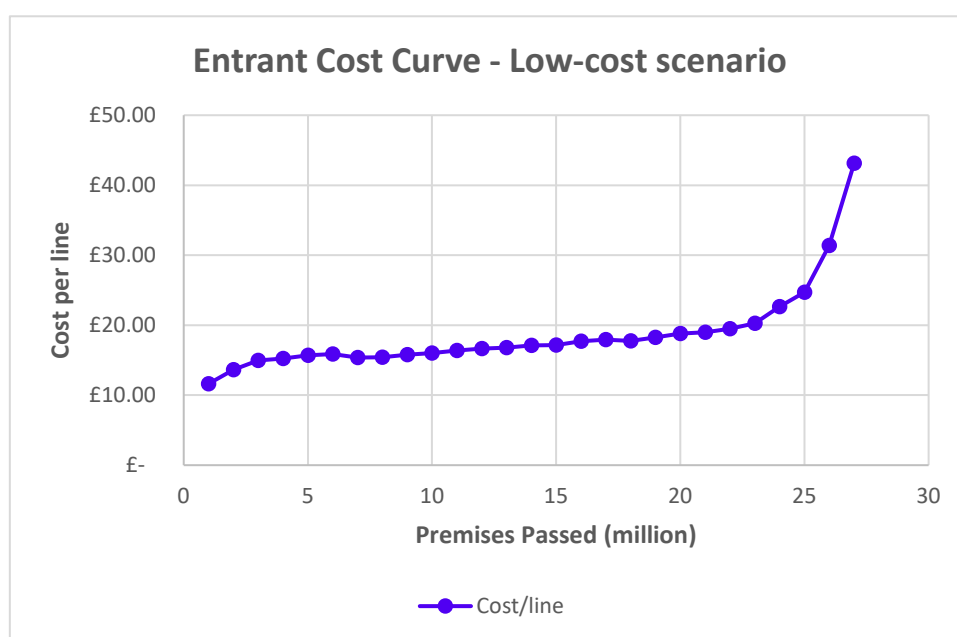
	Premises in PCS reached (Current + Planned)	Total premises in PCS reached	Coverage
CityFibre	[X]	[X]	[X]
Community Fibre	[X]	[X]	[X]
VMO2 and nexfibre	[X]	[X]	[X]
Hyperoptic	[X]	[X]	[X]
Netomnia	[X]	[X]	[X]

⁵⁶² INCA's 'Full Area 2 deployment' scenario assumed deployment to the 26m least-cost premises in WLA Area 2, excluding 1.7m highest-cost premises that it considered are likely have public subsidies.

A11.112 To be clear, we use the network coverage assumption as a modelling simplification to adjust the average cost of the reasonably efficient operator (as a result of geographic scope of coverage changing and including more higher-cost WLA Area 2 postcode sectors than previously). 8m premises may still be a reasonable assumption for the actual footprint in this scenario, but we consider that the average cost of that footprint should reflect the 20m lowest-cost WLA Area 2 premises, rather than the 8m lowest-cost WLA Area 2 premises.

A11.113 In relation to the low cost scenario, we acknowledge stakeholder points that several altnets in WLA Area 2 already have coverage that surpasses 2m premises and that they have plans to further increase coverage. We also agree that it may be impractical and inefficient for an altnet to limit its build to the cheapest 2m premises as this implies a footprint scattered across densely populated centres. Therefore, to avoid understating costs, we have reviewed our assumptions for the low-cost scenario. In considering a more reasonable scale of deployment, we used the 2026 Fibre Cost Model to carry out some analysis of how costs vary geographically across WLA Area 2 shown in Figure A11.2 below.

Figure A11.2 Entrant cost curve (low-cost scenario) for building a fibre network to segments of 1 million premises



A11.114 In this analysis, we estimated the monthly cost per line (using low-cost scenario assumptions) for deploying fibre network to segments of 1 million premises incrementally. We noted that there appears to be a break point at the 5m premises mark, where the cost of building a fibre network to the least-expensive 5m premises is materially lower than the rest of WLA Area 2 premises. We have therefore updated our coverage assumption for the low-cost scenario, assuming that the hypothetical efficient operator reaches 5 million of the least-expensive premises in WLA Area 2. Similar to the high-cost scenario, the actual footprint of a reasonable efficient operator may be higher or lower, but we consider that the least-expensive 5m premises in WLA Area 2 is suitable for estimating the average cost for our low-cost scenario.

A11.115 While our assumptions around scale of deployment and network design are unlikely to exactly match any altnet's network, we consider that our assumptions are suitable for estimating the costs of a hypothetical reasonably efficient entrant operator.

Sequencing of deployment

A11.116 As stated above, nexfibre and INCA argued that the Fibre Cost Model's assumption about sequential deployment is unrealistic.

A11.117 As discussed above, we have maintained our approach of sequencing network deployment by lowest to highest cost exchange areas in WLA Area 2. This is aimed to reflect how an operator might deploy its network by sequencing deployment across postcode sectors that are localised. We consider this is more realistic than assuming an operator would roll out in order of lowest to highest cost postcode sectors that are potentially scattered in different parts of the country.

Network design

A11.118 As stated above, CityFibre stated that its 'ring-based' network structure leads to higher upfront costs which are not accounted for by the Fibre Cost Model. Operators have deployed using a variety of different architectures and there is no single correct approach. We therefore have decided to maintain the tree and branch network structure we have used in our cost modelling since WFTMR21.

Take-up

A11.119 As set out above, stakeholders queried the take-up assumption with BT recommending higher take-up and [redacted] and nexfibre saying that the take-up should be significantly reduced and reflect that they make incentive payments to ISPs.

A11.120 We acknowledge that certain altnets pay incentive payments to ISPs to achieve higher take-up and to facilitate technical integration between ISPs and the altnet's platforms. However, this is just one of many strategies that can be adopted by altnets to achieve higher levels of take-up. For example, other altnets may opt to lower their rental prices instead of making incentive payments to ISPs. As previously mentioned, we do not intend to use the Fibre Cost Model to model the costs of any particular altnet and hence, we have maintained our approach since WFTMR21 of not including incentive payments in estimating the costs of an REO.

A11.121 On the level and rate of take-up of FTTP for the reasonably efficient operator, we maintain our March 2025 Consultation assumptions as below:

- In our low-cost scenario, for each cohort of network build, the reasonably efficient operator achieves a take-up of 40% by year 5; and
- In our high-cost scenario, for each cohort of network build, the reasonably efficient operator achieves a take-up of 30% by year 5 of the deployment.

A11.122 A certain level of take-up is needed for an altnet to achieve economies of scale and become a strong competitor and we consider that these are reasonable assumptions for the level of take-up that we would expect a reasonably efficient operator to achieve. Considering that competitors will take time to build share, and exercising regulatory judgement, we believe that a take-up level of between 30% and 40% achieved in each cohort of fibre network deployment after 5 years of deployment in that cohort represents a reasonable assumption for the hypothetical efficient operator. These assumptions are consistent with our analysis of altnet data on take-up^{563 564} by cohort of build which

⁵⁶³ [redacted] response dated [redacted] to s135 notice dated [redacted].

⁵⁶⁴ [redacted] response dated [redacted] to s135 notice dated [redacted].

indicates that there is a clear trend of increasing take-up for each year after build has been completed in an area.

Infrastructure reuse

A11.123 As stated previously, to determine the amount of physical infrastructure reused, the model applies varying assumptions around spare existing duct capacity at the Exchange Geotype level.

A11.124 The geospatial analysis calculates how much fibre is required at each postcode sector to reach all premises. Using this, along with a set of input data, the model calculates the total length of new and existing underground infrastructure. The underlying assumption of the model is that the network will seek to reuse as much existing duct infrastructure as feasible and only build new duct when not enough capacity is available. The model assumes that existing ducts have different levels of capacity available in the duct for new cables, and we use three capacity tiers (Red, Amber, Green). The model allows the use of different shares by tier for each Geotype.

A11.125 In the March 2025 Consultation, the model's assumptions regarding scale of network rollout, the level of physical infrastructure reused was estimated to be:

- In our low-cost scenario, 69% of the entrant's network (in total across all three Segments) is built using Openreach's physical infrastructure (i.e. PIA).⁵⁶⁵
- In our base-case scenario, 64% of the entrant's network (in total across all three Segments) is built using Openreach's physical infrastructure (i.e. PIA).⁵⁶⁶
- In our high-cost scenario, 64% of the entrant's network (in total across all three Segments) is built using Openreach's physical infrastructure (i.e. PIA).⁵⁶⁷

A11.126 Following the adjustment to our network coverage assumption, the composition of Geotypes to which an entrant deploys its fibre network has also changed and thus, the level of physical infrastructure reused has been adjusted accordingly in our model. Our revised 'low-cost' and 'high-cost' scenarios assume the following:

- In our low-cost scenario, 72% of the entrant's network (in total across all three Segments) is built using Openreach's physical infrastructure (i.e. PIA).⁵⁶⁸
- In our high-cost scenario, 68% of the entrant's network (in total across all three Segments) is built using Openreach's physical infrastructure (i.e. PIA).⁵⁶⁹

WACC

Our proposals

A11.127 In the March 2025 Consultation, we recognised that a new entrant WACC could differ from the OUKT WACC estimated for BT (where the OUKT WACC includes BT's FTTP activities). We said that, based on the performance of altnets to date, some WACC parameters such as cost of debt could be higher for an altnet while others like the effective tax rate could be lower.

⁵⁶⁵ This splits out to 48% for Segments 1 and 2 and 88% for Segment 3.

⁵⁶⁶ After rounding, this splits out to 42% for Segments 1 and 2 and 89% for Segment 3.

⁵⁶⁷ After rounding, this splits out to 46% for Segments 1 and 2 and 90% for Segment 3.

⁵⁶⁸ This splits out to 51% for Segments 1 and 2 and 90% for Segment 3.

⁵⁶⁹ This splits out to 53% for Segments 1 and 2 and 90% for Segment 3.

A11.128 To allow for the possibility that an entrant WACC could be higher than the OUKT WACC, we proposed to uplift the OUKT WACC in our base-case and high-cost scenarios from 2026 onwards. In summary we proposed:

- In our low-cost scenario, the entrant WACC was the proposed OUKT WACC of 7.6%;
- In our base-case scenario, the entrant WACC was the proposed OUKT WACC plus 0.5 percentage points (pp), i.e. 8.1%;
- In our high-cost scenario, the entrant WACC was the proposed OUKT WACC plus 1.0pp, i.e. 8.6%.

A11.129 Consistent with the modelling in WFTMR21, we also proposed to include an adjustment to shorten the asset lives for electronic and passive equipment to reflect that an entrant operator may be required to pay its investment back sooner than an incumbent operator would. We assumed a shorter asset life of seven years for electronic equipment and 10 years for passive equipment, compared to 10 years and 20 years for an incumbent. We said this was equivalent to increasing the WACC by a further 0.5pp, (i.e. it was equivalent to using a WACC of 8.1%/8.6%/9.1% in the low/base/high scenarios).

Stakeholder comments

A11.130 While INCA agreed that an entrant would have a higher WACC than an incumbent operator, it said we hadn't provided a clear rationale for the proposed uplifts of 0.5pp and 1.0pp. INCA said we should conduct a more thorough assessment of an entrant's cost of capital focussing on the cost of debt.⁵⁷⁰

A11.131 CityFibre said the WACC used in the Fibre Cost Model understated the entrant WACC.⁵⁷¹ CityFibre commissioned a report from AlixPartners which recommended an entrant WACC of 9.2% to 10.5% based on estimates of individual WACC parameters. Some of AlixPartners' recommendations related to market WACC parameters (such the risk-free rate and total market return) which we have considered as part of our assessment of BT's WACC (see Annex 15). Other WACC parameters were specific to an entrant. In particular, AlixPartners suggested using the following inputs to estimate an entrant WACC:

- Cost of debt of 6.9% to 7.7%, based on the spot and 6-month average yields for an index of B-rated bonds with 10- and 20-year maturities, plus an additional 10 basis points uplift to account for issuance costs.⁵⁷² AlixPartners considered a B rating to be a realistic and evidence-based assessment of the credit rating that a reasonably efficient entrant in the UK fibre market could achieve during the TAR26 period.⁵⁷³
- Asset beta of 0.54 to 0.61. AlixPartners said that the entrant asset beta would be higher than the asset beta applied to the incumbent's FTTP services, as an entrant would face higher operating leverage than the incumbent. Based on the outputs of an illustrative model, it estimated that the operating leverage of an entrant would be 10% higher than an incumbent and it consequently assumed that the entrant asset beta would be 10% higher than the incumbent's FTTP asset beta (which

⁵⁷⁰ INCA response to TAR26 March 2025 Consultation. Paragraphs 247 to 249.

⁵⁷¹ CityFibre response to TAR26 March 2025 Consultation. Paragraph 2.62.

⁵⁷² CityFibre response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Paragraph 93.

⁵⁷³ CityFibre response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 2.

AlixPartners estimated as 0.49 to 0.55).⁵⁷⁴ As a result, AlixPartners estimated an entrant asset beta range of 0.54 to 0.61. AlixPartners also suggested using a debt beta of 0.0825 (slightly higher than the 0.075 we proposed for BT).

- Gearing of 55% based on its estimate that CityFibre's gearing was around 47% and the view that a new entrant, facing higher risk, would likely rely more on equity financing. It said this suggested BT's gearing level of 55% represented the upper bound for a reasonably efficient entrant.⁵⁷⁵
- Corporate tax rate of 25%.

A11.132 AlixPartners also said that to deliver Ofcom's objectives of promoting network competition, Ofcom should 'aim up' and use a WACC from the top end of their proposed range.⁵⁷⁶

A11.133 No stakeholders specifically commented on our asset lives adjustment.

Our reasoning and decisions

A11.134 In the March 2025 Consultation, we considered that some WACC parameters for an entrant could be higher than an incumbent (such as cost of debt) while others could be lower (such as the effective tax rate). Given the uncertainty in estimating these parameters for an entrant, we thought uplifting the OUKT WACC (combined with an adjustment for asset lives) was a simple way to allow for the possibility that an entrant WACC could be higher than the OUKT WACC and provided a reasonable estimate of an entrant WACC for the purpose of the Fibre Cost Model.

A11.135 However, following stakeholder comments, we have estimated a WACC range applicable to an entrant by considering stakeholder representations on individual WACC parameters rather than applying an uplift to the OUKT WACC. Given we have decided to estimate an entrant WACC directly, we no longer require a separate asset lives adjustment (which we had previously expressed in terms of a 'WACC equivalent adjustment').

A11.136 As the Fibre Cost Model does not model tax cash flows, it requires a pre-tax WACC which reasonably reflects the WACC of an entrant over the 40-year modelled period. We have considered some entrant-specific parameters below and combined these with our market parameter estimates from Annex 16 to estimate a WACC range for an entrant of 9.0% to 10.3%. This compares to the updated OUKT WACC of 7.9% explained in Annex 16. The next sections are structured as follows:

- Gearing;
- Cost of debt;
- Asset beta and debt beta;
- Effective tax rate and pre-tax cost of equity; and
- Entrant WACC range.

⁵⁷⁴ We respond to AlixPartners' recommendations on the asset beta to apply to BT's FTTP services in Annex 16.

⁵⁷⁵ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Paragraph 94.

⁵⁷⁶ [CityFibre](#) response to TAR26 March 2025 Consultation. Paragraphs 2.63 - 2.65.

Gearing

A11.137 In Annex 16 we decided to use a forward-looking gearing for BT Group and its constituent parts, including OUKT, of 55%.

A11.138 Companies with different systematic risk profiles could have different optimal levels of gearing. For example, entrants with higher levels of systematic risk than incumbents may find it harder to secure debt funding or need to pay higher interest rates on equivalent levels of debt, which could result in relatively lower levels of gearing. Given this, optimal gearing for an entrant may be lower than that of BT Group and its constituent parts.

A11.139 There are no UK-listed altnets, so it is difficult to estimate current levels of altnet gearing due to the absence of data on market capitalisation.

A11.140 While in principle an entrant's gearing could be lower than BT's, we agree with AlixPartners that BT's gearing could represent a reasonable gearing estimate for a reasonably efficient entrant in all scenarios, so we assume entrant gearing of 55%. We note that assuming lower levels of gearing (with other parameters unchanged) would not significantly affect the entrant WACC.

Cost of Debt

A11.141 We agree with respondents that entrants will generally face higher borrowing costs than incumbents as they are seen as riskier to debt investors due to lack of trading history and uncertain future financial performance. They may also initially be funded by private debt placements rather than publicly traded corporate bonds so are unlikely to be rated by agencies like S&P. We are unaware of any UK altnets having a credit rating.

A11.142 Most altnets' cost of debt is based on SONIA plus a margin.⁵⁷⁷ The margin reported by the largest altnets was 2.5% to 4.0%.⁵⁷⁸ Based on current SONIA rates this implies a current cost of debt of between 6.5% to 8.0%.⁵⁷⁹

A11.143 Given our entrant WACC applies from April 2026, we are interested in the cost of new debt for an entrant. For BT, we estimate the cost of new debt by reference to 6-month average yields on benchmark (BBB) bonds with a tenor of 10 to 20 years. AlixPartners argued that yields on B rated bonds with maturities of 10 to 20 years would provide a reasonable estimate of the cost of debt for an entrant. As of 31 October 2025, 6-month average yields on B rated bonds of 10 to 20 years maturities are between 8.4% and 8.9%.⁵⁸⁰ This range is considerably more than the cost of debt reported by altnets in financial statements. We consider that yields on BB bonds would be more commensurate with the cost of debt for an entrant. This approach reflects that entrants would not be able to match the credit rating of an incumbent. As of 31 October 2025, 6-month average yields on BB bonds of 10

⁵⁷⁷ Where SONIA is the Sterling Overnight Index Average interest rate.

⁵⁷⁸ Ofcom analysis based on the latest available financial statements for CityFibre, Community Fibre, Hyperoptic, Netomnia, nexfibre and Gigaclear.

⁵⁷⁹ Based on the 1-month average SONIA spot rate as at 31 October 2025.

⁵⁸⁰ To estimate the yield on B-rated corporate bonds, we start by calculating the six-month average yield for BBB-rated bonds. As detailed in Annex 15, paragraph A15.84, the lower bound (6.0%) corresponds to the midpoint of the 7-10 and 10-15 year maturities on the BBB iBoxx index, while the upper bound (6.5%) reflects the six-month average yield for the 15+ year BBB iBoxx index. These values are then adjusted using S&P's "[The Cost of a Notch report](#)" (dated 19 August 2025), which indicates a 237bps spread between BBB and B-rated securities. Applying this adjustment, the estimated range for B-rated bonds becomes 8.4% to 8.9% after rounding.

to 20 years maturities are around 7.3% to 7.8%.⁵⁸¹ Over the course of a 40-year modelled period, we consider the BB index represents a reasonable estimate for the cost of debt a new entrant could achieve.

- A11.144 We recognise that the cost of debt could be higher in the early stages of investment especially as it is likely to be privately placed. To reflect this possibility, we have uplifted the top of the cost of debt range to 8%. Further, to reflect the possibility that, over a 40-year modelled period an entrant could achieve a cost of debt closer to that of the incumbent, we have reduced the bottom end of the cost of debt range to 7.0%.⁵⁸²

Asset beta and debt beta

- A11.145 There are no listed altnets against which to benchmark an entrant asset beta and therefore we must exercise some regulatory judgement when deciding on an asset beta range for the new entrant WACC in the Fibre Cost Model.

- A11.146 We agree with AlixPartners that an entrant is likely to face a higher level of systematic risk driven by higher levels of operating leverage, and will therefore have a higher asset beta, compared to an incumbent operator. However, the illustrative model used by AlixPartners is sensitive to input assumptions and we do not consider differences in operating leverage will necessarily translate directly into differences in asset beta. Further, as FTTP networks mature, the proportion of fixed costs in the cost base is likely to decline, reducing operating leverage, such that over the 40 year modelled period, differences in operating leverage between entrant and incumbent could reduce. While there are no listed altnets against which to benchmark an entrant asset beta, as the entrant is providing fibre broadband services, we think its asset beta would be higher than the OUKT asset beta of 0.43 that we assume in Annex 16 (as the entrant will likely face a higher level of systematic risk) but no higher than the top end of the range for European telecoms (0.68) and lower than the bottom end of the ICT range (0.69). As such we consider the asset beta range of 0.54-0.61 suggested by AlixPartners could be reasonable for the purposes of our Fibre Cost Model.

- A11.147 In relation to debt beta, while in principle we agree that an entrant could be associated with a higher debt beta, at least for part of the modelled period, there is limited evidence available to estimate how large the difference could be. Given that assuming the slightly higher debt beta suggested by AlixPartners does not significantly affect the WACC, and there is an absence of direct evidence to use to assess this, we have assumed the same debt beta as we apply to BT (0.075).

Effective tax rate, pre-tax cost of equity and pre-tax WACC

- A11.148 As set out in Annex 15, we use the CAPM to estimate the post-tax cost of equity, using the formula risk free rate (RFR) + equity risk premium (ERP) * equity beta. The pre-tax cost of equity is obtained by scaling the post-tax cost of equity by the effective tax rate – i.e. the level of corporation tax the company is expected to pay.

- A11.149 To consider the post-tax cost of equity that could apply to an entrant we use the same values for RFR and ERP as we did for BT Group in Annex 15. The equity beta is obtained

⁵⁸¹ To estimate the yield on BB-rated corporate bonds we take the same approach as B rate bonds. Using S&P's "[The Cost of a Notch report](#)" (dated 19 August 2025), indicates a 127bps spread between BBB and BB-rated securities. Applying this adjustment, the estimated range for BB-rated bonds becomes 7.3% to 7.8% after rounding.

⁵⁸² Our 7.0%-8.0% range includes the cost of issuance of debt. For BT Group this represented a 0.1pp uplift to the cost of debt.

from the entrant asset beta and debt beta using the formula (asset beta – debt beta*gearing)/(1-gearing).

A11.150 An asset beta range of 0.54 to 0.61 combined with the RFR, ERP, gearing and debt beta used in the BT Group and OUKT WACC implies a post-tax cost of equity of 8.9% to 9.5%.

A11.151 In line with our approach in Annex 15 we estimated the pre-tax cost of equity by scaling up the post-tax cost of equity using the statutory corporation tax rate of 25%. This results in a pre-tax cost of equity of 11.8% to 12.6%.

A11.152 Combined with our gearing and cost of debt analysis above, this pre-tax cost of equity range would suggest an entrant pre-tax nominal WACC of between 9.4% and 10.3%.

A11.153 We recognise that an entrant is likely to incur losses for some years as it rolls out its network and connects customers. It may therefore pay reduced corporation tax for a time due to low profitability and utilisation of capital allowances and carried forward losses. As a result, an entrant's effective tax rate over the 40-year modelled period may be less than 25%. To reflect this possibility, we have lowered the bottom end of the pre-tax WACC range to 9%. This results in a final pre-tax nominal WACC range of 9.0% to 10.3%.

Reasonably efficient operator WACC range

A11.154 As set out above, we have decided to use a pre-tax nominal WACC range for the entrant of 9.0% to 10.3%.

A11.155 In line with our overall approach to decide the REO cost range, we think it is appropriate to associate the lower WACC with the low cost scenario and the higher WACC with the high cost scenario.

A11.156 As with our other assumptions, we have estimated the WACC range based on our best estimate for a reasonably efficient operator using the available evidence. This is consistent with our general approach where we recognise there is a trade-off between encouraging entry and competition with the cost to consumers from higher prices. Deliberately 'aiming up', as suggested by AlixPartners, is less consistent as it risks building in inefficiency in the price signals being set and potentially unduly increasing the cost to consumers.

Build Capex

A11.157 CityFibre argued that the Fibre Cost Model significantly understates the build capex for a REO.⁵⁸³

A11.158 The purpose of the Fibre Cost Model is to model the costs of a reasonably efficient operator, not a specific altnet. For the purposes of determining the build capex per premises we use Openreach's input data as a starting point, making adjustments to network element unit costs and assumptions around network dimensioning (scale and sequencing of network rollout, infrastructure reuse, etc.) as mentioned above.

A11.159 As evidenced by altnet business plans we note that each operator categorises costs differently, making comparison of altnet costs with the Fibre Cost Model difficult. However, we have conducted some analysis using data on build capex, connection cost,

⁵⁸³ [CityFibre](#) response to TAR26 March 2025 Consultation. Annex 2. Section 2.1. Pages 4-5.

and opex from business plans submitted by operators^{584 585 586 587 588} to sense check the 2026 Fibre Cost Model outputs. As shown in Table A11.4 below, the cost per line of the REO cost scenarios modelled by Ofcom sit within the lower and upper end of the implied rental price based on altnets' submitted costs, giving us some reassurance that our assumptions are within a reasonable range.

Table A11.4: Comparison of Ofcom's modelled entrant and costs submitted by altnets⁵⁸⁹

	Unit	Ofcom REO cost (low-cost scenario) ⁵⁹⁰	Ofcom's REO cost (high-cost scenario)	CityFibre	nexfibre	Community Fibre	Hyperoptic	Netomnia
Coverage	Premises passed	5m by 2025/26	20m by 2028/29	[X]	[X]	[X]	[X]	[X]
Current penetration	%	40% after 5 years	30% after 5 years	[X]	[X]	[X]	[X]	[X]
PIA Usage	%	72%	68%	[X]	[X]	[X]	[X]	[X]
Build Costs	Per premises	£307	£466	[X]	[X]	[X]	[X]	[X]
Connection Costs	Per connection	£331	£383	[X]	[X]	[X]	[X] ⁵⁹¹	[X]
PIA Costs⁵⁹²	Per line connected	£12.40	£18.90	[X]	[X]	[X]	[X]	[X]
Implied rental price @30% take-up after 5 years	£/line/month	£13.26	£20.72	[X]	[X]	[X]	[X]	[X]

⁵⁸⁴ CityFibre response dated 11 August 2025 to s135 notice dated 31 July 2025, question A1.

⁵⁸⁵ nexibre response dated 18 August 2025 to s135 notice dated 31 July 2025, question A1.

⁵⁸⁶ Community Fibre response dated 27 August 2025 to s135 notice dated 31 July 2025, question A1.

⁵⁸⁷ Hyperoptic response dated 8 September 2025 to s135 notice dated 5 August 2025, question A1.

⁵⁸⁸ Netomnia response dated 4 September 2025 to s135 notice dated 31 July 2025, question A1.

⁵⁸⁹ To estimate implied rental price for altnets based on their costs as per their business plans and submissions as part of our information gathering powers, we have normalised take-up achieved by altnets to our modelled scenario of 30% after 5 years of deployment and subsequently converted their total costs to a 'per line per month' basis assuming a cost of capital of 10.3%.

⁵⁹⁰ The implied rental price for 'Ofcom's entrant (low-cost scenario)' assumes a take-up of 40% achieved after 5 years of deployment, not 30% after 5 years of deployment.

⁵⁹¹ We were unable to gather information about Community Fibre's connection cost per connection from its business plans and other submissions. In order to calculate implied rental price, we have estimated its connection cost per connection by calibrating scenarios in the Fibre Cost Model to mimic Community Fibre's network build as closely as possible.

⁵⁹² We were unable to gather information about PIA costs from altnets' business plans submitted to Ofcom. In order to calculate implied rental price for the altnets, we have estimated the PIA costs incurred by the altnets by calibrating scenarios in the Fibre Cost Model to mimic the altnets' network build as closely as possible.

A11.160 Table A11.5 below summarises our assumptions for our two scenarios for the WLA Area 2 REO cost range.

Table A11.5: WLA Area 2 REO cost range list of assumptions

	Low-cost scenario	High-cost scenario
Network coverage	5m premises	20m premises
Take-up (5 years)	40%	30%
Infrastructure reusage	72%	68%
WACC until 2025/26	7.8%	7.8%
WACC 2026/27 onwards	9.0%	10.3%
Electronics equipment asset life	10 years	10 years
Passive equipment asset life	20 years	20 years
Other opex as % of GRC by 2025	3%	2%

Source: Ofcom Fibre Cost Model

Summary of WLA Area 2 REO cost range model outputs

A11.161 Based on the assumptions above, we estimate that the entrant operator in WLA Area 2 would have to charge between £13.30 to £20.76 per month (in 2025/26 prices) in order to recover its efficiently incurred costs over the modelled period.

Table A11.6: Forecast unit costs for WLA Area 2 REO cost range (2025/26 terms)

	Unit	Low-cost scenario	High-cost scenario
Build capex	Per Premises passed	£307.43	£465.91
Connection costs	Per connection	£330.94	£383.28
Opex	Per customer, per annum	£51.66	£54.56
Rental cost per line (real)	£/month	£13.30	£20.76

Source: Ofcom Fibre Cost Model

A11.162 We are publishing a non-confidential version of the 2026 Fibre Cost Model as part of this statement.

A11.163 The non-confidential model reflects all of the updates described above, e.g. new geographic boundaries, rebasing to 2024/25, new approach to PIA duct lead-in charge calculation, and other changes mentioned above.

A11.164 Where input data is confidential, we have used randomised data to maintain its confidentiality:

- For new confidential data that we have used in the 2026 Fibre Cost Model, we have randomised by +/- 20%. These data include:
 - > 2024/25 unit cost data for network elements in the Capex module; and
 - > actual Openreach FTTP network coverage in WLA Area 3 as of July 2025.
- Where we continue to use input data from the 2021 Fibre Cost Model⁵⁹³, we have used the same randomised data as in the 2021 Fibre Cost model, i.e. the 2021 Fibre Cost Model data randomised by +/- 20%.

A11.165 The non-confidential 2026 Fibre Cost Model is functionally the same and if the randomised data were replaced with the actual confidential data we have used, it would produce the same results as presented in Table A11.6 above.

⁵⁹³ Non confidential 2021 Fibre Cost Model, updated 22 February 2023 to correct formula errors:
<https://www.ofcom.org.uk/phones-and-broadband/telecoms-infrastructure/2021-26-wholesale-fixed-telecoms-market-review/>

A12. Modelling of the RAB in WLA Area 3

- A12.1 In Volume 4, Section 1 we decided to adopt a RAB approach in WLA Area 3 which is a cost-based control that will support Openreach's incentives to invest while also protecting consumers and competition based on access to Openreach's networks. Our evidence suggests that pricing continuity will be consistent with our objectives, as set out in the remainder of this annex.
- A12.2 By pricing continuity, we mean an approach where:
- An inflation indexed charge control is set on the anchor, i.e. MPF and FTTC 80/20 rentals (or FTTP 80/20 rentals where a copper-based service is not available).
 - Other bandwidth rentals are subject to a requirement that charges are fair and reasonable.
- A12.3 In this annex, we set out the modelling we have undertaken to assess cost recovery as part of the RAB approach with pricing continuity where Openreach deploys a fibre network commercially to 3.6m premises in WLA Area 3.

The RAB approach

- A12.4 We have decided to adopt a forecast RAB approach which continues the approach we adopted in the WFTMR21.
- A12.5 The RAB approach is a cost-based control. In many ways it is similar to our typical approach to setting a CPI-X price cap, in that it is set in advance based on cost and revenue forecasts and remains for the duration of the control. However, it differs in the following respects:
- the cost forecasts are based on assumptions about Openreach's FTTP network that is still being deployed during the 2026-31 review period; and
 - the price caps are intended to allow the forward-looking expectation of cost recovery across the FTTP and copper networks, in aggregate and over the lifetime of those networks.⁵⁹⁴
- A12.6 Ultimately, our RAB modelling is used to assess the following:
- what is a reasonable level of cost recovery that is required during the review period, where Openreach commercially deploys FTTP in WLA Area 3, that would allow an expectation of cost recovery over the lifetime of the fibre and copper networks; and
 - what this means in terms of setting charge controls on copper and fibre services over the review period.

⁵⁹⁴ In contrast, Ofcom's historical approach has generally been to set pricing regulation to allow for cost recovery on each individual network/technology separately. See [2021 WFTMR Statement](#), Volume 4, Section 2 for further discussion.

High level approach

- A12.7 Our modelling calculates the present value of costs and revenues over a 20-year period, across both the fibre and copper networks. Our modelling has the following components:
- **FTTP costs:** the costs of building and operating a FTTP network reaching 3.6m premises in WLA Area 3 over the lifetime of the network (which we model over a 20-year period).
 - **Copper costs:** the costs of operating the copper network (providing MPF, WLR and FTTC services) in WLA Area 3 over the lifetime of the network. The copper service cost estimates use input data on the costs of copper services from the 'cost forecast model' (which is described in more detail in Annex 10).
 - **Volume and revenue assumptions:** covering our assumptions on the migration from copper to FTTP services and our revenue estimates over the lifetime of our modelled networks.
- A12.8 In the WFTMR21, we used a RAB approach that considered cost recovery relating to Openreach deploying a fibre network in WLA Area 3 from 2021 and reaching 7m premises by 2031. For this review period, WLA Area 3 is smaller and we are therefore considering the cost recovery relating to Openreach deploying a fibre network where build started in 2021 and reaches 3.6m premises by 2031.
- A12.9 In the WFTMR21, we assumed 2m of the 9m premises in Area 3 were not commercially viable. Since 2021, around 1.18m of those 2m premises have been deployed to by altnets and have been re-categorised as WLA Area 2. This leaves around 0.8m premises in our modelled WLA Area 3 of the total 4.4m premises that we assume are not commercially viable. Therefore, this leaves 3.6m commercially viable premises.⁵⁹⁵
- A12.10 To model the costs and revenues for Openreach deploying its fibre network, we use the 2026 Fibre Cost Model. As stated in Annex 11, the geospatial analysis used to process the location of all premises in the UK and dimension the target network appropriately has not been updated since WFTMR21. As a result, it does not account for additional UK premises built since 2021 leading to a difference of c. 275,000 premises between commercial WLA Area 3 (3.6m premises) and number of premises to which the 2026 Fibre Cost Model deploys the fibre network (3.3m premises). We do not consider that this exclusion will have a material impact on the final cost and revenue estimates as we expect the average cost of deploying a fibre network in the premises excluded from our modelling will be approximately the same as the premises included in our modelling.⁵⁹⁶
- A12.11 To estimate cost recovery over the lifetime of the modelled network, we need to model costs and revenues in the period 2021-26 and several future periods.

⁵⁹⁵ On 6 March 2026, an error was identified in the allocation of 61 postcode sectors to WLA geographic markets. 61 postcode sectors were incorrectly classified as WLA Area 3, when they should have been classified as WLA Area 2. This error has been corrected in Schedule 2 for the Statement, and in any references to the results of Schedule 2 throughout the Statement, except where specified otherwise. We have assessed that this error does not have a material impact on the results derived from affected charge control models (i.e. our cost forecast model, fibre cost model and WLA Area 3 RAB model). Given the immaterial impact of this error, we have not corrected it in our charge control modelling for the Statement as this would not have been practicable in time for publication.

⁵⁹⁶ We used the 2026 Fibre Cost Model to check the cost of building and operating a FTTP network to postcode sectors adjacent to the missing postcode sectors. We found that the distribution of costs for these postcode sectors was broadly in line with the distribution of costs across the entirety of WLA Area 3.

- For the 2021-26 period, we use our forecasts (fibre and copper service costs and revenues) from the 2021 RAB model but re-scaled based on Openreach deploying a fibre network that reaches 3.6m premises by 2031.
 - For 2026 onwards, we follow our typical approach to setting cost-based controls by rebasing our modelling estimates to allow us to estimate forward-looking costs and revenues. To inform this rebasing exercise we have considered information on Openreach's outturn volumes, costs and revenues, and recent forecasts gathered under our formal powers. More specifically, we have updated:
 - Copper network costs based on 2021/22 to 2024/25 outturn data (re-scaled to reflect a smaller WLA Area 3 for this review period) and our charges in the cost forecast model for the 2026-31 period;
 - Fibre network cost forecasts using our 2026 Fibre Cost Model;
 - Openreach's fibre network deployment to reflect its actual build in WLA Area 3 as of July 2025;
 - Forecasts of copper and FTTP volume of lines and prices based on outturn information and cross checked against recent Openreach forecasts.
- A12.12 We then combine the forecasts for the 2021-26 period (based on the 2021 model) and the 2026-41 period (based on the 2026 model) to assess expected cost recovery over the total 20-year recovery period.
- A12.13 Our approach of rebasing our modelling to provide a forward-looking path of cost recovery is consistent with allowing Openreach a fair bet on its investment by keeping any upside in earlier review periods if it outperforms our forecasts or incurring the downside if it underperforms our forecasts.
- A12.14 Consistent with this approach, to calculate the present value of costs and revenues over the lifetime of the modelled network we have discounted the cashflows as follows:
- For the 2021-26 period, we use our WACC assumptions from the WFTMR 2021. This means:
 - For copper services we use a pre-tax nominal WACC for Openreach (applicable to copper services) of 7.0% to discount copper service costs and revenues; and
 - For FTTP services: we have used a pre-tax nominal OUKT WACC of 7.8% to discount FTTP costs and revenues.
 - From 2026 onwards, we use our updated WACC estimates. This means:
 - For copper services we use a pre-tax nominal WACC for Openreach (applicable to copper services) of 7.5% to discount copper service costs and revenues; and
 - For FTTP services: we have used a pre-tax nominal OUKT WACC of 7.9% to discount FTTP costs and revenues.
- A12.15 We found that in the TAR26 March 2025 Consultation RAB model there was an error with the estimation of copper volumes for years up to and including 2024/25 as these volumes were based on out-turn data and represented the WFTMR21 WLA geographic boundaries, making the volumes inconsistent with the copper volumes post 2024/25 and the fibre volumes. We have adjusted our approach to estimating copper volumes to reflect the TAR26 WLA geographic boundaries.
- A12.16 Below, we provide details of the modelling approach:

- First, we set out our cost and revenue estimates for the 2021-26 period, based on the 2021 RAB model; and
- Second, we set out our cost and revenue estimates for the 2026-41 period, based on the 2026 RAB model.

Cost and revenue estimates for the 2021-26 period

2021-26 cost estimates

- A12.17 To estimate costs for the 2021-26 period, we use the modelling assumptions from WFTMR 2021 to calculate costs for the fibre and copper network where Openreach deploys a commercial fibre network to 3.6m premises in WLA Area 3.
- A12.18 We estimate fibre network costs using our 2021 Fibre Cost model. This model calculates the total cash costs of deploying and running a FTTP network by estimating the number of network components needed to deploy the FTTP network (e.g. civil costs, fibre, exchange equipment) and combining this with estimates of the capital and operating costs for each component.
- A12.19 Consistent with our approach in the WFTMR21, we assume:
- Deployment of the fibre network starts in 2021 and finishes in 2031 (albeit to 3.6m premises). FTTP build to the remaining c.0.8m premises in WLA Area 3, in the hardest to reach postcode sectors, i.e. with the highest costs, are assumed to require public subsidy and are not included in our RAB assessment.
 - The fibre network is deployed across postcode sectors in alphabetical order. This is to reflect that Openreach's FTTP deployment is likely to contain a mixture of lower- and higher- cost premises, so ordering by cost would not be appropriate, and deployment will likely be sequenced according to BT exchange areas.
 - Openreach reuses existing physical infrastructure, such as ducts and poles, where spare capacity is available and only builds new physical infrastructure where this is not available or feasible. We assume Openreach can reuse:
 - > 68% of existing ducts and poles in our high-cost scenario,
 - > 80% of existing ducts and poles in our low-cost scenario, and
 - > 74% in our central scenario.
 - Operating costs are driven by customer connections and/or number of customers. We have maintained our assumptions regarding rate of connections and customer numbers (rescaled to a fibre network of 3.6m premises)
- A12.20 For copper services, we take forecast Fully Allocated Costs (FAC) from the 2021 cost forecast model. To be consistent with our modelling for the 2026-41 period, we have included the costs of copper connection services and SMPF. As the 2021 cost forecast model erroneously did not include connection services or SMPF, we have applied a simplified uplift to rental service costs.⁵⁹⁷
- A12.21 We then calculate depreciated costs for fibre and copper services combined for the 2021-26 period by calculating the:

⁵⁹⁷ We estimated costs for connection services and SMPF by uplifting rental service costs based on the average proportion of total costs coming from connection and SMPF services in the 2026 modelling.

present value of fibre and copper costs combined for the 20-year period using the WACC assumptions for the 2021-26 period outlined above (7.0% for copper services and 7.8% for fibre services);

present value of fibre and copper volumes combined for the 20-year period using the WACC assumptions for the 2021-26 period; and

annual flat annuity per line of the 20-year fibre and copper costs by dividing (i) the present value of costs by (ii) the present value of volumes, then multiplying by five to get depreciated costs for the 2021-26 period.

A12.22 Based on the above, we estimate the following costs for the 2021-26 period:

Table A12.1: 2021-2026 costs for a 3.6m Area 3 deployment – Low scenario

	20-year copper and fibre costs (£bn)	20-year copper and fibre volumes (m)	Annual flat annuity per line (£)	5-year costs (2021-26) (£bn)
Cash costs (nominal)	11.9	71	168.77	3.3
Present value (2021/22 prices)	6.7	40		2.9

Table A12.2: 2021-2026 costs for a 3.6m Area 3 deployment – Central scenario

	20-year copper and fibre costs (£bn)	20-year copper and fibre volumes (m)	Annual flat annuity per line (£)	5-year costs (2021-26) (£bn)
Cash costs (nominal)	13	71	183.79	3.5
Present value (2021/22 prices)	7.3	40		3.1

Table A12.3: 2021-2026 costs for a 3.6m Area 3 deployment – High scenario

	20-year copper and fibre costs (3bn)	20-year copper and fibre volumes (m)	Annual flat annuity per line (£)	5-year costs (2021-26) (3bn)
Cash costs (nominal)	14.3	71	203.07	3.9
Present value (2021/22 prices)	8.1	40		3.4

2021-26 revenue estimates

A12.23 To estimate revenues for the 2021-26 period, we use our forecasts and assumptions from the 2021 RAB model⁵⁹⁸ but re-scaled based on Openreach deploying a fibre network that reaches 3.6m premises by 2031. In summary:

⁵⁹⁸ See [WFTMR 2021](#), Annex 16, paragraphs A16.51-A16.63.

- We assume Openreach’s commercial FTTP deployment reaches c.3.6m premises by 2031;
- Fibre take-up reaches a maximum of 90%, 8 years after deployment with customers migrating from copper services;
- We assume copper rental prices increase in line with the forecast of CPI in the 2021 RAB model;
- We assume fibre rental prices will be higher than copper prices by c.£1.75-£4.00 and that these will follow the trend of copper prices; and
- We assume a fibre connection charge of £27 per connection.

A12.24 Consistent with the cost estimates, we also included an uplift to revenues to account for connection and SMPF services.

Table A12.4: 2021-2026 revenues for a 3.6m Area 3 deployment (£bn)

	Low scenario	Central scenario	High scenario
Undiscounted (nominal)	3.0	3.1	3.1
Present value (2021/22 prices)	2.7	2.7	2.7

Cost and revenue estimates for the 2026-2041 period

A12.25 Consistent with our typical approach to setting cost-based controls, we have rebased our modelling to estimate forward-looking costs and revenues. We refer to this as our 2026 RAB model and we use this to assess cost recovery for the 2026-41 period.

2026-41 cost estimates

A12.26 We have used our Fibre Cost Model to estimate the costs of Openreach commercially deploying a fibre network to c.3.6m premises by 2031 in WLA Area 3.

A12.27 For our 2026 RAB model, we have adjusted our fibre network deployment assumptions so that coverage reaches [3.6] premises by 2025/26 to reflect Openreach’s completed build in WLA Area 3. We have also adjusted our take-up assumptions to reflect outturn take-up and our latest FTTP rental forecasts in Area 3.

A12.28 For our 2026 RAB model, we have also updated some of the assumptions on fibre costs based on recent information we have gathered. These updated assumptions are largely the same as those we made for the cross-check of the WLA Area 2 REO cost range, set out in Annex 11. They include:

- CAPEX: For network elements where we had comparable information, we updated network element unit costs based on Openreach 2024/25 cost information. For other network elements, we assumed costs increased in line with CPI.
- OPEX: We updated PIA Duct Segment 3 (lead-in) costs to more accurately reflect that this is charged on a per line basis (rather than a per metre charge).
- OPEX: We have lowered “other opex” costs to reflect evidence indicating that FTTP repair/maintenance costs are £[3.5] per line per annum lower than FTTC.

A12.29 Table A12.5 sets out our 2026 RAB model estimates of build and connection capex for a commercial deployment to 3.6m premises in WLA Area 3.

Table A12.5: Forecast unit build and connection capex for 3.6m commercial WLA Area 3 FTTP deployment (2026/27 prices)

Cost type	Unit	Low cost	Central cost	High cost
Build costs	Per premises passed	571	734	904
Connection costs	Per connection	554	554	554
Lead to cash opex	Per connection	25	25	25
Other opex	Per customer, per annum	56	58	60

Source: Ofcom 2026 Fibre Cost Model

A12.30 We take copper network costs from our cost forecast model. Our estimates are based on FAC which include operating costs, depreciation, holding gains/losses and a return on capital.

A12.31 For the 2026-31 period, we directly use the cost forecast model (detailed in Annex 10) to forecast the costs of copper services. In the 2026 RAB model, we include the costs of connection services, SOGEA, G.fast and SMPF. These were not included in the 2021 model, although in the case of SOGEA these volumes were effectively captured as standard FTTC, i.e. FTTC service purchased with MPF or WLR service. We consider it appropriate to include the cost of all copper services to assess cost recovery under the RAB approach.

A12.32 For the 2031-41 period, we have used a simplified cost forecasting approach. We consider that this is a practical approach given that these costs are heavily discounted and there is a high degree of uncertainty when forecasting far into the future. Consistent with the 2021 RAB model, this simplified approach assumes that the cost stack moves in line with volumes according to the weighted average CVEs for MPF and FTTC services, and that it will inflate each year by CPI and reduce by the efficiency rate. We assume that copper retirement will have concluded by the end of 2035/36, meaning copper volumes and costs are assumed to be zero from this point onwards.

A12.33 Having forecast costs for fibre and copper services using the 2026 RAB model, we then calculate depreciated costs for fibre and copper services combined for the 2026-41 period following the same approach detailed above. Tables A12.6-A12.11 below set out our cost estimates.

Table A12.6: 2026 model forecast of costs for a 3.6m WLA Area 3 deployment – Low scenario

	20-year copper and fibre costs (£bn)	20-year copper and fibre volumes (m)	Annual flat annuity per line (£)
Cash costs (nominal)	10.0	63	159.06

	20-year copper and fibre costs (£bn)	20-year copper and fibre volumes (m)	Annual flat annuity per line (£)
Present value (2021/22 prices)	5.9	37	

Table A12.7: 2026 model forecast of depreciated costs: 2026-41 – Low scenario (£bn)

	2026-31 costs	2031-36 costs	2036-41 costs
Cash costs (nominal)	2.6	2.1	2.1
Present value (2021/22 prices)	1.5	0.8	0.6

Table A12.8: 2026 model forecast of costs for a 3.6m WLA Area 3 deployment – Central scenario

	20-year copper and fibre costs (£bn)	20-year copper and fibre volumes (m)	Annual flat annuity per line (£)
Cash costs (nominal)	10.8	63	171.16
Present value (2021/22 prices)	6.3	37	

Table A12.9: 2026 model forecast of depreciated costs: 2026-41 – Central scenario (£bn)

	2026-31 costs	2031-36 costs	2036-41 costs
Cash costs (nominal)	2.8	2.2	2.3
Present value (2021/22 prices)	1.7	0.9	0.6

Table A12.10: 2026 model forecast of costs for a 3.6m WLA Area 3 deployment – High scenario

	20-year copper and fibre costs (£bn)	20-year copper and fibre volumes	Annual flat annuity per line
Cash costs (nominal)	11.7	63	184.96
Present value (2021/22 prices)	6.8	37	

Table A12.11: 2026 model forecast of depreciated costs: 2026-41 – High scenario (£bn)

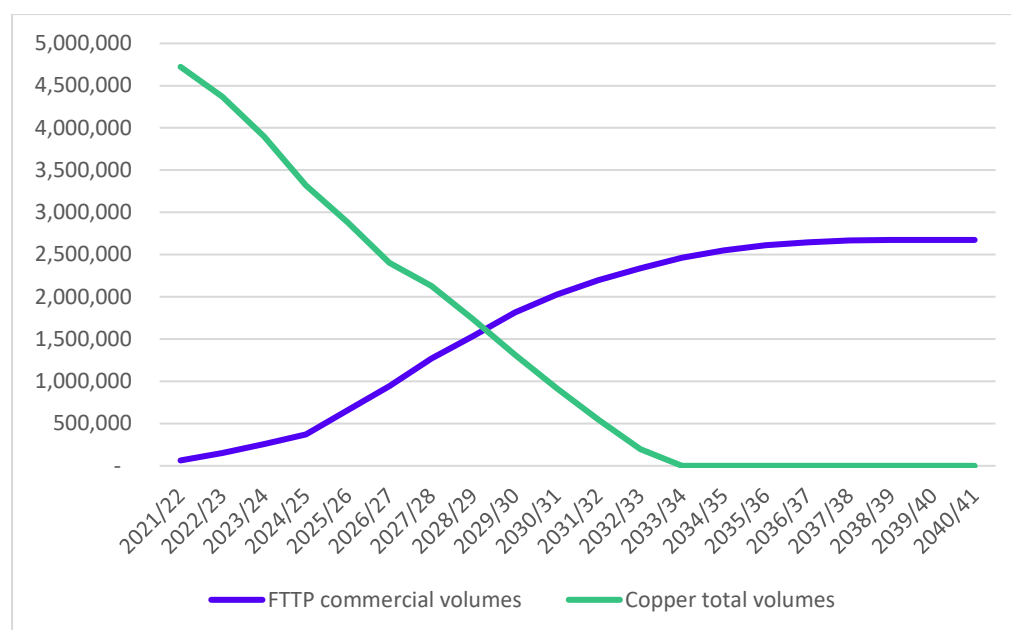
	2026-31 costs	2031-36 costs	2036-41 costs
Cash costs (nominal)	3.0	2.4	2.5
Present value (2021/22 prices)	1.8	1.0	0.7

2026-41 revenue estimates

A12.34 In the 2026 RAB model, we forecast volumes based on the following assumptions:

- Openreach’s commercial FTTP deployment reaches c.3.6m premises by 2031;
- Fibre take-up reaches a maximum of 80%, 9 years after deployment with customers migrating from copper services; and
- Copper volumes decrease in line with this and are forecast to be zero from 2035/36 onwards.

Figure A12.1: Forecasts of WLA Area 3 fibre and copper service volumes



Source: Ofcom estimates and forecasts, 2026 WLA Volumes Module and Fibre Cost Model

A12.35 We have updated our volume forecasts to account for current and planned FTTP coverage by altnets in WLA Area 3 which is estimated to be approx. 1.2 million out of 3.3 million commercially viable premises. In postcode sectors where there is altnet presence, we have assumed that they will achieve a take-up of 30%. Overall, this results in Openreach achieving a take-up of 80%⁵⁹⁹ 9 years after deployment of its fibre network.

⁵⁹⁹ Estimated as a weighted average assuming Openreach achieves 90% take-up in postcode sectors where there is no altnet presence and 60% take-up in postcode sectors where there is altnet presence, accounting for mobile-only households as well.

- A12.36 To estimate copper rental and connection service revenues for 2026-31, we have taken the ‘discounted’ starting prices from the cost forecast model as explained in Annex 10. We then assume that prices increase with forecast CPI in each year during this period. From 2031-41, we assume copper prices remain flat in nominal terms.
- A12.37 In relation to fibre rental prices, for the years up to and including 2029/30, we have updated our central estimate based on the prices from Openreach’s published price list under the Equinox scheme⁶⁰⁰ and Openreach’s forecast of fibre volumes⁶⁰¹. For 2030/31, we assume that the average fibre rental price will increase in line with CPI. For 2031-41, we assume that the average fibre rental price remains flat in nominal terms. To estimate low and high revenue estimates, we have scaled the differential between the central estimate of fibre rental prices in each year and the average copper rental price by plus and minus 50%.⁶⁰²
- A12.38 We have decided to change our approach to estimating the fibre rental prices from relying on Openreach’s forecasts of fibre volumes and revenues as in the TAR26 March 2025 Consultation model to relying on Openreach’s published price list under the Equinox scheme. We believe our updated estimates reflect current market prices more accurately and are better aligned with the fibre rental prices estimated using fibre volume and revenue data from BT Group’s Regulatory Financial Statements⁶⁰³.
- A12.39 For fibre connection prices, we have taken Openreach’s 2026/27 Equinox 2 wholesale discounted connection charge in Area 3 for “Migrating existing customers with the same provider to FTTP (80/20 or above)” of £83.45 and inflated with forecast CPI in each year to estimate the average connection price for 2027-31. As with rental prices, we assume it remains flat in nominal terms for 2031-41.⁶⁰⁴
- A12.40 Figure A12.2 sets out our projections of copper rental prices and fibre rental prices for 2026-41.

Figure A12.2: Assumed average rental prices (£ per month – nominal terms)

[X<]

Source: Ofcom RAB model

- A12.41 Tables A12.12-A12.14 sets out our 2026 RAB model estimates of revenues across fibre and copper services for 2026-41.

Table A12.12: 2026-2031 revenues for a 3.6m WLA Area 3 deployment (£bn)

	Low scenario	Central scenario	High scenario
Undiscounted (nominal)	3.5	3.6	3.7

⁶⁰⁰ Openreach. Full Fibre broadband (FTTP) pricing for service providers. Accessed on 15 January 2025.

⁶⁰¹ Openreach s.135 response dated 16 September 2025 to RFI Tranche 12 dated 05 August 2025, question A3.

⁶⁰² For our modelling purposes we have not included the permitted £1 rental uplift from Equinox when estimating the fibre rental price.

⁶⁰³ BT Group. [Regulatory Financial Statements 2024-25](#). Accessed on 31 January 2026.

⁶⁰⁴ For our modelling purposes we have not included the permitted £20 uplift when estimating the connection charges.

	Low scenario	Central scenario	High scenario
Present value (2021/22 prices)	2.1	2.1	2.2

Table A12.13: 2031-2036 revenues for a 3.6m WLA Area 3 deployment (£bn)

	Low scenario	Central scenario	High scenario
Undiscounted (nominal)	3.0	3.1	3.2
Present value (2021/22 prices)	1.2	1.3	1.3

Table A12.14: 2036-41 revenues for a 3.6m WLA Area 3 deployment (£bn)

	Low scenario	Central scenario	High scenario
Undiscounted (nominal)	3.0	3.2	3.3
Present value (2021/22 prices)	0.8	0.9	0.9

Summary of results

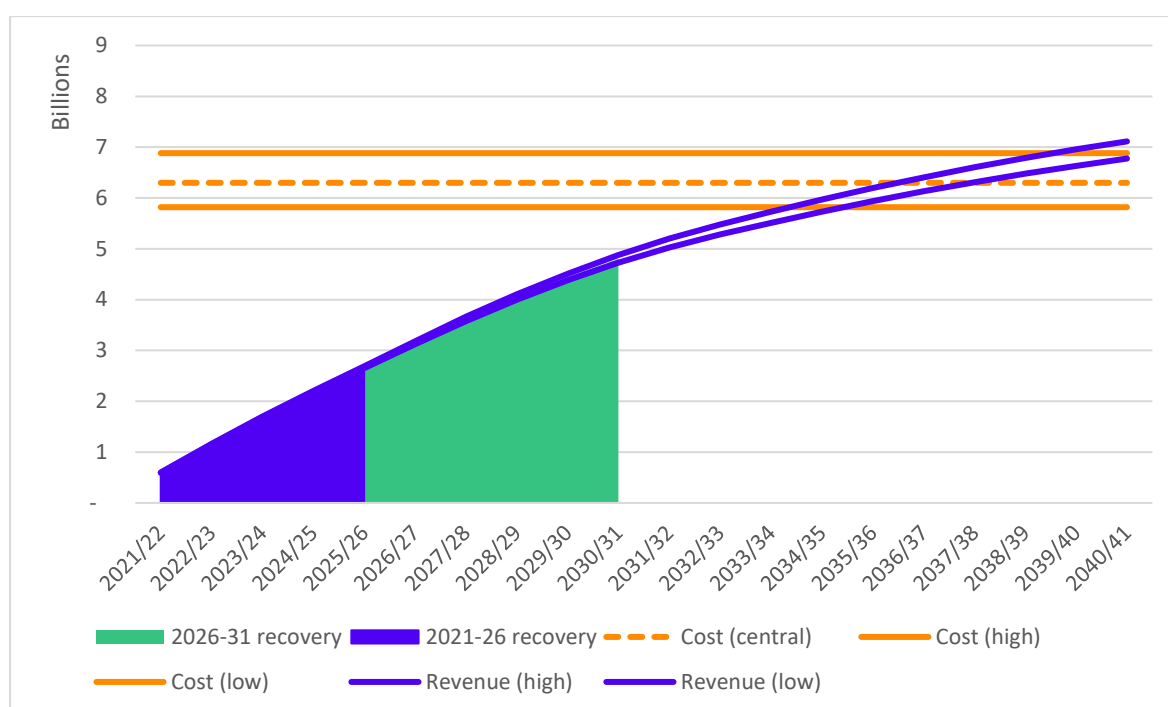
- A12.42 As set out above, our RAB modelling is used to assess whether our pricing continuity approach for WLA Area 3 over the next 5 years sits within a reasonable range of forward-looking cost recovery profiles.
- A12.43 For this assessment, we calculate the present value of costs and revenues over a 20-year period, across both the fibre and copper networks in WLA Area 3. Consistent with allowing Openreach a fair bet on its investment, for the 2021-26 period we assume the costs and revenues that we forecast in the WFTMR21 in our 2021 RAB model (scaled to the updated commercial WLA Area 3 of 3.6m premises) represent the actual costs recovered during this period. For 2026 onwards, we have rebased our modelling estimates using the latest available evidence to allow us to estimate forward-looking costs and revenues.
- A12.44 Given the inherent uncertainty around forecasting for such long periods, we have not sought to determine a single estimate of the level of cost recovery required during the next control period and beyond (and thereby a single level of copper prices needed to allow for that cost recovery). Rather, our modelling seeks to understand what a plausible range of costs for fibre and copper services is over the lifetimes of those networks and whether indexed pricing over the next 5 years sits within a reasonable range of cost recovery profiles. With this purpose in mind, we present our long-term forecasts of total fibre and copper revenue and costs in Table A12.15 below.

A12.45 Table A12.15 and Figure A12.3 set out our cost and revenue forecasts over the 2026-31 review period and over the lifetime of the networks.

Table A12.15: Summary of revenue and cost forecasts for 2026-31 and 20-year lifetime (£bn, present value in 2021/22 prices)

	2026-31 revenues	20-yr revenues (2021-41)	20-yr costs (2021-41)	NPV
Central	4.3	6.9	6.3	0.6
Low	4.1	6.8	5.8	-0.1
High	4.4	7.1	6.9	1.3

Figure A12.3: Estimated fibre and copper cost recovery with pricing continuity (£bn, present value basis)



Source: Ofcom RAB model

A12.46 Based on the above, we consider that pricing continuity over the next review period is consistent with a reasonable range of cost recovery profiles. Our estimates indicate that:

- With a commercial fibre network covering 3.6m premises in WLA Area 3 by 2031, Openreach's total costs across fibre and copper services will range between £5.8bn and £6.9bn on a present value basis over 20 years.
- During the 2026-31 review period, our pricing continuity approach will allow cost recovery of £4.1bn to 4.4bn across fibre and copper services on a present value basis.
- Our 2021 RAB model assumes that Openreach would have already recovered £2.7bn across fibre and copper services on a present value basis during the 2021-26 review period.
- Our modelling indicates total revenues of between £6.8bn and £7.1bn on a present value basis over a 20-year period. These estimates are close to the top of our range of cost

estimates but, given the uncertainty with forecasting cost and revenues over such a long period, we still consider that pricing continuity is likely to be consistent with cost recovery over the lifetime of the networks.

A13. Dark fibre cost modelling

- A13.1 In Volume 3 Sections 7 and 8, we set out the requirements for Openreach to provide network access to dark fibre services connecting to the local exchange (dark fibre access or DFA) in Area 3 and inter-exchange connectivity (dark fibre inter-exchange or DFX) from BT Only exchanges and BT+1 exchanges.
- A13.2 In Volume 4 Sections 2 and 3, we explain our decision that the charges for DFA and DFX should continue to be cost-based.
- A13.3 In Volume 4 Section 5, we explain our decision that the charges for dark fibre ancillary services should continue to be charge controlled at CPI-0%.
- A13.4 This annex sets out our approach to modelling dark fibre costs and the detail of our dark fibre charge controls. We received some stakeholder responses to our consultation proposals on dark fibre cost modelling, and we have addressed these responses within this annex.

Summary of the charge controlled dark fibre services

Our proposals

- A13.5 In our March 2025 Consultation, we proposed to set charge controls for dark fibre services in relation to the underlying segments needed for a circuit, meaning that:
- For DFA services, we proposed to set charge controls for per circuit connection charges and per circuit annual rental charges.
 - For DFX services, we proposed to set charge controls for per circuit connection charges, per circuit annual rental charges and distance-related (per metre) annual main link charges.
- A13.6 We also proposed to set charge controls for ancillary services that are specific to dark fibre.

Stakeholder responses

- A13.7 Openreach noted that some of the line items on its dark fibre price list combine multiple charge controlled modular dark fibre services.⁶⁰⁵ As an example, it highlighted that currently the connection price for the “Dark Fibre 2 Access Link – Single Fibre” product incorporates two units of the charge controlled DFA single fibre connection service⁶⁰⁶ and one unit of the charge controlled initial testing service.⁶⁰⁷
- A13.8 Openreach suggested that for the TAR Statement, Ofcom should set charge controls which align with the line items on its dark fibre price list.⁶⁰⁸ This would involve analysing costs at the modular level and calculating blended charge controls which combine relevant

⁶⁰⁵ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 394-396.

⁶⁰⁶ Specifically, this is the “Connection for a Single Fibre Circuit” service set out in SMP Condition 121.1a) in Volume 7 of the WFTMR 2021 Statement.

⁶⁰⁷ Specifically, this is the “Initial Testing” service set out in SMP Condition 121.5b) in Volume 7 of the WFTMR 2021 Statement.

⁶⁰⁸ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 397-398.

modular costs. Openreach considered that this change would make the charge control easier to operate and increase transparency for its customers.

Our reasoning and decisions

- A13.9 We do not agree with Openreach's view that calculating blended charge controls aligned to price list products will increase transparency for customers. We acknowledge that Openreach's suggested approach could simplify the process of demonstrating compliance with the dark fibre charge controls over the 2026-31 period.
- A13.10 However, we consider that calculating blended charge controls would increase complexity overall, as it would require additional calculations to be added into the dark fibre cost model, and it would require an increased number of dark fibre charge controls (aligned to the various combinations of modular services shown on the dark fibre price list).
- A13.11 In addition, we typically separate the charge controls for core services (which here refers to connections, circuit rentals and main link rentals) and ancillary services in the LLA and IEC markets, and we consider that blending these charge controls specifically for dark fibre services could reduce the transparency of our regulation. This is because in cases where a line item from the dark fibre price list incorporates core and ancillary services (as is the case for Openreach's "Dark Fibre 2 Access Link – Single Fibre" product example⁶⁰⁹), the blended charge control would be neither fully cost-based nor CPI-0%; instead it would be a partly cost-based charge control which is potentially less transparent than the approach proposed in our March 2025 Consultation. We consider that it is beneficial for customers to have a clear understanding of which modular dark fibre services are subject to cost-based charge controls and which services are subject to a CPI-0% charge control when making their purchasing decisions.
- A13.12 For the reasons set out above, we have decided to retain the same approach to defining the dark fibre charge controls as we proposed in our March 2025 Consultation. In particular, we will set the charge control for dark fibre services in relation to the underlying segments needed for a circuit, i.e. we are setting a charge control for:
- Dark fibre access (DFA) segment which is defined as dark fibre for the supply of leased lines access, i.e. between the customer end site and the nearest BT exchange, in Area 3.⁶¹⁰
 - Dark fibre inter-exchange (DFX) segment which is defined as dark fibre for the supply of inter-exchange connectivity from BT Only exchanges and BT+1 exchanges.
 - All combinations of DFA and DFX segments.
- A13.13 For DFA services, we have decided to set charge controls for per circuit connection charges and per circuit annual rental charges.
- A13.14 For DFX services, we have decided to set charge controls for per circuit connection charges, per circuit annual rental charges and distance-related (per metre) annual main link charges.

⁶⁰⁹ This is because initial testing is a dark fibre ancillary service.

⁶¹⁰ This definition of 'DFA segment' refers to one DFA access link between a customer site and a BT exchange. DFA circuits which feature one DFA access link are called 'Dark Fibre 1 Access Link' on the Openreach online dark fibre price list. We note that DFA circuits can feature two DFA access links (or equivalently, two 'DFA segments'), which allows for those circuits to provide connectivity between two customer sites. DFA circuits which feature two DFA access links are called 'Dark Fibre 2 Access Link' on the Openreach online dark fibre price list.

A13.15 We have decided to set charge controls for the following ancillary services that are specific to dark fibre:

- Patch panel charges – To provide DFA and DFX, Openreach needs to install some form of passive NTE to hand over the service to the purchasing telecoms provider. We would expect a patch panel charge to only occur when a patch panel is necessary.
- Initial testing charges – A dark fibre circuit needs to be tested when it is connected for the first time.
- RWT (Right When Tested) charges – A RWT charge is billed when a purchasing telecoms provider experiencing a fault on its dark fibre circuit reports that fault to Openreach, after which an Openreach investigation finds that the line tests as 'OK' when tested remotely or by an onsite engineer visit.
- Cessation charges – A cessation charge is billed when a circuit is physically ceased by an engineer to stop it from being used when it is no longer being charged for.

Combinations of DFA and DFX segments

A13.16 When a dark fibre circuit requires a combination of DFA and DFX segments, the rental and connection charges of the DFX segment should be excluded to avoid double counting of costs. As such, the costs of a dark fibre circuit that spans between two customer sites, where each customer site is connected to a different BT exchange, would be derived as:

- twice the DFA segment rental and connection charges; plus
- the appropriate number of patch panel and initial testing charges; plus
- the DFX segment main link rental charge.

Charge controls for dark fibre ancillary services

A13.17 In Volume 4 Section 5, we explain our decision to continue to charge control dark fibre ancillary services at CPI-0%. This includes the dark fibre specific ancillaries mentioned earlier in this section, plus time related charges (TRCs) and excess construction charges (ECCs) used for dark fibre circuits. This approach is consistent with our general approach to charge controlling ancillary services.

Charge controls for DFA and DFX services

Cost standard

Our proposals

A13.18 In our March 2025 Consultation, we proposed to set a cost-based charge control for DFA and DFX services with reference to the relevant components of Openreach's underlying passive infrastructure. We proposed that charges should be set based on a CCA FAC standard and informed by RFS data.

A13.19 We proposed to retain the approach used in the WFTMR 2021 of using RFS data for benchmark active Ethernet services to estimate the unit FAC for DFA and DFX. This proposal was informed by our assessment that there were some limitations in the DFA and DFX data reported within BT's RFS, which meant that using dark fibre RFS data directly could hinder the robustness of our dark fibre unit FAC estimates. We noted that we would continue to engage with BT about its approach to cost allocation and future RFS reporting for DFA and DFX services.

Stakeholder responses

- A13.20 VodafoneThree disagreed with our proposal to use RFS data for benchmark active Ethernet services to estimate the unit FAC for DFA and DFX, and it suggested that we should instead estimate DFA and DFX costs based directly on RFS data for those services.⁶¹¹ VodafoneThree considered that its suggested approach would improve transparency and accuracy.
- A13.21 VodafoneThree also said that any identified inaccuracies in the DFA and DFX data within the RFS could affect other products that rely on the same inputs, and that any under-allocation of costs to DFA or DFX services could imply possible over-allocation of costs to other products, including Ethernet Access Direct (EAD) products.⁶¹² It advocated that Ofcom should engage with BT to review the relevant RFS methodologies and enforce any necessary adjustments to the RFS data, and then conduct a further consultation on the outputs of its cost modelling once corrections have been made.⁶¹³
- A13.22 Frontier Economics (as referenced in PXC's response to our March 2025 Consultation) noted that RFS returns for IEC dark fibre services were high and increasing between 2020/21 and 2023/24, despite these being subject to a cost-based charge control in 2021-26.^{614 615} It said that Ofcom should investigate the drivers of excess returns on these services and consider if the cost models used to determine cost-based prices need to be adjusted.

Our reasoning and decisions

- A13.23 We have decided to set a cost-based charge control⁶¹⁶ (with reference to the costs of relevant components of Openreach's underlying passive infrastructure), as opposed to adopting an active-minus approach.⁶¹⁷ We set out in Volume 4 why we have decided to set a cost-based charge control for DFA and DFX services.
- A13.24 To inform our choice of cost standard, we note that setting all charges at incremental cost for a multiproduct firm with economies of scope would not be sustainable as the firm would not be able to recover its common costs.
- A13.25 Charges set on a CCA FAC standard have the advantages of being transparent and practicable to implement as Openreach's costs are known and are based on the BT RFS which is publicly available to stakeholders each year. We therefore consider it appropriate to start from BT CCA FAC data and use data from BT's RFS where possible when estimating the unit FAC for DFA and DFX.
- A13.26 We note that BT currently reports financial data for DFA and DFX services within the RFS. We have assessed whether it would be more robust to use this data directly for estimating the unit FAC for DFA and DFX, or instead to repeat the approach used in the WFTMR 2021

⁶¹¹ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Paragraphs 256-257 and 299.

⁶¹² [VodafoneThree](#) response to TAR26 March 2025 Consultation. Paragraphs 258 and 296.

⁶¹³ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Paragraphs 259-260 and 299.

⁶¹⁴ [PXC](#) response to TAR26 March 2025 Consultation. Appendix 1, Page 12.

⁶¹⁵ [Frontier Economics](#) pre-consultation submission. 20 March 2025. Assessment of Openreach profitability. Page 12.

⁶¹⁶ By cost-based charge control we mean a charge control that is set with reference to the underlying costs of providing a dark fibre circuit.

⁶¹⁷ By active-minus we mean a charge control that is set with reference to the price of an active circuit, adjusted to reflect differences in the cost of providing a dark fibre circuit.

of using RFS data for benchmark active Ethernet services to estimate the unit FAC for DFA and DFX.

A13.27 As mentioned above, in our March 2025 Consultation we noted that we had identified some limitations in the DFA and DFX data reported within BT's RFS. Since then BT has made several improvements and corrections to DFA and DFX reporting for the 2025 RFS which have been informed by discussions with Ofcom, including the following changes:

- Several changes to the Openreach sales product management cost allocation methodology, including the creation of separate components for allocating current liabilities related to sales and product management discounts associated with the Equinox and Project 112 special offers.⁶¹⁸
- The creation of internal service codes for Dark Fibre products within the IEC BT Only and LLA Area 3 markets, to improve the accuracy of RFS reporting for internal sales of Dark Fibre products.⁶¹⁹
- The removal of Cumulo cost allocations to Dark Fibre services.⁶²⁰
- A correction to the allocation of spine fibre and distribution fibre costs, to remove the erroneous inclusion of IEC volumes in the calculation of usage factors.⁶²¹

A13.28 We consider that these changes have improved the accuracy of cost allocation and RFS reporting for dark fibre services and also for Ethernet services. These changes will assist future monitoring of outturn profitability for dark fibre services. We will continue to monitor dark fibre RFS reporting on an ongoing basis, and we will raise any further concerns that we identify with BT.

A13.29 However, we consider that it is premature to conclude that using RFS dark fibre data directly within our cost modelling will result in robust estimates of dark fibre unit FAC. If implemented, this change of approach would substantively change our dark fibre cost modelling methodology relative to the methodology used in WFTMR 2021 to set current prices. Given this, we would only consider making such a change when there is good evidence to suggest that using dark fibre costs directly from the RFS is a sufficiently robust approach. We note that the 2025 RFS reporting changes mentioned above are recent, and it is too early to reach a holistic assessment of whether these RFS changes provide sufficiently robust estimates of dark fibre unit FAC (or whether further RFS changes will be necessary in future). In reaching this view, we have taken into account that the existing methodology is well established and already aligned to RFS reporting for Ethernet services.

A13.30 Overall, we therefore disagree with VodafoneThree's view that we should use RFS data for dark fibre services directly in estimating the unit FAC for DFA and DFX. We consider that retaining the methodology proposed in our March 2025 Consultation (i.e. using RFS data for benchmark active Ethernet services to estimate the unit FAC for DFA and DFX) continues to provide the most robust estimates of dark fibre unit FAC at the current time. We have therefore decided to use this approach, as set out in the following sub-section.

A13.31 In response to the points raised by Frontier Economics, we note the improvements to DFA and DFX reporting for the 2025 RFS, which we have explained above. We acknowledge that information from the 2025 RFS appears to indicate that DFX ROCE is high, and we have

⁶¹⁸ BT Group. 2025. [Change Control Notification - 31 March 2025](#). Section 2.3.9.

⁶¹⁹ BT Group. 2025. [Change Control Notification - 31 March 2025](#). Section 2.3.13.

⁶²⁰ BT Group. 2025. [Change Control Notification - 31 March 2025](#). Section 2.3.13.

⁶²¹ BT Group. 2025. [Regulatory Financial Statements 2025](#). Appendix 2, Section 2.3.8.

taken this into account in setting our DFX charge controls for 2026-31, by using 2024/25 RFS data for benchmark active Ethernet services to inform the base year costs in our dark fibre cost modelling. We also note that BT's reallocation of core junction fibre (CJF) costs, which BT intends to capture in its 2026 RFS, is likely to materially reduce the reported RFS profitability of DFX services. In Annex 10, we explain our decision to incorporate BT's CJF fibre cost reallocation (and not incorporate BT's spine fibre cost reallocation) in our charge control modelling for the TAR Statement.

Basing costs on active Ethernet services

- A13.32 Openreach's wholesale Ethernet products (i.e. EAD⁶²²) are the main products that Openreach currently supplies for a range of services spread across lower bandwidths and some VHB circuits. We consider that EAD products provide a suitable benchmark for calculating dark fibre costs for DFA and DFX. This is because EAD products are effectively a combination of dark fibre and active equipment (including electronics). As explained in further detail below, we can split the cost of providing EAD products into active component costs, passive component costs and shared component costs. We can therefore understand the costs associated with dark fibre by removing active component costs from the EAD cost stack.
- A13.33 The typical charging structure for Openreach's EAD product is a one-off connection charge, an annual rental charge per circuit, and a distance-related annual main link charge which applies if the two ends of an EAD circuit are served by different BT exchanges.^{623 624}

Dual fibre circuits

- A13.34 We have decided to continue to require Openreach to offer both single fibre and dual fibre dark fibre circuits. The per circuit rental, connection, and main link charges for the dual fibre variants should be twice those for the single fibre variant.

Calculation of ancillary charges for dual fibre circuits

- A13.35 We would expect a dual fibre circuit not to require twice as much initial testing. Therefore, the initial testing charge (which is per connection) should be the same for both single and dual fibre circuits. The same applies to the dark fibre cessation and RWT charges. We note that the patch panel charges are per panel so independent of whether single or dual fibre circuits are purchased.

Methodology for estimating efficient costs

- A13.36 We have constructed the cost stack for dark fibre connection, rental and main link services from the following two elements:
- Element A: Costs relating to passive infrastructure required for a dark fibre circuit. For example, this would include the costs of the fibre that runs between exchanges; or between the customer end site and an exchange.
 - Element B: Other costs (e.g. overheads) that are required for, but not specific to, a dark fibre circuit as they are shared across multiple services. For example, this would include the costs of service centre staff who manage provision and maintenance queries or product

⁶²² EAD (Ethernet Access Direct) is an Ethernet product offered by Openreach providing high bandwidth, point-to-point connections.

⁶²³ The main link charge depends on the radial distance between the two BT exchanges.

⁶²⁴ In order to avoid double counting of costs, we treat the initial testing charge for a dark fibre circuit as a dark fibre ancillary service that is separate from the dark fibre connection charge.

management people. The costs of such people are generally allocated across a range of different services.

A13.37 We have used CCA FAC information on EAD services derived from BT's RFS to inform our estimates of elements A and B. Specifically, we have estimated the unit FAC of DFA and DFX services in a given year by using the unit CCA FAC of the following benchmark EAD services in that year:

- EAD LA 10 Gbit/s service to calculate the costs of elements A and B for the DFA segment; and
- EAD 10 Gbit/s service to calculate the costs of elements A and B for the DFX segment.

A13.38 Our use of 10 Gbit/s EAD services is a change from our WFTMR 2021 approach of using 1 Gbit/s EAD services as a benchmark for estimating dark fibre costs. We have made this change to reflect our current view (taking account of the latest evidence) of the relative substitutability between different EAD bandwidths and dark fibre services. As explained further in Volume 4, Section 2, we consider that DFA services are most attractive as substitutes for active services at bandwidths above 1 Gbit/s. If DFA services are ultimately used by purchasing telecoms providers to deliver services primarily at bandwidths above 1 Gbit/s, then we consider that the estimated costs of DFA should be informed by the costs of EAD services above 1Gbit/s. This implies use of the 10 Gbit/s EAD LA service, which is the available EAD bandwidth above 1Gbit/s, as our benchmark for DFA.

A13.39 Given that DFX services provide inter-exchange connectivity which supports backhaul, these services need to be capable of delivering the high capacity required for backhaul traffic. We therefore consider that DFX services are particularly attractive as substitutes for active services at bandwidths above 1 Gbit/s.

A13.40 Given the points raised above, and for consistency with our approach towards DFA, we have decided to use the 10 Gbit/s EAD service as our benchmark for DFX.

A13.41 We first forecast the unit costs of DFA and DFX in 2025/26 and in 2030/31 respectively by using forecasts of unit FAC for the benchmark EAD services (which are taken from the top-down cost model) to estimate the unit FAC of DFA and DFX in each of those years.⁶²⁵ We do this by downward adjusting the unit FAC of the benchmark EAD services to remove costs which are not relevant for DFA and DFX services, and we provide further details of this process later in this sub-section.

A13.42 Having generated estimated unit costs of DFA and DFX in 2025/26 and 2030/31, we then collate forecast prices for each service in 2025/26 and 2030/31 under an assumption of CPI-0% price increases in 2026-31.⁶²⁶ Our next step is to estimate the magnitude of any starting charge adjustments (SCAs) on 1 April 2026, which are informed by the gap between forecast prices and unit costs for each service in 2025/26. Lastly, we use the estimated unit costs in 2030/31 and the SCA-adjusted forecast prices⁶²⁷ in 2030/31 to

⁶²⁵ As explained in Annex 10, the top-down cost model uses 2024/25 RFS data for its estimation of base year costs, and it then forecasts the costs of relevant services in subsequent years using top-down cost modelling equations.

⁶²⁶ This set of price forecasts incorporates (i) forecast prices under the existing 2021-26 dark fibre charge controls through to 2025/26 and (ii) forecast prices assuming CPI-0% price increases in 2026-31.

⁶²⁷ This set of price forecasts incorporates (i) forecast prices under the existing 2021-26 dark fibre charge controls through to 2025/26 and (ii) forecast prices assuming that the SCA applies on 1 April 2026 and is followed by CPI-0% price increases in each year of the 2026-31 period.

determine the CPI-X glidepath charge controls needed to align DFA and DFX prices with their respective estimated unit costs by 2030/31.

Adjustments to BT's RFS information

A13.43 In Annex 10, we set out the adjustments that we have made to BT's RFS information to reflect our view of BT's efficiently incurred costs. Our calculations of dark fibre costs are based on RFS information reflecting those base year adjustments.

Geographic scope of the benchmark EAD services

Our proposals

A13.44 In our March 2025 Consultation, we proposed to use national CCA FAC information on EAD services derived from BT's RFS to inform our estimates of a national unit cost for dark fibre. We noted that this approach is consistent with our wider top-down cost modelling approach, which is based on national unit costs for each service.

A13.45 We proposed to exclude the CLA market and BT+2 exchanges from our national EAD cost estimates when estimating dark fibre costs, as these markets are unregulated.

Stakeholder responses

A13.46 In the context of our top-down cost modelling, which produces EAD cost forecasts, Openreach disagreed with our use of national unit costs.⁶²⁸ Openreach considered that its LLA unit costs are highest in LLA Area 3, because it has the least economies of scope and density. Similarly, Openreach considered that its IEC unit costs are higher at BT Only and BT+1 exchanges than at BT+2 exchanges.⁶²⁹ Openreach suggested that Ofcom should incorporate geographically disaggregated unit costs within its charge control modelling for the TAR Statement, and it proposed to work with Ofcom to develop a suitable method for generating geographically disaggregated unit cost estimates.⁶³⁰

A13.47 Openreach highlighted that the approach towards unit costs also has implications for the cost-based DFA and DFX charge controls, given the use of EAD costs as a benchmark for estimating the costs of DFA and DFX services.⁶³¹

Our reasoning and decisions

A13.48 In Annex 10, we address Openreach's comments regarding geographic disaggregation of unit costs, and we explain our decision to retain the use of national unit costs in our top-down cost modelling.

A13.49 Consistent with this decision, we have decided to use national CCA FAC information on EAD services derived from BT's RFS to inform our estimates of a national unit cost for dark fibre.

A13.50 However, we have decided to retain our WFTMR 2021 approach of excluding CLA from our national EAD cost estimates in this context. The CLA is an unregulated market, so it should not impact the charges we set in regulated markets. Therefore, we have removed CLA costs and volumes when estimating dark fibre costs.

A13.51 We have also decided to exclude BT+2 exchanges from our national EAD cost estimates, as BT+2 exchanges are also unregulated. Therefore, we have removed costs and volumes relating to BT+2 exchanges when estimating dark fibre costs.

⁶²⁸ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 81-91.

⁶²⁹ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 113-114.

⁶³⁰ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 90-91.

⁶³¹ [Openreach](#) response to TAR26 March 2025 Consultation. Document 4. Paragraphs 97 and 113-114.

Classification of components

A13.52 We classify the components used to provide EAD services in BT's RFS as relating either only to the active or passive elements of an EAD circuit or as being 'shared' between the active and passive elements. Below we set out our classification for the components used to provide EAD and EAD LA services in BT's 2024/25 RFS.

A13.53 Our overall approach to the classification of components is very similar to the approach used in the WFTMR 2021, as summarised in Annex 17 of the WFTMR 2021 Statement.

A13.54 Active components relate to the active elements of an EAD circuit and do not appear to include any costs relevant to a dark fibre circuit. These include:

- Ethernet Electronics Current and Ethernet Access Direct (EAD) Electronics Capital, which covers costs associated with operating and maintaining active equipment, including the capital costs of that equipment (and overheads related to the Ethernet electronics).
- Ethernet Monitoring Platform, which covers costs associated with a platform that performs remote diagnostic testing and reconfigurations of EAD and OSA circuits.
- Cumulo, i.e. non-domestic rates (NDRs), are a form of property tax paid by ratepayers on their rateable assets which include telecoms assets such as fibre and duct.

A13.55 Passive components relate to the passive elements of an EAD circuit and may therefore include costs that are relevant to a dark fibre circuit (but may vary between the DFA and DFX segments). These include:

- Existing physical infrastructure assets such as ducts and poles;
- Interexchange Fibre, which covers costs associated with providing fibre connectivity between BT exchanges where the ends of an Ethernet circuit are in different BT exchange areas;
- Routing and Records, which covers costs associated with the physical verification and initial recording of routings within the network;
- Legacy Ethernet – Spine Fibre and Legacy Ethernet – Distribution Fibre, which cover costs associated with the fibre used to provide an access segment between a served location and its local BT exchange for EAD services, including the cost of duct that the fibre resides in; and
- Ethernet Excess Construction Capex, which covers costs associated with the construction of additional duct and fibre when there is no existing BT infrastructure connecting a served location to its local BT exchange.⁶³²

A13.56 Shared components relate to both the active and passive elements of an EAD circuit and so may include costs that are relevant to a dark fibre circuit. These include:

- Openreach Sales Product Management, which covers the costs of staff who work in the Sales Product Management division of Openreach;
- Openreach Systems & Development - Ethernet, which covers the development costs for Openreach Ethernet products which are predominantly related to software such as ordering, billing and task allocation systems;

⁶³² Under SMP Condition 12G, BT is required to exempt EAD orders from excess construction charges (ECCs) below a threshold charge, and BT can recover the resulting loss of revenue by including a balancing charge in the connection price.

- Openreach Service Centre Assurance (Ethernet), which covers the costs of staff working in Openreach customer contact centres who deal with enquiries and complaints relating to fault reporting and repairs for Ethernet services;
- Openreach Service Centre Provision (Ethernet), which covers the costs of staff working in Openreach customer contact centres who deal with enquiries and complaints relating to provisions for Ethernet services;
- SLG Ethernet Assurance and SLG Ethernet Provision, which cover costs associated with Service Level Guarantee (SLG) payments made to customers if Openreach fails to meet contractually agreed timescales for repair and provision activities respectively.
- Ofcom Administration Fee (Openreach), which covers the costs of the Network and Services Administrative Charges that Ofcom charges BT; and
- Notional debtors - Revenue receivables, which cover part of the working capital for a service.⁶³³ These costs are an estimate of the amounts that service users (whether BT's own downstream businesses or other providers) owe to BT for each service based on BT's standard payment terms.

Table A13.1: Classification of components required for dark fibre services based on EAD components found in BT's 2024/25 RFS

EAD component	Classification	Dark fibre connections	DFA circuit rental	DFX circuit rental	DFX main link rental
Ethernet Electronics (Current and Capital)	Active				
Ethernet Monitoring Platform	Active				
Cumulo	Active				
PI RAV	Passive		✓		✓
PI Non RAV: • Spine Duct – 1 Bore • Spine Duct – 2 Bore • Spine Duct – 3+ Bore • Lead in Duct • Duct Network Adjustments • Manholes • Joint Boxes	Passive		✓		✓

⁶³³ Methodological changes were made to this component in BT's 2025 RFS. Prior to the 2025 RFS there were separate components for 'Notional Debtors – Openreach copper' and 'Notional Debtors – Openreach non-copper', and in Annex 17 of our March 2025 Consultation we proposed to incorporate the 'Notional Debtors – Openreach non-copper' component into our dark fibre cost estimates. As mentioned on page 14 of BT's 31 March 2025 Change Control Notification, BT has now consolidated the two former components into a single 'Notional Debtors' component, and for this Statement we are therefore incorporating the new consolidated component into our dark fibre cost estimates.

EAD component	Classification	Dark fibre connections	DFA circuit rental	DFX circuit rental	DFX main link rental
PI Poles	Passive		✓		✓
Legacy Ethernet – Spine Fibre	Passive		✓		
Legacy Ethernet – Distribution Fibre	Passive		✓		
Interexchange Fibre	Passive				✓
Routing and Records	Passive	✓			
Ethernet Excess Construction Capex	Passive	✓ ⁶³⁴			
Openreach Sales Product Management	Shared	✓	✓	✓	
Openreach Systems & Development - Ethernet	Shared	✓	✓	✓	✓
Openreach Service Centre Assurance (Ethernet)	Shared		✓	✓	
Openreach Service Centre Provision (Ethernet)	Shared	✓			
SLG Ethernet Assurance	Shared		✓	✓	
SLG Ethernet Provision	Shared	✓			
Ofcom Administration Fee (Openreach)	Shared	✓	✓	✓	✓
Notional debtors - Revenue receivables	Shared	✓	✓	✓	✓

A13.57 We set out below the rationale for including and excluding these components in the various dark fibre services. Except where otherwise stated, all decisions set out below are consistent with the proposals in Annex 17 of our March 2025 Consultation.

Passive infrastructure costs (element A)

A13.58 For each dark fibre service (e.g. connections, rental, main link) we include in element A of the cost stack the unit FAC of any passive components used to provide the corresponding EAD or EAD LA service that we consider would also be required to provide DFX or DFA respectively.

Physical infrastructure assets

A13.59 We have decided that:

⁶³⁴ We include ECCs for the DFA connection charge but exclude these costs for the DFX connection charge.

- element A of the DFX main link rental service should include the full unit FAC of the PIA components attributed to the EAD main link rental service given that a (single fibre) dark fibre circuit uses up the same amount of space as an EAD circuit. For the same reason, element A of the DFA circuit rental service should include the full unit FAC of the PIA components attributed to the EAD LA circuit rental service;
- element A of the DFX circuit rental service should exclude the full unit FAC of the PIA components attributed to the EAD circuit rental service. EAD circuit rental services include duct costs that are not part of inter-exchange connectivity and thus not relevant for the DFX circuit rental service.

Legacy Ethernet – Spine Fibre and Legacy Ethernet – Distribution Fibre

A13.60 We have decided that:

- element A of the DFX circuit rental service should not include the costs of the Legacy Ethernet Fibre components that are attributed to the EAD circuit rental service. DFX does not require any fibre other than that required to connect the circuit between the two BT exchanges. The costs of that fibre are included within the Interexchange Fibre component;
- element A of the DFA circuit rental service should include the full unit FAC of the Legacy Ethernet Fibre components that are attributed to the EAD LA circuit rental service. The dark fibre service from the served customer location to the BT exchange requires fibre.

Interexchange Fibre

A13.61 We have decided that:

- element A of the DFX main link rental service should include the full unit FAC of the Interexchange Fibre component attributed to the EAD main link rental service;
- element A of the DFA cost stack should not include costs relating to the Interexchange Fibre component.

Routing and Records

A13.62 We have decided that:

- element A of the DFX and DFA connection services should include the full unit FAC of the Routing and Records component that is attributed to EAD and EAD LA connections respectively. This is because we do not expect any significant difference in the time, and therefore cost, associated with routing and recording connections for dark fibre compared to EAD circuits.

Ethernet Excess Construction Capex

A13.63 We consider that there will be little, if any, extra construction work that will be required for DFX as the infrastructure supporting connectivity between BT exchanges is already in place. Therefore, we have decided:

- not to include the costs of the Ethernet Excess Construction Capex component that are attributed to the EAD connection service in element A of the DFX connection charge.

A13.64 We consider that Ethernet Excess Construction will be relevant to DFA connections since there will be circumstances where infrastructure is needed to support connectivity between a customer site and a BT exchange. Therefore, we have decided:

- to include the full unit FAC of the Ethernet Excess Construction Capex component that is attributed to the EAD LA connection service in element A of the DFA connection charge.

Other costs not specific to dark fibre services (element B)

A13.65 For both DFA and DFX, we include in element B of the cost stack an appropriate proportion of the unit FAC of any shared components used to provide the corresponding EAD LA / EAD service. Below we set out our treatment of the costs for each of the following components:

- Openreach Systems & Development - Ethernet;
- Openreach Service Centre Assurance (Ethernet) and SLG Ethernet Assurance;
- Openreach Service Centre Provision (Ethernet) and SLG Ethernet Provision;
- Openreach Sales Product Management;
- Ofcom Administration Fee (Openreach); and
- Notional debtors - Revenue receivables.

A13.66 Some or all of the costs of the above components can be viewed as being common with active Ethernet services or indeed common with other non-Ethernet services.

Openreach Systems & Development – Ethernet

A13.67 For the WFTMR 2021 Statement we did not apply a scaling factor, meaning that we allocated the full unit FAC of Openreach Systems & Development – Ethernet costs for EAD LA to DFA, and we allocated the full unit FAC of Openreach Systems & Development – Ethernet costs for EAD to DFX. We reached this decision based on uncertainty over the systems and development costs required for dark fibre, while also noting the very limited impact of this decision on dark fibre charges.

A13.68 Given the continued low impact of this decision on dark fibre charges, we have decided to retain the same approach (i.e. not apply a scaling factor) for the 2026-31 dark fibre charge controls.

Openreach Service Centre Provision (Ethernet) and SLG Ethernet Provision

Our proposals

A13.69 In our March 2025 Consultation, we stated that we do not consider there should be material differences in the number of provisioning-related calls made per circuit to Openreach customer contact centres (or the activities involved in handling such calls) between EAD / EAD LA and dark fibre services. We therefore proposed that:

- element B of the DFA connection service should include the full unit FAC of the Openreach Service Centre Provision (Ethernet) component that is attributed to EAD LA connections;
- element B of the DFX connection service should include the full unit FAC of the Openreach Service Centre Provision (Ethernet) component that is attributed to EAD connections.

A13.70 For provisioning SLG payments, which are covered by the SLG Ethernet Provision component, we noted that such SLG payments for EAD / EAD LA circuits are currently a function of the rental price of the EAD / EAD LA circuit whose installation has been delayed. For estimating dark fibre costs we therefore proposed to adjust the unit FAC of the SLG Ethernet Provision component based on the difference in rental charges between the DFX rental services and EAD rental services; and DFA rental services and EAD LA rental services.

Stakeholder responses

A13.71 VodafoneThree disagreed with our proposed approach to Openreach Service Centre Provision (Ethernet) component costs.⁶³⁵ Specifically, it disagreed with our view that there

⁶³⁵ [VodafoneThree](#) response to TAR26 March 2025 Consultation. Paragraphs 297-298.

should be no material differences in the number of provisioning-related calls made per circuit to Openreach customer contact centres (or the activities involved in handling such calls) between EAD / EAD LA and dark fibre services. VodafoneThree considered that DFX provisioning involves less equipment and labour than for active services, and it said it would expect materially lower provisioning effort and associated costs for DFX products, which would impact the estimated dark fibre connection charges.

Our reasoning and decisions

- A13.72 In BT's RFS, Openreach Service Centre Provision (Ethernet) component costs are attributed to Ethernet, Optical and Dark Fibre connection services based on service volumes. This means that all of these connection services receive the same unit allocations of unit CCA costs from the component.
- A13.73 VodafoneThree's response has not provided empirical evidence to support its expectation that DFX provisioning involves materially lower effort and costs than provisioning for active services.
- A13.74 There are inevitably some assumptions involved in allocating Openreach Service Centre Provision (Ethernet) component costs between different types of connection services. Overall, we consider that the approach used in BT's RFS is a logical and transparent allocation method for these costs, and we have not seen any empirical evidence which undermines the case for using it. We therefore consider that this approach is suitable to use in estimating Openreach Service Centre Provision (Ethernet) costs for DFA and DFX services within our dark fibre cost model.
- A13.75 We have therefore decided that:
- element B of the DFA connection service should include the full unit FAC of the Openreach Service Centre Provision (Ethernet) component that is attributed to EAD LA connections;
 - element B of the DFX connection service should include the full unit FAC of the Openreach Service Centre Provision (Ethernet) component that is attributed to EAD connections.
- A13.76 In relation to the SLG Ethernet Provision component, SLG payments for EAD / EAD LA circuits are currently a function of the rental price of the EAD / EAD LA circuit whose installation has been delayed. We have therefore adjusted the unit FAC of the SLG Ethernet Provision component based on the difference in rental charges between the DFX rental services and EAD rental services; and DFA rental services and EAD LA rental services.
- A13.77 We adjust for differences in rental charges using the ratio of the sum of unit costs across rental and main link services as a proxy for rental and main link prices.⁶³⁶ These unit costs exclude the costs of SLG Ethernet Provision and SLG Ethernet Assurance, as well as those of other components we estimate based on relative prices (i.e. Ofcom Administration Fee (Openreach), Notional debtors - Revenue receivables and Openreach Sales Product Management, as discussed below).
- A13.78 We have therefore decided:

⁶³⁶ For clarity there is no main link price to include in the case of DFA and EAD LA rental services.

- to include approximately [30] (between 40% and 60%) of the unit FAC of the SLG Ethernet Provision component that is attributed to EAD LA connections in element B of the DFA connection service;⁶³⁷
- to include approximately [30] (between 40% and 60%) of the unit FAC of the SLG Ethernet Provision component that is attributed to EAD connections in element B of the DFX connection service.⁶³⁸

Openreach Service Centre Assurance (Ethernet) and SLG Ethernet Assurance

A13.79 In BT's RFS, Ethernet Assurance costs are attributed to Ethernet rental services based on service volumes. We consider that the appropriate framework for estimating the unit costs of this component for dark fibre rental services is to consider the relative number of faults per circuit likely to be incurred on DFX or DFA relative to an EAD circuit or EAD LA circuit respectively.

A13.80 We have gathered information about the number of monthly reported EAD / EAD LA faults over a four-year period from April 2021 to March 2025, split by the clear code submitted by the Openreach engineer upon handling the fault.⁶³⁹ We have used this information to form our own estimate of the proportion of EAD faults that do not primarily involve electronic equipment and would therefore be relevant for a dark fibre circuit.⁶⁴⁰ We have estimated that dark fibre faults occur approximately [30] (between 50% and 70%) of the time for DFX circuits, and [30] (between 50% and 70%) of the time for DFA circuits, when compared to EAD / EAD LA on a per circuit basis.

A13.81 We have therefore decided:

- to include approximately [30] (between 50% and 70%) of the unit FAC of the Openreach Service Centre Assurance (Ethernet) component that is attributed to EAD LA rentals in element B of the DFA circuit rental service;⁶⁴¹
- to include approximately [30] (between 50% and 70%) of the unit FAC of the Openreach Service Centre Assurance (Ethernet) component that is attributed to EAD rentals in element B of the DFX circuit rental service.⁶⁴²

A13.82 Repair SLG payments for EAD / EAD LA circuits are currently a function of the rental price of the EAD / EAD LA circuit whose repair has been delayed. Therefore, consistent with our

⁶³⁷ The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year. This proportion has increased moderately relative to our March 2025 Consultation. This is primarily caused by a reduction in the forecast total unit FAC of EAD LA rental services.

⁶³⁸ The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year. This proportion has increased substantially relative to our March 2025 Consultation. This is primarily caused by an increase in the forecast unit FAC of DFX main link services, which is consistent with the incorporation of BT's core junction fibre (CJF) cost reallocation in our Statement charge control modelling.

⁶³⁹ Openreach response dated 10 June 2024 to s135 notice dated 14 May 2024, question C1. Openreach response dated 19 June 2025 to s135 notice dated 29 May 2025, question C1.

⁶⁴⁰ These estimates are based on our own methodology. We understand that the clear code provides a categorisation of the findings of the Openreach engineer after they have investigated a reported fault. We have treated all faults with an electronics category clear code as active circuit faults (i.e. not relevant for dark fibre) and all faults with a fibre category clear code as passive circuit faults (i.e. relevant for dark fibre). This leaves faults listed under various other clear code categories, and we have assumed that a certain proportion of these faults (informed by the relative frequency of electronics and fibre faults) would occur on a dark fibre circuit.

⁶⁴¹ This proportion has changed slightly relative to our March 2025 Consultation, which reflects the inclusion of two additional years of monthly fault counts data in our analysis.

⁶⁴² This proportion has changed slightly relative to our March 2025 Consultation, which reflects the inclusion of two additional years of monthly fault counts data in our analysis.

approach to SLG Ethernet Provision, we have also adjusted the unit FAC of the SLG Ethernet Assurance component based on the difference in rental charges between the DFX rental services and EAD rental services; and the DFA rental services and EAD LA rental services.

A13.83 We have therefore decided:

- to include approximately [3<] (between 20% and 40%) of the unit FAC of the SLG Ethernet Assurance component that is attributed to EAD LA rentals in element B of the DFA circuit rental service;⁶⁴³
- to include approximately [3<] (between 20% and 40%) of the unit FAC of the SLG Ethernet Assurance component that is attributed to EAD rentals in element B of the DFX circuit rental service.⁶⁴⁴

Openreach Sales Product Management

Our proposals

A13.84 In our March 2025 Consultation, we proposed not to apply a scaling factor for this component, meaning that we allocated the full unit FAC of Openreach Sales Product Management (OSPM) costs for EAD LA to DFA, and we allocated the full unit FAC of OSPM costs for EAD to DFX. This proposal was consistent with our approach in the WFTMR 2021 Statement, and it was informed by the low modelled impact of the OSPM component on dark fibre charges.

A13.85 In paragraphs 6.5 and 6.6 of our November 2025 Consultation, we explained that since our March 2025 Consultation was published, BT made several changes to the cost allocation methodology for the OSPM component as part of its published 2025 RFS. These changes included the simplification of the methodology, such that the allocation of OSPM costs and mean capital employed (MCE) is based on service revenue from the 2025 RFS onwards.

A13.86 Following these changes, we proposed to align our treatment of OSPM costs with the treatment of other components whose RFS costs are allocated based purely on service revenue. This means that to estimate the unit OSPM FAC associated with dark fibre services, we proposed to take this component's unit FAC allocation to the benchmark EAD and EAD LA services, and adjust it to reflect:

- the relative prices of each DFX service and the corresponding EAD service; and
- the relative prices of each DFA service and the corresponding EAD LA service.

Stakeholder responses

A13.87 Openreach said that our proposed changes to the treatment of OSPM costs stem largely from BT's new allocation methodology for OSPM costs, which was introduced for the 2025 RFS.⁶⁴⁵ Openreach stated that it supports Ofcom adopting changes that reflect the up-to-date methodology used in the 2025 RFS, and that to do otherwise would risk inconsistency and reduce transparency. It considered that the change control process is robust and that

⁶⁴³ The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year.

⁶⁴⁴ The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year. This proportion has increased substantially relative to our March 2025 Consultation. As with the SLG Ethernet Provision component, this is primarily caused by an increase in the forecast unit FAC of DFX main link services, which is consistent with the incorporation of BT's CJF cost reallocation in our Statement charge control modelling.

⁶⁴⁵ [Openreach](#) response to TAR26 November 2025 Consultation. Paragraph 139.

measures that have been through that process should be reflected in Ofcom's regulatory considerations.

- A13.88 INCA said that in the absence of sufficient information, it cannot agree with the revised OSPM cost allocation proposal.⁶⁴⁶ It highlighted concerns that BT's cost allocation methodology changes in the 2025 RFS result in an increase in costs allocated to the DFX product and considered that this could be motivated by short term opportunism.
- A13.89 INCA stated its understanding that our proposed changes to the treatment of OSPM costs counteract the effect of BT's cost allocation methodology changes in the 2025 RFS, but that without BT's 2025 RFS changes our proposed changes would have resulted in a real reduction in DFX costs and pricing.⁶⁴⁷ It said that this remains a concern.
- A13.90 VodafoneThree stated that it supports our proposal to align the treatment of OSPM costs with BT's revenue-based allocation methodology, recognising the principle of consistency across cost components.⁶⁴⁸ However, it also noted that the lack of complete data limited its ability to fully assess the impact, and it recommended that Ofcom commit to ongoing review and stakeholder engagement, ensuring that any unintended consequences are promptly addressed.
- A13.91 Substantial Group stated that it supports our revised treatment of OSPM costs in principle, noting that it appears to mitigate an otherwise upwards shift in dark fibre costs due to BT's cost allocation change in the 2025 RFS.⁶⁴⁹ It asked Ofcom to demonstrate in the TAR Statement that the net effect of OSPM and other modelling changes does not lead to unwarranted increases in dark fibre charges, and to confirm that dark fibre will remain a genuinely effective constraint on active Ethernet pricing in LLA Area 3 and IEC SMP exchanges by testing margin squeeze scenarios that reflect realistic PIA-based business models. Substantial Group also said that Ofcom should commit to reviewing OSPM treatment again if future discounts or commercial offers (e.g. successors to Equinox) materially alter the relationship between dark fibre and benchmark active prices.

Our reasoning and decisions

- A13.92 We remain satisfied with BT's move to a purely revenue-based allocation methodology for OSPM costs in its 2025 Change Control Notification (CCN)⁶⁵⁰, and we have decided to align our dark fibre cost modelling approach with this, as proposed in our November 2025 Consultation.
- A13.93 In response to INCA's comments, and as noted earlier in this annex, we consider that BT's 2025 CCN changes to the cost allocation methodology for the OSPM component are a necessary correction to its RFS reporting. This is because we consider that current liabilities that ultimately relate to the Equinox and Project 112 special offers should be allocated to the WLA services that they relate to. Consistent with Substantial Group's comments, as part of our ongoing engagement with BT we will review the allocation of OSPM component costs in the event of future discounts or commercial offers, to ensure that it remains accurate.
- A13.94 We note INCA's concern that, without BT's 2025 RFS changes, our proposed changes would have resulted in a real reduction in DFX costs and pricing, but this is not correct. Our

⁶⁴⁶ [INCA](#) response to TAR26 March 2025 Consultation. Paragraphs 80-81.

⁶⁴⁷ [INCA](#) response to TAR26 March 2025 Consultation. Paragraph 82.

⁶⁴⁸ [VodafoneThree](#) response to TAR26 November 2025 Consultation. Paragraphs 84-85.

⁶⁴⁹ [Substantial Group](#) response to TAR26 November 2025 Consultation. Pages 15-16.

⁶⁵⁰ BT Group. 2025. [Change Control Notification - 31 March 2025](#).

proposed changes to the treatment of OSPM costs were primarily driven by BT's 2025 RFS changes (which resulted in OSPM costs and MCE being based solely on service revenue), and therefore these changes are interlinked. We therefore do not consider that it is meaningful to assess the potential impact of our proposed changes in isolation from BT's 2025 RFS changes.

A13.95 In response to Substantial Group's comments, we refer to Volume 4 for an explanation of where we consider the constraint of dark fibre on active Ethernet pricing. In Annex 10, we explain why we consider that our decision to incorporate BT's CJF cost reallocation in our base year cost modelling does not disrupt pricing relativities between DFX main link and Ethernet main link services.

A13.96 Our decision means that to estimate the unit OSPM FAC associated with dark fibre services, we have taken this component's unit FAC allocation to the benchmark EAD and EAD LA services, and adjusted it to reflect:

- the relative prices of each DFX service and the corresponding EAD service; and
- the relative prices of each DFA service and the corresponding EAD LA service.

A13.97 We have specifically decided:

- to include approximately [X] (between 20% and 40%) and [X] (between 0% and 20%) of the unit FAC (circuit rentals and connections respectively) for the Openreach Sales Product Management component costs attributed to the EAD LA service within the unit FAC of element B of the corresponding DFA service;⁶⁵¹
- to include approximately [X] (between 0% and 20%) and [X] (between 0% and 20%) of the unit FAC (circuit rentals and connections respectively) for the Openreach Sales Product Management component costs attributed to the EAD service within the unit FAC of element B of the corresponding DFX service.⁶⁵²

Ofcom Administration Fee (Openreach) and Notional debtors - Revenue receivables

A13.98 In BT's RFS, the cost of the Ofcom Administration Fee (Openreach) is attributed to connection, rental and main link services based on revenue. Notional debtors - Revenue receivables costs are also attributed to connection, rental and main link services based on revenue.⁶⁵³

A13.99 We have decided to adjust the unit FAC of the Ofcom Administration Fee (Openreach) and Notional debtors - Revenue receivables components to reflect the relative prices of EAD services and DFX services; and the relative prices of EAD LA services and DFA services. We consider that this approach is consistent with BT's approach to attributing the costs of these components in its RFS.

A13.100 We have decided:

- to include approximately [X] (between 20% and 40%) and [X] (between 0% and 20%) of the unit FAC (circuit rentals and connections respectively) for the Ofcom Administration Fee and Notional debtors - Revenue receivables component costs attributed to the EAD LA service within the unit FAC of element B of the corresponding DFA service;⁶⁵⁴

⁶⁵¹ The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year.

⁶⁵² The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year.

⁶⁵³ BT Group response dated 10 September 2025 to s135 notice dated 5 August 2025, question F2.

⁶⁵⁴ The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year.

These proportions have decreased substantially relative to our March 2025 Consultation. In May 2025, we published an [error correction notice](#) which explained that these percentages had been overstated in our

- to include approximately [$\geq$] (between 0% and 20%), [$\geq$] (between 0% and 20%) and [$\geq$] (between 120% and 140%^{655 656}) of the unit FAC (circuit rentals, connections and main link respectively) for the Ofcom Administration Fee and Notional debtors - Revenue receivables component costs attributed to the EAD service within the unit FAC of element B of the corresponding DFX service.⁶⁵⁷

Treatment of non-domestic rates (NDRs)

A13.101 We provide more background on NDRs, which are also known as cumulo rates, when discussing our approach to forecasting BT's cumulo costs (see Annex 10).

A13.102 In general, the NDR liability is calculated by multiplying a rateable value (RV) by a 'rate in the pound'. RVs are assessed by the relevant rating authority in each nation, for example the Valuation Office Agency (VOA) in England and Wales. In the case of BT, and some other telecoms providers, all contiguous rateable assets are valued together in what is called a 'cumulo assessment'. BT's NDR costs on its rateable network assets are therefore commonly referred to as its cumulo costs.

A13.103 With respect to fibre assets, rating precedent has determined that as a general rule of thumb, the party who lights the fibre is considered to be in rateable occupation. This means that if BT sells an active leased line service, it is liable for the NDRs, whereas if BT sells a dark fibre service, the purchasing telecoms provider is liable for the NDRs once it lights that fibre. Prices for dark fibre services should therefore not include any contribution to BT's NDR costs.

A13.104 As we adopt a cost-based approach to setting dark fibre prices in this control, we therefore do not include BT's attribution of its cumulo rates costs to EAD or EAD LA services in the cost stack for dark fibre services. This primarily affects rental services because relatively little of BT's cumulo costs are attributed to connection services.

Charge control design

A13.105 In Volume 4 Section 6, we set out details of our charge control design for DFA and DFX. In summary, we have decided to set:

- A 5-year control for DFA and DFX services.
- Single service charge controls for DFA and DFX.
- A starting charge adjustment (SCA) for DFA which will reduce the estimated gap between prices and unit costs by 75% at the start of the control period, followed by a glidepath charge control that aligns prices with estimated unit costs by 2030/31.

March 2025 Consultation as a result of an error in the confidential version of our dark fibre cost model. The proportion ranges shown in this annex are unchanged from those published in our May 2025 error correction notice.

⁶⁵⁵ This proportion has increased substantially relative to our March 2025 Consultation. This is primarily caused by an increase in the forecast unit FAC of DFX main link services, which is consistent with the incorporation of BT's CJF cost reallocation in our Statement charge control modelling.

⁶⁵⁶ This result is above 100%, which reflects how the forecast cost-based price for DFX main link in 2030/31 exceeds the EAD main link price in 2026/27 (because the dark fibre cost model assumes benchmark EAD prices will remain unchanged in nominal terms between 2026/27 and 2030/31). The level of this percentage does not have a material impact on the total unit FAC for DFX main link.

⁶⁵⁷ The exact proportion of the EAD LA / EAD unit FAC included in element B varies across each forecast year.

- A glidepath-only charge control (i.e. no SCA) for DFX which will align prices with estimated unit costs by 2030/31.

A13.106 Table A13.2 below summarises our charge controls for dark fibre connections, circuit rentals and main link rentals.

Table A13.2: Summary of our charge controls for dark fibre connections, circuit rentals and main link rentals

Dark fibre service	SCA ⁶⁵⁸	CPI-X glidepath ⁶⁵⁹
DFA connection (per circuit)	-24%	CPI – 8.25%
DFA circuit rental (per circuit per year) ⁶⁶⁰	+10%	CPI – 0.75%
DFX connection (per circuit)	N/A (No SCA)	CPI + 2.25%
DFX circuit rental (per circuit per year)	N/A (No SCA)	CPI – 56.50%
DFX main link rental (per metre per year)	N/A (No SCA)	CPI + 14.50%

A13.107 For the avoidance of doubt, the charge controls (i.e. the calibration of the SCA and CPI-X glidepath) for dual fibre DFA and DFX services are identical to those of the equivalent single fibre DFA and DFX services. Details of the expected pricing relativities for dual fibre circuits versus single fibre circuits are explained in paragraphs A13.34 and A13.35 above.

A13.108 Table A13.3 below summarises our charge controls for dark fibre ancillary services.

Table A13.3: Summary of our charge controls for dark fibre ancillary services

Dark fibre service	SCA	CPI-X glidepath ⁶⁶¹
Patch panel at customer premises (per panel per year)	N/A (No SCA)	CPI – 0%
Patch panel at exchange (per panel per year)	N/A (No SCA)	CPI – 0%

⁶⁵⁸ The SCAs for DFA services will be implemented on 1 April 2026. SMP Condition 8.4 (which is published in Volume 7 of this Statement) enables BT to implement our TAR Statement SCAs for DFA services on 1 April 2026 without prior notification.

⁶⁵⁹ The CPI-X glidepaths will apply in each year of the charge control. For DFA services, given that the SCAs will be implemented on 1 April 2026, the first year in which the CPI-X glidepath applies will be 2 April 2026 to 31 March 2027. For DFX services, there are no SCAs and therefore the first year in which the CPI-X glidepath applies will be 1 April 2026 to 31 March 2027.

⁶⁶⁰ For DFA circuit rental the SCA results in an increase in prices on 1 April 2026, which is then followed by below-inflation annual price increases (i.e. real-terms price reductions) under the glidepath charge control between 2 April 2026 and 31 March 2031. This price trend occurs because the SCA is informed by the estimated gap between prices and unit costs in 2025/26, but the unit costs of DFA circuit rental are subsequently forecast to decline in real terms between 2025/26 and 2030/31. As noted in Section 6, our partial (75%) SCA approach will provide a smoother overall glidepath for prices during the charge control period than a 100% SCA would.

⁶⁶¹ The CPI-X glidepaths will apply in each year of the charge control.

Dark fibre service	SCA	CPI-X glidepath ⁶⁶¹
Initial testing	N/A (No SCA)	CPI – 0%
Cessation charge	N/A (No SCA)	CPI – 0%
Right When Tested (RWT) charge	N/A (No SCA)	CPI – 0%
TRCs for dark fibre	N/A (No SCA)	Same as for actives
ECCs for dark fibre	N/A (No SCA)	Same as for actives

A14. Calculation of PIA Maximum Charges

- A14.1 In Volume 4, Section 4 we set out the maximum charges for PIA rental services for the 2026-31 review period.
- A14.2 These maximum rental charges are based on a 'cost based' approach using the fully allocated cost (FAC) valuation of PIA as recorded and audited within BT's Regulatory Financial Statement (RFS) and include a return on capital employed. The maximum charges we calculate for each year of the review period are rounded to the nearest penny, and the approach adopted on Openreach's pricing website is consistent with this methodology.
- A14.3 This annex explains in more detail the calculations that we make to estimate PIA costs whilst Volume 4, Section 4 explains the decisions we have reached including our responses to stakeholder comments on consultation proposals for PIA charges.

General approach

Network Adjustment costs

- A14.4 As we explain in Volume 4, Section 4, we have decided that the costs of network adjustments should be recovered across all SMP products that use the physical infrastructure, subject to a financial limit. We consider that the cost of network adjustments below the financial limit should be recovered from all users of Openreach's Physical Infrastructure; whilst costs above the limit should be recovered directly from the telecoms provider requesting the network adjustment.
- A14.5 Therefore, our cost estimates include an allowance for the costs that Openreach incurs when making network adjustments below the financial limit (appropriately capitalised) in the regulatory cost base that we use to calculate maximum PIA rental charges. Any expenditure above the financial limit is not included in this cost base.
- A14.6 However, unlike the WFMTR21, we no longer use our forecasts for external (i.e. non Openreach) network adjustments below the financial limit, which are based on outdated unit costs, as we consider it likely that Openreach's estimates are more accurate than our own. Furthermore, we consider Openreach's estimates to be consistent with recent actuals, as reported in the RFS, and note that its estimates are lower than our own.

PIA components and services

- A14.7 We differentiate between what we call PIA cost components and PIA services. PIA cost components are the network cost categories that BT uses in its Regulatory Financial Statements to attribute costs to PIA. These components form the basis from which we derive the maximum charges for PIA services.
- A14.8 The PIA cost components are lead-in duct, single bore spine duct, 2 bore spine duct, 3+ bore spine duct, manholes, junction boxes and poles. For some PIA services the component is the same as the service, e.g. single and multi-bore spine duct. However, for others the PIA component provides costs for several services. For example, the poles cost component provides costs for two poles PIA services: single- and multi-end-user attachments.

A14.9 We set out in detail how we forecast these PIA component costs and how these costs are then allocated to PIA services.

Base case cost forecasts

A14.10 PIA maximum charges are estimated using the following four steps:

- **Step 1:** Determine the regulatory cost base for every year of the review period for the relevant infrastructure (assets) being accessed. The regulatory cost base comprises a return on capital, depreciation (net of holding gains), and operating costs. The base cost data we have used has been derived from BT's 2024/25 RFS and we then make some adjustments to this.
- **Step 2:** We forecast the resulting capital and operating costs over the review period. These forecasts require various assumptions, notably about what future volume growth and capital expenditure will be.
- **Step 3:** Attribute the regulatory cost base between different PIA services. BT's systems do not record costs separately for different duct bore sizes or for footway boxes, so we attribute total duct and footway service costs to individual services in each year. Similarly, BT's systems do not record costs for the different pole services⁶⁶² so we attribute total pole costs to the single-end-user and multi-end-user pole attachment services.
- **Step 4:** Calculate unit costs for each component in each year and allocate a share of these unit component costs to rental charges using the fair shares decided in Volume 4, Section 4. The unit costs are measures such as cost per metre of single bore duct or the costs of attachments per pole. Rental charges are calculated on a similar unit basis.

A14.11 Although, at a high level, these steps are the same for both duct and footway PIA services and for pole PIA services, there are some detailed differences. Below, we go through each of these steps separately for duct and footway box assets and for pole assets.

Adjustment to remove mobile network licence costs

A14.12 BT informed us that some of BT Group's costs associated with mobile network licences were inadvertently allocated to services within Openreach SMP markets.⁶⁶³ In Section 5 of our November 2025 Consultation, we explained that we intended to adjust our base year cost modelling to remove mobile network licence costs ahead of the TAR Statement.

A14.13 We do not consider that mobile network licence costs should be included in our cost modelling for regulated Openreach services for the TAR Statement.

A14.14 We have therefore made an adjustment to remove mobile network licence costs from the PIA cost inputs. We have collected 2024/25 cost data from BT which provides detailed estimated impacts of reallocating mobile network licence costs from services in Openreach SMP markets to the rest of BT.⁶⁶⁴ We have used this data to inform our adjustment.

⁶⁶² These are single-end-user and multi-end-user attachments, as well as pole top equipment and cable up a pole services.

⁶⁶³ BT response dated 27 October 2025 to s135 notice dated 20 October 2025, question E9.

⁶⁶⁴ BT response dated 13 November 2025 to s135 notice dated 20 October 2025, questions A1 and A2.

Duct and footway box assets

Step 1: Determination of the regulatory cost base for ducts and footway boxes

A14.15 The base data (2024/25) provided by BT included both operating costs and capital costs. BT currently capitalises most costs associated with duct and footway boxes and records these under the main duct class of work (LDD).⁶⁶⁵

A14.16 Operating costs were split as follows:

- a) Pay and non-pay costs.⁶⁶⁶ These include contributions from Openreach and corporate overhead costs.
- b) CCA depreciation for LDD with HCA depreciation, Supplementary depreciation, Holding Gains and Losses, and Other CCA adjustments identified separately.
- c) A small amount of CCA depreciation associated with other assets required to provide PIA services. This mainly consisted of depreciation associated with the funding of BDUK assets plus some support assets such as software. None of these other assets are revalued on a CCA basis within BT's RFS.

A14.17 Capital costs included the following items:

- a) GRC (gross replacement cost) and NRC (net replacement cost) for LDD;
- b) GRCs and NRCs for other assets;
- c) Net Current Assets.

A14.18 The base data BT provided on duct and footway boxes was consistent with the way BT reports the costs of PIA assets in its RFS. It excluded CCA depreciation and capital costs on:

- Duct that connects copper cables to fibre cabinets since this infrastructure is used for cabinet connectivity only.
- ECCs and Repayment costs: the revenues for both activities recover any expenditure on assets "up front". Any spend on PIA assets associated with these revenue streams is not considered part of the PIA market and should not be recovered via PIA rental charges.

A14.19 We decided to make the following adjustments to the base data:

- We split LDD costs (GRC, NRC and CCA depreciation) into those relating to assets installed before and after 31 March 2018.⁶⁶⁷ For those installed before 31 March 2018, we split the assets into pre-1997 access, pre-1997 non-access and post-1997 assets using information from BT's Regulatory Asset Value (RAV) model.
- Adjust base year data to smooth certain costs that substantially vary each year, e.g. leaver payments and restructuring costs, which we increase for the 2024/25 base year to align with the higher average over recent years, and then allocate between duct and pole costs based on their relative opex.

A14.20 Unlike in the March 2021 Statement, we have decided not to adjust the allocation of wayleave costs to the physical infrastructure market, as reported in BT's RFS. The cost of a

⁶⁶⁵ Local Distribution Duct (LDD) class of work records the activities associated with building and maintaining Openreach's duct thus it reflects most of the capital costs associated with access, backhaul, and core duct.

⁶⁶⁶ Costs excluded any of BT's cumulo rates costs as non-domestic rates are generally not payable on passive assets. It is only once "active" equipment is attached to these passive assets that a rating liability is triggered.

⁶⁶⁷ By assets installed before 31 March 2018 we mean assets installed up to and including 31 March 2018.

wayleave is not affected or driven by the services that use the duct or pole, so we consider it reasonable to allocate all wayleave costs to duct and pole components.

Step 2: Forecast the regulatory cost base over the review period

A14.21 We forecast the adjusted pay and non-pay operating costs in the base year over the review period applying our standard formulas.⁶⁶⁸ We assume:

- i) efficiency (or cost savings) of 4% per annum;
- ii) a cost volume elasticity (CVE) of 0.75 for PIA pay and non-pay costs;
- iii) operating cost inflation of CPI across both pay and non-pay operating costs; and
- iv) volume growth to be the average change in year of installed base (rental) volumes, derived from our capex forecasts.

A14.22 Both the efficiency rate and the CVE have increased since the November 2025 Consultation. See Annex 10 for further information on the calculation of these assumptions.

A14.23 None of these assumptions are particularly critical to the final maximum charges we estimate as operating costs are a relatively low proportion of the duct and footway boxes cost base.

A14.24 We forecast the adjusted capital costs (GRCs, NRCs and CCA depreciation, including Holding losses and gains) from the base year over the review period as follows:

- a) We assume all duct and footway box assets have a life of 40 years,⁶⁶⁹ and that asset price inflation for all these assets is 3% per annum over the review period. These are the same assumptions as the November 2025 Consultation position excluding the asset price inflation which has increased by 1% point. See Volume 4, Section 4 for further information on asset life of ducts and Volume 6, Section 5 for further information on the setting of asset price inflation.
- b) Capital costs associated with LDD assets installed before 31 March 2018: we forecast pre-1997 access assets, pre-1997 non access assets and post-1997 assets installed over the period 1997 to 2018 separately. We classify all these costs – OCM depreciation and mean NRCs – as associated with assets installed before 31 March 2018.
 - i) For each we forecast opening and closing GRCs and NRCs for each year of the review period, and then calculate the mean NRC in each year as the average of the opening and closing balance.⁶⁷⁰
 - ii) We forecast OCM depreciation and holding gains and losses using our assumptions about asset lives and asset price inflation noted above.
 - iii) We assume that there are no write-outs (or disposals) associated with post 1997/98 assets, as these assets have a life of 40 years, but we do forecast some disposals of pre-1997/98 assets. We assume no new capex on these historical assets as this is forecast in the next category.

⁶⁶⁸ See for example Table A11.11, Annex 11 of the 2018 WLA market review, https://www.ofcom.org.uk/_data/assets/pdf_file/0018/112491/wla-statement-annexes-1016.pdf

⁶⁶⁹ However, where duct assets are heavily depreciated, we have used the implied asset life calculated as base year GRC/depreciation.

⁶⁷⁰ To forecast opening and closing balances we use a very similar approach to that we have used in other top-down cost models and one that is consistent with BT's RAV model that is used for the valuation of duct assets on a CCA basis within BT's RFS.

- iv) Since WFTMR21, other CCA adjustments have been very low and consistent with our approach in other top-down cost models, we forecast these to be zero in the future.
 - c) Capital costs associated with “LDD” assets installed after 31 March 2018: we forecast these using the same process as for historic LDD assets except that we include the forecast capital expenditure. As explained in Volume 4, Section 4, we have used Openreach’s forecasts for LDD assets and network adjustments below the financial limit. We assume there are no write outs over the period as these assets have a life of 40 years.
 - d) Capital costs associated with “non-LDD” assets: These are a mix of a “negative” assets, associated with the funding on BDUK assets, and support assets such as software and computing. As these assets are not revalued in BT’s RFS for simplicity we assume both depreciation and NRCs are flat in nominal terms over the review period. This is not a critical assumption because these account for a small percentage of depreciation and an even smaller percentage of mean capital employed.
 - e) Net current assets are forecast using the standard formula of applying volume growth and asset price inflation.
- A14.25 In the next step we attribute costs associated with assets installed before 31 March 2018 separately to those installed after that date. The final stage in this step is then to attribute all non-LDD costs to assets installed in one of those two periods. We attribute pay and non-pay operating costs and depreciation on non-LDD assets using the relative OCM depreciation on LDD assets installed before and after March 2018 in each year. We attribute other MCE and net current assets using the corresponding LDD NRC in each year.
- A14.26 The output of the above process is two sets of operating costs (including depreciation and holding gains and losses) and mean capital employed (including net current assets). These form the regulatory cost base for assets installed before 31 March 2018 and the other for assets installed after 31 March 2018 respectively.

Step 3: Attribute the duct and footway regulatory cost base between different PIA services

- A14.27 Openreach provided us with updated estimates of the attribution of its duct and footway costs between PIA cost components using a methodology analogous to what we and Openreach had used in previous market reviews. The attributions were in proportion to relative GRCs as estimated by a bottom-up evaluation using total installed volumes and standard unit costs⁶⁷¹ for each duct and pole component in 2024/25.
- A14.28 We apply the “old” attributions used to set charges in the 2018 WLA review to costs associated with assets installed before 31 March 2018. For assets installed after 31 March 2018, we calculate revised attributions each year to take account of volumes of each duct and footway box component growing at different rates. The attributions over this period are estimated to be relatively stable.
- A14.29 When calculating the revised “post 31 March 2018” attributions each year we have also:
- Assumed all unit costs increase by 3% per annum over the review period.

⁶⁷¹ The standard unit costs were derived from Openreach’s Network Inventory Management System.

- Assumed the unit cost of lead-in duct remains the same as that for single bore spine duct.⁶⁷²

A14.30 In this step, for each year we:

- Calculate the attribution to apply to the costs of assets installed before 31 March 2018 and after 31 March 2018;
- Attribute the forecast operating costs and mean capital employed associated with assets installed before 31 March 2018 using the pre-31 March 2018 allocation basis;
- Add the forecasts of duct and footway network adjustment costs, below the financial limit, to the forecast mean capital employed costs associated with assets installed after 31 March 2018;
- Attribute the overall forecast operating costs and mean capital employed associated with assets installed post-31 March 2018 using the post-31 March 2018 allocation basis for this year; and finally
- Add the results of the two sets of attributions together and calculate a fully allocated regulatory cost base for each PIA cost component by adding together operating costs and a return on mean capital employed, using a weighted average cost of capital (WACC) of 7.5%.

A14.31 The outputs are a single set of fully allocated costs in each year of the review period for each PIA cost component. In the next sub-section, we refer to this as the regulatory cost base for each PIA cost component.

Step 4: Calculate unit costs for each service in each year and set rental charges as a share of these unit costs

A14.32 First, we calculate a set of unit costs by dividing the regulatory cost base in each year for each cost component by the volumes forecast in each year for that cost component.

A14.33 We then estimate maximum charges that telecoms providers should pay as what we consider should be a fair share of this unit cost. We explain the reasoning for the shares we have determined in Volume 4, Section 4. The shares we have used are given in Table A14.1 below.

Table A14.1: Fair shares for duct and footway PIA services

	WFTMR21	November Consultation	Updated fair shares
Simplified lead-in duct	90%	46%	46%
Single bore spine duct	50%	46%	35%
2 bores spine duct	25%	25%	25%
3+ bores spine duct	10%	10%	10%
Facility hosting per manhole entry	3.3%	3.3%	3.3%

⁶⁷² Openreach currently does not separately record the costs for lead in duct. However, Openreach has confirmed that this is a reasonable assumption to make by undertaking a bottom-up comparison of the activities and relative costs of installing a metre of lead-in duct and single bore spine duct.

	WFTMR21	November Consultation	Updated fair shares
Facility hosting per joint box entry	15%	15%	15%

Source: Ofcom assumptions

A14.34 We have decided to continue to set prices for ducted lead-in services as a flat charge per connection. This fixed price rental service will apply from the telecoms provider's optical distribution point all the way to the building entry point of the end-customer premises.

A14.35 The calculation of this charge requires information on maximum charges and average volumes per premise for each of the following PIA components:

- a) Lead-in duct (charged per metre): this is any duct section that is dedicated to serving a single premise;
- b) Shared duct (charged per metre): this is either shared spine duct or shared rider duct;
- c) Facility Hostings to enter and exit the distribution point and pass through any intermediate footway boxes or chambers.

A14.36 For the 2021 WFTMR, Openreach provided us with the following estimates of these average volumes, calculated from a large and representative sample of 386,952 premises across the UK:⁶⁷³

- Lead in duct: 10.51m per premises;
- Shared duct: 8.69m per premises;⁶⁷⁴
- Joint Box exits: 0.45 (i.e. Facility Hostings) per premises.⁶⁷⁵

A14.37 We have decided to use these estimates for the reasons set out in Volume 4, Section 4. The estimated charge for the ducted lead-in service each year is then calculated by multiplying the above average volumes by the estimated charge for the relevant PIA service in that year.⁶⁷⁶

Poles

Step 1: Determination of the regulatory cost base for poles

A14.38 Operating costs are split as follows:

- a) Pay and non-pay costs.⁶⁷⁷ These include contributions from Openreach and corporate overhead costs.

⁶⁷³ Openreach response of 10 December 2019 to question 2 of the s.135 notice titled *Promoting investment and competition in fibre networks* dated 2 December 2019.

⁶⁷⁴ Openreach explained that, based on information on the 386,952 premises included in their inventory systems shared ducts are, on average, passed by 3 cables. The average length of shared duct is then calculated by using the average total lead-in cable length minus the lead-in duct element divided by 3.

⁶⁷⁵ Based on information on the 386,952 premises included in their inventory systems Openreach estimates that there are 1.36 Facility Hostings per chamber. For the reasons explained in the previous footnote, this is again divided by 3 to provide a per lead-in cable price.

⁶⁷⁶ Shared duct is priced at the single bore duct rate. We use the same average volumes in each year as those given above.

⁶⁷⁷ Costs excluded any of BT's cumulo rates costs as non-domestic rates are generally not payable on passive assets. It is only once "active" equipment is attached to these passive assets that a rating liability is triggered.

- b) CCA depreciation for the main pole class work with HCA depreciation, Supplementary depreciation, Holding Gains and Losses, and Other CCA adjustments identified separately.
- c) A small amount of CCA depreciation associated with other assets required to provide PIA services. This mainly consists of depreciation associated with the funding of BDUK assets plus some support assets such as software. None of these other assets are revalued on a CCA basis within BT's RFS.

A14.39 Capital costs include the following items:

- GRC and NRC for the pole class of work;
- GRCs and NRCs for other assets;
- Net Current Assets.

A14.40 We make the same adjustment to leavers and restructuring costs as we do for duct and footway services, as set out in paragraph A14.16 above.

Step 2: Forecast the regulatory cost base over the review period

A14.41 We forecast the adjusted pay and non-pay operating costs for poles in the same way as we do for duct, as set out in paragraph A14.16 above. We note that pole testing costs are now treated as capex in the regulatory accounts.

A14.42 We forecast capital costs - GRCs, NRCs and CCA depreciation, including holding losses and gains – from the base year over the review period as follows:

- a) We assume that the asset life of poles is 40 years, and that asset price inflation for the main pole asset is 3% per annum over the review period. We use this to generate revised GRCs, NRCs and CCA depreciation using CCA accounting principles. See Volume 4, Section 4 for further information on asset life of poles and Volume 6, Section 5 for further information on the setting of asset price inflation.
- b) We use Openreach's estimates for total volumes of poles from 2024/25 to 2030/31, broken down by how many of the new installs are replacement poles and how many are new poles. The volume growth we generate to forecast operating costs is calculated from the net additions, i.e. it reflects the new poles only, or total additions less replacements.
- c) We also forecast the number of different types of poles (for example cable poles, distribution poles and feeder poles), attachments and manifolds. We do this by growing the volumes in the base year by the average annual growth rate of all poles. This keeps the number of attachments and manifolds per pole constant over the period.
- d) We forecast opening and closing GRCs and NRCs for each year with the mean NRC in each year being the average of the opening and closing balance. To forecast opening and closing balances, we use a very similar approach to that we have used for duct and footway boxes by forecasting capital expenditure and CCA depreciation including price movements.
- e) We use Openreach's capex forecast for poles, including network adjustments below the limit, as these forecasts are consistent with the volume forecasts and expected unit costs for poles. We note that the capitalised pole testing costs result in a similar per annum capex as the pole testing operating costs that we previously modelled.
- f) Capital costs associated with other assets: these consist of a mix of assets, including some grant funded (negative) assets and support assets such as software and computing. For simplicity we assume these capital costs remain constant in nominal terms over the review period.

- g) Net current assets are forecast using the standard formula of applying volume growth and asset price inflation.

A14.43 The output of the above process is operating costs (including depreciation and holding gains and losses) and mean capital employed (including net current assets) in each year. In what follows we refer to this as the regulatory cost base for poles.

Step 3: Attribute the poles regulatory cost base between different PIA services

A14.44 The unit cost of a pole is attributed between the different attachment types. As set out in Volume 4, Section 4, we have decided there should be fewer pole charges and note that both pole top equipment and cable up a pole (per cable) services (as found on Openreach's price list) represent a small proportion of overall cost recovery. We have decided to simplify charges by setting the pole top equipment and the cable up a pole charges to zero, and instead recovering all costs from the single-end-user and multi-end-user attachment charges. See Volume 4, Section 4 for further information on single-end-user and multi-end-user attachment charges.

A14.45 We attribute the updated regulatory cost base for poles across attachments, and then calculate a fully allocated regulatory cost base for each poles service by adding together operating costs and a return on mean capital employed, using a WACC of 7.5%.

A14.46 The outputs of this step are then the regulatory cost base for each poles service in each year of the review period.

Step 4: Calculate unit costs for each service in each year and set rental charges as a share of these unit costs

A14.47 First, we calculate pole unit costs in each year by dividing the regulatory cost base allocated to each pole service (i.e. single-end-user and multi-end-user attachments) by the volumes forecast in each year. This produces a regulatory unit cost per pole for attachments.

A14.48 There are two different types of cable attachments depending on the number of end-users connected: single-end-user attachments and multi-end-user attachments. Some types of poles are only used to carry single-end-user attachments. These are 'pure' distribution point (DP) poles and 'pure' feeder poles. Similarly, cable poles are only used to carry multi-end-user attachments. There are also 'mixed' DP poles and 'mixed' feeder poles that carry both single- and multi-end-user attachments.

A14.49 We calculate unit charges and shares separately for the two types of attachments. The calculations are complex but are the same as those undertaken in the WFMTR21.

A14.50 Pole costs attributed to cable attachments are allocated between single- and multi-end-user attachments based on the average number of those attachments per pole. The output of this calculation is a set of relative unit costs, using the following four steps:

- i) First, the regulatory costs for attachments are divided by the total number of poles to give the overall unit costs per pole for attachments (UCA).
- ii) Second the number of attachments per pole is calculated separately for each type of attachment. For single-end-user attachments this is the number of single-end-user attachments on 'pure' DP and 'pure' feeder poles divided by the number of 'pure' DP and 'pure' feeder poles (=SAPP). For multi-end-user attachments it is the number of attachments on cable poles divided by number of cable poles.

- iii) Third the average attachments per pole for multi-end-user attachments is increased by 2 reflecting the expected additional PIA attachments (=MAPP). The uplift by two attachments per pole is applied as we effectively achieve a fair share of 47.5% which we consider to be more appropriate.
 - iv) Last initial unit costs per attachment are calculated for single-end-user attachments (=UCSA) by dividing the unit costs per people for attachments (UCA) by the number of single-end-user attachments per pole (SAPP). Similar calculations are undertaken for multi-end-user attachments: the initial unit cost per attachment for multi-end-user attachments (=UCMA) is calculated by dividing UCA by MAPP.
- A14.51 Rental charges are currently payable if the telecoms provider has a single-end-user attachment in place. This means that when a customer churns, the competing telecoms provider will continue to pay the rental charge unless it physically removes its equipment. Competing telecoms providers are unlikely to do so just to avoid paying rental charges as it is costly to perform this activity and is wasteful if the customer then subsequently churns back. Therefore, we continue to consider it appropriate to apply a discount rate to single-end-user pole attachments.
- A14.52 The charge that telecoms providers pay is therefore 46% to account for the possibility that the telecoms provider may continue to pay rental charges even after losing the end customer. For single end-user-attachments the share of the unit cost that we use when calculating our PIA charge controls is therefore 46%.
- A14.53 For multi-end-user it is effectively the ratio of the number of (Openreach) multi-end-user attachments per pole divided by the number of multi-end-user attachments per pole after the uplift for PIA use. This is equivalent to assuming a fair share of 47.5% over the review period.

A15. Cost of capital for BT Group

- A15.1 This annex sets out our estimates on the cost of capital for BT Group. Estimating BT Group's cost of capital is the first step in determining the appropriate cost of capital for the relevant services, as outlined in Annex 16.⁶⁷⁸ In this annex, we:
- a) summarise our consultation proposals on BT Group's cost of capital;
 - b) address stakeholder comments; and
 - c) present our final methodology and estimates for this statement.
- A15.2 In most market reviews the main purpose of estimating the cost of capital is to inform the appropriate rate of return on the mean capital employed (MCE) to be included in cost-based charges. This rate of return should reflect the return required by investors to remunerate them for the risks of investing in the relevant assets.
- A15.3 In this review, we require an estimate of the appropriate rate of return on the MCE for those services that are subject to cost-based charge controls. In Volume 4, we explain our decisions to set cost-based charge controls on:
- a) Area 3 dark fibre access (DFA) and active leased line access circuits of bandwidths 1Gbit/s and below (Section 2);
 - b) Dark fibre inter-exchange (DFX) circuits for BT Only exchanges and BT+1 exchanges (Section 3); and
 - c) PIA services (Section 4).
- A15.4 We also require an estimate of the appropriate rate of return on the MCE for other services (MPF, FTTC, and FTTP), which are used as an input in the RAB for Area 3 (as set out in Volume 4, Section 1) and for modelling the revenues and costs for active legacy services (Annex 10).
- A15.5 We use the Capital Asset Pricing Model (CAPM) to estimate the appropriate rate of return on equity. Under the CAPM the cost of equity (Ke) is a function of the risk-free rate (RFR), the expected return on the equity market above the risk-free rate i.e. the equity risk premium (ERP) and the systematic risk of the relevant activity i.e. equity beta (β_e):
- $$Ke = RFR + ERP * \beta_e$$
- A15.6 If the relevant business or project is entirely funded by equity, then the cost of equity is the cost of capital.
- A15.7 In practice, most firms are funded by a combination of debt and equity. In this case the weighted average cost of capital ($WACC$) combines the cost of finance from debt (Kd) and equity (Ke), each weighted by their relative share of enterprise value (i.e. the sum of the value of debt and equity). The value of outstanding debt relative to enterprise value (gearing) is denoted by g in the formula below and the rate of corporation tax is denoted by t . The pre-tax WACC is obtained by scaling the post-tax cost of equity by $1/(1 - t)$, the cost of debt already being pre-tax⁶⁷⁹:

⁶⁷⁸ Relevant services refer to regulated services and services that are not explicitly regulated but are modelled as part of our overall regulatory approach e.g. services in Area 3 RAB.

⁶⁷⁹ Given our cost modelling is done in nominal terms without explicit modelling of tax, we require a forecast of the pre-tax nominal WACC. This differs from the approach of some other UK regulators and that used by some equity analysts who may use the vanilla WACC or the post-tax WACC. The vanilla WACC is a weighted average

$$WACC = \frac{K_e * (1 - g)}{1 - t} + K_d * g$$

- A15.8 The WACC provides a benchmark against which the (risk-adjusted) expected return on any investment is judged. As the WACC is a forward-looking concept, the cost of debt is the marginal cost of new borrowing for the project in question, at a given investment horizon. The cost of debt can typically be estimated with reference to observed market yields on corporate bonds. The observed yield differs from the expected return on bonds due to the risk of default in any corporate bond.⁶⁸⁰
- A15.9 When setting the allowed return, we use a cost of debt which reflects both forward-looking and historical debt costs (for reasons explained later in this Annex). In large part, this explains why the regulatory allowed return will not typically align with the forward-looking WACC.
- A15.10 For consistency with previous notation and because the allowed return is most significantly determined by the forward-looking WACC, we typically refer to the WACC in this annex and in Annex 16.⁶⁸¹

Summary of our WACC decision for BT Group

A15.11 Our final estimate of the BT Group WACC is shown in Table A15.1 below.

Table A15.1: Summary of BT Group's WACC and component parameters

WACC component	March 2026 Consultation	This Statement	Source
Real (RPI-based) RFR	1.0%	2.0%	See A15.49
RPI inflation forecast	2.5%	2.5%	See A15.31
Nominal RFR	3.5%	4.5%	= (1+ real (RPI-based) RFR)*(1+RPI inflation)-1
Real (CPI-based) total market return (TMR)	6.7%	6.7%	See A15.65
CPI inflation forecast	2.0%	2.0%	See A15.30
Nominal EMR	8.8%	8.8%	= (1+real EMR)*(1+CPI inflation)-1
Nominal ERP	5.3%	4.3%	= Nominal EMR – Nominal RFR
Debt beta (β _d)	0.075	0.075	See A15.121
Asset beta (β _a)	0.46	0.43	See A15.137
Gearing (forward looking) (g)	55%	55%	See A15.118

of the post-tax cost of equity and the pre-tax cost of debt; while the post-tax WACC is a weighted average of the post-tax cost of equity and the post-tax cost of debt.

⁶⁸⁰ UKRN, [2018 Report](#), Section 4.7.1, pages 59 to 60. In 2018, the UK Regulators Network (UKRN) published a study by academics and consultants on estimating the cost of capital for price controls. The 2018 UKRN Report noted that the difference between observed and expected yields was expected to be small (10 to 20 bps) for the credit ratings expected for UK regulated companies (i.e. A to BBB).

⁶⁸¹ UKRN, [2018 Report](#), page 6. In the 2018 UKRN Report, one of the recommendations was to differentiate the WACC, i.e. the concept of a purely forward-looking expected cost of capital, from the regulatory allowed return (RAR) which represents the regulator's view on the appropriate return on capital employed.

WACC component	March 2026 Consultation	This Statement	Source
Implied equity beta (β_e)	0.93	0.86	$= (\beta_a - \beta_d * g) / (1 - g)$
Cost of equity (post-tax) (K_e)	8.5%	8.3%	$= \text{Nominal RFR} + \text{Nominal ERP} * \beta_e$
Cost of equity (pre-tax)	11.3%	11.0%	$= K_e / (1 - t)$
Corporate tax rate (t)	25%	25%	See A15.140
Cost of debt (pre-tax) (K_d)	4.6%	5.3%	See A15.94
WACC (pre-tax nominal)	7.6% ⁶⁸²	7.9%	$= (K_e * (1 - g)) / (1 - t) + (K_d * g)$

Source: Ofcom analysis⁶⁸³

A15.12 As shown in Table A15.1, our estimate of BT Group's WACC has changed from 7.6% in the March 2025 consultation to 7.9% in this statement.

Our decisions on key principles and methodology

A15.13 As set out in our March 2025 consultation, the key objectives guiding our cost of capital estimation include the following:

- Efficient price and investment signals** – the allowed return is an important input in setting cost-based regulated charges (particularly in capital intensive industries). Regulated charges should provide the regulated firm with the opportunity to finance efficient investment and provide access seekers with efficient 'build-vs-buy' price signals.
- Stability** – financing telecoms infrastructure and services involves making long-term investments where demand may be uncertain and wholesale prices are limited by ex-ante regulation. It is important for investors to be able to commit risky capital in the knowledge that our approach to price regulation provides an expectation, but not the guarantee of recovery of efficient costs, including the cost of finance.
- Consistency** – we aim to ensure that there is consistency in our decisions, both between parameters in a given decision and, as far as reasonably possible, with other regulatory decisions.
- Transparency** – we aim to clearly explain our approach to stakeholders and seek to avoid overly elaborate methodologies.

A15.14 We consider that these key objectives are consistent with our statutory duties, including our principal duty: 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.

A15.15 In March 2023, the UKRN published 'Guidance for regulators on the methodology for setting the cost of capital' (UKRN Guidance)⁶⁸⁴ and we have regard to this when making our

⁶⁸² Ofcom, Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31, [Annexes 1-22](#), Table A19.1.

⁶⁸³ Note: Intermediate calculations are unrounded. We round the pre-tax cost of equity, the pre-tax cost of debt and the pre-tax nominal WACC to one decimal point. For comparison purposes, the [UKRN Annual Update](#) reports real vanilla WACCs used by UK regulators. The real vanilla WACC (with respect to CPI inflation of 2.0%) is 4.5% for BT Group.

⁶⁸⁴ UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#).

decisions. In addition, the CMA and other UK regulators have published decisions or consulted on proposals. Where relevant, we also refer to this regulatory precedent when making our decisions.

- A15.16 Following our long-standing methodology for fixed-telecoms charge controls, we start with estimating the WACC for BT Group since we do not have a pure play comparator⁶⁸⁵ which provides the relevant services in this review and the relevant services within BT represent a large part of the company.⁶⁸⁶ Any disaggregated WACC for the lines of business should be compatible with the overall WACC for BT Group (weighted by the relative value of the underlying assets for each line of business).
- A15.17 For reasons explained in detail in Annex 16, we disaggregate the BT WACC between three lines of business, as in previous reviews.
- A15.18 Our WACC estimates reflect our view of required returns over a relatively long investment horizon (reflecting the long asset lives of telecoms investments), accounting for the expected market developments over the market review period.
- A15.19 Three respondents commented on our WACC proposals: BT, AlixPartners (on behalf of CityFibre) and Frontier Economics (on behalf of VodafoneThree). Most comments related to our estimates of specific WACC parameters, which we respond to in the relevant sections below.
- A15.20 BT broadly supported our methodology but argued that the reduction in the WACC since WFTMR21 was counterintuitive given higher interest rates and greater macroeconomic uncertainty. BT said this sent a negative signal to investors, as Ofcom was proposing to reduce the WACC during a review period intended to promote investment.⁶⁸⁷ BT suggested alternative parameter estimates and considered that a WACC of 8.3% would be more appropriate.⁶⁸⁸ We respond to BT's arguments on specific parameter choices in the sections that follow, but note that more recent data supports a higher WACC than our consultation position.
- A15.21 It is important to note that we view investment incentives as stemming from the overall package of remedies set out in this statement, not solely from the WACC. We do, however, agree with BT that relying solely on a mechanistic approach to setting the WACC is undesirable. Therefore, we have revised our proposals where there is evidence to suggest this is appropriate. In the sections that follow we respond to BT's comments about individual parameter choices.
- A15.22 AlixPartners' response focused on the WACC applicable to a reasonably efficient entrant which is used as an input in our fibre cost model. However, some of its comments related to market-based parameters (such as inflation, the risk-free rate and total market return) which are relevant to the estimation of BT Group's WACC.⁶⁸⁹ Accordingly, we respond to its comments on these parameters below.
- A15.23 Frontier Economics raised concerns about CEPA's methodology for determining BT's asset beta range. Frontier recommended reducing BT's asset beta from 0.46 (as proposed in the

⁶⁸⁵ A pure play comparator would be a listed company that only provides the relevant services in question.

⁶⁸⁶ According to BT's 2025 Regulatory Financial Statements, markets in which BT was found to have SMP represented 66% of returns and 45% of MCE.

⁶⁸⁷ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, Executive summary.

⁶⁸⁸ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, Figure A1.1.

⁶⁸⁹ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 5.

consultation) to 0.39 for this statement.⁶⁹⁰ We briefly address Frontier’s arguments in the asset beta section below, while CEPA responds to comments on its beta-estimation methodology in its updated report, published as a separate annex to this statement.⁶⁹¹

- A15.24 The rest of this annex and Annex 16 set out our decisions on the WACC for BT Group, Openreach and Other UK Telecoms (OUKT). Our final WACC estimates are based on market data as of 31 October 2025.

WACC parameters

Inflation assumptions

Our proposal

- A15.25 Given our WACC estimates reflect our view of required returns over a relatively long investment horizon (reflecting the long asset lives of telecoms investments), we proposed using long run inflation expectations when calculating the pre-tax nominal WACC.
- A15.26 We proposed using inflation assumptions of 2.0% for CPI and 2.5% for RPI, in line with official forecasts from the Office for Budget Responsibility (OBR).⁶⁹²

Stakeholder responses

- A15.27 AlixPartners broadly supported our use of OBR forecasts for setting forward-looking CPI and RPI inflation assumptions and used the same CPI and RPI figures in its own estimate of WACC for a reasonably efficient entrant. However, it said that these forecasts were now well below the RPI inflation expectations implied by UK gilt markets (around 3.3%).⁶⁹³
- A15.28 BT did not explicitly comment on our approach to estimating RPI and CPI but used our figures in its calculation of WACC.⁶⁹⁴

Our reasoning and decisions

- A15.29 We have decided to estimate CPI and RPI inflation by reference to the latest official forecasts from the OBR. In November 2025, the OBR revised its inflation forecasts, extending them through to Q1 2031.⁶⁹⁵
- A15.30 The OBR forecasts CPI to decline from 2.4% in Q2 2026 (the start of the control period) to 2.1% by Q4 2026, then fluctuate between 1.9% and 2.1% through Q1 2029, before settling at 2.0% from Q2 2029 onwards. Based on these forecasts, we assume a CPI inflation rate of 2.0% for this statement in line with our consultation position.
- A15.31 The OBR forecasts RPI inflation at 3.7% in Q2 2026, declining to 1.9% by Q3 2030 and returning to 2.2% by Q1 2031. Based on these forecasts, we maintain an RPI assumption of

⁶⁹⁰ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 1 - Executive Summary.

⁶⁹¹ We refer to CEPA’s updated report for this statement as the ‘2026 CEPA Report’.

⁶⁹² Office for Budget Responsibility, [Economic and fiscal outlook – October 2024](#), pages 36-37.

⁶⁹³ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 5, paragraphs 83-85.

⁶⁹⁴ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1.

⁶⁹⁵ Office for Budget Responsibility, [Economic and Fiscal Outlook – March 2025](#). Note: all figures represent annual inflation rates.

2.5% for this statement to account for higher RPI inflation early in the control period, followed by lower rates later as RPI aligns with CPIH⁶⁹⁶ from 2030.

- A15.32 Although not explicitly stated, we assume the 3.3% figure referenced by AlixPartners relates to breakeven inflation (BEI) rates. BEI represents the difference in yield between a nominal gilt and an inflation-linked one. As of the end of October 2025, the 10-year spot BEI rate is 2.9%, while the 20-year spot BEI rate is 3.1%.
- A15.33 Although AlixPartners did not advocate for using BEI rates as the basis for our inflation assumptions, we consider this approach inappropriate as BEI rates incorporate not only expected inflation but also other factors such as an inflation risk premium, liquidity risk premium, and potentially additional factors.⁶⁹⁷ In theory, BEI rates can be used to estimate expected inflation if these other components can be quantified. However, many of these factors are unobservable, meaning that significant judgment would be required.

Risk-free Rate (RFR)

Our proposal

- A15.34 The UKRN Guidance outlines the approach UK regulators should take when estimating the RFR: “To estimate the real risk-free rate (RFR) within the CAPM, regulators should use recent yields on index-linked gilts, with a maturity which matches the assumed investment horizon for their sector.”⁶⁹⁸
- A15.35 Consistent with the UKRN guidance and our previous regulatory decisions, we proposed to estimate the real RFR by reference to index-linked gilts (ILGs) with a maturity of between 10 and 20 years and placed weight on six-month averaging periods. Based on this approach, and using data to 31 October 2024, we estimated a nominal RFR of 3.5% based on a real (RPI-based) RFR of 1.0% and RPI inflation of 2.5%.⁶⁹⁹

Stakeholder responses

- A15.36 While BT and AlixPartners agreed with our methodology, they said that the RFR should be updated to reflect more recent market data.⁷⁰⁰
- A15.37 BT further argued that forward-looking interest rates indicate the potential for continued increases in benchmark rates throughout the 2026-31 review period. BT said we should consider adjusting the RFR upwards based on available forward rate data, or account for the possibility of higher rates during the review period by selecting a point estimate towards the upper end of the considered range.⁷⁰¹

⁶⁹⁶ CPIH is a measure of inflation that extends the standard CPI to include housing related costs.

⁶⁹⁷ For example, page 3 of a 2015 Bank of England paper, “[The informational content of market-based measures of inflation expectations derived from government bonds and inflation swaps in the United Kingdom](#)” and page 8 of a 2025 Bank of England paper, “[Do inflation expectations respond to monetary policy? An empirical analysis for the United Kingdom.](#)”

⁶⁹⁸ UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), Recommendation 3, Page 15.

⁶⁹⁹ This was equivalent to a real (CPI-based) RFR of 1.5%.

⁷⁰⁰ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.28-A1.29. ⁷⁰⁰ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 5, paragraphs 74-77.

⁷⁰¹ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.30-A1.33.

Our reasoning and decisions

- A15.38 In line with our proposals, we have decided to estimate the real RFR by reference to the six-month average yields on ILGs with a maturity between 10 and 20 years. We have updated our estimate using market data as of 31 October 2025. As set out below we have decided to use a real RFR of 2.0%. Combined with our RPI assumption of 2.5%, the nominal RFR is 4.5%.
- A15.39 We have also considered BT's proposal to adjust our RFR estimate using forward rate data. The UKRN Guidance notes that there is evidence suggesting that forward rates do not provide a more accurate forecast of future spot rates than current spot rates,⁷⁰² and the CMA has reached a similar view in recent publications.⁷⁰³ BT also notes in its response that forward rates may not be considered entirely reliable predictors.⁷⁰⁴
- A15.40 On this basis, we do not consider it appropriate to revise our RFR estimate using forward rates.
- A15.41 The following paragraphs provide additional details on the investment horizon and measurement period we have used to estimate the RFR.

Investment horizon

- A15.42 As set out in the UKRN guidance, the maturity of the ILG used to inform the RFR should match the assumed investment horizon for its sector. Assets associated with telecoms investments have relatively long lives and an efficient network operator would be expected to finance investments (whether network renewals or enhancements) steadily through time. For example:
- a) BT's network infrastructure assets have accounting asset lives of between two and 40 years,⁷⁰⁵ with a large proportion of the assets used to deliver relevant services towards the midpoint and upper end of this range e.g. duct (c.36% of Openreach MCE), WLA copper (c.16%) and fibre (c.28%);⁷⁰⁶
 - b) Planned investments in FTTP involve long-lived assets, with the majority of the investment in assets with lives between 20 to 40 years;⁷⁰⁷
 - c) The average remaining maturity on BT's debt is around seven years;⁷⁰⁸ and
 - d) The average maturity from issuance on BT's debt is around 15 years.⁷⁰⁹
- A15.43 Recognising the long asset lives of fibre and duct, and the average maturity on BT's debt and average maturity of issuance, we consider a reasonable investment horizon is between 10 and 20 years.

⁷⁰² UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), Addressing the risk of forecast error, Page 15.

⁷⁰³ See for example paragraph 7.123 of its PR24 draft determination and paragraph 1.41 of its PR19 redetermination.

⁷⁰⁴ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.31.

⁷⁰⁵ Page 172 of BT's [2025 Annual Report](#) shows the asset lives used by BT for network infrastructure assets.

⁷⁰⁶ Ofcom analysis of 2025 BT Regulatory Financial Statements, Page 22 and 2025 Regulatory Financial Commentary, Page 9.

⁷⁰⁷ See Ofcom Fibre Cost Model for more detail on asset lives used in the modelling.

⁷⁰⁸ Based on Ofcom analysis of debt information presented in [BT's 2025 Annual Report](#) (Page 208) and on its [website](#). Average maturity remaining for hybrid instruments uses the non call date, not the maturity date in line with the presentation on BT's website.

⁷⁰⁹ Based on Ofcom analysis of [BT's 2025 Annual Report](#) (Page 208) and [website](#). Average maturity at issuance for hybrid instruments uses the non-call date, not the maturity date in line with the presentation on BT's website.

A15.44 In line with our consultation position, we therefore use evidence of yields on 10 and 20-year ILGs to estimate the RFR. We think investment horizons towards upper end of this 10–20-year period would better reflect the investments associated with BT’s relevant services.

Measurement period and decision

A15.45 The UKRN guidance states that regulators should estimate the real RFR using recent yields on ILGs. In recent decisions, other UK regulators have typically considered yields using one to six-month averaging periods.⁷¹⁰

A15.46 Spot yields on 10 and 20-year index-linked gilts were 1.6% and 2.1% respectively on 31 October 2025. Yields on these gilts over different averaging periods are shown in Table A15.2.

Table A15.2: Real (RPI-based) yields on 10 and 20-year gilts

Averaging period	10-year gilt %	20-year gilt %
Spot rate	1.6	2.1
1 Month	1.6	2.2
6 Months	1.5	2.2
1 Year	1.3	2.0

Source: Ofcom analysis based on data from the Bank of England. Figures rounded to 1 decimal place (d.p.). As of 31 October 2025.

A15.47 In line with our proposal, we have decided to estimate the real RFR using a six-month averaging period. We think this ensures the real RFR reflects current market conditions while mitigating the risk of capturing market fluctuations that could be a feature of shorter averaging periods. This gives a range of 1.5% to 2.2%.

A15.48 We also continue to use a point estimate above the mid-point (1.9%) of this range, in line with our consultation position, which places slightly more weight on the longer-term investment horizon.

A15.49 Therefore, we have decided to use a real RFR of 2.0%.⁷¹¹ Based on our RPI estimate of 2.5%, the implied nominal RFR is 4.5%.⁷¹²

TMR and ERP

Our proposal

A15.50 The total market return (TMR) represents the sum of the RFR and the equity risk premium (ERP).⁷¹³ While the expected TMR and expected ERP are not directly observable, in recent decisions we have placed more weight on estimates of the TMR, consistent with a view

⁷¹⁰ CAA used 1-month averages in its October 2023 final decision on NATS ([Economic regulation of NATS \(En Route\) plc: Final Decision for the NR23 \(2023 to 2027\) price control review](#), (NR23) Page 129). The CMA used 6 month averages in the PR19 appeals (PR19 FD), ([Final report](#), Page 790). In its July 2024 RIIO-3 Sector Specific Methodology Decision (2024 RIIO-3 SSMD), Ofgem decided to update its estimate of the RFR in the price control annually using 1-month averages ([RIIO-3 Sector Specific Methodology Decision – Finance Annex](#), Page 62). In Ofwat’s December 2024 PR24 final determinations (PR24 FD), it used a 1-month average ([PR24-final-determinations-Aligning-risk-and-return-Allowed-Return-Appendix.pdf](#), Page 9).

⁷¹¹ Rounded to 1d.p.

⁷¹² Rounded to 1d.p.

⁷¹³ In the March 2021 Statement we used the terminology Expected Market Return (EMR) but consistent with the UKRN Guidance we refer to it as the TMR in this consultation.

that the long-run market return is likely to be more stable than the ERP.⁷¹⁴ In the March 2021 Statement we assumed a real (CPI-based) TMR of 6.7%.

- A15.51 The UKRN Guidance is consistent with our previous approach, stating “Regulators should estimate the equity risk premium (ERP) within the CAPM as the difference between the total market return (TMR) and the risk-free rate (RFR). We recommend that the TMR should be primarily based on historical ex-post and historical ex-ante evidence.”⁷¹⁵
- A15.52 Following the UKRN Guidance, we estimated a real (CPI-based) TMR range of 6.6% to 6.8% in our March 2025 Consultation and considered that a TMR of 6.7% remained appropriate.

Stakeholder responses

- A15.53 BT broadly agreed with our approach but considered that the upper bound of our TMR range should be 6.9%, based on the Blume adjustment.⁷¹⁶ BT said this would support a TMR estimate of 6.8% (being the midpoint of a 6.7% to 6.9% range) rather than our proposed 6.7%.⁷¹⁷ BT considered that this upper bound would:
- a) place greater emphasis on the arithmetic mean, which BT considered appropriate due to the lack of evidence for serial correlation in historical returns; and
 - b) set more pro-growth and efficient price signals.
- A15.54 AlixPartners also broadly agreed with our approach but noted the inherent uncertainty related to estimating TMR. AlixPartners used a real TMR range of 6.5% to 7.0% in its own WACC calculation and noted that our point estimate was towards the lower end of its range.⁷¹⁸

Our reasoning and decisions

- A15.55 We continue to consider it most appropriate to set the TMR in line with the UKRN guidance, referencing both ex-post and ex-ante approaches. On this basis, we use a real (CPI-based) TMR of 6.7% for calculating the BT Group WACC in this statement.
- A15.56 The following paragraphs set out the evidence we have considered in determining our plausible range for the TMR, and by extension, the ERP.

Historical ex-post evidence

- A15.57 We have estimated historical ex-post returns using historical equity returns from the 2025 edition of the Dimson, Marsh and Staunton (DMS) dataset.⁷¹⁹ This includes one additional year of data compared to the version used in the March 2025 Consultation.

⁷¹⁴ In section 4.4.1 of the 2018 UKRN report, the authors present evidence on the relative stability of long-run mean returns on mature stock markets, in contrast with considerably lesser stability of returns on other asset classes (such as bonds and cash), implying that the *ex-post* ERP has been far from stable. This suggests that assuming that the long-run market return is stable (rather than that the forward-looking ERP is stable) might be a reasonable methodology. Indeed, this is one of the recommendations of the 2018 UKRN Report (Page 48).

⁷¹⁵ UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), Recommendation 4, Page 21.

⁷¹⁶ The Blume adjustment takes a weighted average of the arithmetic mean and geometric mean returns where weights are based on the number of historic years of data and the forecast horizon.

⁷¹⁷ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.34-A1.39.

⁷¹⁸ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 5, paragraphs 78-82.

⁷¹⁹ Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of The Optimists: 101 Years of Global Investment Returns*, Princeton University Press, 2002, and Elroy Dimson, Paul Marsh and Mike Staunton, *UBS Global Returns Yearbook*, 2025, Zurich: UBS, 2025.

A15.58 In line with the UKRN Guidance,⁷²⁰ we have deflated historical nominal equity returns from the DMS dataset using the following measures of CPI:

- 1900 – 1949: Consumption expenditure deflator (CED).⁷²¹
- 1950 – 1987: Backcast CPI estimates from the ONS.⁷²²
- 1988 to date: CPI data from the ONS.⁷²³

A15.59 The UKRN Guidance recognises that there is general agreement that the expected return from historic data is the arithmetic average return and suggests two approaches to estimate the arithmetic average.⁷²⁴ The UKRN Guidance says that one approach is to take an arithmetic average of historical returns over holding periods consistent with the chosen investment horizon of, in our case, 10 to 20 years (which could include both overlapping and non-overlapping periods).⁷²⁵ The other approach is to uplift the whole-period geometric average to reflect volatility in returns.⁷²⁶

A15.60 Based on the above guidance, we estimate the historical ex-post evidence suggests a real TMR (CPI) range of 6.7% to 6.8% (Table A15.3).

Table A15.3: Ex-post arithmetic returns (real CPI)

Holding period	Arithmetic return
One-year	6.8%
10-year overlapping	6.7%
20-year overlapping	6.8%
Geometric + adjustment	6.7% ⁷²⁷

Source: Ofcom analysis based on 2025 DMS data and inflation data from the Bank of England and Office for National Statistics.

A15.61 We have not incorporated a Blume adjustment as part of our historical ex-post TMR range as we consider it is less transparent to stakeholders compared to the simple use of arithmetic and geometric averages presented above. We also note that a Blume adjustment using the updated 2025 dataset from DMS, and adjusting nominal returns for CPI inflation, would point to a TMR below our 6.7% to 6.8% range.⁷²⁸

⁷²⁰ UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), page 20.

⁷²¹ Bank of England, A millennium of macroeconomic data, [Research datasets](#), Tab A.47. Please note that inflation index levels for the period 1900-1949 have been adjusted from our March 2025 consultation to reflect a December year-end rather than a June year-end.

⁷²² ONS, [Consumer price inflation, historical data, UK 1950 to 1988](#).

⁷²³ ONS, [Consumer price inflation tables](#), Tables 37-38.

⁷²⁴ This is because, the expected return of a probability distribution is the arithmetic mean.

⁷²⁵ Using overlapping periods has the advantage of more data points when compared to non-overlapping periods, but the individual data points will exhibit serial correlation. Using non-overlapping periods avoids the issue of serial correlation but typically leads to estimates that are volatile year-on-year due to small sample sizes. Given the volatility of these estimates, we have decided not to put any weight on estimates using non-overlapping holding periods. Other UK regulators have made similar arguments e.g. See Ofwat, PR24 FD, Page 35.

⁷²⁶ UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), page 18.

⁷²⁷ The geometric return is 5.1% in CPI terms, this is then uplifted by the geometric-to-arithmetic conversion factor (1.6%). The geometric-to-arithmetic conversion factor is estimated as half the variance of natural logarithmic total market returns between 1900 and 2024.

⁷²⁸ Using the updated 2025 dataset from DMS, and adjusting nominal returns for CPI inflation, we estimate the long-run real average market return to be 5.1% on a geometric basis and 6.8% on an arithmetic basis. Applying the Blume adjustment over a 125-year dataset and assuming investment horizons of 10 and 20 years, we derive TMR estimates of 6.7% and 6.5%, respectively. The midpoint of this range rounds to 6.6%. The

A15.62 Other regulators have also tended not to put weight on a Blume adjustment in their decisions.⁷²⁹

Historical ex-ante evidence

A15.63 We use the DMS ‘decomposition’ approach as adopted by the CMA in PR19 final determinations to estimate the historical ex-ante TMR.⁷³⁰ This approach uses the 2025 DMS data on historical average dividend yield and adds this to the historical average of dividend growth. As this data is in geometric terms, an adjustment is made to convert this into an equivalent arithmetic average. On this basis, the DMS dataset, deflated using our historical estimates of CPI set out above, suggests a real TMR (CPI) of 6.6% (Table A15.4). This is 0.1 percentage points lower than the value calculated in our March 2025 Consultation.

Table A15.4: Ex-ante historical returns (real CPI)

Calculation step	Description	
A	Geometric mean dividend yield	4.5%
B	UK real dividend growth rate	0.5%
C=A+B	Geometric ex-ante TMR	5.0%
D	Geometric-to-arithmetic conversion factor ⁷³¹	1.6%
E= C+D	Ex-ante TMR (CPI terms)	6.6%

Source: Ofcom analysis based on 2025 DMS data and Ofcom’s inflation dataset.

Regulatory precedent

A15.64 Recent TMR estimates from other UK regulators are summarised in Table A15.5. Note that each of these TMR estimates are real with respect to CPIH, while we have estimated a real TMR with respect to CPI. Historically, CPI has on average been slightly higher than CPIH⁷³² meaning that our estimate of the real TMR with respect to CPI could be slightly lower than the TMR estimated by other UK regulators.

Table A15.5: Recent estimates of the TMR by UK regulators

Regulator	Year	Real TMR range (CPIH)
CMA ⁷³³	2021	6.15% - 7.46%
Ofwat ⁷³⁴	2024	6.68% - 6.98%

difference between this figure and the 6.8% suggested by BT arises because BT referenced the unadjusted real returns reported in the DMS dataset, whereas we apply CPI-based deflation in line with UKRN guidance.

⁷²⁹ See for example CMA, [PR19 Price Redetermination Final Report](#), paragraph 9.328, and Ofwat, [Final methodology for PR24 - Allowed return on capital \(Appendix 11\)](#), section 3.4.5.

⁷³⁰ CMA, [PR19 Price Redetermination Final report](#), paragraph 9.341.

⁷³¹ Estimated as half the variance of the log return of the equity total return index.

⁷³² For example, in the ONS back cast series (1950 – 1988), CPI was on average 0.6% points above CPIH.

⁷³³ PR19 FD, paragraph 9.397. We note that the CAA used the same range as the CMA (albeit with respect to RPI) in its November 2023 decision on National Air Traffic Services. See [Economic regulation of NATS \(En Route\) plc: Final Decision for the NR23 price control review](#), paragraph 5.66.

⁷³⁴ PR24 FD, Page 37. Ofwat’s range is based on the highest and lowest datapoints from its combined ex-ante and ex-post analysis.

Regulator	Year	Real TMR range (CPIH)
CMA ⁷³⁵	2025	6.7% - 7.3%
Ofgem ⁷³⁶	2025	6.8%-6.9%

Source: UK Regulators.

Our decision on TMR and ERP

A15.65 Our analysis of the real (CPI-based) TMR using historical ex-post and ex-ante approaches suggest a real TMR of between 6.6% and 6.8%. On this basis, we consider our WFTMR21 figure of 6.7% continues to represent a reasonable estimate of the real TMR as it sits within the range implied by the historical ex-post and ex-ante approaches. As such, we have decided to use a real TMR of 6.7%. Combined with our forecast of CPI inflation of 2.0%, a real TMR of 6.7% implies a nominal TMR of 8.8%. Combined with our estimate of the nominal RFR (4.5%), the nominal ERP used in this statement is 4.3%.

Cost of debt

Our proposal

A15.66 We proposed to estimate the pre-tax cost of debt based on a weighted average of the cost of new debt and an allowance for existing debt, informed by yields on benchmark BBB indices.

A15.67 Using data to October 2024, we estimated a cost of new debt of 4.9% to 5.3% based on six-month average yields, and an allowance for existing debt of 4% based on longer term average yields. We said the allowance for existing debt was comparable to the cost of debt reported in BT's 2024 annual report, recognising that BT's reported cost of debt also includes hybrid securities which have characteristics of both debt and equity. Applying a weighting of 15% to 60% on new debt, we estimated a cost of debt range of 4.1% to 4.8% and proposed to use the midpoint of this range (4.5%) plus a 10-basis points allowance for debt issuance costs. Our overall proposed pre-tax cost of debt was therefore 4.6%.

Stakeholder responses

A15.68 BT disagreed with our proposed cost of new debt and the allowance for existing debt.

A15.69 In relation to the cost of new debt, BT said our estimate was below the nominal 20-year UK gilt yield rate (5.2% as at March 2025) and below its expected cost of new debt. ⁷³⁷ BT suggested estimating the cost of new debt by reference to 10- and 20-year BBB non-financials indices as it considered the yields were closer to its expected costs for new debt. BT proposed a cost of new debt of between 5.6% and 6.1% based on the six-month average yields of these indices as of March 2025. ⁷³⁸

A15.70 BT thought our allowance of 4.0% for existing debt was too low as it was below the average cost of debt BT reported in its 2024 and 2025 annual reports (4.6% and 5.1%

⁷³⁵ PR24, [Provisional Determinations Volume 4: Allowed Return, Risk & Return](#), paragraph 7.285. Please note this is a provisional determination. The CMA's upper bound is based on an ex-post ERP approach. The ex-post ERP approach is not in line with the UKRN guidance.

⁷³⁶ Ofgem, 2025 [RIIO-3 Final Determinations – Finance Annex](#), paragraph 3.28-3.30. Ofgem's 6.8% estimate was based on its ex-ante analysis and its 6.9% estimate was based on its ex-post analysis.

⁷³⁷ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.55-A1.57.

⁷³⁸ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.57-A1.58.

respectively).⁷³⁹ BT also said that the 10-to-15-year averaging period we used to inform our estimate included a period of unusually low costs of debt.⁷⁴⁰

A15.71 BT proposed an allowance for existing debt of 4.0% (Ofcom's proposal) to 4.9% (equivalent to BT's reported cost of debt excluding hybrid debt).⁷⁴¹

A15.72 BT said hybrid debt was an efficient component of a well-financed portfolio, even for a notional firm, and should be included in our cost of debt estimate.⁷⁴² BT said that hybrid debt can be used to support a company's credit rating during investment phases and protect rates paid on senior debt.⁷⁴³ BT recommended a 10 to 20 basis point allowance for hybrid debt.⁷⁴⁴

A15.73 BT appeared to agree with our proposed approach to weighting new and existing debt, and the 10-basis points allowance for debt issuance costs.⁷⁴⁵

A15.74 Overall BT said we should adopt a weighted average cost of debt of 5.2%, based on the midpoint of its suggested ranges for new and existing debt, including an allowance for hybrid debt and issuance costs.⁷⁴⁶

Our reasoning and decisions

A15.75 We have decided to estimate the cost of debt as a weighted average of the cost of new debt and an allowance for existing debt. This is consistent with our approach in the March 2021 Statement and aligns with the UKRN Guidance which recognises that most regulators include an allowance for existing debt well as the expected costs of raising new debt in the review period.⁷⁴⁷ The UKRN Guidance recommends that *"Regulators should estimate an allowance for an efficient company under the notional financial structure with actual debt costs suitably benchmarked against other market evidence."*⁷⁴⁸

A15.76 Based on the analysis below, which uses data to 31 October 2025, we have estimated a pre-tax cost of debt of 5.3% for BT Group.

Cost of new debt

A15.77 Our objective is to include an allowance for the expected cost of raising new debt in the review period. In line with our consultation proposal, we consider that yields on BBB-rated bonds with maturities of between 10 and 20 years would give a reasonable estimate of the cost of new debt because i) BT's senior unsecured debt has maintained a credit rating of at least BBB- over the past 25 years⁷⁴⁹ and ii) as noted in the RFR section above we estimate that BT's listed bonds (across all currencies) had an average maturity at issuance of approximately 15 years, with an average remaining maturity of around seven years.⁷⁵⁰

A15.78 In our consultation, we based the cost of new debt on the S&P BBB GBP All-Corporate 10- and 20-year indices. However, for this statement, we have used the iBoxx UK BBB All-

⁷³⁹ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraph A1.63.

⁷⁴⁰ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraph A1.64.

⁷⁴¹ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraph A1.74.

⁷⁴² [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.65-A1.72.

⁷⁴³ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraph A1.69.

⁷⁴⁴ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, Figure A1.18 and paragraph A1.65.

⁷⁴⁵ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraph A1.74.

⁷⁴⁶ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, Figure A1.18.

⁷⁴⁷ UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), page 31.

⁷⁴⁸ UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), Recommendation 8.

⁷⁴⁹ Sourced from S&P Capital IQ Pro.

⁷⁵⁰ See paragraph A15.42.

Corporate 7-10 year; 10-15 year and 15+ year indices. The iBoxx indices are commonly used by other UK regulators,⁷⁵¹ they provide a longer historic time series (which is relevant for our allowance for existing debt), and the bonds included in each index are transparent.

- A15.79 In line with our consultation proposal, we have set the cost of new debt by reference to six-month average yields to ensure we use an up-to-date figure while also smoothing out volatility in spot rates. This is consistent with our averaging approach to estimating the RFR.
- A15.80 We estimate the six-month average tenor outstanding to be eight, 13, and 23 years for the bonds in the 7–10-year, 10-15 year, and 15+ year indices, respectively. We have estimated the cost of debt for BBB bonds with a 10-year maturity by reference to the midpoint of the six-month average yields for the 7-10 and 10-15 year indices. We have estimated the cost of debt for BBB bonds with a 20-year maturity by reference to six-month average yields for the 15+ year index.
- A15.81 We have also considered whether it might be appropriate to use a more narrowly defined ‘non-financials’ index as suggested by BT, rather than a broader All-Corporates index. For the iBoxx BBB 7-10 year; 10-15 year and 15+ year indices, we estimate that the difference in yields is minimal, with six-month average yields on the non-financials indices about 0–10 basis points lower than yields on the all-corporates indices.
- A15.82 On balance, and in line with our consultation proposal, we have decided to base our cost of debt estimates on All-Corporates indices, which are derived from a larger sample of BBB-rated companies. While we recognise arguments could be made to support an alternative index, such as a non-financials index, the choice of index does not appear to significantly affect our estimate for the cost of new debt in this review.
- A15.83 Figure A15.1 shows how spot yields for the iBoxx BBB bond indices have increased since the March 2021 Statement. As of 31 October 2025, six-month averages were 5.8% for the 7-10 year index, 6.1% for the 10-15 year index, and 6.5% for the 15+ year index.⁷⁵²

⁷⁵¹ For example, see CMA, [Water PR24 References, Provisional Determinations Volume 4: Allowed Return, Risk & Return](#) and Ofgem, [RIIO-3 Final Determinations – Finance Annex](#).

⁷⁵² In response to BT’s comment, we note that these yields are above those for nominal 20-year gilts. We estimate six-month average yields on 20-year nominal gilts as at 31 October 2025 were 5.4%.

Figure A15.1: Spot yields on iBoxx BBB bond indices since WFTMR21



Source: iBoxx £ Corporates BBB indices, Ofcom analysis. Data to 31 October 2025.

A15.84 Our estimated range for the cost of new debt is therefore between 6.0% (midpoint of the six-month average of the 7-10 year and 10-15 year indices) and 6.5% (six-month average of the 15+ year index).

Allowance for existing debt

A15.85 We include an allowance for the cost of existing debt to provide the regulated firm an opportunity to recover efficiently incurred debt costs, especially as debt financing in telecoms tends to be of relatively long maturity.⁷⁵³ The purpose of the allowance is not to precisely remunerate the regulated company's reported cost of debt, but to recognise that firms issue debt over time and in the future a notional firm would need to finance existing debt as well as new debt. We have previously recognised that including an allowance for existing debt ensures a degree of stability and consistency in regulatory decisions over time.⁷⁵⁴

A15.86 Consistent with our proposed approach, we have estimated an allowance for existing debt by reference to long term average yields on benchmark bonds. As per our approach to the cost of new debt, we consider that long-term average yields on BBB-rated bonds with maturities of between 10 and 20 years would provide a reasonable allowance for the cost of existing debt that a notional firm could face. On this basis, we consider evidence on long-term (10 to 20 year) average yields of the three iBoxx indices used to estimate the cost of new debt.⁷⁵⁵

A15.87 As of 31 October 2025, the simple 10-year average yield for BBB-rated bonds for the 7-10 year and 10-15 year indices ranged from 3.9% to 4.0%.⁷⁵⁶ We set the lower bound of our

⁷⁵³ See also March 2021 Statement, paragraph A20.96.

⁷⁵⁴ March 2021 Statement, paragraph A20.97.

⁷⁵⁵ As noted above, the iBoxx indices provide a longer historic time series allowing us to calculate 20-year averages.

⁷⁵⁶ Ofcom analysis of S&P iBoxx data.

allowance for existing debt at 4.0% by taking the midpoint of this range and rounding to one decimal place. The upper bound is based on the 20-year average yield for the BBB-rated corporate 15+ year index, which is 5.1% as of 31 October 2025. This range of 4.0% to 5.1% is similar to that suggested by BT. We have decided to base our allowance for existing debt on the midpoint of this range i.e. 4.6% (after rounding).

A15.88 Over the last 20 years, yields on these three indices have ranged from around 1.6% to over 11%. While the averaging period includes a period of relatively low (and high) yields, we do not think this is inappropriate as suggested by BT as our objective is to provide an allowance for the cost of debt that a notional firm could have raised in the past.⁷⁵⁷

A15.89 As our allowance for existing debt is based on long term average yields on BBB-rated bonds, it will not necessarily align with BT's actual reported cost of debt, as this also includes other types of debt instruments. Our allowance for existing debt of 4.6% is lower than the weighted average effective fixed interest rate (sterling) reported in BT's 2025 annual report of 5.1%⁷⁵⁸ [3<].⁷⁵⁹ On this basis, we consider our allowance for the cost of existing debt is reasonable.

Weighting of existing and new debt

A15.90 In the March 2025 Consultation, we estimated the weightings on new and existing debt by considering what proportion of BT's existing debt could be due for repayment over the review period. Given that the charge controls being set are a combination of costs at the start and at the end of the control (depending on the service in question), we consider that a weighting of between 45% to 95% on existing debt (5% to 55% on new debt) seems reasonable. This is because, by the end of the five-year control c.55% of BT's existing debt will potentially be due for repayment (including call options on hybrid securities) while 5% will potentially be due for repayment by the beginning of the control in April 2026. Therefore, over the control period existing debt will account for c.45% to c.95% of total debt.

Additional allowances

A15.91 As in previous decisions and as proposed in our consultation we include an allowance for debt issuance costs since these costs are not included in operating costs within BT's RFS and so would not otherwise be included in charge controls based on BT's cost data. We have decided to continue to allow a 10-basis point uplift to the cost of debt for issuance and liquidity in this statement.

A15.92 We do not agree with BT that we should include hybrid debt within the cost of debt or as a separate allowance. Our approach is to set the cost of debt allowance with reference to yields on a notional BBB corporate bond index, which includes senior fixed rate nominal bonds. This is consistent with our objective to provide the regulated firm an opportunity to recover efficiently incurred debt costs. We do not take account of yields on BT's senior bonds or hybrid bonds (or any other types of debt) in setting such an allowance.⁷⁶⁰ BT's

⁷⁵⁷ In the March 2021 Statement the allowance for existing debt was above the estimated cost of new debt. See for example paragraph A20.97 of that statement.

⁷⁵⁸ BT Group, [Annual Report 2025](#), Page 211.

⁷⁵⁹ BT response dated 14 October 2025 to questions I1-I2 of the s135 noticed dated 10 September 2025.

⁷⁶⁰ Although we do compare our allowance for existing debt to BT's reported debt costs.

hybrid bonds typically have a sub-investment grade credit rating and higher cost, reflecting the seniority of claims and mix of debt and equity-like characteristics.⁷⁶¹

A15.93 However, we do reference BT’s actual gearing (i.e. including senior bonds, hybrid bonds and other debt) when assessing the appropriate level of notional gearing.⁷⁶² CEPA’s report considers the impact of hybrid debt on BT’s gearing and we have taken this into account when determining notional gearing.

Decision on cost of debt

A15.94 Table A15.6 presents our final assessment of the cost of debt included in the WACC for BT Group. Taking account of the cost of new debt, the allowance for existing debt, and our assumptions on weightings, we derive a cost of debt range of 4.7% to 5.6%.⁷⁶³ In line with our proposal, we have used the midpoint of this range, 5.2%, to inform our cost of debt estimate. We then add a 10-basis point allowance for debt issuance costs to derive our final cost of debt allowance of 5.3%.

Table A15.6: Summary of our cost of debt decision

	Low	High
Cost of new debt	6.0%	6.5%
Allowance for existing debt	4.6%	4.6%
Weight on new debt	5%	55%
Weighted average cost of debt	4.7%	5.6%
Midpoint of range	5.2%	
Issuance costs	0.1%	
Cost of debt allowance	5.3%	

Source: Ofcom analysis

Equity beta, gearing and asset beta

Our proposal

A15.95 In our March 2025 consultation, we estimated betas in line with the UKRN Guidance which states: “Regulators should estimate equity beta for the notional company using comparable listed companies and standard regression techniques (i.e. ordinary least squares (OLS)). Where the listed comparator has different gearing to the notional company, regulators should continue to de-lever and re-lever the raw equity beta.”⁷⁶⁴

A15.96 We commissioned CEPA to provide estimates of beta and gearing for BT Group and comparator companies (UK utilities, UK & EU telecoms and ICT).⁷⁶⁵ CEPA estimated 1-year, 2-year and 5-year daily betas as of 30 September 2024. Based on CEPA’s ranges for asset beta and gearing for these companies, we proposed an asset beta for BT Group of 0.46

⁷⁶¹ Rating agencies also recognise the equity like characteristics of hybrid debt and typically treat hybrid debt as part debt, part equity. For example, in its [May 2025 note](#), S&P, allocated 50% of the payments on BT’s hybrid debt as a fixed charge and 50% as equivalent to a common dividend.

⁷⁶² The impact of higher gearing on the WACC is to i) include a higher proportion of lower cost debt in the capital structure, and ii) to increase (‘lever’) equity returns.

⁷⁶³ Rounded to one decimal point.

⁷⁶⁴ UKRN Guidance, Recommendation 5, Page 25.

⁷⁶⁵ 2025 CEPA Report, [Cost of Capital: Beta and Gearing for TAR 2026](#), 6 February 2025. We refer to CEPA’s report for our March 2025 consultation as the ‘2025 CEPA Report’.

(midpoint of CEPA's range for BT Group of 0.42-0.50), a forward-looking gearing of 55% (slightly above the midpoint of Ofcom's range of 45% - 60%) and a debt beta of 0.075 (informed by CEPA's analysis). Together these values translated into an implied forward-looking equity beta of 0.93 for BT Group.

Stakeholder responses

- A15.97 BT disagreed with the reduction in asset beta from 0.62 in WFTMR21 to 0.46 in our March 2025 Consultation, arguing the decline was partly driven by the temporary impact of FTTP investment on gearing (via a decline in the share price and an increase in debt). BT disagreed our proposed asset beta reflected its long-term or forward-looking beta.⁷⁶⁶
- A15.98 BT said that Ofcom should instead use longer term betas, and suggested placing weight on a 10-year window. It considered that this would provide a better balance between periods of elevated beta prior to the Brexit Referendum and lower beta relating to its FTTP investment. BT proposed we should use an estimate at the top of our range i.e. 0.5.⁷⁶⁷
- A15.99 AlixPartners also recommended using a 5 to 10-year estimation window.⁷⁶⁸
- A15.100 BT also disagreed with our notional gearing assumption, arguing that a notional company would not have BT's recent elevated gearing (as a result of a peak investment phase).⁷⁶⁹ To address this, BT said we could either align gearing to comparators (UK utilities: 52%, EU telecoms: 36%) or take a forward-looking view of BT's gearing, based on how forecast changes in its free cash flow could affect its share price, and hence gearing. BT suggested using 50% gearing, below the midpoint of our proposed 45-60% range.⁷⁷⁰ BT said that its suggested asset beta of 0.5 and gearing of 50% would give an equity beta of 0.93, consistent with our proposal.⁷⁷¹
- A15.101 Frontier Economics (on behalf of Vodafone Three) suggested an asset beta range for BT Group of 0.36 to 0.42, with a mid-point estimate of 0.39.⁷⁷² This was based on one-year, two-year and five-year beta estimates as of 30 September 2025.⁷⁷³
- A15.102 Frontier Economics said there is evidence that investors consider the systematic risk associated with telecoms operators has fallen significantly in the last decade.⁷⁷⁴ It argued that the decline in BT Group's asset beta since WFTMR21 reflects the growing importance of digital services which depend on broadband access, and a shift in the structure of retail pricing for both fixed and mobile offerings, with a larger share of revenues now coming from periodic subscription charges, and a smaller share from usage-based charges. Frontier said the reduction in operating costs of full fibre networks could also reduce the volatility of returns. Hence, Frontier disagreed with BT's view that the downward trend in BT

⁷⁶⁶ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.40-A1.41.

⁷⁶⁷ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.43 – A1.46.

⁷⁶⁸ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 5, Paragraphs 86-91.

⁷⁶⁹ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.47- A1.48.

⁷⁷⁰ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.54.

⁷⁷¹ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraphs A1.54.

⁷⁷² [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Executive Summary.

⁷⁷³ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 6.1.

⁷⁷⁴ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 3.1.3.

Group's asset beta was driven by the FFTP rollout and its associated effects on gearing and share price.⁷⁷⁵

A15.103 Frontier said that even if BT's cashflow improved, BT's future capital structure is a decision for BT's management rather than a mechanistic outcome of a change in share price. For example, it said BT could use increased cash flow to distribute cash to shareholders rather than paying down debt.⁷⁷⁶

A15.104 Frontier also commented on CEPA's methodology for deriving an asset beta range for BT Group. It said that

- CEPA relies on historical data despite evidence that telecommunications asset betas have declined over time.⁷⁷⁷
- The use of the interquartile range of spot betas to derive the mechanistic range is statistically flawed and not used by other regulators.⁷⁷⁸
- The European telecoms comparators used in CEPA's report to estimate asset betas are flawed.⁷⁷⁹

Our reasoning and decisions

A15.105 For this statement, CEPA has updated the 2025 CEPA Report, incorporating market data to 31 October 2025.⁷⁸⁰ Consistent with its approach to its first report, CEPA has estimated one-year, two-year and five-year daily betas for BT and relevant benchmark comparators over different averaging periods, focusing on data since the Brexit referendum. It first estimated a 'mechanistic' beta range based on the interquartile range of the two-year beta estimates before recommending a proposed range after considering other factors.

A15.106 In its updated report (the 2026 CEPA Report) CEPA also responds to stakeholder comments on its methodology for deriving asset beta ranges, which we summarise below.

A15.107 Drawing on recommendations in the 2026 CEPA Report and taking account of stakeholder responses, we have decided to use an asset beta for BT Group of 0.43 and a gearing assumption of 55% for this statement. Combined with a debt beta of 0.075, this implies a forward-looking equity beta of 0.86.

Equity beta estimates

A15.108 Table A15.7 summarises CEPA's estimates of BT's equity beta over different estimation windows and averaging periods.

A15.109 CEPA said that BT's equity beta exhibits greater stability than its asset beta and that BT's 2-year equity betas have typically been in the range 0.83-0.99. CEPA suggested that we might want to select a combination of asset beta and gearing that results in an equity beta

⁷⁷⁵ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 3 - Trends in Telecommunications Asset Betas.

⁷⁷⁶ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 3.3.3.

⁷⁷⁷ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 4.1.

⁷⁷⁸ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 4.2. Frontier argued that the interquartile range approach effectively "discards" information on current systematic risk pricing, as most recent beta estimates fall below the lower quartile.

⁷⁷⁹ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 4.3.

⁷⁸⁰ We refer to CEPA's updated report for this statement as the '2026 CEPA Report'.

aligned with the empirical evidence.⁷⁸¹ CEPA also noted that, BT's equity betas have more consistently fallen below 0.9 since March 2025.

Table A15.7: BT equity betas measured against the FTSE All Share

Window \ Av Period	Spot	1yr	2yr	5yr	10yr
1yr	0.71	0.82	0.90	0.96	0.91
2yr	0.81	0.89	0.91	0.95	0.93
5yr	0.95	0.97	0.97	0.96	0.96

Source: 2026 CEPA report, Table 3.2. Data cut off 31 October 2025.

Forward-looking gearing

A15.110 The UKRN Guidance says: "The notional gearing assumption should reflect the regulator's assessment of the balance of risks facing the regulated company, a wide range of benchmarks on gearing levels and overall regulatory policy objectives, not just that of the actual company (or companies) in question."⁷⁸²

A15.111 Based on the guidance and in line with our previous approach, we start by considering recent trends in BT's gearing and compare this against a range of benchmarks. Our view of forward-looking gearing for BT Group then informs our notional gearing assumptions for the disaggregated parts of BT, used to derive the appropriate WACCs for the different regulated services.

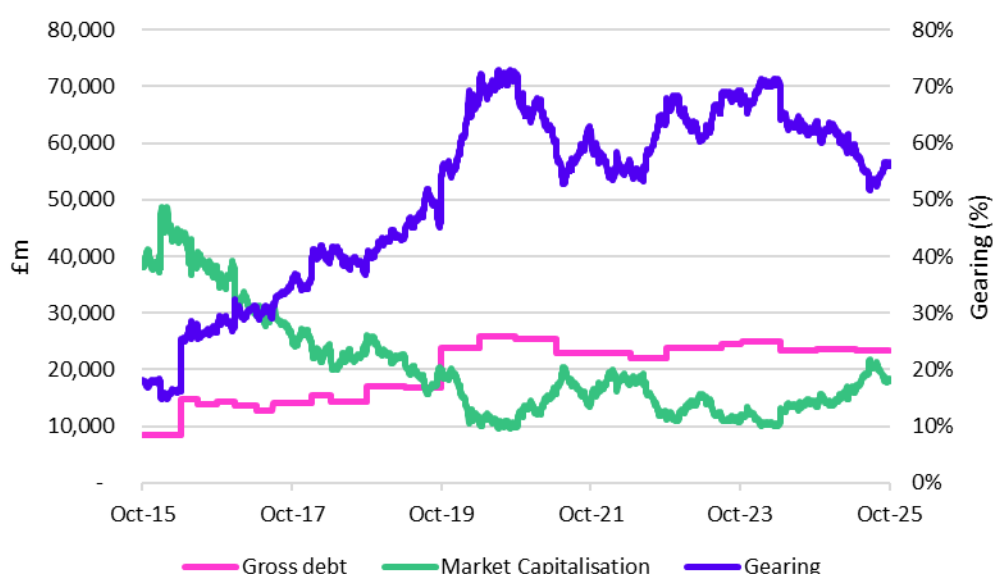
A15.112 Figure A15.2 shows the evolution of BT's market capitalisation, book value of gross debt and gearing over the last 10 years. In recent years there have been several step changes in BT's gross debt i.e. in January 2016 following its acquisition of EE and in October 2019 when IFRS 16 was first adopted. As the chart shows, recent levels of gearing are relatively high compared to earlier periods due to a reduction in market capitalisation. The overall equity risk (as measured by the equity beta) appears to have been relatively stable over CEPA's measurement periods (see Table A15.7), while gearing has increased and the asset beta has reduced (see Figure A15.3).⁷⁸³

⁷⁸¹ 2026 CEPA Report, Page 34.

⁷⁸² UKRN, [Guidance for regulators on the methodology for setting the cost of capital](#), Recommendation 9, Page 33.

⁷⁸³ This assumes that the systematic risk taken by debtholders (as measured by the debt beta) has stayed constant.

Figure A15.2: BT Group gearing, market capitalisation and gross debt



Source: S&P Capital IQ Pro. Data cut off 31 October 2025.

A15.113 Over the last 10 years BT's gearing has been as low as 15% and as high as 73%. The value as of 31 October 2025 was 56%.

A15.114 CEPA's proposed asset beta range for BT Group is based on de-levering two-year equity betas and therefore it presents two-year gearing estimates for BT Group. CEPA's interquartile two-year gearing range is between 48% and 63%.⁷⁸⁴

A15.115 For other comparators, CEPA estimated the interquartile two-year gearing range as follows:

- Vodafone was between 54% and 69%;⁷⁸⁵
- European telecoms was between 27% and 48%;⁷⁸⁶ and
- UK utilities was between 50% and 56%.⁷⁸⁷

A15.116 Consistent with our consultation position, we consider that a reasonable forward-looking gearing level for BT Group, would lie between 45% and 60%, which broadly aligns with the interquartile two-year gearing range for BT Group.⁷⁸⁸ BT's current gearing (56%) lies slightly above the midpoint of this range.

A15.117 Although in general, we would expect gearing for BT Group to be below UK utilities as theoretically these companies could support higher levels of gearing with a similar credit rating, having the top end of our BT Group range above UK utilities reflects the fact that BT's actual gearing has been higher than UK utilities in recent years.

⁷⁸⁴ 2026 CEPA Report, Table 3.3. Current gearing estimates also include IFRS 16 leases as debt, whereas longer-run averaging periods will partially exclude such leases as they were not part of reported debt prior to 2019. CEPA also consider the impact of hybrid debt and leases on BT's gearing (2026 CEPA report, Page 34).

⁷⁸⁵ 2026 CEPA Report, Table 3.9.

⁷⁸⁶ 2026 CEPA Report, Table 3.7.

⁷⁸⁷ 2026 CEPA Report, Table 3.5.

⁷⁸⁸ We think some downward adjustment from CEPA's 48% to 63% range is appropriate to recognise that European telecoms generally have lower levels of gearing and that it may not be appropriate to reflect all of BT's hybrid debt in gearing.

- A15.118 We have decided to adopt our consultation proposal and use a forward-looking gearing assumption of 55%. This is slightly above the midpoint of the 45% to 60% range (53%) as we place weight on the fact BT's gearing has been above the midpoint of this range, and the gearing of UK utilities, in recent years. A figure of 55% is also similar to BT's gearing as at October 2025 (our data cut off date).
- A15.119 We do not agree with BT that we should factor into our gearing assumption how forecast changes in its free cashflow could affect its share price (and hence gearing). We agree with CEPA that this would be somewhat speculative approach as it relies on an assumption that BT's share price does not fully reflect investor expectations of future cashflows.⁷⁸⁹ We also agree with Frontier that the impact on gearing of any increase in cashflow depends to some extent on how that cash is used. We also note that BT's gearing has not been as low as 50% (BT's proposed figure) for at least five years.

Debt beta

- A15.120 The debt beta is a measure of the exposure of debt holders in a firm to systematic risk. Generally, companies with higher gearing, lower credit ratings and/or more expensive debt commitments will tend to have higher debt betas. Debt betas are used to de-lever equity betas to estimate asset betas, and also to re-lever asset betas to estimate equity betas.
- A15.121 No stakeholders commented on our proposed debt beta, and BT adopted the same debt beta in its WACC estimates for BT Group.⁷⁹⁰ Accordingly, in this statement we use a debt beta of 0.075, consistent with our consultation position and CEPA's approach to un-lever equity betas.⁷⁹¹

Asset beta estimates

- A15.122 The asset beta is calculated by de-levering the equity beta for the effect of gearing. Taking account of systematic risk present in debt (i.e. the debt beta), we can derive the asset beta from the equity beta using the following equation: $\beta_a = \beta_e \times (1 - gearing) + gearing \times \beta_d$, where β_a is the asset beta, β_e is the equity beta, gearing is the gross value of short-term debt and long-term debt as a proportion of enterprise value, and β_d is the debt beta.
- A15.123 CEPA has used the same methodology for calculating gearing as we used in previous reviews⁷⁹² and has used a debt beta of 0.075 to un-lever the equity beta for BT.

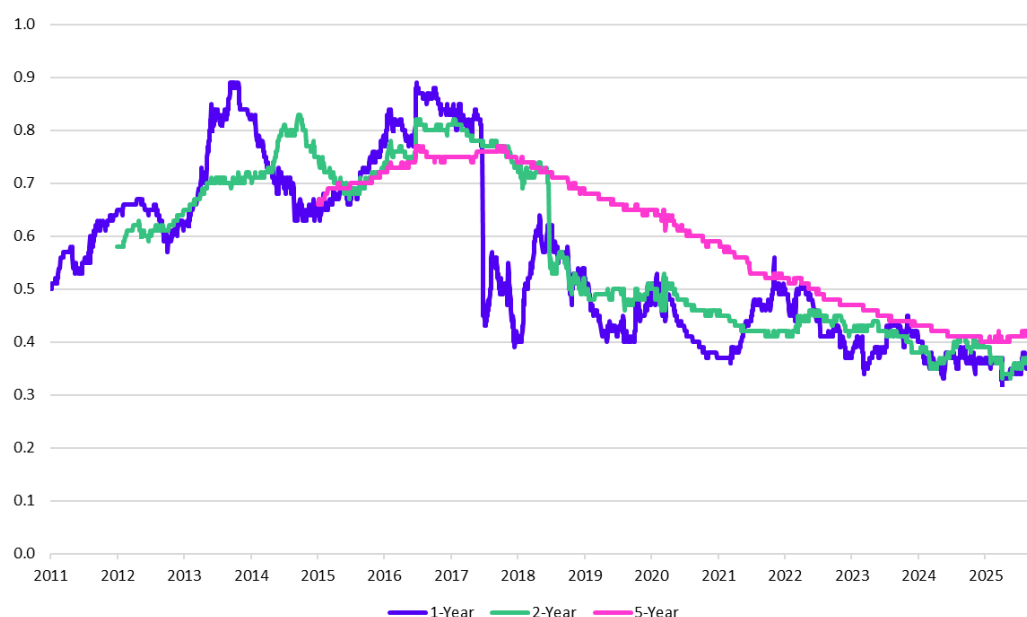
⁷⁸⁹ 2026 CEPA report, Page 10 and discussion on Pages 10 to 13.

⁷⁹⁰ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, Figure A1.1.

⁷⁹¹ 2026 CEPA Report, page 8.

⁷⁹² In the March 2021 Statement (A20.127), we said that in the future it would be appropriate to take gearing statistics as reported under IFRS 16, with all lease liabilities capitalised. Given IFRS 16 was implemented in 2019, CEPA has included IFRS 16 lease liabilities in gross debt from this date. This therefore means that asset betas using data from pre-2019 will exclude IFRS 16 leases.

Figure A15.3: Asset beta estimates for BT Group



Source: 2026 CEPA report, Figure 3.1.

A15.124 As can be seen in Figure A15.3, BT Group's one and two-year asset betas fell sharply when the Brexit referendum event fell out of the estimation windows (in June 2017 for the one-year asset beta and June 2018 for the two-year asset beta). As such, in the June 2019 Statement and March 2021 Statement, we placed weight on five-year asset betas due to them resulting in a better trade-off between our objectives of sending efficient price signals and regulatory stability than using shorter-term betas.⁷⁹³

A15.125 Since the March 2021 Statement, BT Group's asset betas have continued to fall (as can be seen in Figure A15.3 and Table A15.8), a trend that can also be seen with UK and European telecoms comparators.⁷⁹⁴ CEPA considered that asset betas from before the Brexit referendum date (24 June 2016) were less relevant for BT Group's forward-looking beta.⁷⁹⁵ As such when estimating a range for BT Group's asset beta, it placed most weight on asset beta estimates after the referendum effect fell out of the estimation window.⁷⁹⁶

A15.126 Table A15.8 summarises CEPA's estimates of BT's asset beta over different estimation windows and averaging periods.

Table A15.8: CEPA's estimates of asset beta for BT Group

Av Period Window	Spot	1yr	2yr	5yr	10yr
1yr	0.34	0.36	0.37	0.40	0.50
2yr	0.35	0.37	0.37	0.41	0.52
5yr	0.41	0.41	0.41	0.47	0.59

Source: CEPA 2026 report, Table 3.2. Data cut off 31 October 2025.

⁷⁹³ March 2021 Statement, A20.114.

⁷⁹⁴ 2026 CEPA Report, Figures 3.3 and 3.4.

⁷⁹⁵ 2026 CEPA Report, page 22.

⁷⁹⁶ 2026 CEPA report, page 8.

- A15.127 CEPA recommended a range for BT Group's asset beta of 0.40 to 0.50. This was based on an interquartile range of 0.40 to 0.48 for two-year daily asset beta estimates for BT Group, with the top end of the interquartile range uplifted to 0.50 to reflect other factors CEPA considered.⁷⁹⁷
- A15.128 In response to BT and AlixPartners, who supported the use of longer periods for estimating beta, CEPA agreed that beta estimates should not be restricted to short-term data alone. While CEPA placed weight on two-year estimation windows, it did not limit this to spot betas and its approach to defining a mechanistic range, which used the interquartile range of two-year asset betas based on data from 2016 to 2025, took account of longer-term data.⁷⁹⁸
- A15.129 CEPA agreed with Frontier that empirical evidence suggests telecom asset betas have reduced.⁷⁹⁹ However, it disagreed that i) it was appropriate to derive a range based on spot betas alone and that ii) it was inappropriate to use an interquartile range of spot betas over time to inform its proposed asset beta range.⁸⁰⁰ CEPA agreed with some of Frontier's comments on its European comparator sample.⁸⁰¹
- A15.130 CEPA considered that its approach to deriving an asset beta range ensured that its results were not overly sensitive to market conditions at any single point in time, while still incorporating recent market data.⁸⁰²
- A15.131 We consider the 0.40 to 0.50 asset beta range proposed by CEPA reasonably reflects the empirical evidence on BT's asset beta. We explain below our point estimate from within this range.

Selecting a point estimate from CEPA's range

- A15.132 In the March 2025 Consultation, we proposed to use an asset beta of 0.46 which represented the midpoint of CEPA's recommended range for BT Group (0.42 – 0.50).
- A15.133 As BT and European telecoms asset betas have fallen since WFTMR21, we think it is appropriate to use an asset beta that is less than the 0.62 used in WFTMR21.
- A15.134 The midpoint of CEPA's updated range for BT is 0.45. The top end of CEPA's 0.40 to 0.50 range is consistent with longer term observations of asset beta, whereas the bottom end of the range is consistent with more recent asset beta estimates. Below we consider the arguments for selecting a point estimate that is above or below the midpoint of CEPA's recommended range.
- A15.135 We do not think an asset beta higher than 0.45 would be reasonable given that 0.45 represents the top end of CEPA's UK and European telecoms asset beta ranges (0.30-

⁷⁹⁷ 2026 CEPA Report, Pages 33 to 35. For example, CEPA considered that gearing sensitivities and five and ten-year asset betas would support a small upward revision to the top of end of its mechanistic range.

⁷⁹⁸ 2026 CEPA Report, Page 9.

⁷⁹⁹ 2026 CEPA report, Page 16.

⁸⁰⁰ CEPA responds to Frontier's arguments in 2026 CEPA report, Pages 16-19.

⁸⁰¹ 2026 CEPA Report, Page 19. Alongside other changes CEPA made to its comparator sample, this had the effect of slightly reducing the mechanistic asset beta range for European comparators. See 2026 CEPA Report, page 20.

⁸⁰² 2026 CEPA Report, Page 9. CEPA also noted that at least part of the observed decline in daily asset betas for telecoms companies could be due to the mechanistic result of higher outturn average gearing and pointed to the 'implausibly low' spot asset betas of some European telecoms comparators as evidence that spot betas could in some cases be underestimated, 2026 CEPA Report, Page 17.

0.45).⁸⁰³ As there has been a sustained reduction in asset betas for BT Group and other UK and European telecoms companies, we disagree with BT that its asset beta has been distorted by FTTP investment and higher gearing than investors were considering when assessing forward risk. As such, we do not see grounds for adopting an asset beta at the top of CEPA's range.

A15.136 However, we recognise that selecting an asset beta estimate lower than the midpoint could be reasonable given BT's one-, two- and five-year spot asset beta estimates have been below 0.45 for least two years and, as of the 31 October 2025 cut-off date, are closer to 0.40, with the five-year spot beta at 0.41. We place some weight on the five-year spot beta (as this was our approach in the WFTMR21 due to its lower volatility than the one and two-year spot betas). However, we recognise that some of the sensitivities CEPA estimated related to gearing (e.g. net debt and hybrid debt)⁸⁰⁴ would result in slightly higher spot asset beta estimates.

A15.137 On balance, given the sustained decline in telecoms asset betas we have decided to select a point estimate of 0.43, slightly below the midpoint of CEPA's recommended asset beta range for BT Group as this places greater weight on more recent observations of BT's asset beta but reflects CEPA's gearing sensitivities.

Forward-looking equity beta

A15.138 Given our decisions with respect to forward looking gearing, asset betas and debt beta, the forward-looking equity beta is 0.86.⁸⁰⁵ As noted above, CEPA said BT's two-year equity betas have typically been in the range 0.83 to 0.99, with more recent equity betas below 0.9. Our forward-looking equity beta of 0.86 is consistent with CEPA's observations.

Corporate tax rate

A15.139 We require an estimate of the effective rate of tax BT faces as our WACC estimate is in pre-tax nominal terms. Typically, we would expect the statutory tax rate to be a reasonable approximation of the average effective tax rate faced by BT Group over the market review period. In its 2025 Annual Report, BT said that it expects its sustainable effective tax rate before specific items to be around the UK rate of corporation tax.⁸⁰⁶

A15.140 We therefore proposed using the prevailing statutory corporate tax rate of 25% in our Consultation.⁸⁰⁷ No stakeholders disagreed and we have decided to apply a 25% corporate tax rate in this statement.

Our decision on the WACC for BT Group

A15.141 Based on our decisions above, the resultant pre-tax nominal WACC is 7.9% for BT Group, as set out in Table A15.1.

⁸⁰³ 2026 CEPA Report, Table 5.1.

⁸⁰⁴ 2026 CEPA Report, Appendix A.

⁸⁰⁵ Equity beta = $\frac{\text{asset beta} - \text{debt beta} \times \text{gearing}}{1 - \text{gearing}}$, so $0.86 = \frac{0.43 - 0.075 \times 55\%}{1 - 55\%}$.

⁸⁰⁶ BT Plc, [2025 Annual Report](#), Page 48.

⁸⁰⁷ The main rate of corporation tax is 25%. See [Corporation tax rates and allowances](#).

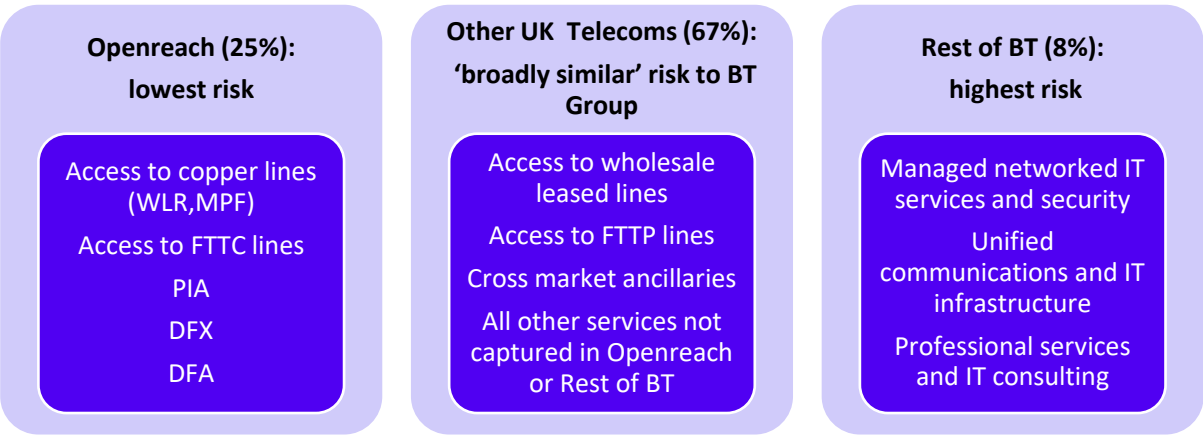
A16. Cost of capital for the relevant services

A16.1 In this annex we explain our approach to estimating the cost of capital for relevant services.⁸⁰⁸ Generally, this means we disaggregate the BT Group cost of capital to estimate the appropriate rate of return for the relevant services.

Summary of our BT disaggregation approach

- A16.2 In recent reviews we disaggregated the BT Group asset beta and cost of debt into three parts, based on our assessment of the relative risk of different services provided by BT.
- A16.3 In the March 2025 Consultation, we proposed to keep the three parts of the BT Group disaggregation in line with the March 2021 Statement. However, we proposed to change the weightings on each part to reflect more recent evidence. The three broad categories are summarised in Figure A16.1.

Figure A16.1: Disaggregation approach proposed in March 2025 Consultation⁸⁰⁹



Source: Ofcom

A16.4 Following consideration of the latest market evidence and stakeholder responses, we have adopted our proposed split of BT Group and respective weightings but updated the asset beta and cost of debt values associated with each part as summarised below. We apply this split to our revised estimate of the BT Group cost of capital (see Annex 15).

Openreach

A16.5 We consider that the Openreach category should continue to capture services associated with lower systematic risk than BT Group overall. This category largely reflects risks associated with core connectivity to broadband networks, which are increasingly seen as a

⁸⁰⁸ Relevant services refer to regulated services and services that are not explicitly regulated but are modelled as part of our overall regulatory approach e.g. services in Area 3 RAB.

⁸⁰⁹ We previously referred to the Openreach category as 'Openreach – copper' but now use 'Openreach' as shorthand as this category covers more than just copper services. For the avoidance of doubt, this category does not include all services that Openreach provides, only those we deem have lower systematic risk than the BT Group.

necessity by customers. Consistent with our March 2025 Consultation proposals, we have decided to include access to copper only (i.e. MPF and WLR) and FTTC lines, PIA, DFA and DFX services in this category.

- A16.6 In line with our consultation proposals, we use the Openreach WACC for:
- setting cost-based charge controls for DFX, DFA and for PIA services (Volume 4, Sections 2-4 for DFX, DFA and PIA cost-based charge controls);
 - the creation of the RAB in Area 3 (Volume 4, Section 1 for our Area 3 RAB approach); and
 - modelling the revenues and costs for certain active legacy services (Annex 10).

Rest of BT (RoBT)

- A16.7 We continue to treat BT's ICT activities as sufficiently distinct from other telecoms services provided by BT, with an asset beta and WACC higher than BT Group. The RoBT WACC is not applied to any of the relevant services but provides a sense check on the other parts of our disaggregation.

Other UK Telecoms (OUKT)

- A16.8 All remaining services (including relevant services associated with FTTP and cross-market ancillaries) remain in OUKT, with an asset beta and WACC equal to BT Group. We recognise that the range of activities captured within the OUKT category is quite broad, and that the asset beta (and WACC) for BT's FTTP services could be higher than for OUKT. However, we explain below why we think it is reasonable to include FTTP in OUKT, and therefore we have decided not to disaggregate OUKT further in this review.

- A16.9 In line with our consultation proposals, we use the OUKT WACC for:
- the creation of the RAB in Area 3 (Volume 4, Section 1 for our Area 3 RAB approach);
 - setting cost-based charge controls for Area 3 active leased line access circuits of bandwidths 1Gbit/s and below (Volume 4, Section 2); and
 - modelling the revenues and costs of certain active legacy services (Annex 10).

Summary of disaggregated WACC estimates

- A16.10 Table A16.1 summarises our final disaggregated WACC estimates.

Table A16.1: Summary of WACC and component parameters

WACC component	Openreach	OUKT	RoBT	Source
Real (RPI-based) RFR	2.0%	2.0%	2.0%	See A15.49
RPI inflation forecast	2.5%	2.5%	2.5%	See A15.31
Nominal RFR	4.5%	4.5%	4.5%	$= (1 + \text{real (RPI-based) RFR}) * (1 + \text{RPI inflation}) - 1$
Real (CPI-based) TMR	6.7%	6.7%	6.7%	See A15.65
CPI inflation forecast	2.0%	2.0%	2.0%	See A15.30
Nominal TMR	8.8%	8.8%	8.8%	$= (1 + \text{real EMR}) * (1 + \text{CPI inflation}) - 1$

WACC component	Openreach	OUKT	RoBT	Source
Nominal ERP	4.3%	4.3%	4.3%	= Nominal TMR – Nominal RFR
Debt beta (β_d)	0.075	0.075	0.075	See A15.121
Asset beta (β_a)	0.38	0.43	0.68	See A16.89, A16.92 & A16.94
Weighting	25%	70%	5%	See A16.76, A16.79 & A16.78
Gearing (forward looking) (g)	55%	55%	55%	See A16.96
Implied equity beta (β_e)	0.75	0.86	1.42	$= (\beta_a - \beta_d * g) / (1 - g)$
Cost of equity (post-tax) (K_e)	7.8%	8.3%	10.6%	= Nominal RFR + ERP * β_e
Cost of equity (pre-tax)	10.4%	11.0%	14.2%	= $K_e / (1 - t)$
Corporate tax rate (t)	25%	25%	25%	See A15.140
Cost of debt (pre-tax) (K_d)	5.2%	5.3%	5.8%	See A16.105
WACC (pre-tax nominal)	7.5%	7.9%	9.6%	$= (K_e * (1 - g)) / (1 - t) + (K_d * g)$
<i>March 2025 Consultation</i>	<i>7.1%</i>	<i>7.6%</i>	<i>9.3%</i>	

Source: Ofcom^{810,811}

Framework for assessing relative risk

- A16.11 We did not receive any substantive comments on our overall framework.⁸¹² Therefore, we decided to adopt the principles outlined in the March 2025 Consultation. The key elements of this framework are explained in this section.
- A16.12 We disaggregate the BT Group asset beta, cost of debt and WACC to reflect differences in the systematic risk of the different activities within BT Group.
- A16.13 The original evaluation framework for disaggregating the BT Group asset beta was established in 2005.⁸¹³ The two key aspects of this framework were:
- there were a priori reasons for why the systematic risk faced by the business in question would be different from that of the overall company (e.g. different income elasticities of demand and/or stability of cash flows); and
 - there was evidence available to assess variations in risk.⁸¹⁴

⁸¹⁰ Note: Intermediate calculations in general are unrounded, however we round the pre-tax cost of equity, pre-tax cost of debt and pre-tax nominal WACC to one decimal point.

⁸¹¹ For comparison purposes, the UKRN annual update has previously reported real vanilla WACCs used by UK regulators (where the vanilla WACC represents a weighted average of the post-tax cost of equity and the pre-tax cost of debt) with respect to CPI. The real vanilla WACC (with respect to CPI inflation of 2.0%) is 4.3%, 4.5%, and 5.9% for Openreach, Other UK Telecoms and RoBT respectively.

⁸¹² Note: we did receive comments on our relative risk assessment, and we respond to these comments below.

⁸¹³ [Ofcom's approach to risk in the assessment of the cost of capital, August 2005](#) (August 2005 Statement), paragraph 5.24.

⁸¹⁴ Examples included: a) it was possible to identify benchmark firms that were close to 'pure play' comparators in terms of having similar risk characteristics to individual projects within BT; b) it was possible to use other quantitative analysis (such as quantified risk assessments or the analysis carried out by PwC at the

- A16.14 Based on this framework we first split the BT Group beta in 2005 between Openreach's copper access network and the rest of BT (including in the rest of BT voice call services, broadband and leased lines).⁸¹⁵ In the 2016 BCMR Statement, we further separated out services provided primarily by BT's Global Services division into a new 'Rest of BT' category, with all other services falling into 'Other UK Telecoms'.⁸¹⁶
- A16.15 The original decision to separate out only copper access was appropriate in a world where voice and internet access (dial-up or copper broadband) were sold as an "add-on" to basic copper line rental. To make calls or use an internet access service, customers needed to rent a copper line – which was separately charged for. We also reasoned (from historical demand estimation) that access services tended to have lower income elasticities of demand than call services which would imply a lower asset beta.⁸¹⁷
- A16.16 Given the decline in fixed voice usage and the integration of broadband with the line rental service (i.e. not sold as an overlay to fixed lines), we recognised in the March 2021 Statement that the previous access and usage distinction was becoming less relevant.⁸¹⁸
- A16.17 Based on the evidence around broadband usage, we noted in the March 2021 Statement that: i) broadband was becoming the 'basic building block' for communications services consumed at a fixed location, ii) customers were consuming ever more data (and hence required services capable of delivering that growing data usage) and iii) customers rarely downgraded their broadband service. Against this backdrop, we considered that systematic risk associated with overall broadband demand was likely to be relatively low, and that it would be appropriate to associate the basic building blocks of broadband, i.e. PIA, copper lines and FTTC in the lower risk Openreach category, alongside dark fibre products which support fixed broadband and mobile networks.
- A16.18 It is within this context that we assess the relative risk of relevant services below.
- A16.19 Consistent with our March 2021 Statement, we have considered where relevant services sit in the disaggregation by taking account of the following characteristics:
- **Systematic demand risk:** services that exhibit more demand risk (greater income elasticity of demand) would be expected to have higher asset betas while services that have less demand risk (i.e. services that are 'necessities') would have lower asset betas; and
 - **Operating leverage:** There is not one single measure of operating leverage, but services that have greater operating leverage (i.e. require significant upfront investments or have

time on behalf of Ofcom to assess variations in risk); and c) data was available at a disaggregated level (e.g. via separated accounts).

⁸¹⁵ August 2005 Statement, paragraph 1.22.

⁸¹⁶ In the 2018 WLA Statement and the 2019 BCMR Statement we also expanded 'Openreach copper access' to include PIA and DFX respectively, and we now simply refer to this category as 'Openreach.'

⁸¹⁷ [Ofcom's approach to risk in the assessment of the cost of capital - first consultation, January](#), paragraph 5.39 to 5.40.

⁸¹⁸ Evidence of this includes: a) In November 2017, the [Advertising Standards Agency ruled](#) that when targeting businesses Plusnet plc must ensure they make clear the overall monthly cost of their broadband packages, for instance by merging the monthly cost and line rental into one all-inclusive price. This ruling applies to all broadband providers; and b) In 2005 there were 7.5m homes with broadband whereas at the end of 2023 there were 28.5m broadband connections. ([2005 Communications Market Review](#) and [Communications Market Report 2024: Interactive data - Ofcom](#)).

a higher proportion of fixed costs) are more exposed to systematic risk and thus would have higher asset betas.⁸¹⁹

A16.20 We have considered the above points on access versus usage, systematic demand risk and operating leverage to inform our assessment of which disaggregated category (i.e. Openreach or OUKT) relevant services would best fit in, not to precisely calculate differences in asset beta.

A16.21 Based on this framework, we first present our assessment of the relative risk of the different relevant services to inform our disaggregation, and then set out our decisions on the appropriate weights and asset betas for each disaggregated part of BT.

Relative risk assessment of relevant services

Relative Risk: PIA

Our proposals

A16.22 We proposed that PIA services should remain within Openreach since these services represent the basic building blocks supporting multiple downstream services.

Stakeholder responses

A16.23 CityFibre said that the WACC applied in setting the PIA charge control was overstated as the WACC for ducts and poles was likely to be significantly lower than the Openreach WACC due to the inherently low risk associated with such infrastructure. CityFibre referenced other telecoms companies choosing to separate infrastructure assets when seeking new sources of capital as evidence of this inherently lower risk. It said that we made no allowance for the lower risk associated with infrastructure assets in its assessment of the WACC in the PIA charge control.⁸²⁰

Our reasoning and decision

A16.24 PIA services represent the basic building blocks supporting multiple downstream services and remain an essential input regardless of the medium of connection (copper or fibre) and regardless of the bandwidth consumed. We consider that operating leverage for PIA services is likely to be relatively low compared to BT Group as most of the PIA network is a sunk asset. We also consider systematic demand risk is likely to be low compared to BT Group as we would expect PIA services to have relatively stable demand from BT's downstream operations while external volumes (which currently represent a small proportion of total volumes) are expected to increase moderately over the control period.⁸²¹

A16.25 Therefore, we consider PIA services would face lower systematic risk than BT Group overall.

A16.26 In response to CityFibre, we consider that including PIA in the Openreach category already takes account of the lower risk associated with duct and poles compared to other telecoms activities (i.e. those in OUKT). Given there are no listed pure play PIA providers which we

⁸¹⁹ Brealey and Myers, Principles of Corporate Finance. Chapter 10, 9th Edition, page 250.

⁸²⁰ CityFibre response to TAR26 March 2025 Consultation. Section 4, paragraph 4.34.

⁸²¹ For example, per BT's 24/25 regulatory financial statements, external lead-in duct represented c.4% of total lead-in duct volumes in 2024/25. Therefore, even if external volumes increase moderately, overall volumes will not increase significantly in percentage terms.

could use as benchmarks to identify a separate beta for PIA services⁸²² and the demand for PIA is intrinsically linked to telecoms services (which are riskier, for example, than products provided by pure network utility operators), we consider the Openreach asset beta (which is between the betas of utility benchmarks and BT Group) reasonably reflects the systematic risk for PIA services.

A16.27 As such, we have decided to keep PIA services in the Openreach category consistent with our proposal.

Relative Risk: Copper and FTTC services

Our proposals

A16.28 In line with our approach in the March 2021 Statement, we proposed to put copper and FTTC services⁸²³ in the Openreach category.

Stakeholder responses

A16.29 No stakeholders specifically commented on our categorisation of Copper and FTTC services in Openreach.

Our reasoning and decisions

A16.30 We consider the evidence continues to support the March 2025 Consultation position.

A16.31 In the 2021 WFTMR Statement we put copper and FTTC services in the Openreach category as this reflected our view that systematic demand risk for services over FTTC was likely to have converged with systematic risks previously associated with basic copper lines.

A16.32 In 2024/25 FTTC lines accounted for [REDACTED] of total Openreach lines and [REDACTED] of all copper lines (See Annex 10), which suggests currently an FTTC connection is the main reason that demand for copper access lines remains, i.e. as it allows consumers to obtain superfast broadband.⁸²⁴

A16.33 We expect demand for FTTC to decrease as FTTP is rolled out, but during most of the review period FTTC will likely continue to be used by many consumers. To the extent systematic demand risk for FTTC could be affected by the migration to FTTP, this will be mitigated in Area 3 at least by our RAB approach.

A16.34 We think an assessment of systematic demand risk would therefore support continuing to place copper and FTTC services in the Openreach category.

A16.35 In relation to operating leverage, as commercial FTTC roll out is complete, we consider FTTC services are unlikely to be associated with higher operating leverage compared to copper only services. We also consider that evidence on profit margins suggests that operating leverage is unlikely to be a significant differentiating factor between FTTC and copper only services.⁸²⁵

⁸²² i.e. there is no listed company that provides only PIA services.

⁸²³ FTTC services includes SOGEA.

⁸²⁴ See Annex 10, Table A10.9. Note: FTTC lines are the sum of MPF + GEA FTTC, WLR+ GEA FTTC and SOGEA. Copper lines are the sum of MPF, WLR, WLR+SMPF, MPF GEA FTTC, WLR+ GEA FTTC and SOGEA.

⁸²⁵ Based on Ofcom modelling using our 24/25 base year costs excluding holding gains for MPF and FTTC (including SOGEA) services, the allowed return accounts for [REDACTED] of the cost stack, suggesting that operating leverage is unlikely to be a significant differentiating risk factor between the two services.

- A16.36 On this basis we consider an assessment of operating leverage supports FTTC and copper services being in the same disaggregation category (i.e. Openreach based on our assessment of demand risk).
- A16.37 Based on the above analysis, in line with our consultation proposal, we have decided to keep copper access and FTTC services in the Openreach category within our disaggregation.⁸²⁶

Relative Risk: Copper-based services and BT FTTP

Our proposals

- A16.38 Consistent with our approach in 2021 WFTMR Statement, we proposed to include FTTP services within OUKT. We considered FTTP services would likely face higher systematic risk and operating leverage than copper-based services during this review period.
- A16.39 However, we said the extent to which the risk was higher was difficult to quantify due to the absence of listed pure play FTTP comparator companies. We said that within our current disaggregation framework, the OUKT category captures the 'average risk' activities of telecoms companies and therefore using market evidence on betas for telecoms companies engaged in building FTTP networks, including BT, was a reasonable starting point.
- A16.40 We also recognised that the range of activities captured within the OUKT category was quite broad, and that the asset beta (and WACC) for BT's FTTP services could be higher than OUKT. However, given we were not setting cost-based charges for FTTP services for this review, we proposed to include FTTP services within OUKT.

Stakeholder responses

- A16.41 BT broadly agreed with our approach to disaggregation and that there was no specific reason to split out BT's FTTP services from OUKT for the purposes of this review.⁸²⁷
- A16.42 In a report commissioned by CityFibre, Alix Partners proposed an alternative disaggregation approach by separating OUKT into two components, OUKT-Mobile and OUKT-FTTP, as they said asset betas for mobile services are lower than asset betas for fibre services.⁸²⁸ Based on the following approach, AlixPartners suggested a fibre asset beta of 0.49:
- AlixPartners used our proposed asset betas for BT Group (0.46), Openreach (0.40), and RoBT (0.65), along with their respective weights (25% for Openreach and 8% for RoBT);
 - It used the Vodafone asset beta from CEPA's 2025 Report (0.4 – the midpoint of the range) as a benchmark for BT's mobile business ('OUKT-Mobile');
 - It estimated a weighting for BT's mobile services based on mobile revenues as a percentage of total revenues (20%) which implied a weighting on BT's fibre services of 47%;

⁸²⁶ We refer to copper and FTTC services as 'copper-based services' for the remainder of this annex.

⁸²⁷ [BT Group](#) response to TAR26 March 2025 Consultation. Annex 1, paragraph A1.75.

⁸²⁸ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 3, paragraph 38.

- d. It estimated the asset beta for BT's fibre services by disaggregating the Openreach, RoBT and mobile asset beta from the BT Group-level asset beta by reference to relevant weightings. This results in an asset beta of 0.49.⁸²⁹

Our reasoning and decisions

- A16.43 In our March 2021 Statement, we put FTTP in the OUKT category as we considered it would likely face higher systematic demand risk and operating leverage than copper-based services.
- A16.44 We consider it remains reasonable to associate FTTP with higher systematic risk than copper-based services in this review period, though we expect this difference to reduce over time. Once the FTTP network is rolled out, and the copper network is retired, the FTTP network will become the only means of providing fixed connectivity to most premises in that exchange area (given our decision to continue to support the retirement of copper-based services).⁸³⁰ This means that over the long run there is likely to be stable and enduring demand for core connectivity to broadband networks, and this demand will be increasingly met via FTTP networks (either built by Openreach or altnets).
- A16.45 Evidence in relation to systematic demand risk for higher speed broadband is mixed. For example, in Annex 4 we note based on current evidence, despite price being a vital concern for customers, they are very unlikely to downgrade their broadband speed in the face of cost-of-living pressures or to save money and to convince a customer to downgrade their service, the price differentials have to be very large.⁸³¹ We also note the prices of FTTP services have reduced considerably since 2021 and prices for standalone fixed broadband FTTP services are much closer to the price of FTTC services despite the quality of services and average speeds being much better for FTTP.⁸³² On the other hand, we also find that family households and particularly affluent families, are the most likely to be engaging in high bandwidth or data intense activities such as streaming or gaming, which indicates they may require more expensive faster speed services.⁸³³ To the extent that some customers are prepared to pay more for FTTP, this could be linked to levels of household income, suggesting some of the higher demand risk of FTTP compared to copper-based services could be systematic in nature.
- A16.46 We also think it remains reasonable to assume FTTP currently faces higher operating leverage than copper-based services. FTTP is still in the build phase, with relatively low revenues but significant fixed cash outflows as the network is developed (implying relatively high operating leverage). This might point to greater sensitivity of cash flows and returns to macroeconomic shocks compared to FTTC and copper, and hence greater systematic risk. Rolling out new FTTP networks requires significant upfront cost. For example, in 2021 BT indicated that it could cost up to £15bn to roll-out FTTP to 25m homes over the following decade,⁸³⁴ which is significant in the context of the value of the existing

⁸²⁹ [CityFibre](#) response to TAR26 March 2025 Consultation (report prepared by AlixPartners). Annex 1, Section 3, paragraphs 49-50.

⁸³⁰ See Volume 3, Section 2.

⁸³¹ See Annex 4.

⁸³² See Volume 2, Section 2.

⁸³³ See Annex 4.

⁸³⁴ On 13 May 2021, [BT announced](#) it had decided to roll out to 5m additional homes (25m in total) for an estimated £15bn.

copper-based network (with an MCE of c.£11bn).⁸³⁵ As we noted above, projects with a relatively higher proportion of fixed costs to overall project value would be expected to have higher asset betas. However, BT announced in 2024 that it had passed peak capital expenditure on its FTTP rollout⁸³⁶ and in September 2025, Openreach announced its full fibre network was available to 20m premises (80% of its original 25m target), which indicates operating leverage effects could reduce going forward.⁸³⁷

- A16.47 On balance we consider that these factors suggest FTTP services could be associated with higher systematic risk than copper-based services during this review period. However, the extent to which the risk is higher is difficult to quantify. Comparing the systematic risk of FTTP to other services provided by BT Group is even more difficult.
- A16.48 Within our current disaggregation framework, the OUKT category captures ‘average risk’ activities of telecoms companies, with the OUKT beta benchmarked to a wide sample of UK and European telecoms companies. FTTP networks are the future of fixed broadband connectivity, with incumbents in Europe at different stages of upgrading their fixed networks to FTTP and many altnets investing in new FTTP networks.
- A16.49 Identifying an explicit asset beta for BT’s FTTP services is difficult because of the absence of listed pure play FTTP comparator companies. As noted in the March 2021 Statement, any separate modelling to derive an explicit beta for FTTP requires significant assumptions, therefore, we consider that using market evidence on betas for telecoms companies engaged in building FTTP networks, including BT, is a reasonable starting point. This is because, given the quantum of the investment and future importance of FTTP returns to BT, investors will likely place significant weight on expected FTTP returns when deciding to invest in BT. As such BT Group’s asset beta will likely be heavily influenced by these expected future returns. Therefore, we consider that the BT Group asset beta provides a reasonable starting point when considering the systematic risk associated with BT’s FTTP services.
- A16.50 On this basis, consistent with our approach in March 2021 Statement and our consultation proposal, we have decided to keep BT’s FTTP services within OUKT.
- A16.51 In response to Alix Partners alternative approach to disaggregation (i.e. separating out BT’s mobile services from OUKT):
- a. Based on our framework for disaggregation, we would only consider an adjustment where there are a priori reasons to consider that mobile risk is lower and there was evidence to assess variations in risk. Commenting on AlixPartners’ argument, CEPA said that while in principle mobile services could face slightly less systematic risk than fixed-line services, stronger evidence would be needed to be confident that an explicit relative risk adjustment is required.⁸³⁸ CEPA said it would therefore be cautious in making an explicit beta adjustment to account for any difference between mobile and fibre services, noting that the relative riskiness of these services is challenging to

⁸³⁵ Based on BT [2025 Regulatory Financial Statements](#), page 22 and [Regulatory Financial Commentary 2025](#), page 9. Note: Sum of MCE for PIA (£7.46bn), WLA Area 2 (£5.69bn) and 3 (£3.33bn) markets less Fibre MCE (£5.67bn)

⁸³⁶ [BT Group, Results for the full year to March 31 2024](#), 16 May 2024.

⁸³⁷ [Openreach’s UK Broadband Upgrade Reaches 20 Million](#), 24 September 2025.

⁸³⁸ 2026 CEPA report, page 15. Note: CEPA said it was plausible that fibre services (FTTP) face a broadly similar systematic risk profile to conventional fixed-line services (2026 CEPA Report, page 13).

disentangle empirically and the magnitude of any beta differential is smaller than a typical beta confidence interval.⁸³⁹

- b. There are practical challenges associated with estimating variations in risk as many listed telecoms providers offer both fixed (including fibre) and mobile services and operate across multiple countries (including countries outside the EU). For example, while Vodafone is a UK listed mobile network operator, only c.20% of its revenues are derived in the UK and over 40% of revenues come from non-mobile,⁸⁴⁰ therefore on its own it, it does not represent a strong benchmark for BT's mobile activities;⁸⁴¹ and
- c. Previous studies commissioned by regulators, including Ofcom, have found limited evidence of a difference in asset betas between mobile and fixed.⁸⁴²

A16.52 On this basis we do not consider the evidence is sufficiently robust to disaggregate BT's mobile services from OUKT i.e. separate OUKT into OUKT-mobile and OUKT-FTTP as proposed by Alix Partners.

Relative Risk: leased lines (active and dark fibre)

Our proposals

A16.53 In the March 2025 Consultation, we proposed to include active leased lines in OUKT (both interexchange connectivity (IEC) and access services), and DFA and DFX in Openreach.

Stakeholder responses

A16.54 Frontier (on behalf of VodafoneThree) said that there was little reason to consider the systematic risk of dark fibre products and equivalent active products would be different as there is a high degree of:

- a. Demand side substitution, with Ofcom expecting demand to migrate from active services to dark fibre services during the charge control; and
- b. Commonality in terms of the underlying assets, with active and passive equivalents using the same fibre cables to provide connectivity.⁸⁴³

A16.55 Frontier said that services regulated with cost-based charge controls are likely to have relatively low systematic risk as they are often used by competing network operators as part of their networks, so demand is unlikely to vary as much as other services provided by BT, for example:

- a. PIA is used extensively to roll out fibre networks service residential and business users and providing connectivity within other networks (e.g. for mobile backhaul);
- b. IEC services both DFX and active services are used to carry traffic from BT exchanges back to the points of presence of other network operators; and

⁸³⁹ 2026 CEPA report, page 15.

⁸⁴⁰ In its 2025 Annual Report, Vodafone reports UK revenues of €7,069m (fixed and mobile) against total revenues of €37,448m (18.9% of total revenues). Mobile service revenues were €21,044m (56% of total revenues).

⁸⁴¹ In the [2024 Review of Annual Licence Fees Consultation](#), we said that while we recognised BT and Vodafone were not perfect proxies for a UK MNO, in the absence of a pure-play listed UK MNO, we considered BT and Vodafone provided a reasonable benchmark of gearing and asset beta for a UK MNO.

⁸⁴² 2026 CEPA Report, Pages 13 and 14.

⁸⁴³ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 5, page 28.

- c. DFA and LLA services are increasingly used for mobile backhaul as well as business connectivity.⁸⁴⁴

A16.56 Frontier also said that these wholesale services are bought under longer contract durations (5-7 years) than equivalent consumer (2 years) or WLA services (1 year), which means demand is less likely to vary due to macro-economic effects. It also highlights that sunk costs make demand less volatile by creating a barrier to exit.⁸⁴⁵

Our analysis and decisions

A16.57 We consider the evidence continues to support the March 2025 Consultation position and have outlined our reasoning below.

DFX

A16.58 In the March 2025 Consultation, we said that in previous reviews (2019 BCMR and March 2021 Statements) we considered that passive leased lines were lower risk than active leased lines and put DFX services in the Openreach category. We reasoned that DFX services were associated with lower systematic risk because changes in bandwidth requirements in the access part of the network were unlikely to translate into significant changes in demand for DFX, since a single DFX connection could be used to serve all foreseeable bandwidth requirements.⁸⁴⁶ We continue to think this reasoning applies to DFX services and therefore have decided to keep these services in the Openreach category consistent with previous reviews.

DFA

A16.59 In the March 2021 Statement, we considered that DFA services were lower risk than active leased lines and put them in the Openreach category. We reasoned that DFA services were agnostic to bandwidth meaning they had low systematic demand risk and the cost structure meant there was no fixed expenditure on electronics meaning operating leverage was low.

A16.60 However, given DFA was a new service, we recognised it was difficult to predict all the ways DFA services could be used and therefore it was difficult to judge how the systematic demand risk of DFA services compared to active leased lines.

A16.61 DFA is still a relatively new service, and take-up has been low to date.⁸⁴⁷ Stakeholders have indicated that there are several barriers that have discouraged the take-up of DFA. However, given the technical advantages of DFA and the cost advantage, we expect demand for DFA to increase over the forecast period as a substitute for VHB connections, including for example for providing connectivity to mobile base stations (i.e. mobile backhaul).⁸⁴⁸

A16.62 Given this, consistent with our consultation position, we have decided to keep DFA services within the Openreach category.

⁸⁴⁴ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 5, pages 28-29.

⁸⁴⁵ [VodafoneThree](#) response to TAR26 March 2025 Consultation (report prepared by Frontier Economics). Section 5, page 29.

⁸⁴⁶ 2019 BCMR Statement, Annex 21, paragraph A21.184.

⁸⁴⁷ With one exception ([§<]), current users of DFA tend to be small and medium-sized business-focused telecoms providers.

⁸⁴⁸ See Volume 3, Section 7 and Volume 4, Section 2.

Active leased lines (IEC and access active circuits)

- A16.63 In previous reviews we included active leased lines in OUKT on the basis that some of the demand was driven by business customers, which might be more cyclical than demand from residential customers. This means the systematic demand risk for these services is likely to be higher than copper-based services. We disagree with Frontier that access active circuits have the same systematic demand risk as equivalent passive services (which we have decided are lower risk for the reasons outlined above). We agree with Frontier that if the majority of active leased lines were being used by mobile network operators for backhaul, they would likely exhibit more stable demand and would likely be lower risk. However, information provided to us by BT indicates that the majority of access active circuits are used by business customers rather than mobile network operators and are therefore likely subject to more cyclical demand risk (unlike passive services).⁸⁴⁹ As such, in line with our consultation position we have decided to retain this classification for this review and keep active leased lines in OUKT.
- A16.64 With respect to the distinction between IEC and access active circuits, we recognise that demand drivers for IEC circuits might be slightly different to those for access circuits. If demand for IEC circuits is largely driven by backhaul requirements of other telecoms providers aggregating consumer and mobile data traffic, the overall demand risk could be lower compared to the demand for access leased lines.
- A16.65 However, we are not setting cost-based charges on IEC active circuits in this review. IEC circuits also account for a small percentage of total revenues and MCE (c.4% of Openreach SMP revenues and less than 1% Openreach SMP MCE), which means our decision on which WACC to associate with IEC circuits will not materially affect the weightings.⁸⁵⁰ Therefore, in line with our consultation position, we have decided to keep IEC active circuits in OUKT, together with access leased lines. Even if this slightly overstates the risk (and hence the WACC) for IEC circuits, this does not affect our approach to price regulation for these services or our proposed WACC for other relevant services.

Cross market ancillaries

- A16.66 To date, cross market ancillaries referred to services relating to cablelink, accommodation and electricity charges.⁸⁵¹ Previously, cross market ancillaries had been implicitly included within OUKT as OUKT includes all relevant services not in the Openreach category. It is possible that systematic demand risk for some cross market ancillaries could be lower than other services included within OUKT as they are used to support delivery of other relevant services.
- A16.67 However, we are not setting cost-based charge controls on cross market ancillaries in this review. They also account for a small percentage of total revenues and MCE (c.3% of Openreach SMP revenues and 1% Openreach SMP MCE), which means our decision on which WACC to associate with cross market ancillaries will not materially affect the weightings.⁸⁵² We proposed to keep cross market ancillaries in OUKT. No stakeholders

⁸⁴⁹ Ofcom analysis of BT's information response dated 19 June 2024 to s135 notice dated 9 May 2024, question A1, and BT's information response dated 5 August 2025 to s135 notice dated 23 June 2025, question A1.

⁸⁵⁰ Ofcom analysis based on BT Regulatory Financial Statements 2024/25, Page 22.

⁸⁵¹ As set out in Volume 6, BT will also report ancillaries associated with the LLA and IEC markets within cross market ancillaries in the RFS from 1 April 2026.

⁸⁵² Ofcom analysis based on BT Regulatory Financial Statements 2024/25, Page 22.

commented on our proposal, and we have decided to keep cross market ancillaries in OUKT.

Disaggregation of services

A16.68 Table A16.2 summarises our decisions on the categorisation of the wholesale services subject to ex ante regulation in this review.

Table A16.2: Categorisation of regulated wholesale services

Openreach	OUKT*	RoBT
Copper access lines, FTTC, DFA, DFX, PIA	LL active access circuits, LL IEC active circuits, FTTP, cross market ancillaries	N/A

**Note that the summary here excludes other wholesale and retail services (including mobile and pay-TV)*

Asset beta weights

Our proposals

A16.69 In the March 2025 Consultation, to estimate the relevant weightings for our three-way disaggregation, we:

- Estimated the 5-year average i) Openreach⁸⁵³ share of BT Group EBITDA and ii) net replacement cost of copper and FTTC services as a proportion of total enterprise value. From this we proposed to use a 25% weighting for Openreach (in line with the March 2021 Statement);
- Estimated the 5-year average share of BT Group EBITDA for BT's ICT and managed network (ICT) activities. From this we proposed to attribute an 8% weighting to RoBT which captured BT's ICT operations (down from 10% used in the March 2021 Statement); and
- Proposed that the remainder (67%) should be used for the OUKT weighting (including FTTP services).

Stakeholder responses

A16.70 No stakeholders specifically commented on our weighting proposal.

Our reasoning and decisions

A16.71 Based on a review of updated evidence, in line with our consultation proposals, we have decided to maintain the same 25% weighting on Openreach and keep the 8% weighting on RoBT. The resulting weighting on OUKT is 67%.

Openreach

A16.72 Table A16.3 below reports weightings based on EBITDA and the ratio of net replacement cost to enterprise value (NRC/EV) for Openreach (as defined for the purposes of our disaggregation) as a proportion of BT Group.

⁸⁵³ As defined in Table A16.2.

Table A16.3 Estimated share of Openreach⁸⁵⁴ within BT Group

	2020/21	2021/22	2022/23	2023/24	2024/25	5Y Average
EBITDA	27%	22%	24%	32%	32%	28%
Regulatory NRC/EV	32%	28%	27%	27%	28%	28%

Source: Ofcom analysis of BT Regulatory Financial Statements, BT Annual Reports and S&P Capital IQ Pro.

A16.73 In estimating the relevant weightings, we have considered the relative size of Openreach in relation to BT Group. On average over the five-year period (2020/21 to 2024/25) the NRC/EV and EBITDA metrics imply a 28% weighting for Openreach.

A16.74 For a steady state network, historical data may be a reasonable proxy for the future. However, we are concerned with forward-looking risks and weights of the various activities provided by BT.

A16.75 We expect changes in the mix of broadband lines offered by Openreach in the future, with the overall proportion of copper only and FTTC lines falling from around [REDACTED] (in 2024/25) to 18% (in 2030/31),⁸⁵⁵ while the share of FTTP lines is expected to increase. This effect would point to selecting a lower value from the average of historical metrics in Table A16.3 and suggests that the ratio of NRC to EV for Openreach (as defined for the WACC) could be lower in the future.

A16.76 Taken in the round, we have decided to maintain our consultation proposal and attribute a 25% weighting to Openreach.

RoBT

A16.77 BT's ICT operations (which are captured in our RoBT disaggregated asset beta) are carried out by its Business division. To estimate the weightings of RoBT, we asked BT to provide EBITDA figures for the relevant ICT services. Our analysis suggests that in the five years to March 2025, EBITDA for BT's ICT services represented between [REDACTED] of BT Group EBITDA and [REDACTED].⁸⁵⁶

A16.78 In June 2025, BT announced it had separated its international activities (which are mainly ICT services) from its Business division⁸⁵⁷ and it has divested a number of international businesses in the last year.⁸⁵⁸ These sales indicate that BT's EBITDA from its ICT activities could decrease over the review period. In 2024/25, ICT services represented [REDACTED] of BT Group's EBITDA. Given ICT services' current share of BT Group EBITDA and expected divestments over the control period, we have decided to attribute a 5% weighting to RoBT, which is lower than the 8% proposed in the consultation.

⁸⁵⁴ As defined in Table A16.2.

⁸⁵⁵ See Annex 10, Tables A10.9 and A10.10 (sum of MPF, WLR, WLR+SMPF, MPF + GEA FTTC, WLR+ GEA FTTC and SOGEA).

⁸⁵⁶ BT Group response dated 9 September 2024 to question I1 of the s.135 notice dated 19 August 2024 (for 2020/21 to 2023/24) and BT Group response dated 14 October 2025 to s135 notice dated 10 September 2025, question I3.

⁸⁵⁷ [Scaling up to the international challenge](#), BT, June 2025

⁸⁵⁸ For example, BT has divested: its [Irish](#) (February 2025) and [Italian](#) (April 2025) wholesale and enterprise business units; [Radianz](#) - a financial services ICT business (September 2025); its [Irish datacentre business](#) (November 2025); and [BT Federal Inc](#) - its US Government contracting telecoms and ICT business (January 2026).

OUKT

A16.79 Given our weights for Openreach and RoBT, the implied weight for OUKT is 70%.

Asset beta by segment

A16.80 The following section outlines our proposals, reasoning and decisions in relation to the choice of asset beta by segment. BT Group and Alix Partners' responses on our approach to estimating asset betas have been discussed in Annex 15 in the context of BT Group. No other stakeholders specifically commented on our proposals.

Market evidence on comparator betas

A16.81 We commissioned CEPA to estimate asset betas for comparator companies. CEPA estimated the asset beta for each comparator against a home index⁸⁵⁹ using different estimation windows (1,2, and 5 years) and averaging periods (spot, 1,2,5, and 10 years). CEPA placed most weight on 2-year betas estimated using data after the Brexit referendum when deriving their mechanistic ranges. CEPA then adjusted some of these ranges based on qualitative factors as outlined in their report. We consider the ranges set out in Table A16.4 reasonably reflect the empirical evidence on the comparator asset betas.

Table A16.4 Asset beta and gearing for comparator groups

	Asset beta range	2-year gearing	
		IQ Range	Median
UK Utilities	0.30-0.35	50% - 56%	53%
Vodafone	0.30-0.45	54% - 69%	64%
European telecoms	0.30-0.45	27% - 48%	40%
ICT	0.66-1.02	7% - 22%	11%
BT Group	0.40-0.50	48%-63%	60%

Source: CEPA.⁸⁶⁰ IQ range = interquartile range.

Asset beta for Openreach

Our proposal

A16.82 In the March 2025 Consultation we adopted a similar methodology to previous reviews for estimating the Openreach asset beta. We considered that:

- the Openreach asset beta would be below the BT Group asset beta (0.42-0.50) but above that for UK utilities (0.30-0.35);
- The Openreach asset beta would be below other UK telecoms providers i.e. Vodafone (0.30-0.50, midpoint 0.40); and

⁸⁵⁹ UK listed companies were measured against the FTSE All Share Index and European telecoms and ICT companies against the Stoxx TMI ex-UK.

⁸⁶⁰ 2026 CEPA Report, pages 3, 23, 25, 27, 29 and 31.

- c. It would be unlikely for the Openreach asset beta to be above the midpoint of the range proposed by CEPA for an average European telecoms company (0.30 - 0.50, midpoint: 0.40).

A16.83 Given this we proposed to set the Openreach asset beta at the midpoint of the range between UK utilities and BT Group (i.e. 0.40).⁸⁶¹ This also represented the midpoint of the European telecoms and Vodafone asset beta ranges.

Our reasoning and decision

A16.84 The Openreach category captures the lowest risk services provided by BT Group, which includes most of the wholesale regulated services offered over legacy network infrastructure. No stakeholders commented on our approach to estimating an asset beta for Openreach.

A16.85 As in previous reviews, our starting point is that the appropriate asset beta would be below the beta for BT Group, but above that for UK utilities. The telecoms industry is characterised by greater technological innovation, and while the overall demand risk associated with core connectivity is likely to be low, we do not consider it would be as low as for a water or an energy network. The updated asset beta range estimated by CEPA for UK utilities is between 0.30 and 0.35, compared to our BT Group asset beta of 0.43 (which is slightly below the midpoint of CEPA's updated asset beta range for BT Group) – the midpoint between the two is 0.38.⁸⁶²

A16.86 We would also expect the asset beta for Openreach to be below that of other UK telecoms providers, although we recognise that Vodafone is the only other UK listed telecoms company now. Vodafone is also an imperfect comparator as it derives a relatively small proportion of overall revenue from the UK (c.19%) and does not own wholesale copper networks in any of the countries it operates.⁸⁶³

A16.87 CEPA's updated range for Vodafone is between 0.30 and 0.45 (midpoint 0.38).

A16.88 We also draw on the much larger sample of European telecoms companies. While BT appears to have a somewhat higher asset beta than most of its European counterparts, we think it unlikely that the asset beta for BT's least risky services (i.e. those in Openreach) would be above the midpoint of the range proposed by CEPA for an average European telecoms company (0.30 - 0.50, midpoint: 0.38).

A16.89 We have decided to set the Openreach asset beta at 0.38, which is the same as the midpoint of the range between UK utilities and BT Group and the same as the midpoint of the range of the UK and European telecoms comparators (as set out above).

Asset beta for OUKT

Our proposal

A16.90 In the March 2021 Statement, we used an asset beta for OUKT of 0.62 which was equal to the BT Group asset beta. In the March 2025 Consultation, we proposed to continue to use the same asset beta for OUKT as used for BT Group (0.46) on the basis it captured most of BT's telecoms activities.

⁸⁶¹ Rounded to 1d.p.

⁸⁶² Based on the midpoint of the updated listed utilities range and BT Group's asset beta, rounded to 2 d.p.

⁸⁶³ For revenue analysis see [Vodafone 2025 Annual Report](#), page 20.

Our reasoning and decision

- A16.91 Since the March 2021 Statement (where we decided to use an asset beta of 0.62), telecoms asset betas (including BT Group) have declined significantly, in part due to increased gearing. Based on CEPA's report, UK and European telecoms asset betas are between 0.30 and 0.45. No stakeholders commented on our approach to estimate the OUKT beta.
- A16.92 Given OUKT captures most of BT's activities (including FTTP services), we have decided to continue to use the same asset beta for OUKT as used for BT Group (0.43). An asset beta of 0.43 reflects the decline in telecoms asset betas since the March 2021 Statement and is within the range for Vodafone and European telecoms companies.

Asset beta for RoBT

Our proposal

- A16.93 Given our proposals on the relative weights and asset betas for Openreach and OUKT the resulting asset beta proposed for RoBT was 0.65.

Our reasoning and decision

- A16.94 Given our decisions on the relative weights and the asset betas for Openreach and OUKT, the resulting asset beta for RoBT is 0.68.⁸⁶⁴ We note that CEPA's updated asset beta range for ICT companies is between 0.66 and 1.02 and therefore our estimate is at the bottom end of CEPA's range. We think it is appropriate to have a RoBT asset beta towards the lower end of the range given our gearing assumption (set out below) is higher than most ICT benchmarks.⁸⁶⁵

Gearing for each part of BT Group

- A16.95 We proposed to maintain the approach taken in the March 2021 Statement and apply the BT Group gearing assumption to each of the different parts of BT.⁸⁶⁶
- A16.96 No stakeholders commented on our proposal, and we have decided to use a forward-looking gearing assumption of 55% across the different parts of BT, equal to our BT Group gearing assumption.

Summary of asset beta disaggregation

- A16.97 Table A16.5 summarises our decisions on asset betas, weights and gearing for different parts of BT Group.

⁸⁶⁴ Given the relatively low weight on RoBT, the asset beta for RoBT is quite sensitive - e.g. a 0.01 reduction in the OUKT asset beta would increase the RoBT by c.0.14.

⁸⁶⁵ We also recognised this in the March 2021 Statement, paragraph A21.112.

⁸⁶⁶ March 2021 Statement, A21.117 to A21.123. In that statement we recognised that lines of business with different levels of systematic risk could have different optimal gearing levels. However, we said that estimating different levels of gearing for different parts of BT introduced further judgement into the WACC estimation, which needed to be balanced against the likely materiality of assuming different levels of gearing on the overall WACC. Given the overall impact on the WACC would not be significant we decided that applying our estimate of BT Group gearing to each of the different parts of BT was reasonable and appropriate.

Table A16.5: Summary of asset betas and gearing for the different parts of BT

	BT Group	Openreach	OUKT	RoBT
Asset beta	0.43	0.38	0.43	0.68
Debt beta	0.075	0.075	0.075	0.075
Weighting	100%	25%	70%	5%
Gearing (forward looking)	55%	55%	55%	55%
Implied equity beta	0.86	0.75	0.86	1.42

Source: Ofcom analysis

Disaggregation of BT Group cost of debt

Our proposals

A16.98 Consistent with previous market reviews, we considered that a firm facing lower systematic risk could attract a higher credit rating for a given level of gearing than a firm facing higher systematic risk. This implied that BT's services with lower systematic risk (i.e. those included within Openreach) would face a lower cost of debt than OUKT or RoBT (at the same level of gearing).

A16.99 We proposed to adopt the same approach as in the March 2021 Statement:

- Estimate the Openreach cost of debt by assuming it could achieve a one notch uplift (i.e. BBB+) to BT Group's credit rating (BBB). We estimated Openreach might be able to reduce its cost of debt by 0.03-0.33 percentage points (midpoint of 0.20) relative to BT Group;
- Apply the BT Group cost of debt to OUKT (given we assume the systematic risk of OUKT is the same as BT Group); and
- Derive the RoBT cost of debt by using the weightings from the asset beta disaggregation.

A16.100 Based on a proposed cost of debt for BT Group of 4.6%, we proposed to use a cost of debt of 4.4% for Openreach and 4.6% for Other UK Telecoms. Based on the same disaggregation weightings used for the asset betas above, this implied a cost of debt of 5.2% for RoBT.⁸⁶⁷

Stakeholder responses

A16.101 No stakeholders responded to our proposals.

Our reasoning and decisions

A16.102 We have decided to adopt the same approach as outlined in the March 2025 Consultation but have updated the evidence as set out below.

⁸⁶⁷ ROBT cost of debt is calculated for presentation purposes only since we do not regulate services supplied within what we describe as RoBT. $25\% \times 4.4\%$ [Openreach] + $67\% \times 4.6\%$ [Other UK Telecoms] + $8\% \times 5.2\%$ [RoBT] = 4.6% [BT Group].

A16.103 BT Group is currently rated BBB. To estimate the Openreach cost of debt we have considered debt spreads for BBB and A-rated benchmark indices (10 years and 20 years).⁸⁶⁸ Table A16.6 outlines the spread implied by the iBoxx debt indices we have referenced. Assuming a one notch uplift to Openreach from the BT Group rating, Openreach might be able to reduce its cost of debt by around 0.12 percentage points to 0.15 percentage points relative to BT Group.⁸⁶⁹

A16.104 We have decided to take the midpoint of this range and therefore Openreach's cost of debt would be 0.1 percentage points (rounded to 1 d.p.) lower relative to BT Group.⁸⁷⁰

Table A16.6: Spread between BBB and A-rated benchmark indices (10 years and 20 years)

	One-year average	Two-year average
BBB vs A ratings	0.36% to 0.40%	0.45% to 0.46%
1 Notch Change (BBB to BBB+)	0.12% to 0.13%	0.15% to 0.15%

Source: iBoxx £ Corporates indices, Ofcom analysis using data to 31 October 2025.

A16.105 Based on a cost of debt for BT Group of 5.3% estimated for this statement, we have decided to use a cost of debt of 5.2% for Openreach and 5.3% for Other UK Telecoms. Based on the same disaggregation weightings used for the asset betas above, this implies a cost of debt of 5.8% for RoBT.⁸⁷¹

Our decision on the disaggregated WACC

A16.106 Table A16.7 summarises the pre-tax nominal WACC for each constituent part of BT Group under the three-way disaggregation approach based on the decisions above.

Table A16.7: Pre-tax nominal WACC for disaggregated lines of business

	Openreach	OUKT (same as BT Group)	RoBT
Pre-tax nominal WACC	7.5%	7.9%	9.6%

Source: Ofcom.

⁸⁶⁸ We have used corporate bond indices of 10- and 20-year maturities in line with our approach to calculate BT Group's cost of debt. For the 10-year maturity, we take the midpoint between the iBoxx 7-10 year and 10-15 year indices. For the 20-year maturity, we use the iBoxx +15 year index.

⁸⁶⁹ There are effectively three ratings notches between BBB rated debt and A rated debt and therefore one-notch estimates have been derived by dividing the figures in the table by three. S&P also estimate the impact on the yield on bonds for different credit ratings. In their report from August 2025, [The Cost Of A Notch: The Cost Of Becoming A Fallen Angel Holds Steady Despite Market Volatility](#), they estimate a 11-15 basis point decrease in spreads from moving from BBB+ to BBB. This is in line with our estimated range and supports a reduction from consultation.

⁸⁷⁰ Rounding to 2.dp. does not impact the WACC for Openreach.

⁸⁷¹ RoBT cost of debt is calculated for presentation purposes only since we do not regulate services supplied within what we describe as RoBT. $25\% \times 5.2\%$ [Openreach] + $70\% \times 5.3\%$ [Other UK Telecoms] + $5\% \times 5.8\%$ [RoBT] = 5.3% [BT Group].

A17. SMP Conditions and directions: responses to stakeholder drafting comments

Background

- A17.1 The SMP conditions and directions that we have decided to set are in Volume 7. In this Annex, we set out and respond to comments from stakeholders on the drafting of the proposed SMP Conditions and Directions, on which we consulted in the March 2025 Consultation, the October 2025 Consultation and the November 2025 Consultation.
- A17.2 In this Annex we focus our responses on drafting comments which relate to the application of the relevant regulatory obligation. We received a number of other minor comments, for example in relation to typographical errors, which we have corrected where appropriate and do not address individually in this Annex.⁸⁷²
- A17.3 We also do not describe changes to the SMP Conditions and Directions in this Annex where they reflect policy decisions and the underlying policy decisions are explained in detail within the Statement.
- A17.4 In the paragraphs below, we first set out our responses to comments on the non-pricing remedies and then to comments on the pricing remedies. We only received a small number of comments on the drafting of our regulatory reporting Directions and none in relation to SMP Condition 11. We set out our responses to the comments we received on the draft regulatory reporting Directions and explain any changes we made as a result in Volume 6 of this Statement.

Non-pricing remedies

Interpretation

- A17.5 Openreach proposed an amendment to the definition of “Physical Infrastructure Access” (Schedule 1, Part 2 of the notification setting the SMP conditions). We have not adopted its proposal and the definition remains unchanged for the reasons set out at paragraph 5.24 in Section 5, Volume 3 of this Statement.⁸⁷³

Quality of Service Directions

- A17.6 In relation to the Quality of Services directions, Openreach highlighted that draft paragraph 12 of Direction 3 referred to the “UK as a whole”, but noted that the proposed QoS standard for FTTP would only apply to Area 3.⁸⁷⁴ We decided to delete the reference to

⁸⁷² Some references to the relevant markets have been amended to ensure consistency between Table 1A and Table 1B (Schedule 1, Part 1 of the notification setting out the SMP conditions) and the SMP conditions (in line with our final policy decisions).

⁸⁷³ Openreach response to TAR26 March 2025 Consultation. Document 3. Page 74.

⁸⁷⁴ Openreach response to TAR26 March 2025 Consultation. Document 4. Page 82.

“UK as a whole” to avoid any ambiguity regarding the geographic application of the relevant FTTP standards.

- A17.7 Openreach proposed that the exclusion of MBORC related failures in paragraph 13(a) of Direction 3 should be extended to FTTP standards. For the reasons set out in our Statement,⁸⁷⁵ we have decided not to implement Openreach’s suggestion and maintain the references to MPF and FTTC unchanged.⁸⁷⁶

Pricing remedies

- A17.8 In the following paragraphs, we first address stakeholders’ responses to our proposals to simplify the drafting of the charge controls in SMP Conditions 12A – 12I to make them easier to read, understand and navigate. Next, we set out comments we received on specific provisions in the following SMP Conditions and our responses: SMP Conditions 12B, 12C, 12D, 12E and 12G. We then discuss comments we received on certain drafting issues that apply to more than one of the charge control conditions and our responses. Finally, we set out comments on the drafting of the Electricity Direction and our comments.

Simplification of charge control SMP Conditions

- A17.9 In the March 2025 Consultation, we explained that we had taken the opportunity to revisit the overall structure and drafting of charge control SMP conditions with a view to simplifying them. We proposed a number of changes to this end, including:
- a) bringing frequently used formulae upfront;
 - b) ordering charge controls in a standard way; and
 - c) other changes to assist with reading and navigation, such as inserting sub-headings to break up the conditions and as far as possible, conforming drafting.
- A17.10 The stakeholders that responded to our consultation question on this, Openreach⁸⁷⁷ and nexfibre,⁸⁷⁸ said that they agreed with the simplification changes that we had proposed. We have adopted the changes in the price control conditions we have set.

SMP Condition 12B

- A17.11 Openreach confirmed that of the 48 services listed in the tie cables basket in the draft condition, 6 will be withdrawn by 1 April 2026 and 26 have had no or minimal revenues recorded against them in the last 5 years.⁸⁷⁹ Given this, we have removed these 33 services from the list of services in Section 1 of the Annex to Condition 12B.
- A17.12 Openreach also said that it was changing the presentation of certain products within the basket in its price list so that rather than showing the prices for the first 100 pair cable (100 metres) and then the incremental charge for each 100 extra pairs, it will have entries for the price for 200 pairs, 300 pairs etc. It suggested that these additional entries should be included in the basket.⁸⁸⁰ However, since we have removed the 100 extra pair product

⁸⁷⁵ See paragraph 3.111, Section 3, Volume 5.

⁸⁷⁶ Openreach response to TAR26 March 2025 Consultation. Document 4. Page 82.

⁸⁷⁷ Openreach response to TAR26 March 2025 Consultation, Document 4. Page 75.

⁸⁷⁸ Nexfibre response to our March 2025 Consultation. Page 43.

⁸⁷⁹ Openreach response dated 13 February 2026 to s135 notice dated 3 February 2026, question 14(b).

⁸⁸⁰ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 256.

from the basket because it has no or minimal revenues, we have not included the revised presentation of the products.

- A17.13 Similarly, we have removed two services from the Co-mingling new provide and rental services basket at Section 4 of the Annex since these have been withdrawn by Openreach.⁸⁸¹

SMP Condition 12C

- A17.14 In the October 2025 Consultation, we proposed certain changes to draft Condition 12C on which we had consulted in the March 2025 Consultation, to implement our proposal to have single service charge controls on connection charges rather than a basket control. Openreach asked why the revised Condition 12C did not include a requirement in paragraph 12C.7 (Compliance) to provide assurance in respect of the information provided in the form of the Agreed Upon Procedures (AUP).⁸⁸² Since Condition 12C no longer includes a basket charge control, AUP assurance is not required.
- A17.15 Openreach also proposed that, for the purposes of the FTTP charge controls, we adopt the language of Condition 12D.2 in terms of defining when copper-based network access is not available. Condition 12D.2 requires that the charge controls specified in Conditions 12D.3 and 12D.4 apply whether they relate to copper services or FTTP and therefore did not appear directly applicable. We have revised the definition of when copper-based network access is available, as set out in paragraphs A17.36 and A17.37 below.

SMP Condition 12D

- A17.16 Openreach highlighted that it only provides the Special Fault Investigation (SFI) services specified in draft Condition 12D.6(b).⁸⁸³ Condition 12D.6(a), which applied to other SFI services, is therefore redundant and we have not retained it. We have also rationalised the defined terms in Condition 12D.11 to remove duplication.
- A17.17 Openreach suggested that the two remaining SFI services – SFI Assure and SFI Frame Direct – should be charge controlled at CPI-0% as single item charge controls because of issues that Openreach had identified in the data relevant to the time each service requires to complete.⁸⁸⁴
- A17.18 We have decided to retain the formula proposed in our March 2025 Consultation for determining the charge control for the SFI services in SMP Condition 12D.6. That is, the maximum charge for each SFI service in each relevant year must not exceed Engineer Time x Hourly Charge) + Visit Charge. Engineer Time is defined as the amount of time determined by Openreach at 1 April 2026 as required to complete the service, which must be fair and reasonable. It is for Openreach to ensure they are able to demonstrate compliance with SMP Condition 12D.6, including ensuring that its determination of Engineer Time is fair and reasonable.

⁸⁸¹ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 260.

⁸⁸² Openreach response to TAR26 October 2025 Consultation. Page 15.

⁸⁸³ Openreach response to TAR26 March 2025 Consultation. Document 4. Page 86.

⁸⁸⁴ Openreach confidential response to TAR26 March 2025 Consultation. Document 4. Paragraphs 368 - 369.

SMP Condition 12E

A17.19 Openreach raised a number of issues in relation to the drafting of the Ethernet and WDM charge controls which we have grouped as set out below.

Main Link

- A17.20 Openreach queried whether Main Link services were intended to be subject to individual charge controls as well as a basket control.⁸⁸⁵ As set out in Section 2 of Volume 4 and Section 3 of Volume 4 in relation to Ethernet IEC, each EAD Main Link service charge in an Ethernet basket is also subject to a CPI+5% sub-cap⁸⁸⁶ and this is reflected in Conditions 12E.5 and 12E.12.
- A17.21 Openreach highlighted that Main Link is defined in Condition 12E.25 by reference to the Ethernet price list and asked for confirmation that we did not intend to charge control any other Main Link services (e.g. those relating to products other than Ethernet).⁸⁸⁷ We have clarified that the definition of Main Link in Condition 12E.25 is for the purposes of the single service charge control in Condition 12E.5 and applies to the Ethernet Main Link services in the linked price list.⁸⁸⁸ However we do intend other Main Link services to be charge controlled. Ethernet and ONBS Main Link services are also charge controlled as part of the Ethernet baskets, as set out in Sections 1 – 4 of the Annex to Condition 12E. Main Link services listed in Section 5 of the Annex to Condition 12E are a WDM service, subject to the WDM charge control in 12E.7 and Main Link services provided in connection with DFX are subject to the charge controls set out in Condition 12I.
- A17.22 As suggested by Openreach⁸⁸⁹, we have added a separate requirement in paragraph (d) of Condition 12E.21 for the provision of compliance information in relation to the single service Ethernet Main Link charge control. We have made this amendment in the interests of clarity although we recognise that there is likely to be overlap with the requirement in paragraph (b) to provide compliance information relating to Main Link as an individual service in the Ethernet baskets.

Glidepath for LBW Ethernet Basket control

- A17.23 As set out in Section 6 of Volume 4, we have decided to allow for a one-year transition period for the 1Gbit/s and below Ethernet basket control before using a re-profiled glidepath to align prices to cost by 2031.⁸⁹⁰ We have implemented this in line with the draft amendments to condition 12E on which we consulted in the November 2025 Consultation.

Rationalisation of services listed in the Annex to Condition 12E

- A17.24 We have confirmed with Openreach that a number of products have been withdrawn since 2021 or because the expected volumes during the TAR period are so low that they will not impact on the reporting of basket compliance.⁸⁹¹ These include EAD Enable and the full

⁸⁸⁵ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 351.

⁸⁸⁶ See paragraph 2.34(b) of Section 2, Volume 4 and paragraph 3.68(b) of Section 3, Volume 4.

⁸⁸⁷ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 349.

⁸⁸⁸ As was the case under WFTMR21, ONBS Main Link services are not subject to the sub-cap although they are subject to the Ethernet basket charge controls. We note that these services have not generated any revenues in last four years for which we have data.

⁸⁸⁹ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 348.

⁸⁹⁰ See paragraphs 6.34 – 6.37.

⁸⁹¹ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraphs 270 – 275.

BNS, WES and BES portfolios. We have therefore removed the relevant entries in Section 1 and Section 6 of the Annex to Condition 12E.

- A17.25 Openreach suggested EAD Rugged was not within scope of Condition 12E as it is Street Access, and therefore should be removed from the Annex.⁸⁹² We agree that EAD Rugged circuits do not form part of the LLA product market.⁸⁹³ We have therefore removed it from the list of services in the Annex to Condition 12E.
- A17.26 We have also removed migration charges and managed migration options from the EAD list of miscellaneous ancillary services in Section 6 of the Annex because these have been or will be withdrawn by 1 April 2026.⁸⁹⁴
- A17.27 Openreach requested that several EAD modify and regrade charges be treated as “Miscellaneous Ancillary Charges” under Section 6 of the Annex to Condition 12E, with individual CPI controls, rather than be included in the relevant Ethernet basket controls under Section 1 of the Annex.⁸⁹⁵ They explained that the services accounted for about 0.2% of the total basket revenue but represented about 30 products in the compliance model. We have not made the change requested since those services falling within the LBW Ethernet basket for LLA Area 3 would no longer be subject to the cost-based control, which we have decided is appropriate. Given this, we consider that it is proportionate for the services to remain in Section 1 of the Annex to Condition 12E.

WDM Services

- A17.28 Openreach suggested that all WDM services, whether listed in Section 5 of the Annex to Condition 12E or as a miscellaneous ancillary service in Section 6 could be subject to a single CPI control.⁸⁹⁶ Both WDM services in Section 5 of the Annex and the ancillary services listed in Section 6 are subject to a single service CPI-0% charge control. To the extent that Openreach is suggesting WDM services should be subject to a basket control, this is not feasible since Openreach does not record WDM volume data at the level of detail required.
- A17.29 Openreach explained that its WDM price lists include customisation options but it considered that these are not WDM components. They said that ISP customers are not charged customisation charges and these are not included in their billing tariff systems.⁸⁹⁷ We accept that these are incremental charges to the underlying WDM base component. The charge control applies to each underlying WDM component price. The changes we have made to Section 5 of the Annex to Condition 12E clarify that customisation charges are not in scope.
- A17.30 Openreach considered it was unclear why OSA Filter Connect and OSEA Filter Connect were listed in Sections 5 and 6 of the Annex to Condition 12E since they are not price list page headings.⁸⁹⁸ We agree that including OSA Filter Connect and OSEA Filter Connect as

⁸⁹² Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 381.

⁸⁹³ As mentioned in Volume 2 Section 5, we have excluded leased lines used for specialist applications (such as EAD Rugged services) from the product market for LLA services. Consistent with this, in Annex 5 we explain that EAD Rugged circuits have been excluded from the data used in our leased lines market definition analysis.

⁸⁹⁴ Openreach [Price List](#) [accessed on 23 February 2026].

⁸⁹⁵ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 276.

⁸⁹⁶ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 383.

⁸⁹⁷ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraphs 384 - 388.

⁸⁹⁸ Openreach response to TAR26 March 2025 Consultation. Document 4. Page 88.

separate sub-headings is not necessary as they fall within the OSA⁸⁹⁹ and OSEA⁹⁰⁰ price lists respectively. As such, we have removed the references to OSA Filter Connect and OSEA Filter Connect from Sections 5 and 6 of the Annex to Condition 12E.

Shift charges

- A17.31 Openreach consider that in Section 6 of the Annex to Condition 12E, EAD Modify Circuit Shift Charges should not be defined as a “Miscellaneous Ancillary Services” as this “acts an additional constraint on pricing”. It said that Shift-Internal, Shift-External Resite and Shift-External charges are subject to other controls. They suggested that if Ofcom wishes to charge control EAD Modify Circuit Shift Charges, we should explicitly limit this to Enable SyncE on EAD 10000.⁹⁰¹ We accept that the proposed drafting adds an additional constraint to certain charges which was not the policy intention and thus have replaced the reference in EAD Modify Circuit Shift Charges with Enable SyncE on EAD 10000 (all variants).

SMP Condition 12G

- A17.32 In response to a query from Openreach,⁹⁰² we have removed the references to 12E.4 and 12E.6 in 12G.11(b) which were incorrectly included.
- A17.33 In relation to paragraphs 12G.13, Openreach commented that although DFA is in scope under SMP Condition 12G.11 (for the purpose of charging an ECC Balancing Charge), it has been excluded from SMP Condition 12G.13, which only refers to EAD and EAD LA connections being taken into account in the calculation. It noted that DFA had been included in the equivalent condition which was set in the WFTMR21.⁹⁰³ It also asked for confirmation that DFX should be excluded from the scope of the condition.
- A17.34 We can confirm that DFA connections are correctly excluded from the calculation of the ECC Balancing Charge under 12G.13. The provisions of 12G.13 only apply for the calculation of the ECC Balancing Charge in respect of Ethernet connections which have been excluded from the calculation of the basket controls under SMP Condition 12E (as set out in 12G.11). Since these basket controls do not apply to DFA, it is not necessary to include reference to these connections in 12G.13. As explained in paragraph 5.105 of Section 5, Volume 4 (Ancillaries) the lost revenue from the balancing charge has been factored into the dark fibre connection prices we are setting. Because of this, we would not expect an additional amount to cover the balancing charge to be added on top of the connection price in the same way as occurs for specific EAD connections.
- A17.35 We can confirm that the services which are the subject of the ECC Balancing Charge are not relevant to DFX. Related to this, we have amended the references to IEC markets in the left hand column of Condition 12G (and updated Table 1A and Table 1B at the beginning of the SMP conditions⁹⁰⁴) since most of the provisions do not apply (ECC services are provided between the local exchange and an end-user premises).

⁸⁹⁹ See applicable OSA services listed on Openreach’s Optical Services price list, at sections 3.4.1 to 3.4.7, <https://www.openreach.co.uk/cpportal/products/pricing-pmf> (accessed on 2 March 2026).

⁹⁰⁰ See applicable OSEA rental, connection and Main Link services listed on Openreach’s Optical Services price list, at sections 3.4.8 to 3.4.12 at <https://www.openreach.co.uk/cpportal/products/pricing-pmf> (accessed on 2 March 2026).

⁹⁰¹ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraphs 376 – 379

⁹⁰² Openreach response to TAR26 March 2025 Consultation. Document 4, Paragraph 354.

⁹⁰³ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 355.

⁹⁰⁴ We have also corrected errors in Table 1A and Table 1B highlighted in the Openreach response to TAR26 March 2025 Consultation. Document 4.

Other issues

Trigger for FTTP charge controls

- A17.36 In the March 2025 Consultation, we proposed that the FTTP charge controls under SMP Conditions 12C and 12D would apply where copper-based network access is not available. For the purposes of these conditions, we included in the definitions applicable to Condition 12, a definition of where copper-based network access is available. In its response, Openreach said that this did not match the intent set out in the March 2025 Consultation and proposed that we should amend the definition so that it explains where copper-based network access is not available. It also said that that one of the specified criteria – an active FTTC connection – was not correct because it did not allow for other forms of copper-based network access.⁹⁰⁵
- A17.37 We agree with Openreach’s comments and have amended the definition accordingly. Under the definition, copper-based network access is not available if either Openreach does not have an active copper-based connection at the relevant location or it is no longer required to meet new requests for copper-based network access at that location.

Openreach price lists

- A17.38 Openreach informed us that it has restructured its price list which has altered how and where product charges are displayed. It is currently running both new and old price lists on its website in tandem but plans to retire the old “purple” list in 26/27. It highlighted that links to the Openreach price list in the SMP conditions would need to be updated to reflect the change and we have made this change.⁹⁰⁶

Compliance with charge controls

- A17.39 SMP Conditions 12B.10, 12D.8, 12E.21, 12F.15, 12G.17 and 12H.7 set out requirements for compliance, including a requirement to provide assurance of compliance information in the form of the AUP. As set out in Volume 4, Section 6, Openreach said that the AUP compliance process was administratively burdensome and questioned whether the requirements are proportionate.⁹⁰⁷ For the reasons set out in that Section, we have decided to retain the requirements in the SMP Conditions for Openreach to provide assurance of the compliance information it provides in the form of the AUP.⁹⁰⁸

Substituted services

- A17.40 In its response to the March 2025 Consultation, Openreach said it did not object to our proposal to standardise the “Substituted Services” provision of each charge control which has a basket control.⁹⁰⁹ However, it said that each substitution is a little different and in practice requires a discussion with Ofcom on the appropriate treatment in the compliance calculations. It therefore asked that text is included in each provision so that it applies as Ofcom may direct to be appropriate in the circumstances. We recognise that when Openreach is making a substitution of a service subject to a basket control, a discussion with Ofcom as to how the basket control applies is likely to be appropriate. For this reason, each of the relevant provisions⁹¹⁰ provides that the substituted service is subject to the

⁹⁰⁵ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraphs 362 – 365.

⁹⁰⁶ Openreach response to TAR26 March 2025 Consultation. Document 4. Page 74 to 75.

⁹⁰⁷ See paragraphs 6.202 – 6.204.

⁹⁰⁸ See paragraph 6.207, Section 6, Volume 4.

⁹⁰⁹ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 279.

⁹¹⁰ See 12B.9(b), 12E.20(b), 12F.12(b) and 12G.16(b)

applicable condition “subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances”.

Amendments to formulae for calculation of charge controls

- A17.41 We have made minor drafting changes to two of the formulae at the beginning of Condition 12, for the calculation of charge controls. Openreach commented in relation to Formula 2 that the correct number of days in relation to the third year of the control for the prior year weighting formula is 366 (because the prior year is a leap year). We have made this change.
- A17.42 We have also made certain drafting changes to Formula 6 with a view to clarifying how variables within the formula apply but which do not change the substance of the calculation.

Electricity direction

- A17.43 In its comments on the Electricity Direction, Openreach said that it understood the Direction to require the publication of information as a one-off exercise.⁹¹¹ As explained in Section 5, Volume 4 of this Statement, compliance information, such as that required by the Electricity Direction, must be published annually.⁹¹² We have added explicit wording at paragraph 9 of the Direction to make this clear.

⁹¹¹ Openreach response to TAR26 March 2025 Consultation. Document 4. Paragraph 251.

⁹¹² See paragraph [5.120].

A18. Equality Impact Assessment and Welsh Language Impact Assessment

A18.1 In this Annex we set out the Equality Impact Assessment and the Welsh Language Impact Assessment in relation to decisions set out in this Statement, pursuant to our duties under the Communications Act 2003 (the “Act”), the Equality Act 2010 (the “2010 Act”), the Northern Ireland Act 1998 (the “1998 Act”) and the Welsh Language Standards applicable to Ofcom.⁹¹³

Equality Impact Assessment

- A18.2 Section 149 of the Equality Act 2010 (the “2010 Act”) imposes a duty on Ofcom, when carrying out its functions, to have due regard to the need to eliminate discrimination, harassment, victimisation and other prohibited conduct related to the following protected characteristics: age; disability; gender reassignment; marriage and civil partnership; pregnancy and maternity; race; religion or belief; sex and sexual orientation. We refer to groups of people with these protected characteristics as ‘equality groups’. The 2010 Act also requires Ofcom to have due regard to the need to advance equality of opportunity and foster good relations between persons who share specified protected characteristics and persons who do not.
- A18.3 Section 75 of the Northern Ireland Act 1998 (the “1998 Act”) also imposes a duty on Ofcom, when carrying out its functions relating to Northern Ireland, to have due regard to the need to promote equality of opportunity and have regard to the desirability of promoting good relations across a range of categories outlined in the 1998 Act. [Ofcom’s Revised Northern Ireland Equality Scheme](#) explains how we comply with our statutory duties under the 1998 Act.
- A18.4 To help us comply with our duties under the 2010 Act and the 1998 Act, we assess the impact of our decisions on persons sharing protected characteristics and in particular whether they may discriminate against such persons or impact on equality of opportunity or good relations.
- A18.5 When thinking about equality we think more broadly than persons that share protected characteristics identified in equalities legislation and think about potential impacts on various groups of persons.⁹¹⁴
- A18.6 In particular, section 3(4) of the Act also requires us to have regard to the needs and interests of specific groups of persons when performing our duties, as appear to us to be relevant in the circumstances. These include:
- a. the vulnerability of children and of others whose circumstances appear to us to put them in need of special protection;

⁹¹³ In Volume 1, we explain that the March 2025 Consultation, October 2025 Further Consultation and November 2025 Further Consultation taken together constituted our impact assessment for the purposes of section 7 of the Act.

⁹¹⁴ Ofcom. July 2023. [Impact assessment guidance](#). Paragraph 4.7.

- b. the needs of persons with disabilities, older persons and persons on low incomes; and
- c. the different interests of persons in the different parts of the UK, of the different ethnic communities within the UK and of persons living in rural and in urban areas.

A18.7 We examine the potential impact our decisions are likely to have on people, depending on their personal circumstances. This 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 and identity.

Our consultation position

A18.8 In our March 2025 Consultation, our October 2025 Further Consultation, and our November 2025 Further Consultation we included Equality Impact Assessments that identified which, if any, policy proposals we considered may have an impact on equality groups.⁹¹⁵

A18.9 We considered that the following proposals were more likely to have an impact on certain equality groups:

- a. General investment in gigabit-capable networks – while we expected further network build in both urban and rural areas including harder-to-reach and more costly areas, we recognised that consumers living in hard-to-reach rural areas and in nations with a significant proportion of the population living in these areas may experience a slower roll-out or may not benefit from the same level of investment as urban areas. We proposed a variety of mitigations including continued regulation of existing copper-based services and promoting investment by Openreach.
- b. Copper retirement – we considered that older consumers and people from different socio-economic groups/ backgrounds, including those that might be financially vulnerable, could be adversely impacted by both the general risks of migration, and the potential for retail price increases. Among many mitigations, we noted that we had adopted a three-stage process for the transition from copper-based broadband services to FTTP-based services.
- c. Exchange exit – we considered that people with disabilities and older people might be more adversely impacted by a cessation of MPF lines to facilitate exchange exit, given they are more likely to be slower to migrate to FTTC/FTTP services. To mitigate the potential impacts, we proposed to retain our existing regulation on MPF lines, meaning Openreach would not be able to unilaterally withdraw these services. We noted that the need for agreement from providers to stop using MPF should mean that end users' needs are taken into account and vulnerable consumers are better protected.

A18.10 We did not consider that the other specific policy proposals regarding the WLA market, the IEC market, the LLA market and the physical infrastructure market would affect any specific groups of persons (including persons that share protected characteristics under the 2010 Act or the 1998 Act) differently to the general population.

⁹¹⁵ Ofcom. March 2025. [Consultation: Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31](#). Annex 21. Paragraphs A21.40 – A21.70. Ofcom. October 2025. [Consultation: Further consultation on WLA pricing remedies - Telecoms Access Review 2026-31](#). Paragraphs 2.23 – 2.30. Ofcom. November 2025. [Consultation: Further consultation on leased lines market analysis and various pricing issues - Telecoms Access Review 2026-31](#). Paragraphs 2.12 – 2.14.

Stakeholder responses

Investment in gigabit-capable networks across the UK

A18.11 The Advisory Committee for Scotland (ACS) broadly agreed with our Equality Impact Assessment. However, it emphasised the fact that Scotland's full fibre coverage is the lowest of the four nations, with rural areas being particularly poorly connected. The ACS said it remained concerned that hard-to-reach rural areas may not receive the same level of investment compared to urban areas.⁹¹⁶

Copper retirement/eventual withdrawal of legacy services

A18.12 Several stakeholders raised concerns about the impact on vulnerable customers, and nexfibre specifically pointed to these concerns and the importance of impact being properly assessed.⁹¹⁷

A18.13 Openreach disagreed with the short-term concerns of copper transition we highlighted, specifically around the possible impact on older and disabled customers if MPF lines were ceased. Openreach said that migrating vulnerable end customers to more reliable fibre networks that are less vulnerable to theft, is the best way to protect them. Openreach said that migration to fibre networks should be the focus in protecting vulnerable end customers.⁹¹⁸

Exchange Exit

A18.14 Openreach disagreed that there was the potential for short term adverse impacts relating to exchange exit, given both their own commitment, and that of other providers, to protecting vulnerable consumers.⁹¹⁹

Our Equality Impact Assessment

A18.15 Broadly, our final decisions relating to investment in gigabit-capable networks and our regulatory support for both copper retirement and exchange exit are aligned with the proposals set out in the March 2025 Consultation, and therefore many of the equality impacts we have identified in this assessment are similar to those set out in the Consultation.

A18.16 We remain of the view that our decisions in these areas are more likely to have an impact on certain equality groups, and that our other specific decisions regarding the WLA market, the IEC market, the LLA market and the physical infrastructure market will not affect any specific groups of persons (including persons that share protected characteristics under the 2010 Act or the 1998 Act) differently to the general population.

Investment in gigabit-capable networks across the UK

A18.17 Our strategy and the regulatory stability that we have provided since the last review of the wholesale fixed telecoms market in 2021 has supported significant build by a wide range of companies, putting the UK on course to deliver wide availability of gigabit-capable networks. Since May 2021, the number of premises with access to full-fibre has increased

⁹¹⁶ [Advisory Committee for Scotland](#) response to TAR26 March 2025 Consultation. Page 11.

⁹¹⁷ [nexfibre](#) response to TAR26 March 2025 Consultation. Main response. Page 48.

⁹¹⁸ [Openreach](#) response to TAR26 March 2025 Consultation. Document 6. Paragraphs 22-24.

⁹¹⁹ [Openreach](#) response to TAR26 March 2025 Consultation. Document 6. Paragraph 21.

from 6.9m premises (24%) to 23.7m premises (78%) in July 2025, while coverage of gigabit-capable networks has increased from 11.6m premises (40%) to 26.4m premises (87%).⁹²⁰

- A18.18 Full-fibre coverage in each of the four nations has also risen above 70%, with Northern Ireland having the highest level of full-fibre coverage of the four nations at 93%.⁹²¹ As the Advisory Committee for Scotland referred to, Scotland has the lowest full fibre coverage, of 71% of residential premises.⁹²² However, as with other UK nations, Scotland's full fibre coverage has rapidly grown over the previous review period, with only 27% of premises covered in 2021.⁹²³ The comparatively lower coverage in Scotland today reflects, in large part, the differing levels of rurality between Scotland and other UK nations. The mitigations we identify below will mitigate the impacts on consumers in rural Scotland.
- A18.19 Our decisions seek to promote continued investment in the deployment of gigabit-capable networks and network competition between gigabit-capable networks where this is viable. As explained in Volume 1, Section 2, our view is that gigabit-capable networks are beneficial to consumers of communications services (including both consumers and businesses) and citizens in general. As a result, we expect our decisions to have a positive impact on all consumers, including those in equality groups.
- A18.20 We expect further network build in both urban and rural areas, with operators (including Openreach) increasingly turning their attention in the 2026-31 review period to premises that are harder-to-reach and/or more costly to serve.
- A18.21 We recognise that private sector investment in gigabit-capable networks is unlikely to deliver everywhere. We also recognise that consumers living in hard-to-reach rural areas and in nations with a significant proportion of the population living in these areas may experience a slower roll-out or may not benefit from the same level of investment compared to urban areas.
- A18.22 We have considered ways to mitigate these potential impacts. For the consumers living in areas where the roll-out might be slower, we have decided that existing services will remain in place until gigabit-capable services are made available. As a result, while it may take longer for these areas to see the benefits of new network deployment, both the existing copper-based network and the QoS requirements that they are subject to, ensure that services remain in place and are provided to an appropriate level of quality.
- A18.23 For the consumers living in areas that are unlikely to see the emergence of competing networks, our decisions are intended to promote competition based on access to Openreach's network which allows downstream providers to offer consumers a choice of retail services. To provide these consumers with the benefits of an upgraded network and improved services and thereby mitigate the potential impacts on them, in these areas we seek to regulate access to Openreach's network in a way that promotes investment by Openreach in gigabit-capable networks. Additionally, we have decided to set minimum QoS standards on Openreach FTTP in these areas, as a backstop to ensure the quality of their service is not degraded due to a lack of network competition, as set out in Volume 5.

⁹²⁰ Ofcom. 2021. [Connected Nations 2021](#); Ofcom. 2025. [Connected Nations 2025](#). These figures are based on coverage of residential premises.

⁹²¹ Ofcom. 2025. [Connected Nations 2025](#)

⁹²² [Advisory Committee for Scotland](#) response to TAR26 March 2025 Consultation. Page 10. Ofcom. 2025. [Connected Nations 2025](#)

⁹²³ Ofcom. 2021. [Connected Nations 2021: Scotland report](#).

- A18.24 We note that we expect consumers living in rural areas and some nations and regions of the UK to benefit from public subsidy programmes. To date, these have delivered significant gigabit-capable build across hard-to-reach areas often located in rural settings in the UK. Our PIA remedy is complementary to these programmes.
- A18.25 We also note that we expect wireless technologies to play an increasingly important role in delivering higher speed connectivity to consumers in hard-to-reach areas. Fixed wireless access and new satellite services are developing that can provide connectivity to harder to reach areas to deliver higher speed services for these consumers at lower cost.

Copper retirement/eventual withdrawal of legacy services

- A18.26 Over time, customers currently using Openreach's legacy copper-based networks will migrate, either to Openreach's FTTP network or to rival networks. Eventually Openreach's copper-based network can be decommissioned to avoid the costly running of two parallel networks. We want our regulation to support the retirement of Openreach's copper-based network, while facilitating the wider objectives of this review. Consistent with the approach taken in the WFTMR21, we have decided that our regulation should continue to support this transition by progressively transferring regulation (including price protections) from copper to FTTP services, as set out in Volume 3, Section 2.
- A18.27 We consider (and agree with Openreach) that in the long term the transition from copper to FTTP services that our decisions facilitate is likely to have a positive impact on all consumers, including those in equality groups. Consumers will ultimately benefit from being moved off ageing technology which is at higher risk of faults.⁹²⁴ More generally, in the longer term we expect that any savings made from Openreach decommissioning the copper-based network will flow down to consumers on its network.
- A18.28 However, in the short term, we remain of the view that our decision to support the regulatory transition from copper-based broadband services to FTTP-based broadband services may have an adverse impact on some equality groups. In particular, it may impact older consumers and people from different socio-economic groups / backgrounds, including those that might be financially vulnerable, due to the general risks that are associated with migrations. These groups may also be at risk of having to pay higher retail prices for copper-based services if they are unable or unwilling to switch to FTTP, as we explain below.
- A18.29 As set out in Volume 3, Section 2, the detail of our framework for the regulatory transition from copper to FTTP services provides Openreach with the tools to stop selling new copper-based services in exchange areas where it has provided ultrafast coverage to 75% of premises ('the first threshold') and, at least two years later, for the charge control on copper-based services to be disapplied at premises where FTTP is available, in exchange areas where Openreach has provided ultrafast coverage to 100% of premises in an exchange area (excluding any premises that Ofcom directs) ('the second threshold').
- A18.30 We recognise that Openreach has taken certain steps to protect end customers from experiencing short-term adverse impacts of copper retirement. This has included avoiding ceasing lines in trial areas due to concerns about end customers and developing its "Prove Telecare" training for engineers to safely migrate vulnerable consumers to fibre services.⁹²⁵ We welcome these steps from Openreach.

⁹²⁴ Ofcom. 2025. [Connected Nations 2025](#). Page 58.

⁹²⁵ [Openreach](#) response to TAR26 March 2025 Consultation. Document 6. Paragraph 21.

- A18.31 However, we consider that even with these steps, there remains a possibility of adverse impacts on certain equality groups during the transition from copper to FTTP services. We set out below how our decisions mitigate those impacts.
- A18.32 Our decisions give Openreach increasing flexibility to encourage customers to migrate to FTTP. As experience from the PSTN retirement shows, migrating customers is complex, involves significant risk to some consumers and needs to be effectively managed, particularly for vulnerable consumers. The migration to FTTP will also need to be carefully managed to appropriately protect consumers, especially the most vulnerable ones.
- A18.33 Additionally, when the second threshold is met Openreach will have the ability to increase prices for copper-based network access at the wholesale level to incentivise a transition to ultrafast services, and this may lead to higher retail broadband prices for copper-based services. Increases in retail prices for copper-based services may have an adverse impact on people who may be unable or unwilling to switch to FTTP from different socio-economic groups/backgrounds, including those that might be financially vulnerable who already find it difficult to afford fixed broadband service.⁹²⁶ Increases in retail prices for copper-based services may have an adverse impact on people who are not in a position to migrate quickly. This could be because they are vulnerable, or the migration is complex. Given it may take longer to migrate vulnerable customers, these customers may face higher prices for an extended period. Also, ISPs may not have adequate time to prepare for complex migrations.
- A18.34 We recognise the potential adverse impacts of copper retirement, and as set out in Volume 3, Section 2 we have considered the impact on vulnerable customers, and appropriate support to ensure they are protected. nexfibre also said that the potential impacts of copper retirement must be adequately assessed. Below, and in more detail in Volume 3, Section 2, we set out how we have considered ways to mitigate potential impacts:
- To protect consumers from the risks associated with migrations, we are adopting a gradual process in the transition of regulation from copper-based broadband services to FTTP-based services.
 - We are retaining the existing requirement for Openreach to publish and provide Ofcom with four notifications at specified points in the process of transition for each local exchange area, as detailed in Volume 3, Section 4, Paragraph 4.176. This will allow ISPs to plan for and mitigate impacts on end-users, especially the most vulnerable ones, on an exchange-by-exchange basis.
 - For the second threshold specifically, we sought stakeholder views as part of the March 2025 Consultation on how best to protect vulnerable consumers in situations where, for example, FTTP is available, but there is a barrier to these customers migrating and the Second Threshold Notice has been issued. The impact on vulnerable customers of the second threshold is dependent on how the threshold is implemented, and we are consulting separately on our approach to the second threshold.⁹²⁷ On the broader issue concerning the take-up of FTTP, we consider interventions to promote take-up to fall outside the scope of this review. However, the potential adverse impacts are mitigated to a degree through our programme of work that continues to promote the benefits that enhanced connectivity can bring to citizens and consumers across the UK.

⁹²⁶ Ofcom. 2024. [Communications Affordability Tracker](#).

⁹²⁷ Ofcom. March 2026. [Consultation: Approach to the copper retirement second threshold calculation – Telecoms Access Review 2026-31](#).

- We are setting charge controls on Openreach’s wholesale charges, as set out in Volume 4, Section 1, which will in turn protect consumers from price rises for copper-based and FTTP services at the retail level. The charge controls will apply to legacy copper services (in particular MPF and the FTTC 80/20 product), where these remain widely available, but will transition to the FTTP 80/20 anchor product as Openreach progresses its copper retirement in each area.⁹²⁸
- We are committed to continue to work with industry and the UK Government to ensure that customers, particularly those who are vulnerable, are supported and protected through technological transitions. We are also committed to consider what general principles there are across digital transitions to deliver the best outcomes for consumers, industry and economic growth. We will continue with this work through our ongoing monitoring programmes.⁹²⁹ We note that Openreach and several ISPs have programmes in place to protect vulnerable consumers while migrating their services away from legacy technologies.

A18.35 In addition to the above, financially vulnerable consumers may also be eligible for social tariffs, i.e. cheaper broadband and phone packages that can help households to afford their communications services and thereby mitigate the potential negative impacts stemming from higher retail prices.⁹³⁰

Exchange exit

A18.36 During this review period Openreach will start to exit exchanges and is currently negotiating with providers on specific terms of exit in the Priority 108 exchanges that are due to close in the 2026-31 review period, as discussed in Volume 3, Section 3. We are broadly supportive of the exchange exit programme, which should provide the opportunity for both Openreach and other providers to move to a more cost efficient and sustainable network which should flow through to benefits for UK consumers and citizens in the long term.

A18.37 While Openreach highlighted steps it had taken to protect vulnerable consumers at trial exchanges, we still consider its exchange exit programme may have an adverse impact on consumers relying on copper broadband services served from the local exchange, specifically broadband provided on MPF.

A18.38 If MPF lines were ceased to facilitate exchange exit, consumers might lose access to the services provided over MPF lines. This might disproportionately affect people with disabilities and older people, as they may be more likely to be slower to migrate to FTTC/FTTP services.

A18.39 We have decided to retain our existing regulation on MPF, meaning that Openreach will not be able to unilaterally withdraw these services. We note that this mitigates the potential impacts of Openreach’s exchange exit programme and protect consumers from losing access to services provided over MPF lines.

A18.40 We consider that Openreach has the levers it requires to achieve exchange exit by reaching commercial agreement with providers to stop using MPF and to migrate consumers on

⁹²⁸ We have decided that charge controls will apply to FTTP when Openreach meets the first threshold, and charge controls will be removed from copper-based services at premises where FTTP is available when Openreach meets the Second Threshold. See Volume 3, Section 2 for further details, including the definition of the First Threshold and Second Threshold.

⁹²⁹ We explain our approach further in Volume 1, Section 2. As an example, a summary of how Ofcom monitors the PSTN switchover can be found at: [Protecting customers during the migration to digital landlines](#).

⁹³⁰ Ofcom. 2024. [Affordability of communications services](#).

MPF lines to an alternative product. However, the need for agreement from providers in this process should mean that end users' needs are to some extent considered, given that consumer facing providers have a direct relationship with consumers and are incentivised to not disrupt services.

- A18.41 The requirement to provide MPF access may be disapplied in circumstances where Ofcom provides consent. We would consider any request for consent by Openreach in accordance with our duties and against our objective to support Openreach exiting exchanges (given the benefits set out in this Statement), in a way that mitigates potential harm to consumers or competition, and we would take into account the particular circumstances at the relevant time.
- A18.42 As we set out in Volume 3, Section 3, wholesale SMP regulation is designed to address wholesale level competition problems. It is not an appropriate mechanism for carefully managing end consumer migrations from legacy services to modern fibre-based services. Openreach and retail providers will continue to be subject to other conditions and voluntary commitments.
- A18.43 As the experience of PSTN switch off and customers migrations to all IP digital landlines has shown, the detailed rules for managing these transitions require detailed end customer focused communications and processes. The expectations set out by Ofcom and the voluntary Charters agreed between the Department of Science, Innovation and Technology (DSIT) and fixed line providers are examples of this, and they explain the necessary safeguards for vulnerable customers and critical national infrastructure (CNI) users during the transition to new digital services.
- A18.44 We are aware that Openreach is continuing negotiations with providers on commercial terms for exchange exit. We expect Openreach and providers to work together constructively to identify solutions to support the transition away from the current exchange footprint allowing for the benefits of exchange exit to be realised while also delivering good outcomes for all consumers, including those in equality groups.⁹³¹

Welsh Language Impact Assessment

- A18.45 The Welsh language has official status in Wales. To give effect to this, certain public bodies, including Ofcom, are required to comply with Welsh language standards in relation to the use of Welsh, including the general principle that Welsh should not be treated less favourably than English in Wales. Accordingly, we have considered the potential impact of our review on (i) opportunities for persons to use the Welsh language; and (ii) treating the Welsh language no less favourably than the English language.

Our consultation position

- A18.46 We considered the potential impacts our proposals may have on opportunities to use Welsh and treating Welsh no less favourably than English where relevant. We did not consider that, under our SMP powers, we are able to specify a language requirement in relation to Openreach's publication requirements as set out in Volume 3, Sections 2 and 4

⁹³¹ We consider that the additional measures set out by Ofcom in the [General Conditions of Entitlement](#) and associated [Guidance](#) issued in relation to the planned retirement of the public switched telephone network (the PSTN switch-off) will also contribute to the mitigation of the adverse impacts that may result from the removal of copper-based products following the closure of an exchange.

and in Volume 5, Sections 3 and 4. However, we invited Openreach to consider the needs of its customers based in Wales. To that extent, we considered our proposals were likely to have positive effects or increased positive effects on opportunities to use Welsh and treating Welsh no less favourably than English.

Stakeholder responses

- A18.47 Ogi said that Ofcom should go further in applying pressure on Openreach to use the Welsh language. Ogi invited Ofcom to strengthen its position, and suggested that given BT Group's voluntary bilingual policy, it would be feasible for Openreach to further their use of the Welsh language.⁹³²
- A18.48 Openreach agreed that it is important to consider the impact of the TAR26 on the use of the Welsh language.⁹³³ Openreach highlighted its own corporate policies that aim to protect and promote the use of the Welsh language. This includes the establishment of their Wales Board who champion learning Welsh, as well as broader engagement with a wide range of Welsh stakeholders⁹³⁴
- A18.49 The ACS did not feel it was in a position to comment on issues relating to the Welsh language. However, it did say that consideration should be given as to how accessible Ofcom's publications are for speakers of Gaelic and other minority languages across the UK.⁹³⁵

Our Welsh Language Impact Assessment

- A18.50 To the extent we have discretion in the exercise of our powers and duties under the Act, and as set out within the Statement, we have considered the potential impacts of our decisions on opportunities to use the Welsh language and treating Welsh no less favourably than English where relevant.⁹³⁶
- A18.51 We consider that the decisions set out in our statement in relation to our framework for the regulatory transition from copper to FTTP services will enhance connectivity for all customers, including Welsh speakers. As a result, they are likely to indirectly have positive effects on opportunities to use Welsh and treating Welsh no less favourably than English. As networks are increasingly built to premises with Welsh language speakers, providers will be incentivised to develop their Welsh language practices for the sake of retaining and effectively serving the needs of customers.
- A18.52 We understand that Ogi believe that there may be additional measures Ofcom could take to compel Openreach to make further use of the Welsh language. We do not consider that, under our SMP powers, we are able to specify a language requirement in relation to

⁹³² [Ogi](#) response to TAR26 March 2025 Consultation. Welsh Language. Page 1.

⁹³³ [Openreach](#) response to TAR26 March 2025 Consultation. Document 6. Paragraph 25.

⁹³⁴ [Openreach](#) response to TAR26 March 2025 Consultation. Document 6. Paragraphs 26-29.

⁹³⁵ [Advisory Committee for Scotland](#) response to TAR26 March 2025 Consultation. Page 11.

⁹³⁶ While not relevant to our assessment of the impact of our decisions on the Welsh language, the ACS called on us to consider the impact of our decisions on Gaelic, and other minority languages in the UK. We recognise the importance of customers being able to engage with providers in different languages, however, we do not have the specific legal duties to consider the impacts of our decisions on the Gaelic language. More generally, through our duty under the Act to consider how our decisions will impact different parts of the UK, we have considered how our decisions may impact consumers in Scotland, especially the nation's rural areas. We note this impact and our mitigations in paragraphs A18.18-A18.25, above.

Openreach's publication requirements as set out in Volume 3, Sections 2 and 4 and in Volume 5, Sections 3 and 4.

- A18.53 We welcome the steps that Openreach has taken to meet the needs of its customers in Wales, such as translating external media releases for news stories relating to Wales into Welsh and making Welsh language lessons available for staff working in Wales. We invite it to continue to consider how it can best meet the needs of its customers in Wales, given it operates across the United Kingdom.

A19. Glossary

This annex aims to define many of the terms found in the main document, especially terms relating to telecoms regulations. The reader is also advised to refer to Annex 2: Overview of telecoms networks for more details on the technical aspects which underpin telecoms networks.

Term	Description
2014 EC Recommendation	The 2014 European Commission (EC) Recommendation on relevant product and service markets.
2022/23 restated CCN data	The 2022/23 restated data within BT's published 2024 Change Control Notification (CCN).
2022/23 published RFS	The 2022/23 information reported in the Regulatory Financial Statements (RFS) which BT produced in July 2023, under the obligations contained in its SMP conditions.
5G	The term used to describe the fifth generation of mobile networks beyond 4G Long Term Evolution (LTE) mobile networks. 5G is expected to deliver faster data rates, lower latency and a better user experience.
Access aggregation node	Telecoms equipment, at an operational building (such as at a local exchange), used for the purpose of aggregating traffic from multiple customer sites within a local area.
Access Change Notice (ACN)	A notice issued by Openreach of any amendment to the charges, terms and conditions on which it provides network access, or in relation to any charges for new network access.
Access connections	Connections between customer premises and an access aggregation node or between customer premises.
Access network	Access network provides the connection between an access aggregation node and a customer site or an end-user site. This connection may comprise of various elements including a customer lead-in, network flexibility point, network termination equipment, series of cables, and other network connections and equipment (e.g. at a footway box, on a pole, within a street cabinet, or in an operational building).
ADSL (Asymmetric Digital Subscriber Line)	ADSL is a technology with download speeds of up to 24 Mbit/s which uses copper wires to connect the local exchange to a customer. ADSL is asymmetric, which allows higher speeds in the downstream direction (towards the customer) compared to the upstream direction (towards the local exchange).
AFI (Additional Financial Information)	Detailed financial information provided in confidence to Ofcom as part of BT's Regulatory Financial Statements.

Term	Description
AISBO (Alternative Interface Symmetric Broadband Offering)	Legacy name for a CI leased line – symmetric refers to the same upload and download speeds on the same line.
Altnet	Altnet is short for alternative network provider which is not Openreach or Virgin Media O2. An altnet is an organisation operating within the UK that builds its own network infrastructure for wholesale and/or retail provision of broadband services. Some altnets also offer leased lines services.
AMD (Accounting Methodology Document)	A document prepared by BT which sets out the methodologies used to attribute its costs to prepare the Regulatory Financial Statements.
Anchor pricing	An approach to pricing whereby the price of an anchor product is directly controlled which indirectly constrains the price of more advanced services (or a similar service provided using a new technology).
ATI regulations	Access to Infrastructure (ATI) regulations set out measures intended to reduce the cost of deploying high-speed electronic communications networks (capable of delivering broadband access services at speeds of at least 30 Mbit/s). These measures include sharing the physical infrastructure of telecoms network providers as well as infrastructure operators in other sectors including gas, electricity, water and sewage and drainage systems, heating and transport services.
AVE (Asset Volume Elasticity)	The percentage increase in capital costs required for a 1% increase in volume.
Backhaul	A transmission link within a telecommunications network, typically connecting: an access aggregation node to a backhaul aggregation node, between backhaul aggregation nodes, or from a backhaul aggregation node to a core network node.
Bandwidth	Bandwidth typically refers to the capacity of a transmission link i.e., it is the maximum amount of data that can be transmitted over a transmission link in a given period of time. Often expressed in Mbit/s or Gbit/s.
Basket	A term used in relation to the structure of charge controls, where the charge control is applied to the total revenue from a group of services in a given year, subject to a specified compliance formula.
BDUK	Building Digital UK. An executive agency of the UK government (Department of Science, Innovation and Technology), providing government assistance to help deliver fast and reliable broadband and mobile coverage to hard-to-reach places across the UK.

Term	Description
Bearer	A transmission link that carries one or more multiplexed smaller capacity connections. For example, if a system using wavelength-division multiplexing (WDM) technology is used to carry several 1 Gbit/s services over a single fibre connection, we would consider the WDM system as the bearer.
BEREC	Body of European Regulators for Electronic Communications.
BES (Backhaul Ethernet Services)	A legacy Openreach Ethernet service providing high bandwidth inter-exchange connectivity, superseded, for example, by Openreach's EBD and EAD products.
Broadband	Broadband commonly refers to high-speed internet access that is faster than legacy (narrowband) dial-up access.
BT	British Telecommunications plc.
BT Cablelink - External	A legacy BT product, which was designed to provide a connection for external (outside) use. The external part was superseded by Cablelink External in 2005.
BT CCN (Change Control Notification)	BT's annual publication of methodology changes affecting the Regulatory Financial Statements.
Business customer site	A business customer site to be served by a telecoms provider. For example, a business premises or a mobile base station.
Cablelink External	A fibre cable connecting to a telecoms provider's equipment within a BT exchange to a network 'just outside' the BT exchange via an external Openreach footway box. This is also referred to by Openreach as an External Cablelink product.
CAGR	Compound Annual Growth Rate, typically quoted as a percentage.
CAPM	Capital Asset Pricing Model.
Capex (Capital Expenditure)	The firm's capital investment in fixed assets.
CCA (Current Cost Accounting)	An accounting convention, where assets are valued and depreciated according to their current replacement cost while maintaining the operating or financial capital of the business entity.
CDD (Contractual Delivery Date)	A date provided by Openreach to a telecoms provider on which Openreach contracts for an order to become a completed order.
Certainty	A LLA / IEC QoS standard based on the percentage of orders completed on or before the iCDD.

Term	Description
CI (Contemporary Interface)	A set of modern technologies used for delivery of leased line services (e.g. Ethernet, wavelength-division multiplexing) superseding legacy traditional interface (TI) services. May also be referred to as CISBO (CI symmetric broadband offering) in some previous regulatory documents.
CLA (Central London Area)	A geographic market in central London as defined by Ofcom.
CNI (Critical national infrastructure)	Infrastructure supporting essential services such as water or electricity provision, or access to emergency services.
Common costs	Costs which are shared by multiple services supplied by a firm.
Co-location	The provision of space and associated facilities, typically at a BT exchange, for telecoms provider equipment.
Co-mingling services	Co-mingling services provide communications providers with points of presence within a shared secure area of a BT exchange allowing for the installation of LLU equipment.
Copper-based broadband	A broadband service where the physical connection between the local access aggregation node and the network termination equipment (NTE) comprises copper wires either in whole or in part. Openreach products used to deliver copper-based broadband include, but are not limited to LLU, SLU, MPF/SMPF, FTTC, G.fast, SOTAP, SOGEA, and SOG.fast.
Copper-based service	A service where the physical connection between the local access aggregation node and the network termination equipment (NTE) comprises copper wires either in whole or in part. Openreach products used to deliver these or related services include, but are not limited to WLR, ISDN, LLU, SLU, MPF/SMPF, FTTC, G.fast, SOTAP, SOGEA, and SOG.fast.
Core network	A core network is made up of Core nodes which are linked together using high-capacity connections.
Core node	Core nodes form part of a core network and are used to route (or switch) traffic between backhaul connections and/or between other core nodes and can also act as a point of interconnect to other networks or to other network services (such as data centres or internet peering sites).
CP (Communications Provider)	An organisation that provides electronic communications services and/or electronic communications networks. Often referred to as a telecoms provider or a network operator.
CPE (Customer Premises Equipment)	Sometimes referred to as customer apparatus or consumer equipment. Equipment on a customer's premises which is not part of the public telecommunications network but is directly or indirectly attached to it via a network termination equipment (NTE).

Term	Description
CPI (Consumer Price Index)	An official measure of inflation of consumer prices in the UK.
CSH (Customer Sited Handover)	CSH is an interconnection between BT and another telecoms provider which involves BT providing a point of handover (POH) at the site (e.g. operational building) of the telecoms provider (i.e. not at a BT exchange).
Cumulo rates	Used to describe the non-domestic rates (effectively a property tax) that BT pays on its rateable network assets in the UK. These assets include BT's passive infrastructure such as its duct, poles, fibre and copper cables and exchange buildings. It is called a cumulo assessment because the rates on all these assets are assessed together.
Customer lead-in	The final connection (physical link) to a point of handover at the customer site from a nearby network flexibility point. This may be to a communications room within a building or to a network termination equipment (NTE) within the customer's premises.
Customer site (or customer premises)	Any customer location to be served by a telecoms provider, for example, a residential property, a business premises, or a mobile base station.
Customer-specific network extensions	Business as usual connections where a telecoms provider extends its existing network to connect a specific customer site.
CVE (Cost Volume Elasticity)	The percentage increase in operating costs required for a 1% increase in volume.
CVR (Cost Volume Relationship)	The relationship of how cost and volumes move in relation to one another.
CWU (Communication Workers Union)	A union for the communications industry which represents members in postal, telecoms, mobile, administrative and financial companies.
Dark fibre	An optical fibre connection between two physical locations, that has no electronics attached to 'light' the fibre for data transmission i.e., it is passive.
Dark Fibre Access (DFA)	A regulatory requirement on Openreach to provide access to dark fibre in certain geographic areas of the leased lines (LL) access product market.
Dark Fibre Inter-exchange (DFX)	A regulatory requirement on Openreach to provide access to dark fibre for inter exchange connectivity (IEC).
Dark fibre service	A service which allows telecoms providers to lease only the optical fibre element of leased lines from a supplier, allowing them to attach equipment of their own to provide a range of leased lines products.

Term	Description
Data centre	Premises whose main purpose is to house computing, data and application hosting, and communications equipment. They tend to have multiple tenants and may be owned and operated by telecoms providers and/or run by third-party providers that are 'carrier neutral'. A carrier neutral data centre is owned and operated entirely independently of telecoms providers with interconnection to and between multiple telecoms providers.
Deemed consent	A contractual provision allowing Openreach to deem the consent of its customers to a change of the CDD in a range of circumstances as provided for in its contract.
Disposals	The assets that the firm disposes of (e.g. an asset that becomes fully depreciated or an asset that the firm sells) over the course of the financial year.
DLRIC (Distributed Long Run Incremental Cost)	The long-run incremental cost of the individual service with a share of costs which are common to other services over BT's core network.
DOCSIS (Data Over Cable Service Interface Specification)	A telecommunications standard that enables cable TV networks to support broadband internet access services over existing hybrid fibre coaxial (HFC) cable infrastructure.
DP (Distribution Point)	A flexibility point in an access network to which final connections to customer premises are connected. Usually, a connection point either in an underground chamber or on a pole.
DPA (Duct and Pole Access)	A wholesale access service giving a telecoms provider access to physical infrastructure, including the underground ducts and poles network of another telecoms provider.
DSAC (Distributed Stand Alone Cost)	An accounting approach estimated by adding a proportionate share of the inter-increment common costs to the DLRIC. Rather than all common costs shared by a service being allocated to the service under consideration, the common costs are instead allocated amongst all the services that share the network increment.
DSL (Digital Subscriber Line)	A family of technologies generically referred to as DSL or xDSL that enable the transmission of broadband signals over a pair of copper wires (known as a twisted copper pair).
EAD (Ethernet Access Direct)	An Ethernet product offered by Openreach providing high bandwidth, point-to-point connections.
EAD Local Access (EAD LA)	An EAD variant offered by Openreach which only runs from an end-user site to the local access serving exchange. An LA leased line has no main fibre link between exchanges.

Term	Description
EBD (Ethernet Backhaul Direct)	An Ethernet backhaul product offered by Openreach providing high bandwidth, inter-exchange connectivity between designated BT exchanges.
EBITDA	Earnings before interest, tax, depreciation and amortisation.
ECCs (Excess Construction Charges)	A charge levied by Openreach where additional construction of duct and fibre or copper is required to provide service to a customer site. Provided either directly by Openreach or by a contractor.
EFM (Ethernet in the First Mile)	Generally used to describe a DSL based network technology for the delivery of symmetric Ethernet services provided over copper access networks. This has generally been superseded by higher speed Ethernet services over FTTP, Cable, and FTTC networks.
EMP (Equivalence Management Platform)	A set of operational support systems and associated processes put in place by Openreach.
Equinox 1 Appeal	Appeal brought by CityFibre Limited under section 192 of the Act in relation to Ofcom's Statement on Openreach proposed FTTP offer (Equinox) of 30 September 2021. See https://www.catribunal.org.uk/sites/cat/files/2021-12/20211207_1426_summary_of_appeal.pdf
Equinox 1 Offer	The terms of the Equinox FTTP Offer Contract notified to Ofcom by Openreach on 1 July 2021 and amended from time to time.
Equinox 2 Offer	The terms of the Equinox FTTP Offer Contract – Supplemental Agreement notified to Ofcom by Openreach on 14 December 2022 and amended from time to time.
Equinox Offers	The Equinox 1 Offer and the Equinox 2 Offer.
ERP	Equity Risk Premium.
Ethernet	A standardised packet-based technology originally developed for use in Local Area Networks (LANs) but now also widely used in telecoms providers' networks for the transmission of data.
EV	Enterprise Value. A measure of a company's value, equal to its market capitalisation plus the value of debt less any cash holdings.
FAC (Fully Allocated Cost)	An accounting approach under which all the costs of the company are distributed between its various products and services. The fully allocated cost of a product or service may therefore include some common costs that are not directly attributable to the service.
Fibre channel	Standardised storage area network protocol operating at bandwidths between 1 Gbit/s and 128 Gbit/s.

Term	Description
Fixed Wireless Access (FWA) services	Broadband services delivered over a wireless connection from a provider's network to a fixed point at a customer's premises. This excludes WiFi connections used within a customer premises.
FTTC (Fibre-to-the-Cabinet)	An access network structure in which the optical fibre extends from the local exchange to the street cabinet. The customer is usually connected from the street cabinet to their premises via copper cables using twisted copper pairs. FTTC deployments in the UK typically use 'very-high speed digital subscriber line' (VDSL) technology.
FTTP (Fibre-to-the-Premises)	An access network structure in which the optical fibre runs all the way from customers' premises (either residential or business) to the local exchange. The optical fibre may be point-to-point or may be point to multi-point using, for example, a passive optical network (PON). FTTP can also be referred to as Fibre-to-the-Home (FTTH), Fibre-to-the-Building/Business/Basement (FTTB) or full fibre.
Gbit/s	Gigabits per second (1 Gigabit = 1,000,000,000 bits). A measure of bandwidth in a digital system. 1 Gbit/s=1,000 Mbit/s
GEA (Generic Ethernet Access)	Openreach's wholesale service providing telecoms providers with access to its FTTC and FTTP networks to supply higher speed broadband services. The GEA service meets BT's obligation to provide virtual unbundled local access (VULA).
Gigabit capable broadband	Gigabit capable broadband is a network connection to a customer's premises capable of delivering download speeds of 1 Gbit/s or more. In the UK, this is typically delivered over FTTP or hybrid fibre coaxial (HFC) cable networks.
Glidepath	A glidepath refers to a form of charge control which sets a trajectory for the charges in question, whereby they decrease (or increase) steadily over the period of the charge control from their current level to reach a target level (in real terms) in the final year of the charge control period. In the context of a cost-based charge control, the target level for charges in the final year of the period is a cost-based level.
GRC (Gross Replacement Cost)	The cost of replacing an existing tangible fixed asset with an identical or substantially similar new asset having a similar production or service capacity.
G.fast	G.fast is a DSL technology used to deliver higher broadband speeds than earlier DSL technologies, such as ADSL and VDSL. To deliver the higher speeds, G.fast equipment is often deployed near to the customer at a local distribution point (DP) using a copper connection to the customer premises, and using a fibre connection to connect between the DP and the provider's network. G.fast equipment can also be deployed in a street cabinet (FTTC).

Term	Description
GPON (Gigabit Passive Optical Network)	GPON is a PON technology which has a capacity of 2.5 Gbit/s in the downstream direction (towards the end-user) and typically 1.25 Gbit/s in the upstream direction (towards the provider's network). Faster PON systems such as XGS-PON are also available.
HCA (Historic Cost Accounting)	An accounting convention, where assets are valued and depreciated according to their original purchase price.
HFC (Hybrid Fibre Coaxial)	An access network structure in which the optical fibre extends from the exchange or a hub to the street cabinet. The street cabinet is usually located up to a few hundred metres from the customer's premises. The remaining part of the access network from the street cabinet to the customer is usually connected via coaxial cables. HFC deployments in the UK typically use DOCSIS technology.
HGL (Holding Gains and Losses)	The change in the value of the underlying assets used by the company over the course of the financial year.
HNR (High Network Reach) Area	Geographic areas with at least two rival leased lines providers within a specific distance from a business site, as defined by Ofcom.
Hull Area	The area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and Kingston Communications (Hull) plc (KCOM).
iCDD (initial Contractual Delivery Date)	The iCDD is the first date provided to Openreach's customers by Openreach advising of the anticipated circuit completion date.
IEC (Inter Exchange Connectivity)	Leased line connections that carry traffic either between local access areas, often described as exchange areas, or as part of a backhaul network and/or core network.
IEC (Inter-exchange connectivity) market	IEC market refers to fixed connections between BT exchanges for the purpose of carrying backhaul and/or core network traffic.
Interconnect	The link used by telecoms providers to connect equipment at a location within a BT exchange either to another telecoms provider's network within an exchange or via an external Openreach footway box close to, but just outside, the BT exchange. This covers a number of products including, but not limited to: Bulk transport link, Cablelink (external), Cablelink (internal) and LLU Egress-External/BT Egress-External.
IP (Internet Protocol)	The communications protocol used for transmitting a data packet between a source and a destination on some data networks including the Internet.

Term	Description
ISDN (Integrated Services Digital Network)	A digital telephone service that supports telephone and switched low bandwidth data services.
ISP (Internet Service Provider)	A company that provides end-users with access to the internet and other related services such as data storage, email, and other cloud services.
ITU-T	The International Telecommunication Union Telecommunication Standardisation Sector (ITU-T) is one of the three sectors of the International Telecommunication Union (ITU).
Jitter	A measure of the variation of delay in transmission over a transmission path.
kbit/s	Kilobits per second (1 kilobit = 1,000 bits). A measure of bandwidth in a digital system. 1 Mbit/s=1,000 kbit/s
KPIs (Key Performance Indicators)	Specified information to be provided for the purposes of assessing performance and providing transparency of service provision by a dominant provider.
Latency	A measure of delay in transmission over a transmission path.
LBW (Lower Bandwidth)	Leased line access services at bandwidths up to and including 1Gbit/s.
Leased line	A communications link normally delivered over fibre between two fixed locations, typically used by businesses. Leased line services tend to be high speed, uncontended (the capacity is guaranteed and not subject to reduction by the presence of other telecoms services), symmetric (the capacity is the same in both directions), and typically, dedicated to the customer's exclusive use.
Leased Line Equivalent	A service with features such as uncontended capacity, symmetric download and upload speeds, and quality of service parameters similar to point-to-point dedicated leased line services (e.g. high availability, fast repair times and installation times, and continuous monitoring and support). These services can be delivered over Ethernet over symmetric PON (e.g. multiple 1 Gbit/s or faster services delivered over XGS-PON).
Licence exemption	Ofcom is required to exempt radio equipment if its installation or use is not likely to result in undue interference to other radio equipment. Under this approach, a user does not need a licence as long as their device complies with specified technical parameters. This approach tends to be used for equipment where the risk of interference from uncoordinated use is low.

Term	Description
Light licensed	Light licences generally require no specific assignment or co-ordination by Ofcom and are available on request. This authorisation approach is appropriate where there is lower risk of interference between different users, interference can be managed through self-coordination or where a high quality of service is not essential, but still allows Ofcom to manage any problems arising from devices interfering with each other.
LLA (Leased Lines Access) market	LLA refers to the market for high-speed uncontended symmetric connections from a business premises to a provider's network. These include Ethernet (over point-to-point), WDM services, Ethernet over symmetric PON (such as XGS-PON), as well as dark fibre used to self-supply leased line services.
LLCC	Leased line charge control.
LLU (Local Loop Unbundling)	The mechanism by which a dominant (incumbent) provider's access network ('local loop') between a customer's site and an access aggregation node is available for connection to competing providers' network equipment. This enables operators other than the incumbent to use the local loop to provide services directly to their customers.
LLU Egress – External	A legacy BT product, that pre-dates and was used for the same function as a Cablelink External. Also known as BT Egress – External or BT Egress (Backhaul) Link
LRIC (Long Run Incremental Cost)	A measure of the change in the long-run total costs of the firm that arises from the provision of a discrete increment of output.
Mbit/s	Megabits per second (1 Megabit = 1 million bits). A measure of bandwidth in a digital system.
MBORC (Matters Beyond Our Reasonable Control)	MBORC is a force majeure event under the relevant Openreach access agreement, the occurrence of which releases Openreach from the liability to make any payment under the corresponding SLG.
MCE (Mean Capital Employed)	BT's definition of Mean Capital Employed is total assets less current liabilities, excluding corporate taxes and dividends payable, and provisions other than those for deferred taxation. The mean is computed using the start and end values for the period.
MDF (Main Distribution Frame)	A wiring frame, typically in an operational building such as a BT exchange, where copper local loops are terminated and interconnected.
MDF Site	A BT operational building containing an MDF. Also referred to as a Local Serving Exchange.
MDU	Multi Dwelling Unit (such as an apartment block).

Term	Description
MEA (Modern Equivalent Asset)	The approach to set charges by basing costs and asset values on what is believed to be the most efficient available technology that performs the same function as the current technology.
MEAS (Managed Ethernet Access Service)	This is a service provided by BT to provide connectivity from multiple mobile base station sites back to a mobile core network.
MNO (Mobile Network Operator)	A provider which owns a mobile network.
Mobile backhaul	Mobile backhaul is the network connectivity that carries mobile traffic between an MNO's base station and its core network nodes. Mobile backhaul typically consists of a fixed access connection from the base station to a fixed access aggregation node together with a fixed backhaul connection which then connects to the MNO's core network. While fixed leased lines (including dark fibre) are generally used for these connections, wireless links such as microwaves may be used in some cases.
Modified greenfield Approach	An approach to analysing markets using a hypothetical scenario in which it is assumed that there are no ex-ante SMP remedies in the market being considered or in any markets downstream of it.
MPF (Metallic Path Facility)	MPF services are a type of LLU product which allows communications providers to deliver voice and broadband services to their customers using Openreach copper cables.
MSAN (Multi Service Access Node)	A network access equipment associated with an IP-based network that provides network interfaces for voice, broadband and other services. MSANs are typically installed in a telephone exchange.
MTTP (Mean Time To Provide)	A QoS standard measuring the average time to provide an Ethernet circuit excluding customer caused delays.
NCA	Net current assets.
NDRs (Non-Domestic Rates)	A form of property tax paid by organisations and businesses to contribute towards the cost of local services.
Network expansion	A network expansion refers to any of the following types of network build: d) Customer-specific network extensions, e) New area rollout, f) Network infill.
Network flexibility points	Points in a network where connections can be made to, for example, an end-user premises. Network flexibility points may be inside a street cabinet, in an underground chamber, or on a pole. Network flexibility points can refer to both copper and optical fibre connectivity.

Term	Description
Network infill	Cases where a telecoms provider expands its network to fill gaps (wherein it is generally unable to serve customers by means of customer-specific network extensions) between or in areas where they already have network coverage. This excludes where only additional equipment has been added to existing network sites.
New area rollout	Cases where a telecoms provider builds a network across an area (for example, a town or a city) where it did not previously have any network coverage, i.e., it was not generally able to serve customers in that area by means of customer-specific network extensions.
NICC	A technical forum for the UK communications sector that develops interoperability standards for public communications networks and services in the UK. It is an independent organisation owned and run by its members. Ofcom participates in NICC as an observer member.
NGA	Next Generation Access. Mainly used to refer to access networks using fibre optic technology.
NMR	Narrowband Market Review. It covers wholesale markets that underpin the delivery of fixed voice telephone services.
Non-telecoms physical infrastructure	Any physical infrastructure which was built for purposes other than the deployment of telecoms networks. Such physical infrastructure includes, but is not limited to, infrastructure for the supply of electricity, water, or gas, as well as for transportation, such as railways.
NRA	National Regulatory Authority, such as Ofcom in the UK.
NRC (Net Replacement Cost)	Gross replacement cost less accumulated depreciation based on gross replacement cost.
NTE (Network Termination Equipment)	Equipment that connects the customer's broadband or telephone equipment to a telecoms provider's customer lead-in that comes into a residential or business premises.
ODF (Optical distribution frame)	ODF is a structured frame for the termination and cross-connection of optical fibres.
Off-net	In the context of leased lines, off-net means instances in which a telecoms provider buys a leased line or leased line equivalent service from another telecoms provider, such as Openreach, and then resells it to a business customer or another telecoms provider (possibly combined with capacity on their own network).
OHP (Openreach Handover Point)	Points in BT's network where other telecom providers can connect their own networks to the Openreach access network, allowing them to provide services to their customers.

Term	Description
On-net	In the context of leased lines, on-net means a leased line or a leased line equivalent service that a telecoms provider provides by connecting its electronic equipment to physical links which it either: a) owns and operates, and/or b) leases from another company. In the case of (b) above, the most common arrangement is the leasing of so called 'dark fibre', though an alternative method could be to lease duct from an infrastructure provider to install their own fibre.
Openreach	The line of business of BT which comprises BT's access and backhaul network assets and the products and services provided using those assets. Openreach Limited, a wholly owned subsidiary of BT plc, has responsibility for operating and managing those assets on behalf of BT.
Opex	Operating expenditure – i.e. costs reported in the profit and loss account.
Optical Splitter	A passive device used in FTTP networks which splits a beam of light into many light beams (optical signals). Optical splitters play a key role in passive optical networks (PONs) by allowing a single PON to be shared among many end-users.
OSA (Optical Spectrum Access)	An Openreach service which relies on a dedicated optical fibre link utilising the wavelength division multiplexing (WDM) technique in order to send multiple optical signals along an optical bearer (fibre optical cables and equipment). Openreach variants include Optical Spectrum Extended Access, OSA Filter Connect, and OSA 100G Single.
OSEA (Optical Spectrum Extended Access)	Openreach WDM services supporting circuits over a longer distance than OSA.
OTA2 (Office of the Telecommunications Adjudicator)	An organisation independent of Ofcom and the industry, tasked with overseeing cooperation between telecoms providers.
OTDR (Optical Time-Domain Reflectometer)	Test equipment used to monitor and check the performance of fibre links and detect problems, in particular, used to identify the location of a broken fibre.
OUKT	Other UK telecoms.
Overall network route length	The total length of the cabled network routes that comprise a telecoms provider's network excluding any cabled network routes which they rent from third parties irrespective of the number of ducts and/or cables deployed along that route. A cabled network route housed in third-party physical infrastructure should be counted.

Term	Description
P2P (Point-to-Point) FTTP	A FTTP architecture that requires a dedicated fibre from an access aggregation node to each end-user, ensuring no sharing of bandwidth on the dedicated fibre link. This architecture can also provide symmetrical bandwidth.
Patch panel	For optical fibre connectivity, a patch panel is used to interconnect and manage fibre optic cables. For copper-based connectivity, a patch panel is used to interconnect and manage copper and coaxial cables.
PCO (Principal Core Operator)	A telecoms provider with its own network infrastructure, has a substantial (near-national) footprint, and offers a wholesale inter-exchange backhaul and core connectivity service to other telecoms providers.
Physical link	A connection between two points using: a) copper wire or coaxial cable without electronic equipment, or b) optical fibre without electronic equipment, or c) a point-to-point radio link.
PIA (Physical Infrastructure Access)	A remedy requiring BT to provide telecoms providers with access to its physical infrastructure (i.e. ducts and poles).
POH (Point of Handover)	A point (location) where one telecoms provider interconnects with another telecoms provider for the purposes of connecting their networks to provide services to third-party end-customers. May also be referred to as point of connection (POC).
PON (Passive Optical Network)	A shared point-to-multipoint fibre-optic network architecture for FTTP that uses passive optical splitters. In the UK, a mixture of GPON and XGS-PON are being widely deployed for FTTP services.
POP (Point of Presence)	A point (location) in a telecoms provider's network (such as an exchange or other operational building), generally used to serve customers in a particular locality.
Premises	A customer site where a telecoms network provider's network termination equipment (NTE) is located.
PSTN (Public Switched Telephone Network)	The circuit-switched telephone network (primarily copper-based) operated by BT and other electronic communications providers.
QoS (Quality of Service) standards	The level of performance standards that we have set Openreach to meet.
RAP (Regulatory Accounting Principles)	A set of principles with which BT's Regulatory Financial Reporting must comply.

Term	Description
RAB (Regulatory Asset Base)	A RAB approach involves the assets used to provide all, or a set of, an operator's services being entered into a common pool known as the regulatory asset base (or RAB) which is recovered across all, or a set, of the firm's services. This differs from an approach where the costs of providing a particular service are recovered only from the charges on that service.
RAV (Regulatory Asset Value)	The value ascribed by Ofcom to an asset or capital employed in the relevant licensed business.
RBS (Radio Base Station) backhaul	A legacy TDM circuit provided by BT which is used to provide mobile backhaul connectivity.
RFoG (Radio Frequency or RF over Glass)	An optical network system that is typically used to transport radio frequency (RF) signals over a Passive Optical Network (PON) rather than over hybrid fibre and coaxial cable.
RFR	Risk-free rate of return. Typically shortened to risk-free rate.
RFS (Regulatory Financial Statements)	The statements, plus the data and models supporting them, which BT is required to produce under the obligations contained in its SMP conditions set by Ofcom. They include the published RFS and additional financial information (AFI) provided to Ofcom in confidence.
RO (Reference Offer)	A document published by a telecoms provider setting out matters such as technical information, the terms and conditions for provisioning, SLAs and SLGs, and availability of other related services such as accommodation.
ROCE (Return on Capital Employed)	The ratio of accounting profit to capital employed.
RWT (Right When Tested)	When a line tests as 'OK' when tested remotely or tested by an onsite engineer visit.
SAC (Stand Alone Cost)	An accounting approach under which the total cost incurred in providing a product is allocated to that product.
SDH (Synchronous Digital Hierarchy)	A legacy TDM based digital transmission standard that has been widely used in communications networks and for leased lines but been largely replaced by Ethernet and WDM services. SDH was developed to replace older and less scalable Plesiochronous Digital Hierarchy (PDH) systems.
SDI (Serial Digital Interface)	A standard for transmitting uncompressed digital video and audio transmission over coaxial cable or optical fibre.
SDSL (Symmetric Digital Subscriber Line)	A DSL variant that allows broadband signals to be transmitted at the same rate from end-user to exchange (upstream) as from exchange to end-user (downstream).

Term	Description
Self-supply	Circuits that are provided by a telecoms provider using their own physical links, equipment and associated infrastructure. See also on-net.
SFP (Small Form-factor Pluggable)	A compact, optical module transceiver (laser) that can be plugged into network equipment for data transmission over a fibre connection.
SLA (Service Level Agreement)	A contractual commitment provided by a telecoms provider, such as Openreach, to a customer, which sets out the service standards such as time to provide and time to repair.
SLG (Service Level Guarantee)	A contractual commitment by Openreach to telecoms providers specifying the amount of compensation payable by Openreach to a telecoms provider for a failure to adhere to an SLA.
SLU (Sub Loop Unbundling)	A process by which telecoms providers can deploy their own equipment at a network distribution point (usually the location of the street cabinet) and use Openreach's lines from the street cabinet to the customer. Telecoms providers either share or rent the entire sub-loop (the connection between the street cabinet and the customer) from Openreach.
SME	Small and medium enterprise.
SMP (Significant Market Power)	Significant Market Power is equivalent to the concept of dominance as defined in competition law and is used to identify those telecoms providers which could act, to an appreciable extent, independently of the market. An entity found to have SMP may be subject to remedies.
SMPF (Shared Metallic Path Facility)	SMPF is a type of LLU product which allows communications providers to deliver broadband services to their customers over the top of a BT WLR voice connection.
SOGEA	Single Order Generic Ethernet Access (SOGEA) over FTTC is a standalone product variant that allows customers to buy a superfast broadband line without the need to buy the copper connection separately.
SOG.fast	Single Order G.fast (SOG.fast), also referred to as SOGfast, is a standalone product variant that allows customers to buy a G.fast line without the need to buy the copper connection separately.
SOTAP	Single Order Transitional Access Product (SOTAP) that delivers a copper path between the network termination equipment (NTE) at the customers' premises and the main distribution frame (MDF) at the exchange. SOTAP provides broadband and optional Voice over IP (VoIP) services over the existing copper line where an alternative fibre service is not available.
SOR (Statement of Requirements)	A BT process for submission and processing of requests for product/service enhancements.

Term	Description
Speed	The rate at which the data that can be transmitted between two points in a network. Often expressed in Mbit/s or Gbit/s. Speed may be less than the bandwidth or capacity of the transmission link if the link is shared between multiple users.
SPM (Sales Product Management)	A network cost component.
SSNIP (Small but Significant Non-transitory Increase in Price) Test	An element of the hypothetical monopolist test used in market definition analysis, in which the competitive constraints posed by potential substitutes for the service in question are tested by considering switching to the substitutes if the price of the service was increased by a small but significant non-transitory amount (often 5 to 10 per cent).
Starting charge adjustment (SCA)	A SCA is a one-off adjustment to charges that are subject to a charge control, which is applied at the start of the charge control period. Typically, a SCA adjusts charges at the start of the period to either align them with cost or to reduce the gap between charges and cost.
Sub-cap	A sub-cap refers to a cap on a single service (or set of services) within a wider charge control.
Superfast broadband	Broadband services capable of delivering a minimum download speed of at least 30 Mbit/s.
Supplementary depreciation	The additional depreciation charge to convert an HCA depreciation charge into a CCA depreciation charge.
TCO (Total Cost of Ownership)	The total price of a service, including all incurred charges, over a specified period.
TDM (Time Division Multiplexing)	A method of combining multiple data streams for transmission over a shared communication channel by means of time-sharing by allowing each data stream in turn to transmit data in different time slots. SDH is an example of a system that uses TDM.
Telecoms physical infrastructure	Physical infrastructure that is built for the purposes of deploying a fixed telecoms network. For example, ducts, poles and underground chambers. However, this excludes any copper cabling or optical fibre cabling making use of the physical infrastructure, and also excludes any physical infrastructure which is deployed to host radio transmission and reception equipment needed for wireless connections in a telecoms network (e.g. masts and antenna installations).
Telecoms provider	A person or an organisation which provides an electronic communications network or provides an electronic communications service. We sometimes refer to them as a communications provider or a network operator.

Term	Description
The Act	The Communications Act 2003.
TI (Traditional Interface)	TI circuits refer to legacy leased line TDM services such as SDH. These circuits have mostly been replaced by more up to date contemporary interface (CI) technologies such as Ethernet or WDM. TI can also be referred to as TISBO (TI symmetric broadband offering) in some previous regulatory documents.
TMR (Total Market Return)	TMR includes interest, capital gains, dividends and distributions derived from an investment over a given period of time, as opposed to just capital gains.
TRC (Time-Related Charge)	A charge raised by Openreach to recover costs incurred when Openreach engineers perform work not covered under the terms of the Openreach standard service.
Tribunal	The Competition Appeal Tribunal or CAT.
TTP (Time To Provide)	How long it takes Openreach to deliver an Ethernet circuit following acceptance of a customer's order.
Ultrafast broadband	Broadband services capable of delivering a minimum download speed of at least 300 Mbit/s.
UKRN	UK Regulators Network.
UPRN (Unique Property Reference Number)	Unique Property Reference Number, a unique numeric identifier for every addressable location in Great Britain.
USO (Universal Service Obligation)	In 2018, the Government introduced legislation for a broadband USO, to give homes and businesses the right to request a 'decent' and affordable broadband connection. A 'decent' broadband connection is currently defined by the Government as capable of delivering download speeds of at least 10 Mbit/s and upload speeds of at least 1 Mbit/s.
VDSL2	Second-generation very high-speed digital subscriber line (VDSL2) is a DSL technology currently used as the primary means of providing broadband over FTTC networks.
VHB (Very High Bandwidth) services	Leased line access services at bandwidths above 1 Gbit/s.
VOA (Valuation Office Agency)	An executive agency of HM Revenue & Customs (HMRC). Among other functions, it compiles and maintains the business rating and council tax valuation list for England and Wales.
VoIP (Voice over IP)	Voice over Internet Protocol (VoIP) is a technology that allows users to send voice calls using Internet Protocol data packets over the internet.

Term	Description
VPN (Virtual Private Network)	A technology allowing users to make inter-site connections over a public telecommunications network that is software partitioned to emulate the service offered by a physically separate private network.
VULA (Virtual Unbundled Local Access)	A regulatory obligation requiring BT to provide access to its FTTC and FTTP network deployments which allows telecoms providers to connect at an access aggregation node (the Openreach Handover Point) and are provided a virtual connection from this point to the customer premises.
WACC (Weighted Average Cost of Capital)	The rate that a company is expected to pay on average to all its security holders, both debt and equity, to finance its assets.
WAN (Wide Area Network)	A geographically dispersed telecommunications network, typically a corporate network linking multiple sites at different locations.
WBA (Wholesale Broadband Access) market	The WBA market concerns the wholesale broadband products that telecoms providers provide for themselves and sell to each other.
WES (Wholesale Extension Service)	A legacy Openreach Ethernet service that can be used to link customer site to a node in a communications network, superseded by Openreach's EAD product.
WEES (Wholesale End-to-End Extension Service)	A legacy Openreach Ethernet service that can be used to provide a point-to-point connection between two customer's sites, superseded by Openreach's EAD product. Also referred to as a wholesale end-to-end segment.
WDM (incl. DWDM) (Wavelength Division Multiplexing and Dense Wavelength Division Multiplexing)	Wavelength division multiplexing (WDM) is a transmission technology that enables multiple high-capacity circuits (typically 4 to 16) to share an optical fibre or a fibre pair by using a different optical wavelength for each circuit. Dense WDM (DWDM) takes WDM technology a step further by using even higher densities of wavelengths.
WFAEL (Wholesale Fixed Analogue Exchange Line)	The WFAEL market concerns the provision of wholesale analogue voice services.
WFTMR (Wholesale Fixed Telecoms Market Review)	WFTMR refers to the fixed telecoms market review which concluded in March 2021, with regulations covering the 2021-2026 review period. It is also sometimes referred to as WFTMR21.
WiFi	A short-range wireless access technology that allows devices to connect to the internet via a base station (such as a wireless router or a wireless access point), or directly between two devices.
WLA (Wholesale Local Access) market	WLA refers to the market for connections from a residential or business premises to a provider's network which are used to provide fixed broadband connectivity services.

Term	Description
XGS-PON	XGS-PON is a PON technology which has a symmetric capacity of 10 Gbit/s in both the downstream and upstream direction.

A20. Cost of Capital: Beta and Gearing for TAR 2026

See our [CEPA Report - Cost of Capital: Beta and Gearing for TAR 2026](#).

A21. Sources of evidence

- A21.1 We have noted throughout this consultation the evidence we have relied upon in relation to our decisions and how we have relied upon that evidence. This annex lists the main sources of evidence used, including responses to our consultations and to our formal s.135 notices requesting information.
- A21.2 While this annex lists the main evidence we have relied upon, the list is for convenience only and is not intended to be exhaustive.

Pre-consultation submissions from stakeholders

- A21.3 We received written submissions from 13 stakeholders ahead of our March 2025 Consultation:
- BT Group
 - Frontier Economics
 - Gigaclear
 - INCA
 - ITS
 - nexfibre
 - OFNL
 - Openreach
 - PIA Coalition
 - PXC
 - Towerhouse LLP
 - Vodafone
 - Zzoomm
- A21.4 Where available, we have published non-confidential versions of the written submissions from the stakeholders listed above. These can be found on our [website](#).

Consultation responses

Responses to the March 2025 Consultation on the Telecoms Access Review 2026–31

- A21.5 On 20 March 2025, we published a consultation (March 2025 Consultation), setting out our proposals for the regulation of the fixed telecoms markets that underpin broadband, mobile and business connections, for the period from April 2026 to March 2031.
- A21.6 35 stakeholders provided written responses to this consultation:
- Advisory Committee for Northern Ireland
 - Advisory Committee for Scotland

- Allpoints Fibre
- BBC
- BT Group
- BUUK
- CityFibre
- Communications Consumer Panel and ACOD
- Community Fibre
- Consumer Scotland
- FCS
- Fibrus
- Gamma
- Gigaclear
- Hyperoptic
- INCA
- Individuals x 2 [Names Withheld]
- ITS
- Liberty Global
- Nexfibre
- OGI
- Openreach
- PIA Coalition
- PxC
- Scottish Government
- Sky
- Substantial Group Limited
- TechUK
- UKCTA
- Virgin Media O2
- Vodafone
- VodafoneThree
- Vorboss
- Welsh Government
- Which
- WightFibre

A21.7 Where available, we have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our [website](#).

Responses to the October 2025 Consultation on WLA pricing remedies

A21.8 On 17 October 2025, we published a further consultation (October 2025 Consultation) on WLA pricing remedies.

A21.9 15 stakeholders provided written responses to this consultation:

- BT Group
- CityFibre
- Community Fibre
- FCS
- Gamma
- INCA
- Nexfibre
- Openreach
- PxC
- Sky
- UKCTA
- Utility Warehouse
- Virgin Media O2
- VodafoneThree
- Zen

A21.10 Where available, we have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our [website](#).

Responses to the November 2025 Consultation on leased lines market analysis and various pricing issues

A21.11 On 17 November 2025, we published a further consultation (November 2025 Consultation) on leased lines market analysis and various pricing issues.

A21.12 17 stakeholders provided written responses to this consultation:

- CityFibre
- Community Fibre
- Fullfibre, Zzoomm, OGI, GoFibre and Commsworld
- Gigaclear
- GoFibre
- INCA

- ITS
- Nexfibre
- OFNL
- Openreach
- PxC
- Sky
- Substantial Group
- TechUK
- UKCTA
- Virgin Media O2
- VodafoneThree

A21.13 Where available, we have published non-confidential versions of the responses from the stakeholders listed above. These can be found on our [website](#).

Information gathered using statutory powers

A21.14 During this market review, we have issued a series of notices under section 135 of the Communications Act 2003 (the Act) requiring various telecoms providers to provide specified information as set out in the notice. We have set out the information requests below by stakeholder.

A21.15 We have supplemented the information gathered in response to the below notices with information received in response to regular data collection as part of our Connected Nations reporting. More information can be found in Annex 2 of the [Connected Nations 2025 Methodology Annex](#).

Notices addressed to and received from 1310 Limited

A21.16 Our Ref 02013527 Notice of 25 June 2025 regarding pricing remedies. Response received on 3 October 2025.

Notices addressed to and received from Allpoints Fibre Networks Limited

A21.17 Our Ref 02015629 Notice of 28 July 2025 regarding market analysis. Responses received on 26 August 2025 and 8 September 2025 and 22 September 2025.

A21.18 Our Ref 01814467 Notice of 19 June 2024 regarding pricing remedies. Responses received on 26 July 2024.

A21.19 Our Ref 01821918 Notice of 8 July 2024 regarding market analysis. Responses received on 5 September 2024 and 30 September 2024.

A21.20 Our Ref 02052928 Notice of 10 September 2025 regarding cross programme. Response received on 22 September 2025.

Notices addressed to and received from Altnet Partners Limited

- A21.21 Our Ref 02015633 Notice of 28 July 2025 regarding market analysis. Responses received on 22 August 2025 and 6 November 2025.
- A21.22 Our Ref 02052929 Notice of 10 September 2025 regarding cross programme. Response received on 30 September 2025.

Notices addressed to and received from Ask4 Limited

- A21.23 Our Ref 02013529 Notice of 25 July 2025 regarding market analysis. Responses received on 19 August 2025.

Notices addressed to and received from Bogons Limited

- A21.24 Our Ref 02013531 Notice of 21 June 2025 regarding market analysis. Responses received on 21 August 2025.

Notices addressed to and received from British Telecommunications plc

- A21.25 Our Ref 01802693 Notice of 02 May 2024 regarding Pricing Remedies. Response received on 29 May 2024 and 11 June 2024.
- A21.26 Our ref 01793662 Notice of 09 May 2024 regarding leased lines. Response received on 19 June 2024.
- A21.27 Our ref 01813898 Notice of 19 June 2024 regarding pricing remedies. Responses received on 18 July 2024 and 1 August 2024.
- A21.28 Our ref 01821921 Notice of 8 July 2024 regarding market analysis. Responses received on 12 August 2024, 27 August 2024, 16 August 2024, 19 August 2024, 6 September 2024, 9 September 2024, 23 September 2024 and 25 September 2024.
- A21.29 Our ref 01835679 Notice of 29 July 2024 regarding non-pricing remedies. Responses received on 9 September 2024 and 11 November 2024.
- A21.30 Our ref 01854699 Notice of 19 August 2024 regarding pricing remedies. Responses received on 4 September 2024, 17 September 2024 and 24 September 2024.
- A21.31 Our ref 01893979 Notice of 23 October 2024 regarding inter-exchange connectivity. Response received on 27 November 2024.
- A21.32 Our ref 01914644 Notice of 25 November 2024 regarding pricing remedies. Responses received on 10 December 2024 and 6 January 2025.
- A21.33 Our ref 01924889 Notice of 6 January 2025 regarding regulatory reporting. Response received on 20 January 2025.
- A21.34 Our ref 01951282 Notice of 10 February 2025 regarding cross-programme confirmatory. Response received on 25 February 2025.
- A21.35 Our ref 01986240 Notice of 29 May 2025 regarding pricing remedies. Responses received on 26 June 2025 and 24 July 2025.
- A21.36 Our ref 02029319 Notice of 5 August 2025 regarding pricing remedies. Responses received on 10 September 2025, 3 October 2025 and 15 October 2025.

- A21.37 Our ref 02029319 Notice of 5 August 2025 regarding pricing remedies. Responses received on 10 September 2025, 3 October 2025 and 15 October 2025.
- A21.38 Our ref 02076883 Notice of 20 September 2025 regarding cross programme. Responses received on 27 October 2025, 13 November 2025, 14 November 2025, 21 November 2025 and 25 November 2025.
- A21.39 Our ref 02052865 Notice of 10 September 2025 regarding cross programme. Responses received on 14 October 2025, 15 October 2025 and 16 October 2025.
- A21.40 Our ref 02134940 Notice of 3 February 2026 regarding pre-statement confirmatory. Responses received on 13 February 2026 and 19 February 2026.

Notices addressed to and received from Box Broadband Limited

- A21.41 Our Ref 02015630 Notice of 28 July 2025 regarding market analysis. Responses received on 26 August 2025 and 8 September 2025.

Notices addressed to and received from Broadband for the Rural North Limited

- A21.42 Our Ref 02013530 Notice of 25 June 2025 regarding market analysis. Responses received on 14 August 2025 and 28 October 2025.

Notices addressed to and received from Brsk Limited

- A21.43 Our Ref 01814491 Notice of 19 June 2024 regarding pricing remedies. Responses received on 16 July 2024.
- A21.44 Our Ref 01821920 Notice of 8 July 2024 regarding market analysis. Responses received on 5 August 2024.
- A21.45 Our Ref 01893998 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 11 November 2024 and 14 November 2024.
- A21.46 Our Ref 02015640 Notice of 28 July 2025 and 8 August 2025 regarding market analysis. Responses received on 8 September 2025, 16 September 2025 and 22 September 2025.
- A21.47 Our Ref 02052931 Notice of 10 September 2025 regarding cross programme. Response received on 10 October 2025.

Notices addressed to and received from Buuk Infrastructure UK Ltd

- A21.48 Our Ref 01951903 Notice of 10 February 2025 regarding confirmatory. Response received on 18 February 2025.

Notices addressed to and received from CityFibre Infrastructure Holdings Limited

- A21.49 Our Ref 01793647 Notice of 9 May 2024 regarding leased lines. Responses received on 20 June 2024.
- A21.50 Our Ref 01813901 Notice of 19 June 2024 regarding pricing remedies. Responses received on 18 July 2024.

- A21.51 Our Ref 01821922 Notice of 8 July 2024 regarding market analysis. Responses received on 20 August 2024.
- A21.52 Our Ref 01835680 Notice of 29 July 2024 regarding non-pricing remedies. Responses received on 27 August 2024.
- A21.53 Our Ref 01894003 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 13 November 2024 and 19 November 2024.
- A21.54 Our Ref 01902208 Notice of 24 October 2024 regarding City Fibre-Sky deal. Responses received on 25 October 2024, 8 November 2024 and 22 November 2024.
- A21.55 Our Ref 01906581 Notice of 15 November 2024 regarding Quality of Service FTTP. Responses received on 2 December 2024.
- A21.56 Our Ref 01951887 Notice of 10 February 2025 regarding confirmatory. Responses received 19 February 2025.
- A21.57 Our Ref 02013532 Notice of 23 June 2025 regarding market analysis. Responses received 28 July 2025, 5 September 2025, 17 October 2025 and 14 November 2025.
- A21.58 Our Ref 02052932 Notice of 10 September 2025 regarding cross programme. Response received 6 October 2025.
- A21.59 Our Ref 02136711 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received 5 February 2026.

Notices addressed to and received from Colt Technology Services Group Limited

- A21.60 Our Ref 01793648 Notice of 9 May 2024 regarding leased lines. Responses received on 19 June 2024 and 2 July 2024.
- A21.61 Our Ref 01821923 Notice of 11 July 2024 regarding market analysis. Responses received on 8 August 2024 and 23 August 2024.
- A21.62 Our Ref 01894014 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 13 November 2024 and 27 November 2024.
- A21.63 Our Ref 02013533 Notice of 23 June 2025 regarding market analysis. Responses received on 21 July 2025, 1 August 2025 and 27 November 2025.
- A21.64 Our Ref 02052866 Notice of 10 September 2025 regarding cross programme. Responses received on 29 September 2025 and 17 October 2025.

Notices addressed to and received from COMMS WEST LIMITED

- A21.65 Our Ref 01813902 Notice of 19 June 2024 regarding pricing remedies. Responses received on 15 August 2024.

Notices addressed to and received from Commsworld

- A21.66 Our Ref 01813904 Notice of 19 June 2024 regarding pricing remedies. Responses received on 17 July 2024.
- A21.67 Our Ref 01894006 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 22 November 2024.

- A21.68 Our Ref 01918304 Notice of 2 December 2024 regarding inter-exchange connectivity. Responses received on 16 December 2024.
- A21.69 Our Ref 02033749 Notice of 4 August 2025 regarding market analysis. Responses received on 2 October 2025 and 16 October 2025.
- A21.70 Our Ref 02052867 Notice of 10 September 2025 regarding cross programme. Response received on 17 October 2025.

Notices addressed to and received from Community Fibre Limited

- A21.71 Our Ref 01813907 Notice of 19 June 2024 regarding pricing remedies. Response received 31 July 2024.
- A21.72 Our Ref 01821924 Notice of 8 July 2024 regarding market analysis. Response received on 16 August 2024.
- A21.73 Our Ref 01835681 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 22 August 2024.
- A21.74 Our Ref 01893997 Notice of 23 October 2024 regarding inter-exchange connectivity. Response received on 13 November 2024.
- A21.75 Our Ref 02015642 Notice of 28 July 2025 regarding market analysis. Responses received on 26 August 2025 and 9 September 2025.
- A21.76 Our Ref 02006361 Notice of 31 July 2025 regarding pricing remedies. Response received on 27 August 2025.
- A21.77 Our Ref 02052933 Notice of 10 September 2025 regarding cross programme. Response received on 9 October 2025.

Notices addressed to and received from Contingency Networks Limited

- A21.78 Our Ref 01813909 Notice of 19 June 2024 regarding pricing remedies. Response received on 28 August 2024.

Notices addressed to and received from Converged Communication Solutions Ltd

- A21.79 Our Ref 01813910 Notice of 19 June 2024 regarding pricing remedies. Response received on 18 July 2024.

Notices addressed to and received from Country Connect Ltd

- A21.80 Our Ref 02013534 Notice of 23 June 2025 regarding market analysis. Response received on 21 August 2025.

Notices addressed to and received from County Broadband Ltd

- A21.81 Our Ref 02015631 Notice of 28 July 2025 regarding market analysis. Responses received on 12 September, 15 September and 12 November 2025.

Notices addressed to and received from Eircom UK Limited

- A21.82 Our Ref 01793649 Notice of 9 May 2024 regarding leased lines. Response received on 19 July 2024.
- A21.83 Our Ref 01821925 Notice of 8 July 2024 regarding market analysis. Responses received on 5 September 2024 and 11 September 2024.
- A21.84 Our Ref 01894020 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 13 November 2024.
- A21.85 Our Ref 02013535 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025 and 5 August 2025.
- A21.86 Our Ref 02052868 Notice of 10 September 2025 regarding cross programme. Response received on 17 October 2025.

Notices addressed to and received from euNetworks Fiber UK Limited

- A21.87 Our Ref 01793650 Notice of 9 May 2024 regarding leased lines. Response received on 20 June 2024.
- A21.88 Our Ref 01821926 Notice of 8 July 2024 regarding market analysis. Response received on 5 August 2024.
- A21.89 Our Ref 02013536 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025 and 5 August 2025.
- A21.90 Our Ref 02052869 Notice of 10 September 2025 regarding cross programme. Response received on 19 September 2025.

Notices addressed to and received from Exa Infrastructure UK Limited

- A21.91 Our Ref 01812385 Notice of 14 May 2024 regarding leased lines. Responses received on 24 June 2024 and 27 June 2024.
- A21.92 Our Ref 01821927 Notice of 8 July 2024 regarding market analysis. Response received on 5 August 2024.
- A21.93 Our Ref 02013537 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025 and 5 August 2025.
- A21.94 Our Ref 02052870 Notice of 10 September 2025 regarding cross programme. Response received on 14 October 2025.

Notices addressed to and received from Exponential-e Limited

- A21.95 Our Ref 01835682 Notice of 29 July 2024 regarding Non-Pricing Remedies. Response received on 5 September 2024.
- A21.96 Our Ref 01894017 Notice of 23 October 2024 regarding Inter-exchange Connectivity. Responses received on the 12 November 2024 and 20 November 2024.

Notices addressed to and received from Fibrespeed Limited

- A21.97 Our Ref 01793651 Notice of 9 May 2024 regarding leased lines. Responses received on 2 July 2024 and 2 August 2024.

- A21.98 Our Ref 01821928 Notice of 8 July 2024 regarding market analysis. Responses received on 6 August 2024, 22 August 2024 and 19 November 2024.
- A21.99 Our Ref 02013539 Notice of 23 June 2025 regarding market analysis. Response received on 26 August 2025.
- A21.100 Our Ref 02052936 Notice of 10 September 2025 regarding cross programme. Response received on 8 October 2025.

Notices addressed to and received from Fibrus Ltd

- A21.101 Our Ref 01814477 Notice of 19 June 2024 regarding pricing remedies. Response received on 14 August 2024.
- A21.102 Our Ref 01821929 Notice of 8 July 2024 regarding market analysis. Responses received on 27 August 2024 and 25 September 2024.
- A21.103 Our Ref 02015676 Notice of 28 July 2025 regarding market analysis. Responses received on 8 September 2025 and 3 November 2025.
- A21.104 Our Ref 02015676 Notice of 10 September 2025 regarding cross programme. Response received on 22 September 2025.

Notices addressed to and received from Full Fibre Limited

- A21.105 Our Ref 01835683 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 9 September 2024.

Notices addressed to and received from G.Network Communications Limited

- A21.106 Our Ref 02015634 Notice of 28 July 2025 regarding market analysis. Responses received on 22 August 2025, 8 September 2025, 2 October 2025 and 7 November 2025.
- A21.107 Our Ref 02052937 Notice of 10 September 2025 regarding cross programme. Response received on 25 November 2025.

Notices addressed to and received from Glide Business Limited

- A21.108 Our Ref 02013541 Notice of 23 June 2025 regarding market analysis. Responses received on 19 August 2025 and 24 October 2025.

Notices addressed to and received from Gigaclear Limited

- A21.109 Our Ref 01813911 Notice of 19 June 2024 regarding pricing remedies. Responses received on 5 August 2024.
- A21.110 Our Ref 01821930 Notice of 8 July 2024 regarding market analysis. Responses received 29 August 2024, 9 September 2024, 16 September 2024 and 11 November 2024.
- A21.111 Our Ref 01835684 Notice of 29 July 2024 regarding pricing remedies. Responses received on 22 August 2024.
- A21.112 Our Ref 02013540 Notice of 23 June 2025 regarding market analysis. Response received 5 August 2025.

A21.113 Our Ref 02052938 Notice of 10 September 2025 regarding cross programme. Response received 2 October 2025.

Notices addressed to and received from Gofibre Holdings Limited

A21.114 Our Ref 01835685 Notice of 29 July 2024 regarding pricing remedies. Responses received on 4 September 2024.

A21.115 Our Ref 01894013 Notice of 23 October 2024 regarding Inter-exchange Connectivity. Responses received on the 12 November 2024 and 25 November 2024.

A21.116 Our Ref 02013542 Notice of 23 June 2025 regarding market analysis. Responses received on 11 August 2025 and 29 October 2025.

Notices addressed to and received from Highland Broadband Networks Limited

A21.117 Our Ref 02014535 Notice of 25 June 2025 regarding market analysis. Responses received on 18 August 2025.

Notices addressed to and received from Hutchison 3G UK Limited

A21.118 Our Ref 01793904 Notice of 9 May 2024 regarding leased lines. Response received on 19 June 2024.

A21.119 Our Ref 01821945 Notice of 8 July 2024 regarding market analysis. Responses received on 9 August 2024 and 29 August 2024.

Notices addressed to and received from Hyperoptic Ltd

A21.120 Our Ref 01813913 Notice of 19 June 2024 regarding pricing remedies. Response received on 16 August 2024.

A21.121 Our Ref 01821931 Notice of 8 July 2024 regarding market analysis. Responses received on 30 September 2024.

A21.122 Our Ref 01835686 Notice of 29 July 2024 regarding non-pricing remedies. Responses received on 14 August 2024.

A21.123 Our Ref 01893994 Notice of 23 October 2024 regarding market analysis. Responses received on 13 November 2024 and 19 November 2024.

A21.124 Our Ref 01951899 Notice of 10 February 2025 regarding confirmatory. Response received on 20 February 2025.

A21.125 Our Ref 02013544 Notice of 23 June 2025 regarding market analysis. Response received on 4 August 2025.

A21.126 Our Ref 02006360 Notice of 5 August 2025 regarding pricing remedies. Response received on 9 September 2025.

A21.127 Our Ref 02052939 Notice of 10 September 2025 regarding cross programme. Response received on 22 September 2025.

A21.128 Our Ref 02134945 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 12 February 2026.

Notices addressed to and received from Independent Networks Cooperative Association Limited

A21.129 Our Ref 02134946 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 13 February 2026.

Notices addressed to and received from ITS Technology Group Limited

A21.130 Our Ref 01793912 Notice of 9 May 2024 regarding leased lines. Response received on 28 June 2024.

A21.131 Our Ref 01821932 Notice of 8 July 2024 regarding market analysis. Response received on 5 August 2024.

A21.132 Our Ref 01894000 Notice of 23 October 2024 regarding inter-exchange connectivity. Response received on 12 November 2024.

A21.133 Our Ref 01951892 Notice of 10 February 2025 regarding confirmatory. Response received on 19 February 2025.

A21.134 Our Ref 02013545 Notice of 25 June 2025 regarding market analysis. Responses received on 22 July 2025, 5 August 2025, 13 August 2025, 4 November 2025, 2 December 2025, 7 January 2026 and 28 January 2026.

A21.135 Our Ref 02052940 Notice of 10 September 2025 regarding cross programme. Response received on 8 October 2025.

Notices addressed to and received from Jisc

A21.136 Our Ref 01813914 Notice of 19 June 2024 regarding pricing remedies. Response received on 7 August 2024.

A21.137 Our Ref 01835687 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 5 September 2024.

Notices addressed to and received from KCOM Group Limited

A21.138 Our Ref 01793653 Notice of 9 May 2024 regarding leased lines. Responses received on 20 June 2024 and 12 July 2024.

A21.139 Our Ref 01821933 Notice of 8 July 2024 regarding market analysis. Responses received on 5 August 2024 and 12 August 2024.

A21.140 Our Ref 02013546 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025 and 4 August 2025.

A21.141 Our Ref 02052941 Notice of 10 September 2025 regarding cross programme. Response received on 25 September 2025.

Notices addressed to and received from Lightspeed Networks LTD

A21.142 Our Ref 01835688 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 21 September 2024.

A21.143 Our Ref 01894010 Notice of 23 October 2024 regarding Inter-Exchange Connectivity. Responses received on 13 November 2024 and 22 November 2024.

Notices addressed to and received from Lumen Technologies UK Limited

- A21.144 Our Ref 01796466 Notice of 9 May 2024 regarding leased lines. Responses received on 3 July 2024.
- A21.145 Our Ref 01821934 Notice of 8 July 2024 regarding market analysis. Responses received on 5 August 2024 and 25 August 2024.
- A21.146 Our Ref 01894012 Notice of 23 October 2024 regarding Inter-exchange connectivity. Responses received on 27 November 2024, 3 December 2024 and 9 December 2024.
- A21.147 Our Ref 02014537 Notice of 23 June 2025 regarding market analysis. Responses received on 8 July 2025, 10 July 2025, 17 July 2025, 9 September 2025 and 2 December 2025.
- A21.148 Our Ref 02052871 Notice of 10 September 2025 regarding cross programme. Responses received on 5 November 2025.

Notices addressed to and received from MOBILE BROADBAND NETWORK LIMITED

- A21.149 Our Ref 01793908 Notice of 9 May 2024 regarding leased lines. Responses received on 3 July 2024.
- A21.150 Our Ref 01821935 Notice of 8 July 2024 regarding market analysis. Responses received on 9 August 2024.
- A21.151 Our Ref 02076884 Notice of 20 October 2025 regarding cross programme. Responses received on 12 November 2025.

Notices addressed to and received from MS3 Networks Limited

- A21.152 Our Ref 01793654 Notice of 9 May 2024 regarding leased lines. Response received on 28 June 2024.
- A21.153 Our Ref 01821936 Notice of 8 July 2024 regarding market analysis. Response received on 2 August 2024.
- A21.154 Our Ref 02014539 Notice of 23 June 2025 regarding market analysis. Responses received on 21 July 2025, 5 August 2025, 22 August 2025, 12 November 2025 and 9 December 2025.
- A21.155 Our Ref 02052942 Notice of 10 September 2025 regarding cross programme. Response received on 17 October 2025.

Notices addressed to and received from National Grid Telecoms Limited

- A21.156 Our Ref 01793660 Notice of 9 May 2024 regarding leased lines. Responses received on 13 June 2024.
- A21.157 Our Ref 01821937 Notice of 8 July 2024 regarding market analysis. Responses received on 5 August 2024 and 12 August 2024.
- A21.158 Our Ref 02014540 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025 and 5 August 2025.
- A21.159 Our Ref 02052872 Notice of 10 September 2025 regarding cross programme. Response received on 18 September 2025.

Notices addressed to and received from Neos Networks Limited

- A21.160 Our Ref 01793656 Notice of 9 May 2024 regarding leased lines. Responses received on 19 June 2024 and 8 August 2024.
- A21.161 Our Ref 01813917 Notice of 19 June 2024 regarding pricing remedies. Response received on 18 July 2024.
- A21.162 Our Ref 01821938 Notice of 8 July 2024 regarding market analysis. Response received on 5 August 2024.
- A21.163 Our Ref 01835689 Notice of 29 July 2024 regarding non-pricing remedies. Responses received on 6 September 2024.
- A21.164 Our Ref 01893989 Notice of 23 October 2024 regarding Inter-exchange connectivity. Responses received on 13 November 2024 and 2 November 2024.
- A21.165 Our Ref 01951895 Notice of 10 February 2025 regarding confirmatory. Response received on 21 February 2025.
- A21.166 Our Ref 02014541 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025 and 22 August 2025.
- A21.167 Our Ref 02052873 Notice of 10 September 2025 regarding cross programme. Response received on 9 October 2025.
- A21.168 Our Ref 02134941 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 10 February 2026.

Notices addressed to and received from NETOMNIA LIMITED

- A21.169 Our Ref 01813920 Notice of 19 June 2024 regarding pricing remedies. Response received on 17 July 2024.
- A21.170 Our Ref 01821939 Notice of 8 July 2024 regarding market analysis. Responses received on 2 September 2024, 8 September 2024 and 16 September 2024.
- A21.171 Our Ref 01835690 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 21 August 2024.
- A21.172 Our Ref 01893996 Notice of 23 October 2024 regarding Inter-exchange connectivity. Responses received on 11 November 2024 and 21 November 2024.
- A21.173 Our Ref 0201564 Notice of 28 July 2025 regarding market analysis. Responses received on 8 September 2025, 16 September 2025, 22 September 2025, 24 October 2025, 29 October 2025 and 10 November 2025.
- A21.174 Our Ref 02006363 Notice of 31 July 2025 regarding pricing remedies. Response received on 4 September 2025.
- A21.175 Our Ref 02052943 Notice of 10 September 2025 regarding cross programme. Responses received on 10 October 2025, 4 November 2025 and 14 November 2025.
- A21.176 Our Ref 02140004 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 10 February 2026.

Notices addressed to and received from Nexfibre Networks Limited

- A21.177 Our Ref 01794524 Notice of 9 May 2024 regarding leased lines. Response received on 21 June 2024.
- A21.178 Our Ref 01813930 Notice of 19 June 2024 regarding pricing remedies. Response received on 25 July 2024.
- A21.179 Our Ref 01821940 Notice of 8 July 2024 regarding market analysis. Responses received on 19 August 2024, 27 August 2024, 30 August 2024 and 30 September 2024.
- A21.180 Our Ref 01835691 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 30 August 2024.
- A21.181 Our Ref 01902209 Notice of 24 October 2024 regarding City Fibre-Sky deal. Response received on 7 November 2024.
- A21.182 Our Ref 01951891 Notice of 10 February 2025 regarding confirmatory. Response received on 19 February 2025.
- A21.183 Our Ref 02014542 Notice of 25 June 2025 regarding market analysis. Responses received on 22 July 2025, 5 August 2025, 18 August 2025, 7 November 2025 and 28 January 2026.
- A21.184 Our Ref 02029320 Notice of 31 July 2025 regarding pricing remedies. Response received on 14 August 2025.
- A21.185 Our Ref 02052944 Notice of 10 September 2025 regarding cross programme. Response received on 9 October 2025.

Notices addressed to and received from OGI Networks Limited

- A21.186 Our Ref 02015635 Notice of 28 July 2025 regarding market analysis. Responses received on 20 August 2025, 8 September 2025, 18 November 2025 and 2 December 2025.
- A21.187 Our Ref 02136718 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 11 February 2026.

Notices addressed to and received from Open Fibre Networks Limited

- A21.188 Our Ref 02014543 Notice of 25 June 2025 regarding market analysis. Responses received on 13 August 2025 and 7 October 2025.

Notices addressed to and received from Openreach Limited

- A21.189 Our Ref 01793655 Notice of 9 May 2024 regarding leased lines. Responses received on 19 June 2024 and 4 July 2024.
- A21.190 Our Ref 01802695 Notice of 14 May 2024 regarding pricing remedies. Responses received on 28 May 2024, 19 June 2024, 24 June 2024, 1 July 2024, 8 July 2024, 12 July 2024, 22 November 2024 and 29 January 2026.
- A21.191 Our Ref 01813931 Notice of 19 June 2024 regarding pricing remedies. Responses received on 10 July 2024, 22 July 2024, 24 July 2024, 31 July 2024 and 7 August 2024.
- A21.192 Our Ref 01821941 Notice of 8 July 2024 regarding market analysis. Responses received on 5 August 2024, 13 August 2024, 14 August 2024, 27 August 2024 and 30 August 2024.

- A21.193 Our Ref 01810625 Notice of 10 July 2024 regarding quality of service. Responses received on 21 August 2024.
- A21.194 Our Ref 01835693 Notice of 29 July 2024 regarding non-pricing remedies. Responses received on 8 August 2024, 15 August 2024, 22 August 2024, 2 September 2024 and 18 September 2024.
- A21.195 Our Ref 01891607 Notice of 26 September 2024 regarding pricing remedies. Responses received on 3 October 2024, 23 October 2024 and 7 November 2024.
- A21.196 Our Ref 01893976 Notice of 23 October 2024 regarding Inter-exchange connectivity. Response received on 20 November 2024.
- A21.197 Our Ref 01894851 Notice of 28 October 2024 regarding Quality of Service FFTP. Responses received on 25 November 2024 and 2 December 2024.
- A21.198 Our ref 01922413 Notice of 20 November 2024 regarding Quality of Service. Response received on 25 November 2024
- A21.199 Our Ref 01914844 Notice of 2 December 2024 regarding non-pricing remedies. Responses received on 16 December 2024 and 6 January 2025.
- A21.200 Our Ref 01924891 Notice of 13 January 2025 regarding regulatory reporting. Response received on 27 January 2025.
- A21.201 Our Ref 01951886 Notice of 10 February 2025 regarding confirmatory. Response received on 21 February 2025.
- A21.202 Our Ref 01984812 Notice of 30 April 2025 regarding Quality of Service. Response received on 30 May 2025.
- A21.203 Our Ref 01986239 Notice of 29 May 2025 regarding pricing remedies. Responses received on 17 June 2025, 19 June 2025, 26 June 2025, 30 June 2025 and 4 September 2025.
- A21.204 Our Ref 02014544 Notice of 25 June 2025 regarding market analysis. Responses received on 22 July 2025, 5 August 2025 and 18 August 2025.
- A21.205 Our Ref 02032810 Notice of 31 July 2025 regarding pricing remedies. Responses received on 27 August 2025 and 4 September 2025.
- A21.206 Our Ref 02006358 Notice of 5 August 2025 regarding pricing remedies. Responses received on 27 August 2025, 10 September 2025, 16 September 2025 and 1 October 2025.
- A21.207 Our Ref 02052886 Notice of 13 August 2025 regarding Quality of Service. Responses received on 4 September 2025 and 12 September 2025.
- A21.208 Our Ref 02052874 Notice of 10 September 2025 regarding cross programme. Responses received on 25 September 2025, 9 October 2025 and 14 October 2025.
- A21.209 Our Ref 02076885 Notice of 20 October 2025 regarding cross programme. Responses received on 27 October 2025 and 13 November 2025.
- A21.210 Our Ref 02102250 Notice of 19 November 2025 regarding FFTP. Response received on 4 December 2025.
- A21.211 Our Ref 02105954 Notice of 10 December 2025 regarding monitoring of Openreach offers. Response received on 16 January 2026.
- A21.212 Our Ref 02134939 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 13 February 2026.

Notices addressed to and received from Persimmon Homes Limited

A21.213 Our Ref 02013538 Notice of 23 June 2025 regarding market analysis. Response received on 21 August 2025.

Notices addressed to and received from Quickline Communications Limited

A21.214 Our Ref 01835694 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 8 August 2024.

A21.215 Our Ref 02015636 Notice of 28 July 2025 regarding market analysis. Responses received on 12 September 2025, 23 September 2025 and 28 October 2025.

A21.216 Our Ref 02052946 Notice of 10 September 2025 regarding cross programme. Response received on 16 October 2025.

Notices addressed to and received from Sky UK Limited

A21.217 Our Ref 01793663 Notice of 9 May 2024 regarding leased lines. Response received on 26 June 2024 and 18 July 2024.

A21.218 Our Ref 01813932 Notice of 19 June 2024 regarding pricing remedies. Response received on 18 July 2024.

A21.219 Our Ref 01821943 Notice of 8 July 2024 regarding market analysis. Responses received on 19 August 2024 and 23 August 2024.

A21.220 Our Ref 01835695 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 9 September 2024.

A21.221 Our Ref 01893990 Notice of 23 October 2024 regarding Inter-exchange connectivity. Responses received on 13 November 2024 and 22 November 2024.

A21.222 Our Ref 01914848 Notice of 2 December 2024 regarding non-pricing remedies. Response received on 16 December 2024.

A21.223 Our Ref 01951894 Notice of 10 February 2025 regarding confirmatory. Response received on 22 February 2025.

A21.224 Our Ref 02014546 Notice of 23 June 2025 regarding market analysis. Response received on 10 July 2025.

A21.225 Our Ref 02052926 Notice of 10 September 2025 regarding cross programme. Response received on 9 October 2025.

A21.226 Our Ref 02105955 Notice of 10 December 2025 regarding monitoring of Openreach offers. Response received on 29 December 2025.

Notices addressed to and received from Spectrum Fibre Limited

A21.227 Our Ref 02052945 Notice of 10 September 2025 regarding cross programme. Response received on 7 October 2025.

Notices addressed to and received from TalkTalk Communications Limited

A21.228 Our Ref 01819262 Notice of 19 June 2024 regarding pricing remedies. Responses received on 1 August 2024 and 28 October 2024.

- A21.229 Our Ref 01821942 Notice of 8 July 2024 regarding market analysis. Responses received on 19 August 2024, 26 September 2024 and 2 October 2024.
- A21.230 Our Ref 01893984 Notice of 23 October 2024 regarding Inter-exchange connectivity. Response received on 4 December 2024.
- A21.231 Our Ref 01918303 Notice of 2 December 2024 regarding non-pricing remedies. Response received on 16 December 2024.
- A21.232 Our Ref 02014545 Notice of 23 June 2025 regarding market analysis. Responses received on 16 July 2025 and 5 September 2025.
- A21.233 Our Ref 02052927 Notice of 10 September 2025 regarding cross programme. Response received on 24 October 2025.
- A21.234 Our Ref 02105957 Notice of 10 December 2025 regarding monitoring of Openreach offers. Response received on 24 October 2025.
- A21.235 Our Ref 02136721 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 13 February 2026.

Notices addressed to and received from TalkTalk Telecom Group Limited

- A21.236 Our Ref 01793664 Notice of 9 May 2024 regarding leased lines. Response received on 19 June 2026.
- A21.237 Our Ref 01813934 Notice of 19 June 2024 regarding pricing remedies. Response received on 9 July 2024.
- A21.238 Our Ref 01821944 Notice of 8 July 2024 regarding market analysis. Responses received on 5 August 2024 and 19 August 2024.
- A21.239 Our Ref 01835696 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 29 September 2024 and 14 January 2025.
- A21.240 Our Ref 01914846 Notice of 2 December 2024 regarding non-pricing remedies. Response received on 16 December 2024

Notices addressed to and received from Technological Services Limited

- A21.241 Our Ref 02014547 Notice of 25 June 2025 regarding market analysis. Response received on 29 October 2025.

Notices addressed to and received from Toob Limited

- A21.242 Our Ref 01814480 Notice of 19 June 2024 regarding pricing remedies. Response received on 16 July 2024.
- A21.243 Our Ref 01821946 Notice of 8 July 2024 regarding market analysis. Response received on 5 August 2024.

Notices addressed to and received from Trooli Ltd

- A21.244 Our Ref 01817511 Notice of 19 June 2024 regarding pricing remedies. Response received on 18 July 2024.
- A21.245 Our Ref 01821947 Notice of 8 July 2024 regarding market analysis. Response received on 27 August 2024.

Notices addressed to and received from Truespeed Communications Ltd

- A21.246 Our Ref 01814484 Notice of 19 June 2024 regarding pricing remedies. Response received on 17 July 2024.

A21.247 Our Ref 01821948 Notice of 8 July 2024 regarding market analysis. Response received on 5 August 2024.

A21.248 Our Ref 02015638 Notice of 28 July 2025 regarding market analysis. Response received on 12 September 2025.

A21.249 Our Ref 02052947 Notice of 10 September 2025 regarding cross programme. Response received on 30 September 2025.

Notices addressed to and received from Verizon UK Limited

A21.250 Our Ref 01793657 Notice of 9 May 2024 regarding leased lines. Response received on 21 June 2026.

A21.251 Our Ref 01821949 Notice of 8 July 2024 regarding market analysis. Response received on 12 August 2024 and 27 August 2024.

A21.252 Our Ref 02014549 Notice of 23 June 2025 regarding market analysis. Response received on 1 August 2025.

A21.253 Our Ref 02052875 Notice of 10 September 2025 regarding cross programme. Response received on 8 October 2025.

Notices addressed to and received from VMED O2 UK Limited

A21.254 Our Ref 01793658 Notice of 9 May 2024 regarding leased lines. Response received on 19 June 2024 and 3 July 2024.

A21.255 Our Ref 01813943 Notice of 19 June 2024 regarding pricing remedies. Response received on 24 July 2024.

A21.256 Our Ref 01821950 Notice of 8 July 2024 regarding market analysis. Responses received on 19 August 2024, 23 August 2024 and 2 September 2024.

A21.257 Our Ref 01835697 Notice of 29 July 2024 regarding non-pricing remedies. Responses received on 21 August 2024 and 6 September 2024.

A21.258 Our Ref 01893981 Notice of 23 October 2024 regarding Inter-exchange connectivity. Response received on 27 November 2024.

A21.259 Our Ref 01951890 Notice of 10 February 2025 regarding confirmatory. Response received on 20 February 2025.

A21.260 Our Ref 02014550 Notice of 26 June 2025 regarding market analysis. Responses received on 29 July 2025, 5 August 2025 and 27 August 2025.

A21.261 Our Ref 02052876 Notice of 10 September 2025 regarding cross programme. Responses received on 16 October 2025 and 31 October 2025.

A21.262 Our Ref 02076886 Notice of 20 October 2025 regarding cross programme. Response received on 17 November 2025.

A21.263 Our Ref 02107424 Notice of 25 November 2025 regarding confirming Connected Nations data for use on Telecoms Access Review. Response received on 4 December 2025.

A21.264 Our Ref 02134942 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 18 February 2026.

Notices addressed to and received from VodafoneThree Holdings Limited

- A21.265 Our Ref 02052877 Notice of 10 September 2025 regarding cross programme. Responses received on 23 September 2025 and 27 November 2025.
- A21.266 Our Ref 02076887 Notice of 20 October 2025 regarding cross programme. Response received on 14 November 2025.
- A21.267 Our Ref 02107422 Notice of 25 November 2025 regarding Connected Nations data for use on Telecoms Access Review. Response received on 4 December 2025.
- A21.268 Our Ref 02105956 Notice of 10 December 2025 regarding monitoring of Openreach offers. Response received on 9 January 2026.
- A21.269 Our Ref 02134944 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 13 February 2026.

Notices addressed to and received from Vodafone Limited

- A21.270 Our Ref 01793659 Notice of 9 May 2024 regarding leased lines. Responses received on 24 June 2024 and 27 June 2024 and 25 November 2025.
- A21.271 Our Ref 01813945 Notice of 19 June 2024 regarding pricing remedies. Responses received on 12 August 2024 and 21 October 2024.
- A21.272 Our Ref 01821951 Notice of 8 July 2024 regarding market analysis. Response received 15 August 2024, 2 September 2024 and 26 September 2024.
- A21.273 Our Ref 01835698 Notice of 29 July 2024 regarding non-pricing remedies. Response received on 5 September 2024.
- A21.274 Our Ref 01893988 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 13 November 2024 and 20 November 2024.
- A21.275 Our Ref 01893988 Notice of 2 December 2024 regarding non-pricing remedies. Responses received on 17 December 2024 and 20 December 2024.
- A21.276 Our Ref 02014551 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025, 5 August 2025 and 2 December 2025.
- A21.277 Our Ref 02014551 Notice of 23 June 2025 regarding market analysis. Responses received on 22 July 2025, 5 August 2025 and 2 December 2025.

Notices addressed to and received from Vorboss Limited

- A21.278 Our Ref 01793910 Notice of 9 May 2024 regarding leased lines. Response received on 19 June 2026.
- A21.279 Our Ref 01821952 Notice of 8 July 2024 regarding market analysis. Response received on 12 August 2024.
- A21.280 Our Ref 02014552 Notice of 23 June 2025 regarding market analysis. Response received on 22 July 2025, 4 August 2025 and 28 August 2025.
- A21.281 Our Ref 02052878 Notice of 10 September 2025 regarding cross programme. Response received on 9 October 2025.

Notices addressed to and received from WIFI SCOTLAND LLP

A21.282 Our Ref 01813947 Notice of 19 June 2024 regarding pricing remedies. Response received on 20 August 2024.

Notices addressed to and received from Wightfibre Limited

A21.283 Our Ref 01814485 Notice of 19 June 2024 regarding pricing remedies. Response received on 4 July 2024.

A21.284 Our Ref 01821953 Notice of 8 July 2024 regarding market analysis. Response received on 15 August 2024 and 26 September 2024.

A21.285 Our Ref 02015639 Notice of 28 July 2025 regarding market analysis. Response received on 22 August 2025, 8 September 2025 and 7 January 2026.

A21.286 Our Ref 02052948 Notice of 10 September 2025 regarding cross programme. Response received on 8 October 2025.

A21.287 Our Ref 02134943 Notice of 3 February 2026 regarding pre-statement confirmatory. Response received on 13 February 2026.

Notices addressed to and received from X Internet Limited Company

A21.288 Our Ref 01951904 Notice of 10 February 2025 regarding confirmatory. Response received on 12 February 2025.

Notices addressed to and received from Zayo Group UK Limited

A21.289 Our Ref 01793661 Notice of 9 May 2024 regarding pricing remedies. Response received on 19 June 2024.

A21.290 Our Ref 01821954 Notice of 8 July 2024 regarding market analysis. Response received on 2 August 2024.

A21.291 Our Ref 01894004 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 26 November 2024.

A21.292 Our Ref 01793661 Notice of 9 May 2024 regarding pricing remedies. Response received on 19 June 2024.

A21.293 Our Ref 02014554 Notice of 23 June 2025 regarding market analysis. Responses received on 29 August 2025 and 11 September 2025.

A21.294 Our Ref 02052879 Notice of 10 September 2025 regarding cross programme. Response received on 9 October 2025.

Notices addressed to and received from Zen Internet Limited

A21.295 Our Ref 01894009 Notice of 23 October 2024 regarding inter-exchange connectivity. Responses received on 12 November 2024 and 19 November 2024.

Notices addressed to and received from ZZOOMM PLC

A21.296 Our Ref 01814486 Notice of 19 June 2024 regarding pricing remedies. Response received on 18 July 2024.

A21.297 Our Ref 01821955 Notice of 8 July 2025 regarding market analysis. Response received on 1 August 2024.

Consultations to the Telecoms Access Review

A21.298 Ofcom. March 2025. Promoting competition and investment in fibre networks: Telecoms Access Review 2026-31.

A21.299 Ofcom. May 2025. Corrections to the Telecoms Access Review 2026-31 Consultation.

A21.300 Ofcom. October 2025. Further consultation on WLA pricing remedies - Telecoms Access Review 2026-31.

A21.301 Ofcom. November 2025. Further consultation on leased lines market analysis and various pricing issues - Telecoms Access Review 2026-31.

A21.302 Ofcom. March 2026. Consultation: Approach to the copper retirement second threshold calculation – Telecoms Access Review 2026-31.

Consultations and statements for other market reviews

A21.303 Ofcom, December 2025, Consultation: Promoting competition and investment in fibre networks – Hull Area Review 2026-31.

A21.304 Ofcom, March 2025, Consultation: Reviews of Call Termination Markets and End-to-End Connectivity Condition.

A21.305 Ofcom, March 2021, Statement: Promoting investment and competition in fibre networks – Wholesale Fixed Telecoms Market Review 2021-26.

A21.306 Ofcom, March 2021, Statement: Promoting competition in fibre networks – Hull Area Wholesale Fixed Telecoms Market Review 2021-26.

A21.307 Ofcom, June 2019, Statement: Promoting competition and investment in fibre networks – review of the physical infrastructure and business connectivity markets.

A21.308 Ofcom, March 2018, Statement: Wholesale local access market review.

A21.309 Ofcom, 2016, Business Connectivity Market Review Statement.

A21.310 Ofcom, 2014, Fixed access market reviews 2014 Statement.

A21.311 Ofcom, 2013, Business Connectivity Market Review Statement.

A21.312 Ofcom, 2011, Business Connectivity Market Review Consultation.

Other consultations and statements

A21.313 Ofcom December 2025. [Consultation: Ofcom's Plan of Work 2026/27](#)

A21.314 Ofcom. October 2025. Statement: Temporary NGSO gateway access to E band.

A21.315 Ofcom. September 2025. Openreach monitoring report.

A21.316 Ofcom. July 2025. Consultation: Expanding spectrum access for satellite gateways.

A21.317 Ofcom. July 2025. Statement: Optimal use of 3.9 GHz spectrum.

- A21.318 Ofcom. July 2025. Consultation: Award of 1492-1517 MHz spectrum for mobile services.
- A21.319 Ofcom. May 2025. Comparing customer service: mobile, home broadband and landline.
- A21.320 Ofcom. March 2025. [Ofcom's Three -Year Plan 2025-2028](#)
- A21.321 Ofcom. February 2025. Statement: Increasing use of the 27.5-30 GHz and 32 GHz bands - Ofcom.
- A21.322 Ofcom. September 2024. Statement on Network and Service Resilience Guidance.
- A21.323 Ofcom. June 2024. [Investigation into Openreach's quality-of-service performance in leased lines access and wholesale local access in 2022/23](#)
- A21.324 Ofcom. October 2023. Statement: General policy on ensuring compliance with security duties.
- A21.325 Ofcom. June 2023. Openreach monitoring report.
- A21.326 Ofcom. May 2023. Ofcom's decision on Openreach's 'Equinox 2' pricing offer.
- A21.327 Ofcom. October 2022. SME consumer experience in the communications market – interactive report
- A21.328 Ofcom. September 2021. Statement on Openreach proposed FTTP offer (Equinox).
- A21.329 Ofcom. July 2021. Existing Openreach FTTP offers with geographic pricing.
- A21.330 Ofcom. February 2019. The future of fixed telephone services.
- A21.331 Ofcom. November 2005. Undue discrimination by SMP providers.

Other publications

- A21.332 Ofcom. 19 January 2026. [Ofcom letter to Prime Minister on contribution to economic growth](#)
- A21.333 Ofcom. December 2025. [Ofcom fines Virgin Media £23.8 million for putting vulnerable customers at risk of harm](#)
- A21.334 Ofcom. December 2025. [Non-geostationary satellite earth station licences](#)
- A21.335 Ofcom. December 2025, [Investigation into Virgin Media's compliance with rules relating to vulnerable consumers and access to emergency organisations.](#)
- A21.336 Ofcom. October 2025. [Ofcom spectrum auction: final results announced.](#)
- A21.337 Ofcom. October 2025. [Open letter to industry.](#)
- A21.338 Ofcom. May 2025. [Moving landline phones to digital technology: what you need to know.](#)
- A21.339 Ofcom. May 2025. [Comparing customer service: mobile, home broadband and landline](#)
- A21.340 Ofcom. February 2025. [Non-geostationary satellite earth station licences.](#)
- A21.341 Ofcom. January 2025. [Regulatory Enforcement Guidelines for investigations.](#)
- A21.342 Ofcom. September 2024. [Review of the use of fixed wireless links and spectrum implications.](#)
- A21.343 Ofcom. 16 Sept 2024. [Customers to get clearer broadband information](#)
- A21.344 Ofcom. 12 Sept 2024. [Simpler and quicker broadband switching is here.](#)

- A21.345 Ofcom. March 2024. [Confirmation Decision served on BT by the Office of Communications \(Ofcom\) for contravention of SMP Condition 10.1. Case reference: CW/01273/06/23](#)
- A21.346 Ofcom. March 2024. [Broadband terminology research.](#)
- A21.347 Ofcom. March 2024. [Social tariffs: Cheaper broadband and phone packages.](#)
- A21.348 Ofcom. October 2023. [Quality of Service for Ethernet and Dark Fibre. Statement on proposed modifications to Quality of Service Directions and related Key Performance Indicators for Ethernet and Dark Fibre repairs](#)
- A21.349 Ofcom. September 2023. [Evolution of fixed access networks.](#)
- A21.350 Ofcom. June 2023. [Openreach Monitoring Unit](#)
- A21.351 Ofcom. November 2022. [Vulnerable people.](#)
- A21.352 Ofcom. October 2022. [SME consumer experience in the communications market – interactive report.](#)
- A21.353 Ofcom. September 2022. [Treating vulnerable customers fairly: a guide for phone, broadband and pay-TV providers.](#)
- A21.354 Ofcom. 12 April 2022. [Are you in or out of contract?](#)
- A21.355 Ofcom. 6 May 2020. [Improving broadband and landline standards. A review of how Ofcom’s service quality rules have affected Openreach’s service level performance.](#)
- A21.356 Ofcom 2019. [BT Regulatory Financial reporting.](#)
- A21.357 Ofcom. February 2016. [Initial conclusions from the Strategic Review of Digital Communications](#)
- A21.358 Ofcom. March 2014. [Porting charges under General Condition 18.](#)
- A21.359 Ofcom. June 2011. [Dispute resolution guidelines.](#)
- A21.360 Ofcom. December 2008. [Dispute between Cable & Wireless and T-Mobile about termination rates.](#)

Research and reports

- A21.361 Ofcom. December 2025. [Online Nations 2025 – interactive report.](#)
- A21.362 Ofcom. November 2025. [Connected Nations 2025.](#)
- A21.363 Ofcom. October 2025. [Communications Market Report 2025.](#)
- A21.364 Ofcom. May 2025. [Connected Nations - Planned Network Deployment.](#)
- A21.365 Ofcom. December 2024. [Connected Nations 2024.](#)
- A21.366 Ofcom. December 2023. [Connected Nations 2023.](#)
- A21.367 Ofcom. December 2022. [Connected Nations 2022.](#)
- A21.368 Ofcom. December 2021. [Connected Nations 2021.](#)
- A21.369 Ofcom. December 2020. [Connected Nations 2020.](#)

European Commission publications

- A21.370 [Commission Notice on the definition of the relevant market for the purposes of Union competition law](#) (C/2024/1645),
- A21.371 [Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services](#) (2018/C 159/01)
- A21.372 [Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services](#) (C(2018) 2374 final)

Further sources

BT Group

Regulatory Financial Statements

- A21.373 BT [Regulatory Financial Statements 2025](#).
- A21.374 BT [Regulatory Financial Statements 2022](#).
- A21.375 BT [Commitments of BT Plc and Openreach Limited to Ofcom – Issue 7](#)

Financial reports and statements

- A21.376 BT Group. February 2026. [Results for the nine months to 31 December 2025](#). Accessed on 25 February 2026.
- A21.377
- A21.378 BT Group. [BT Group plc Annual Report 2025](#). Accessed 6 March 2026.
- A21.379 BT Group. [Accounting Methodology Documentation](#).
- A21.380 BT Group. [BT Group plc - Annual Report 2024](#). Accessed 27 February 2025.
- A21.381 BT Group. 5 February 2026. [Trading update for the quarter and nine months to 31 December 2025](#). Accessed on 13 February 2026.

Press releases

- A21.382 BT. 12 February 2026. [Chancellor welcomes BT's investment into the UK's best networks](#). Accessed on 13 February 2026.
- A21.383 BT Group. 5 February 2026. [Trading update for the quarter and nine months to 31 December 2025](#). Accessed on 13 February 2026.
- A21.384 BT. 6 November 2025. [BT Group and Starlink pave the way for high-speed home broadband in the UK's hardest to reach places](#). Accessed 15 December 2025.

Other materials

- A21.385 BT. [Business broadband for small & medium enterprises](#). Accessed 22 January 2026.
- A21.386 BT. [WFTMR21 Compliance Model 2024-25](#). Accessed 6 March 2026.
- A21.387 BT. [Wholesale Catalogue Annex 2025](#),
- A21.388 BT Wholesale. July 2024. [PDPL - Wholesale FAQs](#).
- A21.389 BT. [Our Commitments](#). Accessed 29 January 2026.

A21.390 BT. 5 February 2026. [Results for the nine months to 31 December 2025](#). Accessed 25 February 2026.

A21.391 BT Group. 3 October 2025. [Change Control Notification: Part 1](#). Accessed 6 March 2026.

Openreach

Prices and price lists

A21.392 Openreach. [Full Fibre broadband \(FTTP\) pricing for service providers](#). Accessed on 6 March 2026.

A21.393 Openreach. [Price list, Ethernet Access Direct \(EAD\) including EAD Enable](#). Accessed on 26 February 2026.

A21.394 Openreach. [Pricing](#). Accessed on 6 March 2026.

A21.395 Openreach. Openreach Connection Special Offer for EAD 1Gb [Price List](#). Accessed on 27 February 2026.

A21.396 Openreach. Ethernet Access Direct (EAD) Re-sign offer for 36 or 60 month terms for 1000Mb and below for Local Access and Standard access. [Price List](#)<https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=/jE2ocVJWQV26zjlitLkENcdyodlluBUsggK/K+Aew1CepI+i9Y5ot6DpSkS4dHAe6YShZ82RgLOGLsH2e9+mw==>. Accessed on 27 February 2026.

A21.397 Openreach. [Price List](#)<https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=0d0zetWgShsjqKWjcN2Y5WJA8BGGqsBLxL7IgSM4fRpZ6rNZujnCs99NbIKJZPD9hXYmiiJxH6wrCQm97GZMyQ==> Accessed on 27 February 2026.

Other materials

A21.398 Openreach. [Openreach website](#). Accessed on 8 December 2025.

A21.399 Openreach. 13 October 2025. [GEN091/25 Notification of withdrawal of the copper charge control in six exchanges](#). Accessed on 6 March 2026.

A21.400 Openreach. 5 March 2026. [GEN011/26 Notification of withdrawal of the copper charge control in three exchanges](#). Accessed on 6 March 2026.

A21.401 Openreach. October 2025. [NGA2017/25 Equinox 2 - GEA-FTTP 1200Mb / 120Mb & 1800Mb / 120Mb rental prices](#)

A21.402 Openreach. October 2025. [NGA2015/25 Special offer where the rental charge will effectively be £0 \(after rebate\) for the first 12 months on all FTTP New to Network \(NTN\) that originate from Fixed Wireless Access \(FWA\)](#). Accessed 4 February 2026

A21.403 Openreach. 4 September 2025. [NGA2013/25 Special offer on FTTP New to Network Connections](#). Accessed on 6 March 2026.

A21.404 Openreach. 15 July 2025. [ETH015/25 Ethernet Access Direct \(EAD\) 1000Mb Local Access alternative pricing for the UK excluding CLA and HNR areas](#). Accessed on 6 March 2026.

A21.405 Openreach, 13 June 2024. [NGA2014/24 FTTP end customer voucher scheme trial](#). Accessed on 6 March 2026.

A21.406 Openreach. 26 June 2020. [Letter to Ofcom](#). Accessed on 6 March 2026.

A21.407 Openreach. [Openreach puts the stopper on copper](#). Accessed on 17 February 2025.

- A21.408 Openreach. [Exchange Exit list by Phase](#). Accessed on 19 February 2025.
- A21.409 Openreach. 12 November 2025. [Openreach announces price changes to encourage digital adoption of newer, more reliable and better value technology](#). Accessed on 9 February 2026.
- A21.410 Openreach. [Exchange Exit Programme](#). Accessed on 29 January 2026.
- A21.411 Openreach. March 2024. [Exchange Exit: Openreach industry consultation response](#). Accessed on 29 January 2026.
- A21.412 Openreach. June 2023. [Openreach industry consultation response December 2023](#), Page 3. Accessed on 29 January 2026
- A21.413 Openreach. [Wholesale Line Rental \(WLR\) Withdrawal](#). Accessed on 24 February 2026.
- A21.414 Openreach. [Single Order Transitional Access Product \(SOTAP\)](#) Accessed on 24 February 2026.
- A21.415 Openreach. June 2023. [How we propose to exit the 103 priority exchanges consultation issue 4 - Published 22 June 2023](#). Accessed on 29 January 2026.
- A21.416 Openreach. September 2024. [Dark Fibre X](#). Accessed on 4 March 2026.
- A21.417 Openreach. 8 January 2026. [Connectivity Services Contract](#), Schedule 2, Service V37, 12 March 2025, paragraph 2.4d. Accessed 5 March 2026.
- A21.418 Openreach. 6 January 2025. [A record year for UK broadband build and usage](#). Accessed on 6 March 2026.
- A21.419 Openreach, [Price list, Ethernet Access Direct \(EAD\) including EAD Enable](#). Accessed on 2 March 2026.
- A21.420 Openreach. [Price list, Generic Ethernet Access \(FTTP\)](#). Accessed on 10 December 2025.
- A21.421 Openreach. [Our Key Performance Indicators](#). Accessed on 20 January 2026.

Government and regulators

Competition and Markets Authority (CMA)

- A21.422 CMA, 4 December 2024. [Vodafone / CK Hutchison JV merger inquiry](#). Accessed on 6 March 2026.

A21.423

Department for Science, Innovation and Technology (DSIT)

- A21.424 Department for Science, Innovation and Technology. 11 February 2026. [Draft Statement of Strategic Priorities for telecommunications, the management of radio spectrum, and postal services](#)
- A21.425 DSIT. 11 February 2026. [Proposed Statement of Strategic Priorities for telecommunications, the management of radio spectrum, and postal services: government response](#). Accessed on 23 February 2026.
- A21.426 DSIT, MHCLG. December 2025. [Reforming planning rules to accelerate deployment of digital infrastructure](#). Accessed on 5 March 2026.
- A21.427 DSIT. August 2024. [Public Switched Telephone Network charter](#). Accessed on 5 March 2026.

A21.428 DSIT. March 2024. [Network Operator Charter](#). Accessed on 5 March 2026.

A21.429 DSIT. November 2024. [Critical National Infrastructure Charter](#). Accessed on 5 March 2026.

Department for Business and Trade (DBT)

A21.430 DBT, 2024. [Growth Duty: Statutory Guidance – Refresh](#).

Department for Digital, Culture, Media & Sport (DCMS)

A21.431 ...

Other

A21.432 UK Government. [About us – Building Digital UK](#). Accessed on 6 March 2026.

A21.433 UK Government. [Project Gigabit](#). Accessed on 6 March 2026.

A21.434 UK Government. 13 November 2025. [BDUK delivery performance, quarterly: April 2025 to Sept 2025](#). Accessed on 6 March 2026.

A21.435 UK Government. [Business rates](#). Accessed 6 March 2026.

A21.436 Scottish Government. [About Reaching 100%](#) Accessed on 10 December 2025.

A21.437 Department for the Economy. [Project Stratum](#). Accessed on 11 December 2025.

A21.438 Welsh Government. 6 December 2023. [Tens of thousands of homes and businesses can access gigabit capable speeds as rollout of full fibre broadband smashes targets](#). Accessed on 6 March 2026.

A21.439 GOV.UK. 11 March 2020. [A consultation on the Reform to Retail Prices Index \(RPI\) Methodology](#).

A21.440 UK Government. 2015. [Deregulation Act 2015](#)

A21.441 UK Government. 2010. [Equality Act 2010](#).

Other telecoms providers

CityFibre

A21.442 CityFibre Blog. [Repurposing yesterday's network for our Full Fibre future](#). Accessed on 6 March 2026

A21.443 CityFibre. 14 June 2022. [Repurposing yesterday's network for our full fibre future](#). Accessed on 23 February 2026.

A21.444 CityFibre. [CityFibre delivers record performance in 2025](#) Accessed on 10 February 2026

A21.445 CityFibre. 9 November 2017. [Vodafone and CityFibre bring gigabit-speed fibre to the UK](#). Accessed on 29 January 2026.

A21.446 CityFibre. 21 January 2020. [FibreNation and Adds TalkTalk as strategic customer, increasing its rollout plans to pass up to 8 million premises](#). Accessed on 29 January 2026.

A21.447 CityFibre. 22 May 2020. [CityFibre response to the WFTMR Consultation](#). Accessed on 6 March 2026

A21.448 CityFibre. November 2021. [Vodafone anchors CityFibre's nationwide Full Fibre rollout to 8 million homes](#).

A21.449 CityFibre. 9 July 2025. [Major broadband provider with launch of new 5 Gbps full fibre speed and WIFI 7 Hub](#). Accessed on 29 January 2026.

- A21.450 CityFibre. 22 January 2026. [CityFibre delivers record performance in 2025](#). Accessed on 29 January 2026.
- A21.451 CityFibre. [Dark Fibre](#). Accessed on 17 February 2026.
- A21.452 CityFibre. 12 June 2025. [CityFibre triples business ethernet availability for its partners](#). Accessed on 5 February 2026.
- A21.453 CityFibre. 14 July 2025. [CityFibre agrees £2.3bn in new financing round, in major investment in UK digital infrastructure](#). Accessed on 18 February 2026.
- A21.454 CityFibre. 20 January 2025. [Full speed ahead: CityFibre's build now underway in all Project Gigabit areas](#). Accessed on 2 March 2026.
- A21.455 CityFibre. 11 February 2025. [CityFibre delivers first full year of profitability, with Sky to launch in 2025](#). Accessed on 29 January 2026
- A21.456 CityFibre. [Sky and CityFibre sign partnership](#). Accessed 6 March 2025
- A21.457 CityFibre. [CityFibre triples business ethernet availability for its... | CityFibre](#). Accessed on 5 February 2026.

VodafoneThree

- A21.458 Vodafone. [5G and 4G broadband with GigaCube](#). Accessed on 6 February 2026.
- A21.459 Vodafone. [Vodafone Broadband](#). Accessed 10 February 2026.

Virgin Media O2

- A21.460 Virgin Media O2. [Hello, we're Virgin Media O2](#). Accessed on 27 February 2025
- A21.461 Virgin Media O2. 18 February 2026. [InfraVia, Liberty Global and Telefónica acquire Substantial Group for £2 billion through their existing joint venture, nexfibre](#). Accessed on 26 February 2025.
- A21.462 Virgin Media O2. [InfraVia, Liberty Global and Telefónica acquire Substantial Group for £2 billion through their existing joint venture, nexfibre](#). Accessed on 26 February 2026.
- A21.463 Virgin Media O2. 18 February 2026. [Virgin Media O2 Q4 2025 Financial Results](#). Accessed on 6 March 2026
- A21.464 Virgin Media O2. [Virgin Media O2 bolsters future network with fibre upgrade plan](#). Accessed on 15 January 2025.
- A21.465 Virgin Media O2. 17 September 2025. [Virgin Media O2 brings together new team to challenge the fixed wholesale market](#). Accessed on 6 March 2026.
- A21.466 Virgin Media O2. [VMO2 switches on residential 2Gbps broadband service and launches symmetrical speed options](#). Accessed on 4 March 2025
- A21.467 Virgin Media Business. [Fibre Business Broadband & Phone Deals for 2025 | Virgin Media Business](#). Accessed on 28 January 2025.
- A21.468 [Virgin Media O2 completes gigabit upgrade in boost for Britain's broadband target](#). Accessed on 11 February 2025.
- A21.469 Virgin Media O2. 29 July 2021. [Virgin Media O2 bolsters future network with fibre upgrade plan](#). Accessed on 15 January 2025.
- A21.470 [Virgin Media O2 and Daisy Group Announce New B2B Company to Create Communications and IT Powerhouse for UK Businesses](#). Accessed on 25 February 2025.

- A21.471 Virgin Media O2. [Business broadband](#). Accessed on 22 January 2026.
- A21.472 Virgin Media O2. [Virgin Media O2 and Daisy Group Announce New B2B Company to Create Communications and IT Powerhouse for UK Businesses](#) . Accessed on 25 February 2025.
- A21.473 Virgin Media Business. [Dedicated Internet Access](#). Accessed on 12 February 2026.
- A21.474 Virgin Media O2. 16 April 2024. [Mobile coverage that's out of this world: Virgin Media O2 looks to Space to boost signal in rural areas - Virgin Media O2](#). Accessed on 6 March 2026.
- A21.475 Virgin Media Business. [Dedicated Internet Access | Leased Lines | Virgin Media Business](#). Accessed on 6 March 2026
- A21.476 Virgin Media Business. [Dark Fibre | Virgin Media Business](#). Accessed on 6 March 2026.

Other

- A21.477 Avanti. [Extending EE's 4G network - Avanti Communications](#). Accessed on 4 March 2025.
- A21.478 Colt. 2 November 2023. [Colt completes \\$1.8bn acquisition of Lumen EMEA - Colt Technology Services](#). Accessed on 6 March 2026.
- A21.479 Colt. [Dark Fibre](#). Accessed on 23 February 2026.
- A21.480 Community Fibre. 22 January 2026. [How to choose a business broadband provider](#). Accessed on 17 February 2026.
- A21.481 Community Fibre. 12 June 2025. [Community Fibre announces strategic wholesale agreement with VodafoneThree](#). Accessed on 29 January 2026.
- A21.482 Community Fibre. 28 August 2025. [Community Fibre launches strategic wholesale agreement with VodafoneThree](#). Accessed on 17 February 2026.
- A21.483 Community Fibre. [Community Fibre announces continued customer growth. 9 September 2025](#). Accessed on 13 February 2026.
- A21.484 Community Fibre. 29 January 2026. [Community Fibre announces record revenue growth](#). Accessed on 29 January 2026.
- A21.485 Community Fibre. [Community Fibre. Broadband Packages](#). Accessed on 10 December 2025.
- A21.486 Community Fibre. 11 August 2021. [Community Fibre announces acquisition of Box Broadband](#). Accessed on 6 March 2026.
- A21.487 Connexin. 24 March 2025. [CityFibre acquires Connexin's full fibre infrastructure in strategic agreement](#). Accessed on 29 January 2026.
- A21.488 Freedom Fibre. [Freedom Fibre partners with Talk Talk](#). Accessed on 29 January 2026.
- A21.489 Full Fibre. 27 January 2025. [FullFibre and Zzoomm merge to form one of UK's largest Altnets](#). Accessed on 27 November 2025.
- A21.490 Hyperoptic. 29 September 2025. [Hyperoptic continues to demonstrate strong growth and network expansion in 2024](#). Accessed on 13 February 2026.
- A21.491 Hyperoptic. 2024. [Mid-Year Update Report for the Six Months to 30 June 2024](#). Accessed on 6 March 2026.
- A21.492 INCA. 22 October 2025. [Altnet sector unveils new infrastructure sharing venture to win market share in mobile and datacentre markets](#). Accessed on 11 December 2025.
- A21.493 ITS. September 2024. [Sky Business signs a new long-term agreement with dedicated B2B full fibre provider ITS](#). Accessed on 6 March 2026.

- A21.494 Netomnia. 15 June 2024. [Netomnia and Brsk to merge creating the second largest altnet in the United Kingdom](#). Accessed on 6 March 2026.
- A21.495 Netomnia. [Netomnia FTTP overtakes FTTC](#). Accessed 10 February 2026.
- A21.496 Netomnia, 28 January 2026. [Netomnia, YouFibre, Brsk Annual Results 2025](#). Accessed on 13 February 2026.
- A21.497 Netomnia. 12 August 2025. [Netomnia Launches B2B Wholesale Platform](#). Accessed on 17 November 2025.
- A21.498 nexfibre. [About nexfibre](#). Accessed on 27 February 2025.
- A21.499 nexfibre. [nexfibre welcomes giffgaff to its next generation wholesale platform](#). Accessed 9 January 2026.
- A21.500 nexfibre. [Q3 2025 coverage update](#). Accessed on 13 February 2026.
- A21.501 nexfibre. [Nexfibre network passes 2 million premises](#). Accessed on 14 January 2025.
- A21.502 NICC. [Developing interoperability standards for the UK](#). Accessed on 24 February 2026.
- A21.503 Point Topic, INCA. April 2025. [UK Altnets: Delivering Affordable, High-Speed Connectivity with Unmatched Customer Satisfaction](#). Accessed on 6 March 2026.
- A21.504 PXC. 18 November 2025. [Community Fibre partners with PXC to continue upscaling its fibre services for customers](#). Accessed on 29 January 2026.
- A21.505 PXC. 8 December 2025. [PXC and Trooli partnership enters next phase](#). Accessed on 29 January 2026.
- A21.506 PXC. 16 September 2024. [PXC to Partner with Netomnia and Brsk](#). Accessed on 6 March 2026.
- A21.507 Starlink. [Starlink for homes](#). Accessed on 22 January 2026.
- A21.508 TalkTalk. [Business fibre broadband](#). Accessed on 22 January 2026.
- A21.509 InfraVia, Liberty Global, Telefonica. February 2026. [InfraVia, Liberty Global and Telefónica acquire Substantial Group](#)
- A21.510 for £2 billion through their existing joint venture, nexfibre
- A21.511 Virgin Media Business. [Dark Fibre](#). Accessed on 17 February 2026.
- A21.512 Zen. 5 November 2024. [We've partnered with Freedom Fibre](#). Accessed on 29 January 2026.

Press

- A21.513 Financial Times. [BT stems customer losses as broadband competition abates](#). Accessed 11 February 2026.
- A21.514 InfraVia, Liberty Global and Telefonica. 18 February 2026. [02-18-InfraVia-Liberty-Global-and-Telefonica-Acquire-Substantial-Group.pdf](#) Accessed 18 February 2026.
- A21.515 ISPreview. 24 February 2026. [FTTH Council Europe Updates on Copper Switch Off Progress by Country](#). Accessed on 2 March 2026.
- A21.516 ISP Review. 12 September 2025. [Openreach to Cut Price of FTTP Broadband Rental on UK Proactive Upgrades to Cut Price of FTTP Broadband Rental on UK Proactive Upgrades](#). Accessed on 27 November 2025.

- A21.517 ISP Review. 14 May 2025. [AllPointsFibre Launch New UK Aquila Wholesale Full Fibre Network](#). Accessed on 3 March 2026.
- A21.518 ISP Review. 18 July 2025. [Rural UK Full Fibre Networks County Broadband and Truespeed to Merge](#). Accessed on 27 November 2025.
- A21.519 ISP Review. 24 February 2026. [Bright Edge Networks Launch New UK Wholesale Telecoms Platform – Beacon](#). Accessed on 3 March 2026.
- A21.520 ISP Review. 25 September 2025. [ISP Zen Internet Signs Deal to Harness MS3’s UK Full Fibre Network UPDATE](#). Accessed on 29 January 2026.
- A21.521 ISP Review. 29 December 2025. [Consolidation Tracker for Alternative UK Gigabit Broadband Networks - ISPreview UK](#). Accessed 15 January 2025.
- A21.522 ISP Review. 24 November 2025. [Enders analysis warns largest UK broadband altnets lost £1.5bn in 2024](#). Accessed on 13 February 2026.
- A21.523 ISP Review. 30 October 2024. [Enders Analysis Finds 20 Largest UK Altnet BT Rivals Lost £1.3bn in 2023](#). Accessed on 6 March 2026.
- A21.524 ISP Review. 28 January 2026. [Virgin Media Start Opening FTTP Upgrade Areas to Existing UK Customers](#). Accessed on 29 January 2026.
- A21.525 ISP Review. 17 September 2025. [Virgin Media UK Create Fixed Wholesale Broadband Unit for Consumer and Business](#). Accessed on 25 November 2025.
- A21.526 ISP Review. 19 January 2026. [Creditors Allegedly Set to Take Control of Rural UK Broadband ISP Gigaclear](#). Accessed on 24 February 2026.
- A21.527 ISP Review. 24 March 2025. [CityFibre to Acquire Connexin’s UK FTTP Broadband Network UPDATE](#). Accessed on 29 January 2026.
- A21.528 ISPreview. 7 November 2025. [Nexfibre Publish Q3 2025 UK Full Fibre Broadband Build Update – 2.44M Premises](#). Accessed 12 February 2026.
- A21.529 ISPreview, 2022. [Ogi Become First UK ISP to Deploy Nokia's 25Gbps Full Fibre Tech - ISPreview UK](#). Accessed on 13 January 2026.
- A21.530 ISPreview, 2025. [Netomnia Goes Live with First 50Gbps UK Full Fibre Broadband Network](#). Accessed on 17 February 2026.
- A21.531 ISPreview. [Netomnia Agree UK Broadband Merger Deal with Owners of Virgin Media O2 UPDATE2 - ISPreview UK](#). Accessed 27 February 2026.
- A21.532 Thinkbroadband. 23 September 2025. [Olilo has placed its first order on APFN aquila platform](#). Accessed on 29 January 2026.
- A21.533 Thinkbroadband. September 2025. [The State of Broadband – September 2025](#). Accessed on 17 February 2026.
- A21.534 Thinkbroadband. September 2025. [The State of Broadband](#). Accessed on 19 January.
- A21.535 ThinkBroadband. 19 February 2026. [Exactly how much new fibre is Virgin Media O2/Nexfibre buying with Netomnia?](#) Accessed on 24 February 2026.
- A21.536 Thinkbroadband. 14 May 2025. [Persimmon Homes sells Fibrenest to BUUK/OFNL for £100m](#). Accessed on 29 January 2026.
- A21.537 Telecoms.com. 6 August 2025. [FWA in the 5G and 6G Era: From Last-Mile Fix to Strategic Growth Engine](#). Accessed on 15 December 2025

- A21.538 Telecoms.com. 26 June 2024. [FWA market matures as operators look to monetise 5G](#). Accessed on 15 December 2025.
- A21.539 Telecoms.com, 2025. [Openreach tests out Nokia's 50G PON tech](#). Accessed on 1 December 2025.
- A21.540 FDM/CCS Insight. [Growing Adoption of 50G-PON in Enterprise and Consumer Segments](#). Accessed on 7 January 2026.

Other sources

Legal judgments

- A21.541 [Hutchison 3G UK Ltd v The Office of Communications](#) [2009] EWCA Civ 683. Accessed 4 March 2026.
- A21.542 *British Telecommunications PLC v Office of Communications (VULA)* [2016] CAT 3. Accessed 4 March 2026.
- A21.543 British Telecommunications Plc v Office of Communications [2017] CAT 25. Accessed 10 March 2026.
- A21.544 *TalkTalk Telecom Group plc and Vodafone Limited v Ofcom* (BCMR 2019) [2020] CAT 8. Accessed 10 March 2026.
- A21.545 [CityFibre Limited v The Office of Communications](#) [2022] CAT 32. Accessed 6 March 2026.

Other

- A21.546 [The Communications \(Access to Infrastructure\) Regulations 2016](#). Accessed 6 March 2026.
- A21.547 Enders Analysis. [BT: The altnet threat starts to recede](#). Accessed 11 February 2026.
- A21.548 OBR. 21 May 2025. [OBR CPIH inflation forecast](#). Accessed 12 December 2025.
- A21.549 ONS. 19 November 2025. [Consumer price inflation, UK: October 2025](#).
- A21.550 ONS. February 2026. [Construction output price indices](#)
- A21.551 ONS. February 2026. [AWE: Construction Index: Seasonally Adjusted Total Pay Excluding Arrears](#)
- A21.552 Point Topic. 13 December 2024. [Q3 2024 UK ISP and network supplier metrics – a market overview](#). Accessed 6 March 2026.
- A21.553 New Street Research, 2025. 24 November 2025. FWA is on the horizon. Accessed 6 March 2026.
- A21.554 Analysys Mason. 26 April 2024. [Satellite is a cost-effective means for MNOs to reach remote customers](#). Accessed 6 March 2026.
- A21.555 UK Statistics Authority. January 2013. [Press release](#)