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TELECOMS ACCESS REVIEW: ALLOCATION OF FIBRE CABLE COSTS

DECEMBER 2025

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Contents

1 Executive Summary

Openreach Ethernet services[1] provide 'secure, business grade connectivity to businesses throughout the UK' and are used 'to support critical national infrastructure projects, Mobile networks, Government and Schools projects'.[2] Competitive pricing of these services underpins growth across the economy and the efficient delivery of public services.

Openreach is currently in the midst of a complete access network renewal, moving away from the legacy of a network topology that reflected the limitations of copper based voice telephony, to an all fibre network. This will involve replacing the copper access network with a full fibre network, allowing the majority of current exchange buildings to be retired, leaving 950 Openreach Handover Points (OHPs). While the focus of the full fibre roll out has been on providing improved services for residential and SME customers, Openreach have stated with respect to the Ethernet services used by enterprise and wholesale users that "Our Full Fibre network is **driving lower cost**".[3] In part this is because, on a forward looking basis, Ethernet services will be directly connected to the OHPs, avoiding the costs of connecting via the legacy local exchange.

However, this reduction in the cost to Openreach of delivering Ethernet services has not been reflected in lower prices for users of Ethernet services to date. Due to lack of effective competition, in most areas of the country, Openreach Ethernet prices are still determined by regulation. Since 2019, Openreach have been allowed to increase Ethernet prices in line with inflation, which leads to real terms increases in ARPUs as customers also move to higher-priced higher-speed services to take account of increased traffic volumes, such as the increase in capacity delivered by 5G mobile networks. Openreach report overall ARPUs increasing by 8% in FY2024, well above the rate of inflation.[4] Ofcom has allowed price increases despite limited competition for many customers and the reported returns on Ethernet services being well above the cost of capital. When setting the current charge controls in geographies where Openreach did not face effective competition, Ofcom forecast overall excess annual profits of £219 million by FY2026 above that required to generated a return equal to the WACC for LLA services.[5] The outturn returns reported in the RFS for FY2025 show returns above WACC across all LLA and IE markets. These reported returns appear to have been artificially depressed in BT's RFS, due to costs incurred in the new full fibre roll out being mis-attributed to the legacy Ethernet network, with returns on a basis consistent with that used to set the charge controls likely to be significantly higher.

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1 Openreach Ethernet services include Ethernet Access Direct (EAD), Optical Spectrum Access and inter-exchange connectivity (IEC) services.

2 Openreach Investor Business Briefing - 7th Dec 2023. Page 41

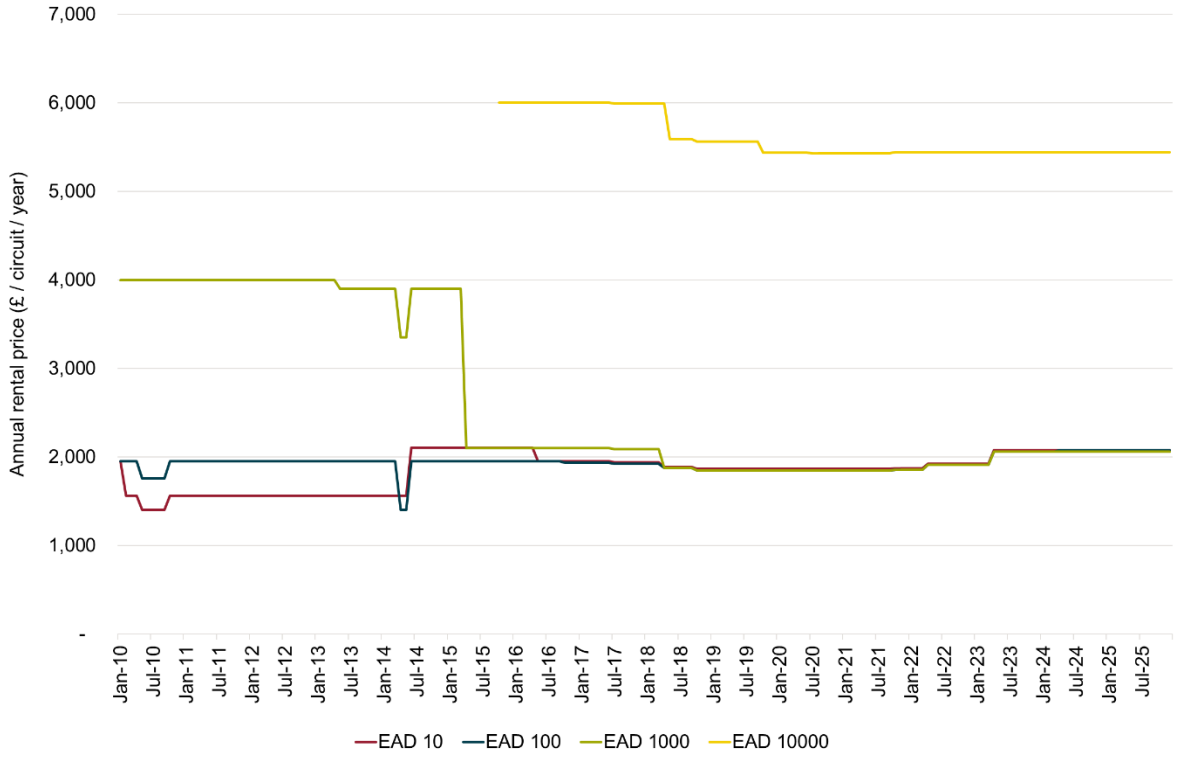
3 Ibid

4 Ibid page 41

5 Promoting investment and competition in fibre networks: Wholesale Fixed Telecoms Market Review 2021-26 Consultation January 2020. Annexes page 152

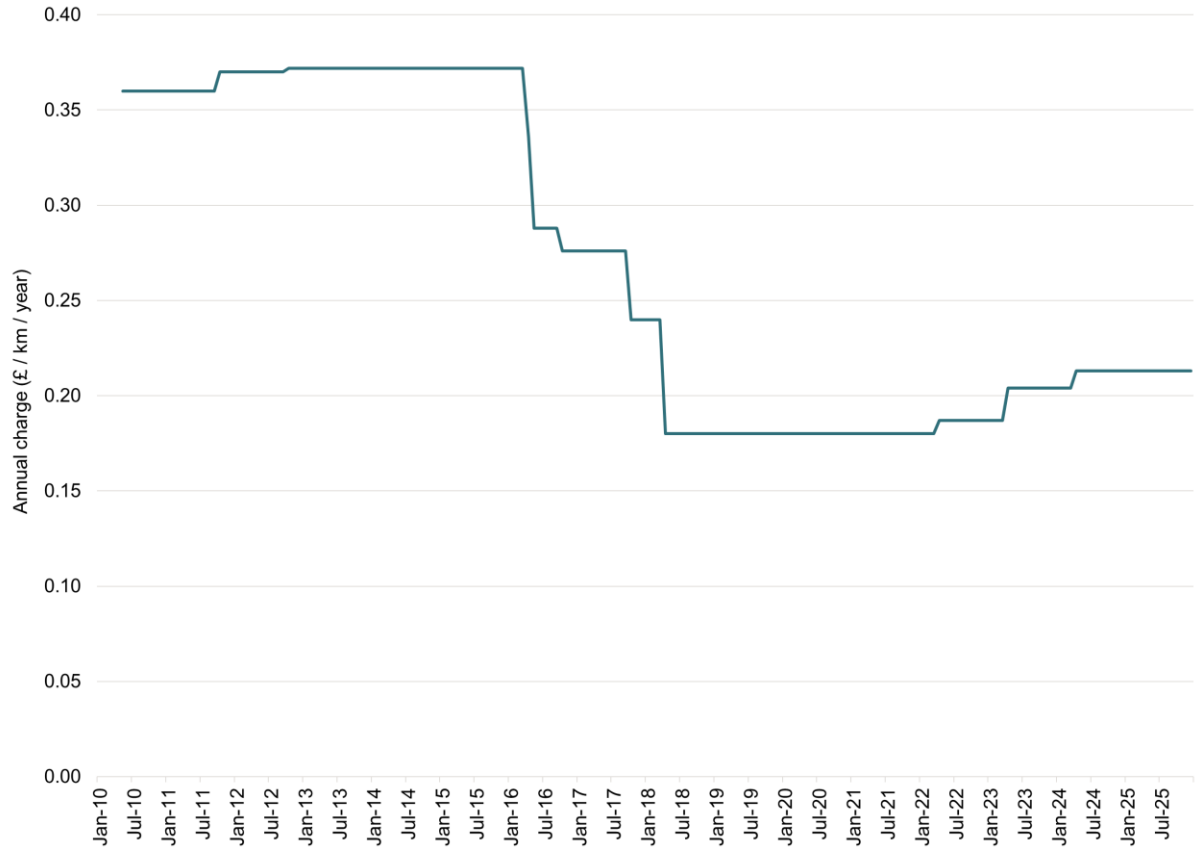
Allowing Openreach to increase prices in line with inflation from 2019 onwards reversed the previous downward trends in pricing driven by regulation to align prices with forecast costs, as shown in the charts below.

Figure 1 EAD rental prices – 2010 to 2025



Source: BT EAD price list
Note: Standard prices

Figure 2 EAD main link charges – 2010 to 2025



Source: BT EAD price list

Ofcom's March 2025 consultation proposed to implement charge controls requiring significant reductions in prices by Openreach in areas where it did not face prospective competition, to reflect the fact the overall reported returns were significantly above the weighted cost of capital. Continued excessive prices would result in harm to society, with little benefits in terms on incentivising investment by Openreach or competitors, and with no expectation that competition would mitigate the harm in the longer term. As such Ofcom considered it appropriate to propose a charge control that brought prices into line with forecast costs at the end of the charge control period, eliminating returns greater than the cost of capital.

Ofcom's November 2025 consultation now proposes to allow Openreach to set prices at a higher level than proposed in March. These new proposals reflect changes that BT has announced it will be making in the allocation of costs in the Regulatory Financial Statements, due to be published in July 2026. The announcement of these changes to cost allocation methodologies are outside the normal course of events and appear to be motivated by BT's desire to increase profits generated from customers for whom it does not face effective competition.

Ofcom needs to conduct a more detailed review of BT's proposals, and ensure stakeholders have sufficient information to fully assess the proposals and their impact on regulated prices

Given information asymmetry, Ofcom should be extremely cautious about accepting methodological changes proposed outside the normal course of events by BT, which would have the effect of increasing BT's future allowable revenues. There is a strong risk that BT can pick changes in a way which biases cost attribution, implementing changes which have the effect of increasing costs allocated to services regulated at cost,[6] while ignoring any potential changes which would reduce costs.

In a number of previous cases, BT has used its information asymmetry to try and increase reported costs of regulated services in advance of charge controls, in order to persuade Ofcom to relax charge controls. This has required vigilance by Ofcom to ensure BT could not game the regulatory system, with a detailed review and analysis of changes proposed by BT.

This risk is particularly acute in the current circumstances, where Openreach are in the process of migrating services from legacy networks to a more efficient full fibre network. There is a risk that by projecting forwards costs from current levels, Ofcom's cost forecast model will 'bake in' transitory costs relating to the migration, while not adequately reflecting the efficiency gains in future years as services are migrated.

In order to assess the validity of the proposals set out in its consultation, Ofcom should:

- Fully review BT's proposed changes in the round, if necessary with external support,[7] to assess whether the changes result in a more accurate and appropriate estimate of the cost of providing EAD services; and
- Determine whether a mechanistic projection from the base year costs results in an appropriate charge control for LLA services, given the ongoing network transition.

Stakeholders' ability to respond effectively to Ofcom's consultation is severely limited by the sparse information available to them (and to Ofcom) on BT's changes to methodologies:

- The full documentation on how the changes to the cost accounting methodology will be implemented is not available and will not be available until July 2026;
- The detailed Regulatory Financial Statements, showing the impact of these changes at a product level, will not be published until July 2026, although it appears restated RFS have been provided to Ofcom for earlier years; and

6 In this case LLA services including dark fibre in Area 3 and IEC services.

7 For example, Ofcom commissioned Analysys Mason to produce a report on methodologies for the valuation of BT's duct assets in 2010 and commissioned Cartesian to produce a report reviewing BT's cost attribution methodologies in 2015.

- Ofcom has not provided the updated cost forecast model underlying its revised proposals, despite a significant change in the underlying input cost assumptions.

Available information suggests that BT's proposed changes are partial and not well justified

BT is specifically proposing two changes to its cost accounting approach:

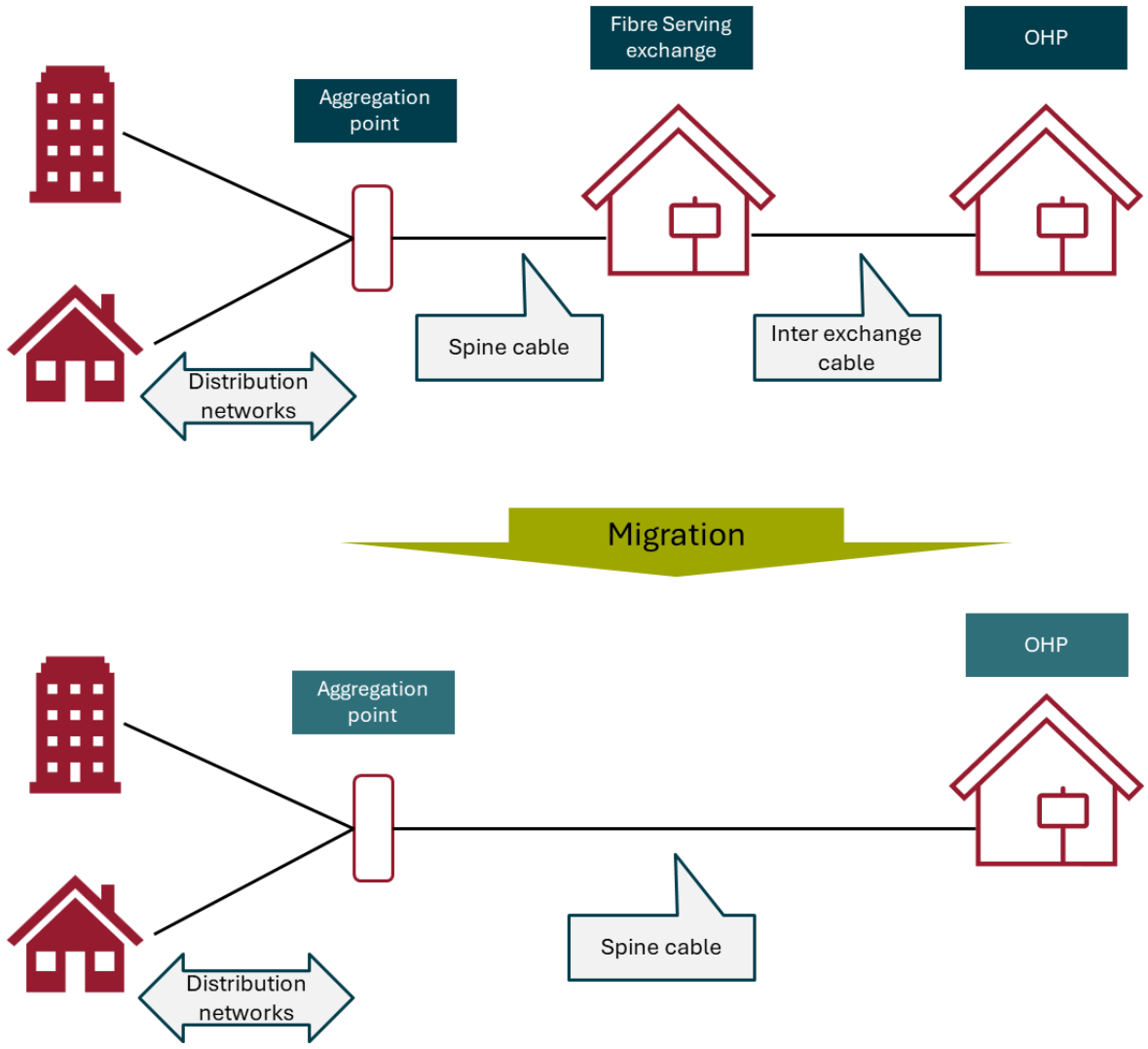
- To reduce or remove the allocation of 'interexchange fibre cable' to FTTC/FTTP services within the WLA markets and hence increase costs allocated to LLA and IEC markets; and
- To adjust the allocation of 'spine fibre cable' to allocate costs based on current numbers of fibre cables used by different services rather than allocating cable costs based on the intended use of the capacity.

Both changes have the effect of shifting reported costs from consumer oriented FTTC/FTTP services, to Ethernet services. If Ofcom were to rebase its proposed charge controls to reflect these changes, this will increase BT's allowable revenues under regulation, as reported costs are an input to the LLA cost-based charge controls, but not the GEA charge controls, which will continue to be set on a CPI-0 basis.

This effect will lead to less appropriate regulatory costing of Ethernet services. In particular, there is little rationale for price increases for Ethernet users as a result of the roll out of full fibre networks, given that the benefits of the roll out, in terms of greater bandwidth and reliability, largely accrue to WLA customers. The main benefits for Ethernet service provision are potential economies of scope from moving to a unified fibre network and efficiencies from removing unnecessary exchange buildings from the network, which would be expected to lead to lower costs and hence prices for Ethernet users, not higher.

The first change proposed by BT reflects an evolution in the routing of services following the roll out of the full fibre network. Because the full fibre access network does not have the same distance restrictions as the legacy copper network, it can bypass most local exchanges, terminating in a much smaller number of OHPs. This will allow BT to close most local exchanges, and avoid the need for associated 'interexchange fibre cables' i.e. cables between local exchanges and the PHPs. But there is a trade-off, as this will results in the average distance between customers and the serving exchange being further, requiring longer "spine" fibre cables in the access network. This is illustrated below.

Figure 3 Migration from legacy fibre network to new network



Source: Frontier Economics

In the RFS to date, BT has allocated a share of the costs of the 'interexchange fibre cables' to GEA services. BT now notes that the cables carrying GEA services do not always pass through local exchanges, and are proposing to reduce the allocation of interexchange fibre cables to GEA services. However, BT are not proposing to take any account of the longer spine cable distances between customers and OHPs when the local exchange is bypassed, compared to between customers and local exchanges, when allocating the costs of the 'spine' cables. The new spine cables effectively are a substitute for a combination of the legacy spine cables and the interexchange cables. The costs of both new and legacy spine cables are currently combined and allocated based on the number of fibres alone, rather than being treated separately or taking any account of the length of fibre used by each service. Not taking account of fibre length results in an under-allocation of access network cable costs to GEA services, which will use much longer spine cable routes to OHPs , and an overallocation of costs to legacy Ethernet services, where the serving access node is still the local exchange.

In addition, BT is proposing a further change to the allocation of spine cables. Rather than allocating costs on a causal basis to reflect the capacity installed for each service, BT is proposing to allocate costs based on current usage of spine cables. This move away from cost causality is clearly contrary to the Regulatory Accounting Principles, which Ofcom require BT to follow in the production of the RFS. Given that the full fibre roll out and migration is still ongoing, the utilisation of the spine cables rolled out as part of this programme is still low. However, this is to be expected in such a roll out, and will be reflected in the competitive level of prices, where Openreach face competition from others rolling out full fibre networks, and will be recognised in the 'fair bet' if Openreach is regulated in future. BT's proposed changes to the allocation, which will effectively result in legacy Ethernet customers partially funding the full fibre roll out, will distort competition and regulation in the WLA markets as well as causing harm in the Ethernet market.

In summary, while there are underlying changes in how services are delivered by Openreach, the changes made by BT do not fully reflect the totality of these changes nor the long run costs of service delivery when the migration is complete.

Ofcom's cost modelling needs to reflect the future delivery of WLA and Ethernet services

As noted above, Ofcom has not provided a revised version of the model, taking into account the cost allocation changes made by BT, which makes it impossible to comment in detail on the implementation of these changes in the forward looking cost forecast. However, two points are clear:

- The cost forecast model published with the consultation in March 2025, is not capable of appropriately forecasting EAD costs in a period where there are fundamental changes in the way in which EAD services are delivered, due to the ongoing retirement of local exchanges; and
- The proposals for the charge control of EAD services are inconsistent with Openreach's statement that the costs of providing Ethernet services is falling over time, and that the introduction of EAD2 during the forecast period will reduce costs.

Even if the base year estimates were an accurate reflection of Openreach's costs in that year, simply projecting those costs 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. The model does not take account of structural changes in how Ethernet services will be delivered more efficiently during the period. For example:

- The closure of 108 local exchanges and hence retirement of the associated cable routes; and
- The introduction of EAD2 which offers lower costs than EAD.

Any charge control on LLA services should show real terms reductions in prices over the period of the charge control, reflecting:

- The excess profits generated on LLA services currently, due to Openreach being able to increase ARPUs in real terms under the pricing continuity approach adopted by Ofcom since 2019; and
- The expected efficiency gains over time as Openreach migrates Ethernet delivery to a more efficient network structure and technology.

To the extent that there are any one off costs associated with the network transition and service migration, these should not be recovered through increased LLA prices:

- To the extent that the transition will deliver quality benefits to WLA customers, related costs should be recovered from WLA customers through the pricing continuity/fair bet mechanisms put in place in these markets, rather than from LLA customers who will not see equivalent quality benefits; and
- As these changes will deliver long run efficiencies, and hence lower costs, in the delivery of Ethernet services, they should be recovered from future customers and/or BT's investors, who will benefit from the cost reductions.

Ideally Ofcom would have a range of forecasts to determine the optimal profile of prices over time:

- A cost forecast based on the legacy technology, 'as if' there were no changes in network structure and technology (and anchor pricing approach);
- A cost forecast based upon the cost of delivering services based on the forward looking technology; and
- A cost forecast based on the costs incurred migrating from the legacy technology to the forward looking technology.

The first of these forecasts would form an upper bound for prices during the transition period, and the second an estimate of the long term prices, as a lower bound. The third would provide further information to regulate prices during the transition in a way which allows full recovery of costs over time, whilst protecting customers from excessive pricing.

However, given that Ofcom is seeking to make a charge control determination in the next three months, it is not practicable for Ofcom to carry out a full analysis, and so Ofcom will need to apply a degree of regulatory judgment in setting the charge controls with imperfect information. This could be an anchor pricing approach, forecasting unit costs forward from a point where the RFS was not distorted by the issues set out above.

What is not appropriate is for Ofcom to adjust the LLA and IEC charge controls based on forecast costs which to reflect the changes proposed by BT. This reflects both the substance

of the changes, which are clearly partial and unjustified, but also the principle that BT should not be able to use information asymmetry to increase its profitability. Given BT has not adequately updated the RFS in the last 5 years to take account of the roll out of full fibre networks, which appears to have led to a misallocation of costs to Ethernet service, Ofcom would ideally review the base year cost inputs to the Ethernet charge controls and if necessary reduce them to reflect the anchor pricing principle:

- For spine cable, this will involve adjusting downwards the costs attributed to LLA markets to remove the spillover of costs associated with the roll out of the full fibre network, due to BT pooling shorter legacy spine cables used for LLA services with the longer spine cables used in the FTTP roll out;
- For interexchange cable, this will require adjusting for reductions in utilisation over time so that the final users on links soon to become redundant do not face large price increases.

However, a full review of the RFS would take a number of months.

2 Context

2.1 Regulation of Ethernet services

Ethernet services are used for a wide range of business and government connectivity where mass market broadband services do not provide sufficient quality. Ethernet services are also bought by operators to provide connectivity within their networks as an alternative to building their own infrastructure.

Ofcom has recognised that the competitive conditions for the provision of Ethernet services (and previously leased line services) are different to that for the provision of mass market broadband and voice connections, with limited substitution on both the demand side and supply side. On the demand side, customers of Ethernet services, which provide high quality, reliable services, do not consider mass market broadband services to be adequate substitutes. On the supply side, while Ethernet and mass market broadband services can share some common infrastructure, there is a degree of differentiation in both the infrastructure used and the operational and business support services (OSS/BSS) used to deliver high quality services to users of Ethernet services.

As such Ofcom has defined wholesale Leased Line Access (LLA) and Inter-Exchange Connectivity (IEC) product markets, separately from the Wholesale Local Access product market underlying mass market broadband services.

The existence of operators in specific geographic areas, such as central London, targeting leased line customers also means that separate geographic markets have been defined to reflect the variation in competition across the country. For example, BT has been determined to not have SMP in the Central London Area (CLA) since 2019.

Cost based charge controls on Ethernet services were introduced in 2009 and revised in 2013 and 2016. These charge controls were based on cost forecast models, using BT's reported costs, projected forwards. Ofcom sets cost based charge controls such that expected revenues from the basket of services are equal to expected costs of delivering the basket of services. The cost forecast models underpinning these charge control::

- Uses base year costs for particular cost components, taken from the RFS;
- Forecasts demand for all relevant services;
- Forecasts component costs to the end of the charge control period, based on growth in demand for services using that component, asset/cost volume elasticities (AVE/CVE), inflation and efficiency gains;
- Allocates the component costs to services using the methodologies underlying the RFS; and
- Calculated the value of X in a CPI-X charge control which will result in prices such that revenues will equal forecast costs for the basket of services.

Underlying this approach is an implicit assumption that the cost structure of Openreach is broadly stable throughout the forecast period, so demand-driven changes in costs can be captured by CVEs/AVEs, and the allocation of component costs can be made using the same methodology at the end of the period as at the beginning of the period.

The cost based charge controls required real terms price reductions, reflecting a combination of:

- Reductions in the unit cost of delivering Ethernet services due to increased efficiency over time and;
- The ability of BT to increase overall ARPUs, even when prices were falling, due to customers migrating to higher speed services, with Openreach charging a premium for higher speed services.

In 2019, Ofcom determined that the charge controls for LLA and IEC services should be set on a 'pricing continuity' basis, which would allow prices to rise above forecast costs, on the basis that this would incentive investment in alternative fibre networks. This approach was repeated in the 2021 WFTMR.

In the March 2025 consultation, Ofcom proposed to set cost based charge controls for LLA and DFA services in Area 3 (the part of the country where Ofcom does not expect significant investment from alternative providers of leased line services) and for dark fibre services in the IEC market in BT Only and BT+1 exchanges.

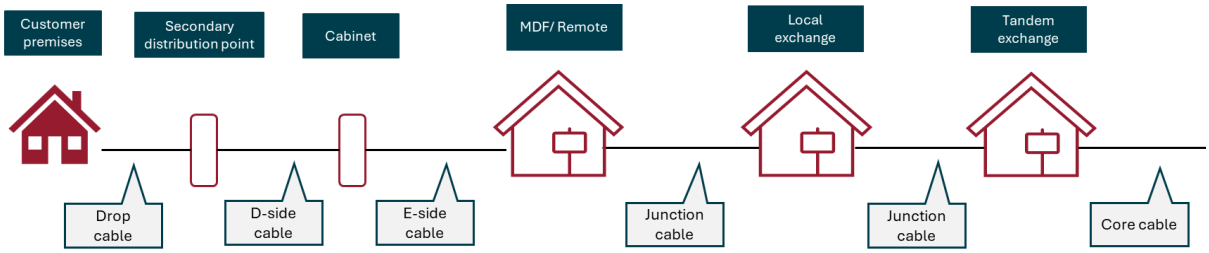
2.2 The treatment of fibre cable costs in the RFS

The most significant costs in the provision of LLA services and dark fibre services is the cost of the underlying fibre cables and duct infrastructure. Below we set out how these costs were treated in the RFS prior to BT's changes.

2.2.1 RFS components reflect the legacy network topology

BT's network was initially built to provide services over copper cabling. Due to attenuation in copper cables, there was a limit on the distance from the exchange (the site of the main distribution frame) to the end customer. This meant that a large number of exchange sites were needed. The high costs of (analogue) switching and transmission also meant that there was a complex hierarchy of exchanges.

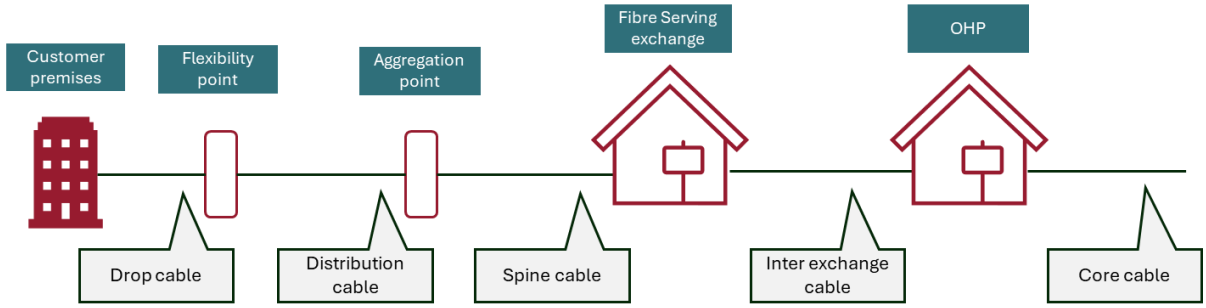
Figure 4 BT PSTN network



Source: Frontier Economics

When fibre was introduced into BT's network, initially for inter-exchange transmission and then in the access network, the existing infrastructure (ducts and buildings) and hence network topology was used, even though fibre cables can carry signals over a much longer distance.

Figure 5 BT Legacy Fibre network



Source: Frontier Economics

The RFS reflects this topology, with allocations to separate cost components for drop, distribution, spine and inter-exchange cables.

Openreach's charging structure for EAD services also reflects this topology, with separate rental charges for the 'main link', based on the distance between the serving fibre exchange and the OHP covering the cost of the interexchange fibre, and a fixed "rental" component covering the access network and active equipment.[8]

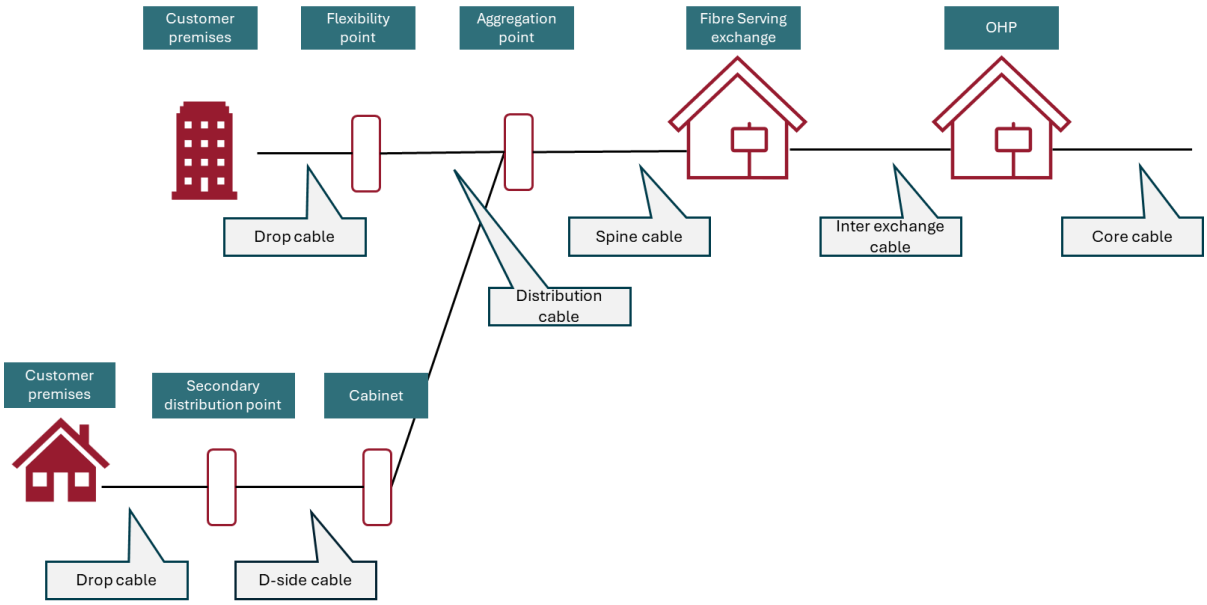
2.2.2 Approach for FTTC and FTTH services

When Openreach introduced fibre to the cabinet (FTTC), which relies on the copper network from cabinets to end users, it was treated in the RFS in a similar way to EAD services. There would be a separate distribution fibre cable network connecting up cabinets, a common spine

[8] Not all EAD services will use a main link component. The use of main link is greater for external users, i.e. competitive providers, than for BT internal use.

fibre network from aggregation points to the serving fibre exchange, and the interexchange cable to the OHP.

Figure 6 FTTC network as treated in the RFS



Source: Frontier Economics

For the drop and distribution cables the allocation of costs was based on actually incurred costs for Ethernet and FTTC services. Spine cable was allocated based on the capacity of fibres required for the respective distribution networks. Interexchange cable was allocated based on usage factors for the different products (including legacy services such as voice).

Fibre to the premises (FTTP) to date was also costed on the same basis as FTTC in the RFS, i.e. drop cables and distribution cables for FTTP are separately identified, spine cable was allocated based on the fibres in the distribution network, and interexchange cable was allocated based on usage factors.

3 Impact of network migration

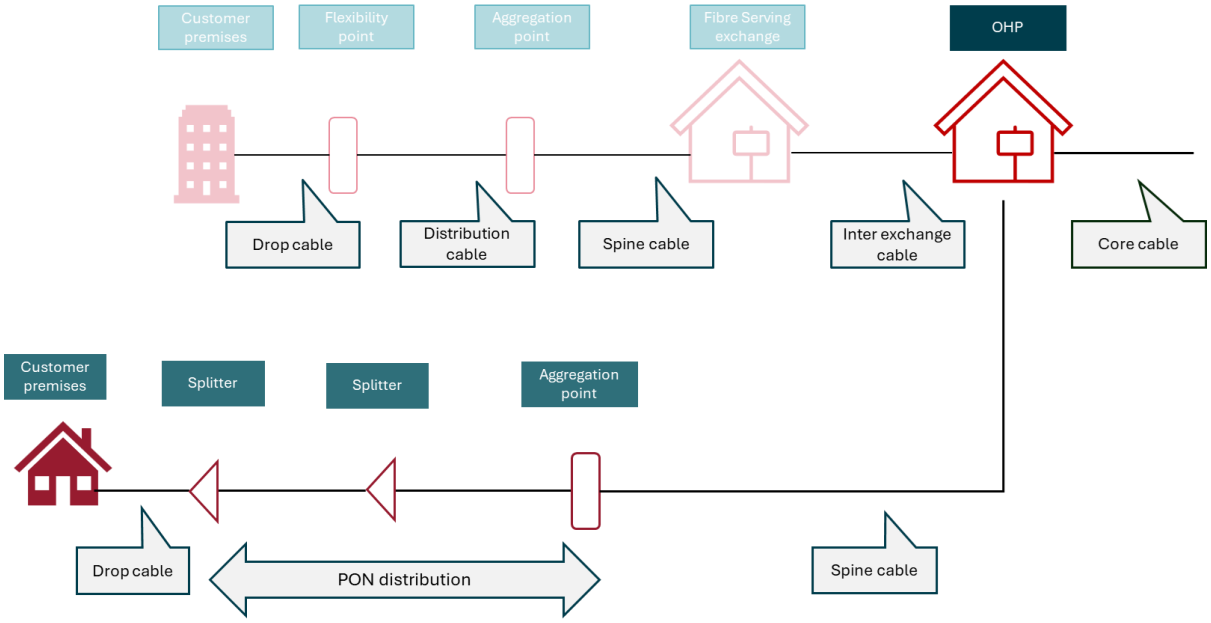
3.1 Copper switch off means local exchanges can be closed

As noted above, the rationale for the large number of local exchanges was the physical characteristics of copper cables. As demand on Openreach's network migrates to fibre based products (even if copper cable is used for final distribution, i.e. FTTC) this constraint is removed.

Given the costs of maintaining exchange buildings is significant, and routing fibre unnecessarily though local exchanges will increase overall route lengths, Openreach is planning to close more than 80% of exchange buildings.

While legacy fibre networks largely transit the local exchange, the fibre network underlying the FTTP build will generally avoid exchanges which are due to be closed, so that no additional work needs to be done when the exchange is closed, as illustrated below:

Figure 7 FTTP network topology



Source: Frontier Economics

While the impetus of the exchange closure programme is copper switch off, exchange closure will also mean that EAD services can no longer be routed via the 'fibre serving' exchange. The price list for EAD services notes that from 2021 the actual routing of cables may not pass through the notional fibre serving exchange, but CPs will be charged as if it did, i.e. will pay a 'main link' charge even if there is no use of inter-exchange cable. This means customers will

pay based on the inefficient legacy network topology, even if the service is delivered using the more efficient forward looking topology.

3.2 The network migration will drive efficiencies in the provision of Ethernet services

The migration to full fibre networks will bring significant benefits to mass market broadband users in terms of quality, both in terms of higher bandwidths and more reliable services.

There will be no significant quality benefits to Ethernet users who already have access to a full fibre network offering high bandwidths and high reliability. However, there are significant potential cost efficiencies.

For example EAD prices are currently set 'as if' the circuits are routed via the local exchange, and hence use interexchange fibre, even where in reality the circuit may be routed directly to the OHP using 'spine cable'. Routing EAD circuits directly to the OHP is likely to have lower costs for a number of reasons:

- Avoiding the local exchange avoids the costs of the local exchange accommodation for the cable entry, and of optical distribution frames and jumpering within the exchange;
- Without the constraint of routing through the local exchange site, the overall fibre route can be shorter;
- There will be economies of scope in using the same spine cables for FTTP backhaul circuits and EAD; and
- Avoiding the local exchange avoids the costs and disruption of re-routing circuits when the exchange is eventually closed.

Openreach are also planning to shortly launch EAD2, which will lower costs of active equipment compared to EAD:

> ***Openreach's new Ethernet services (EAD2)***
>
> *With the development of much higher capacity datacentre equipment, the method of delivery underpinning traditional dedicated Ethernet has been superseded by* ***shared aggregation equipment able to deliver much higher speeds at lower cost****, lower energy and lower physical footprint.*
>
> *This architecture is being adopted by Openreach as part of EAD2 which is a new service currently in development by Openreach in conjunction with our CP customers. [✂]* ***and therefore will be present for the majority of the TAR market review period.***[9]

Overall, post migration the costs of delivering Ethernet services would be expected to be significantly lower, consistent with Openreach's public statements, and if the market were competitive these efficiencies would be shared with customers through lower prices.

9 Openreach TAR Submission, June 2025 Annex 2: Network Technology Report Page 3. Emphasis added

3.3 Reported costs during the migration

There are two potential issues with reported costs during the transition:

1. Accounting depreciation will tend to inflate unit costs by not taking account of the profile of demand over time; and

2. If the cost allocation methodologies are not suitably updated to take account of changes in the cost structure, there is a risk of misallocation of costs between the legacy and new networks and between services.

We describe these issues below.

3.3.1 Accounting depreciation will tend to overstate costs during the migration

Post-migration, the costs of delivering Ethernet services are expected to be lower overall. However, during the migration the overall asset base will increase during a period of dual running of networks, while demand is broadly stable. In other words utilisation on both networks will be lower than the average over the lifetime of the assets.

If traditional straight line depreciation is used, which takes no account of utilisation over time, this this will lead to the unit costs on both the legacy and new networks being inflated.[10]

The typical regulatory approach to accounting for changes in demand over time for an asset reflecting technology cycles, is to use economic depreciation, which adjusts cost recovery to take account of changes in utilisation. For example, Ofcom has suggested that it is likely to use economic depreciation if regulation is imposed on WLA FTTP services in the future:

> *"We recognise that in the early stages of deploying a full-fibre network BT would incur significant capital expenditure with relatively low revenue from FTTP services. One important element of our approach to any future charge controls will therefore be our assumptions about how Openreach's assets have depreciated. Our approach to depreciation will determine the value that Openreach would derive from its investments in the period where it is subject to any charge control. While we would have to consider the prevailing circumstances at the time, we would expect to use economic depreciation rather than accounting depreciation when looking at Openreach's full-fibre investment. Economic depreciation calculates depreciation based on the revenue earning potential of assets (and the services those assets provide) rather than based on a set amount of cost each year (as with accounting depreciation)."*[11]

[10] The effect is likely to be greater on the new network as there is limited accumulated depreciation of the assets at the beginning of their useful lives. Legacy assets are likely to be heavily depreciated at the point when the migration begins,

[11] TAR Consultation, Volume 4 para 1.100

3.3.2 Cost allocation methods for shared assets may need to be updated

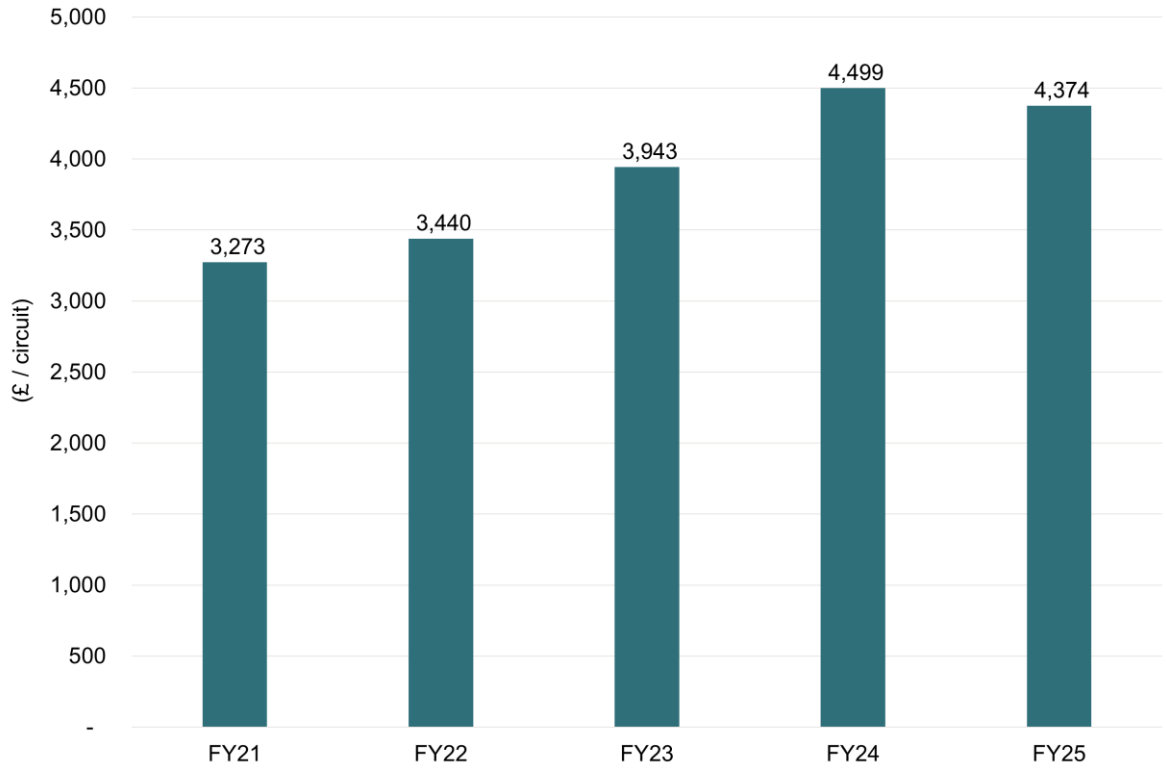
Where assets can be separately identified for the legacy and the new network, then this can aid accurate cost attribution. However, where assets are shared, such as underlying infrastructure such as duct, poles or buildings, the attribution methodologies used previously may not fully capture cost causality.

For example, to date the RFS allocates 'spine cable' costs between WLA and LLA services based on the number of fibre deployed for each service. This approach may have been appropriate where all spine cables terminated at the local exchange. The implicit assumption is that on average fibre aggregation nodes used for WLA services (e.g. GEA-FTTC/FTTP) were equally distant from the local exchange as those used for LLA services (e.g. EAD). However, according to BT spine cables used for GEA-FTTP generally terminate at the nearest OHP, rather than the nearest exchange building (as is the case for EAD services), and so will be longer on average. While both legacy and new cables from aggregation points are categorised as 'spine cables' by BT, they not equivalent, and should be treated separately if possible. Pooling these different cables and allocating costs solely on the basis of number of fibres will tend to under-allocated costs to GEA-FTTP and over-allocate costs to EAD. This will then have a knock on effect on the allocation of infrastructure assets, which are allocated in proportion to cable assets.

3.3.3 These issues appear to have led to an inflated cost allocation to EAD during the roll out of full fibre networks

It had previously been noted to Ofcom that it appears that the costs allocated to LLA services in the RFS were increasing faster than expected, which seemed to be the result of a 'spill over' of cost incurred for the roll out of FTTP services to legacy Ethernet services. For example, the chart below shows the fibre cable mean capital employed per circuit for LLA services over the past five years:

Figure 8 Fibre cable mean capital employed per LLA circuit



Source: *Frontier analysis of RFS*

Note: *Weighted average of MCE per circuit for EAD rental categories within the RFS, across both Area 2 and Area 3 (EAD 1Gbit/s, Other EAD, EAD LA, Other EAD LA). FY21-24 values are based on the restated values in the subsequent years' RFS.*

This shows a 35% increase in the average cost of fibre cable allocated to LLA circuits over 4 years, during the period where BT was rolling out its FTTP network. This increase could be partially explained by the misallocation of new spine cables and not taking account of the much greater length of spine cables deployed for FTTP services.

4 BT's proposed changes

4.1 Overview of the proposed changes

Ofcom is reconsulting on changes to the charge control which will apply from March 2026, to reflect a change that BT will make in the Regulatory Financial Statements in 2026, which will be published by July 2026.

These cover two changes to the allocation of fibre asset costs between services:

- To reduce or remove the allocation of 'interexchange fibre cable' from WLA (FTTC/FTTP) services, to reflects that the cables carrying GEA services do not always actually pass through local exchanges; and
- To adjust the allocation of 'spine fibre cable' between WLA and LLA services, to allocate costs between based on current numbers of fibre cables used by different services, rather than allocating based on the intended use of capacity.

We explain below that:

- There is a lack of transparency on the proposed changes, which does not allow stakeholders to fully assess the changes and their impact on the LLA charge controls;
- Ofcom should be cautious in accepted changes to the RFS proposed by BT/Openreach, consistent with its approach in the past; and
- Based on available information, the BT's proposed changes to the RFS, and the proposals for changes to the LLA and IEC charge controls, do not appear to be appropriate.

4.2 Lack of transparency on the proposed changes

There is a significant information asymmetry between BT and other stakeholders including Ofcom which, if not adequately addressed, could allow BT to manage the information they provide to Ofcom and other stakeholders to attempt to increase charge controls to a higher level, thus allowing BT to earn higher returns.

There is a well-established regulatory regime designed to mitigate this information asymmetry:

- Obligations imposed on BT by Ofcom to produce the RFS:
  - with the methodologies aligning with Ofcom decisions on the treatment of costs for regulatory purposes;
  - publication of the RFS by BT;
  - publication of documentation of the methodology used to produce the RFS;

- Explanation of the modelling approach used to set charge controls, including the use of data from the RFS to set the base year costs and adjustments made to the outputs of the RFS; and
- Publication of the models used to forecast costs in order to set charge controls.

The importance of the RFS as the basis of price regulation of BT and Openreach is noted by Ofcom:

> *"BT's regulatory financial reporting obligations secure the creation and retention of the information needed for our regulation of SMP markets, particularly price controls, to be,* ***and be seen to be****, effective. They provide us with the information necessary to help us make informed regulatory decisions, such as cost information to support price controls on an ongoing basis, and information necessary to assess the impact and effectiveness of our decisions … They also enable us to monitor and, if necessary, enforce no undue discrimination and some price control regulations."*[12]

Furthermore, Ofcom has limited resources and expertise and so the engagement of other stakeholders through publication of the RFS and consultations on proposed charge controls is a key element of determining effective price controls.

4.2.1 Cost forecasts in the March 2025 consultation

The March consultation set out the approach that Ofcom proposed to use to set the charge controls for LLA and IEC services and published the models used to set the charge controls. Ofcom used restated 2022/23 costs as the base year for the consultation modelling, and proposed to use the 2023/24 restated costs as the base year for the cost modelling underlying the decision due in 2026.

The RFS including the 2023/24 restated costs and the associated methodologies were published in July 2025. This means that stakeholders have visibility of the costs and methodology that Ofcom was proposing to use as the base year in the final decision.

4.2.2 Cost forecasts in the November 2025 consultation

The November consultation proposed significant changes to the cost based charge controls for LLA and IEC services. to reflect to the two changes to cost allocation notified by BT, which are due to be reflected in their 2026 RFS. Ofcom refers to the Change Control Notification issued by BT in October 2025. A CCN is generally issued in March of each year, setting out the changes which will be implemented in the RFS published in July of that year. The publication of a CCN in October, 9 months before the publication of the associated RFS is out of the ordinary, with no similar CCN ever being published mid financial year.

12 Promoting competition and investment in fibre networks: Wholesale Fixed Telecoms Market Review 2021–26, Volume 6, paragraph 2.3.

The amount of information available to stakeholders to respond to the current consultation is much more limited than that available generally to respond to proposed charges controls (including the proposals in March 2025):

- Stakeholders do not have access to the RFS which calculated service costs on the basis that Ofcom is proposing to use to set charge controls, as the 2026 RFS will only be published in July 2026;
- Stakeholders do not have access to a detailed description of the cost attribution methodologies to be used; and
- Stakeholders do not have access to a revised cost model underlying the newly-proposed charge control, based on the new base year data and methodologies.

The information shown in the CCN is very limited:

- It shows the impact of the changes at a market level, but not for individual services;
- This CCN aggregates the impact of the two changes, while CCNs in the past have shown the impact of each individual methodological change made;
- The CCN sets out which cost attribution methodologies will be changed, but not the approach and data sources.

As such stakeholders are largely reliant on the description for the changes set out in the consultation. These refer to evidence provided by BT and discussions between BT and Ofcom, but do not provide any quantitative information other than that provided in the CCN.

A lack of visibility during the consultation process prior to setting charge controls was part of an appeal of an Ofcom decision in 2010.[13] The relevant ground of appeal was that:

> *OFCOM should have disclosed the modelling relied upon (and any materials needed to understand and comment on the modelling) to set the […] price control to the appellant and other interested stakeholders during the consultation process.*[14]

The appeal was settled between the appellant and Ofcom, with Ofcom agreeing to a framework for publishing models for consultations on price controls as set out in a letter from the appellant.[15] The current consultation appears to not be compliant with this framework, with no model being published and interested stakeholders lacking the ability to understand fully and comment on the proposals.

13 CASE: 1149/3/3/09

14 CASE: 1149/3/3/09 Summary of Notice of Appeal

15 Transcript of hearing

4.3 Ofcom should be cautious in accepted changes to the RFS proposed by BT/Openreach

As noted above, there is a strong information asymmetry between BT and other stakeholders, including Ofcom, in the costs that BT incurs in delivering services.

The RFS is a large and complex system under the control of BT. Other stakeholders have limited visibility of the cost structure of BT, and how BT produces cost accounts which reflect this cost structure. While there are some factors which mitigate the asymmetry to a degree (the audit requirement, requirements to publish documentation and the determined Regulatory Accounting Principles), BT has significant freedom in how the RFS are compiled. BT also has freedom in how it directs resources to ensure the RFS reflects the cost structure of BT as it evolves over time.

By BT's own admission, the RFS to date has not reflected the evolving cost structure of Openreach's network, which has resulted in its proposed reduction / removal of the allocation of interexchange cabling from GEA services. This issue was apparently only identified by Openreach 'in the normal course of business'. It is notable that this error:

- was not identified by BT's regulatory accounting function but by Openreach;
- despite apparently being an issue since FTTC was introduced, was not identified at the time the FTTC was charged controlled, where presumably significant resources were directed by BT to ensure the allocation of costs to FTTC was correct; and
- has been accompanied by another change which appears to be purely subjective (i.e. the proposed adjustment to the allocation of 'spine fibre cable' between WLA and LLA services - see further details below).

As such the changes made by BT are not a simple correction of an error which Ofcom should implement without question. This new information raises fundamental questions about how evolving cost structure of Openreach's network should be reflected in price controls: how costs should be calculated (i.e. depreciation), attributed between LLA and WLA services, and forecast forwards to set the LLA charge control.

4.3.1 In previous market reviews, Ofcom has rejected changes made in the regulatory accounts prior to decision

There are a number of examples of BT making changes to the RFS shortly before Ofcom charge control decision in a way which increases the base cost of regulated services, which if accepted would have led to a higher charge control.[16]

[16] However, this case appears unique in that Ofcom is proposing to change the charge control to reflect a change which will be made in the RFS in the future.

Ofcom has reviewed these changes proposed by BT and, where appropriate, rejected these changes, as the examples set out in Annex A show.

4.4 The RFS changes notified by BT and the proposals for changes to the charge controls do not appear to be well founded

As noted above, in its CCN, BT has notified it will make two changes:

1. A change to the allocation of inter-exchange fibre cable (aka 'core and junction fibre' – CJF); and
2. A change to the allocation of spine fibre cable.

These have then been incorporated into revised cost modelling by Ofcom. We explain below that these changes are at best partial and inconsistent with the Regulatory Accounting Principles, and are therefore not provide a solid basis on which to base charge controls.

We also explain that Ofcom has not fully explained how it will incorporate the expected changes in Openreach's network structure in the forecast cost modelling.

4.4.1 Removal of allocation of 'Interexchange cable' from GEA services

BT note that the spine cables from fibre aggregation points to OHPs used to deliver GEA services do not always transit the local exchange. Given that the majority of local exchanges will be decommissioned in the foreseeable future, this appears to be an efficient approach to network planning, particularly for the FTTP roll out which is intended to be the basis of the network in the long term. BT propose to adjust the attribution of interexchange cable to reflect the fact that GEA services may not use the cable between the serving exchange and the OHP.

However, this single change is not enough to fully reflect the forward looking network topology used by the full fibre network. The fact that GEA fibre connections do not transit the local exchange has a number of implications:

1. new spine fibre cables will be, on average, longer than legacy spine cables used for Ethernet services, as they will need to connect to one of the 950 OHPs, rather than the nearest of the 5,600 local exchanges; and

2. new spine fibre cables which bypass the local exchange must be physically distinct from the legacy spine fibre cables used for Ethernet services, which terminated at local exchanges.

While it may be reasonable to remove the allocation of interexchange cable cost from GEA services which do not use this cable, BT should at the same time revise the allocation of spine cable costs to reflect this new topology:

- Given that the spine cables used for the full fibre network are distinct from those used for the legacy Ethernet service, ideally BT should identify the costs of these cables directly rather than use proxy drivers to allocate costs;
- If BT's systems are not able to identify those cables used for the full fibre roll out separately from those used for the legacy Ethernet services, than any allocation should reflect the different lengths of cables used for the full fibre network and for legacy Ethernet.

Correcting the allocation of spine fibre costs should significantly increase the costs of spine cable attributed to GEA services, counterbalancing the reduction in costs from the reduced allocation of interexchange cable to these services. Conversely, the corrected allocation should reduce the allocation of spine cable cost to LLA services.

Ofcom should also consider the appropriate approach to forecasting the cost of inter-exchange cables, which feed into 'main link' charges for EAD and DFA services and into IEC services. Many of these links will become redundant in the foreseeable future as exchanges are retired. Demand on these links will be falling as services, including LLA services, migrate to the new network topology over time. The need to operate and maintain these links during the migration, with falling utilisation, is one of the cost associated with migrating to a more efficient network delivering benefits to WLA customers. It would not be appropriate to load the cost of these links (and indeed cost of the local exchange) onto LLA and IEC services as the remaining demand on these assets.

4.4.2 The allocation of spine fibre costs based on fibres used

The second change BT proposes is to allocate spine costs according to the number of fibres used rather than the available capacity for each service, which could be a function of the number of fibres on the distribution side of the aggregation node.

As noted above, BT has identified that spine cables used for GEA services are distinct from those used for legacy Ethernet services. Utilisation on the new spine cables used for FTTP will be relatively low, reflecting a combination of the fact that in some cases the corresponding distribution networks will not yet be fully deployed, and that penetration on the FTTP network is still increasing. In contrast, the legacy Ethernet network is relatively mature and utilisation will likely be much higher at present.

The effect of BT's proposals would be to allocate some of the costs of low utilisation cables built for FTTP services to the legacy LLA services.

It is expected for new networks to have relatively low utilisation, with the profile of cost recovery of capital expenditure concentrated in later years. For example, as noted in Section 3 above, Ofcom has suggested that if prices were regulated after 2031, economic depreciation would be used to ensure that cost recovery was in line with usage of the network, rather than the straight line depreciation as used in the RFS.

BT's rationale for this change is to "improve the accuracy of our reporting by aligning cost attribution to how services are charged and the actual usage of Access Spine Fibre".

This explanation ignores cost causality. It is obvious that a roll out of a new network will result in costs being incurred in advance of both charging for services and usage. While the costs incurred are in advance of the future demand, they are causally related to the future services that will be delivered over these assets. This is the reason for the pricing continuity/fair bet framework implemented by Ofcom.

Recovering the upfront investment costs for the full fibre network partially from the legacy LLA services will lead to distortions and should not allowed.

- It will increase the estimated costs for legacy LLA services by attributing costs for cables and capacity on these cables which are not used to deliver these services.
- It will distort competition for services delivered by full fibre networks, by effectively cross subsidising Openreach's network while altnet competitors do not have legacy business.
- It could lead to over-recovery of costs if FTTP services in some areas are regulated under a 'fair bet' approach using economic depreciation.

4.5 Forecasting the future cost of LLA and IEC services

Forecast costs in 2030/31 are the basis for setting the proposed charge controls, which are designed to align revenues with costs at the end of the charge control period. The cost forecast model used by Ofcom implicitly assumes that the overall cost structure of Openreach will remain broadly the same, with cost changes over time captured by a combination of inflation, efficiency gains and cost/asset volume elasticities.

However, this assumption does not hold for EAD services, as significant changes are happening in the underlying cost structure of Openreach, which will change how services are delivered. For example, given the exchange closure programme, much of the existing interexchange fibre used to connect these exchanges will not be used in the longer term. For example the cables used to connect the 108 exchanges which are due to be closed in 2030 will presumably not be in service for the final year of the charge control. Even before exchange closure, new circuits are likely to be routed directly to OHPs.

Ofcom has not explicitly set out how prices should be set for LLA and IEC services, given this change in network topology.

If Ofcom were to accept the changes to the base year costs suggested by BT and use these inputs directly in the cost forecast model issued, then the model would not accurately forecast forward looking costs as it would:

- reflect some of the diseconomies of scope on the legacy fibre network, as WLA traffic migrates from the legacy fibre network shared with EAD services, to the FTTP network which directly connects to OHPs; and

- would not reflect the efficiencies in the delivery of EAD services, as these services themselves are migrated to an access network that connects directly with OHPs.

In previous charges controls, Ofcom has managed technology transitions based upon an "anchor pricing" approach, based on projecting costs forward on a steady state basis during the transition. This protects customers, who do not face price rises during the transition period and allows BT investors to benefit from the efficiency gains resulting from the transition. In this case there is less need to reward investors through higher returns on LLA services, as BT's investors will be appropriately rewarded for the investment in full fibre networks through the 'fair bet' mechanism applied to WLA services.

Ofcom should consider the appropriate glide path from the costs of delivering Ethernet services over the legacy fibre network to the costs of delivering Ethernet services over the lower cost, modern, converged network.

5 Conclusion

Given information asymmetry, Ofcom should be extremely sceptical about basing charge controls on new methodologies which have been proposed or implemented by BT in the period immediately before charge controls are set. BT has a strong incentive to change the RFS, within the constraints placed on it, in a way which favours its investors and conversely not making changes which will reduce regulated charges, even when appropriate.

The first change proposed by BT shows this clearly. BT have made a change to the allocation of interexchange allocation to reflect the fact that spine cables used for GEA services do not necessarily transit the local exchange. However, BT ignore the consequential changes required to the allocation of spine cables to take account of the fact that GEA services use separate cables to legacy Ethernet services and that these cables will be longer.

The second change, to allocation spine cable costs based on number of fibre used, is a more egregious case of BT making a purely subjective change which makes the allocation of costs less accurately reflect causality of costs, but which favours BT.

Ofcom should not change the final charge control to reflect these changes. Rather Ofcom should seek to carry out an independent review of the allocation of fibre cable costs between GEA and LLA services to ensure that costs associated with the roll out of the full fibre network are not inappropriately recovered from legacy Ethernet services.

Ofcom should also consider how the efficiency gains in delivery of LLA services due to BT's exchange closure program should be factored into the forward looking charge controls. In any case, Ethernet users should not see increases in prices due to the transition to a more efficient network structure largely built to deliver benefits to WLA customers.

Annex A

A.1 Previous changes to the RFS rejected by Ofcom

Revaluation of copper and duct assets in 2010

In its 2009/10 Regulatory Financial Statements (RFS), BT applied a revaluation under a "Current Cost Accounting" (CCA) basis to its duct assets and likewise to copper-based access network assets (copper cables, ducts etc.)

As a result of its changes in assumptions and data, BT recorded a **~36% increase** in the gross and net replacement cost of its duct network.

The effect was to raise the "regulatory asset base" (RAB/RAV) i.e. the value assigned to these network assets which, under a cost-plus / cost-based regulatory framework, would increase the cost base from which wholesale access charges (e.g. for Local Loop Unbundling (LLU), Wholesale Line Rental (WLR), or other access services) are derived.

Facing BT's revaluation, Ofcom commissioned an external review (by consulting firm Analysys Mason, for the duct assets) to assess alternative valuation methodologies and whether the revaluation was appropriate for use in regulated wholesale price controls.

Ofcom concluded that BT's revaluation should be rejected for the purpose of setting LLU/WLR charge controls. In other words, wholesale access prices should not be based on BT's inflated (post-revaluation) CCA values.

Instead, Ofcom proposed a "roll-forward" methodology: for pre-1997 assets, use an indexed historic cost basis (Indexed HCA) to define a Regulatory Asset Value (RAV), and for newer assets apply CCA (or other methods), but only if justified by robust evidence.

This approach was confirmed after an appeal of the decision by BT.

Allocation of costs between LLA and WLA products in 2013

Prior to 2021, Ofcom conducted reviews for different regulated markets on cycles which did not coincide. For example, there was a review of the Business Connectivity Market (equivalent to the LLA market) concluding in 2013 and a review of the Fixed Access Markets (equivalent to the WLA market) concluding in 2014.

This provided BT with an incentive to shift costs between products over time to whichever markets were next coming up for review in order to ensure the charge controls for this market were based on a higher level of costs in the base year.

Between the 2013 BCMR and the 2014 FAMR, BT reviewed the allocations with the RFS, which had the impact of moving costs from business connectivity services to WLR and LLU services regulated in the FAMR.

In its 2014 statement on LLU/WLR charge controls, Ofcom noted that it had reviewed BT's revised cost data but that data alone was not automatically treated as reliable for setting cost-oriented wholesale charges. Ofcom undertook to base its cost models on what it judged to be "efficient, forward-looking costs", not simply BT's historical (or newly attributed) costs.

In parallel, Ofcom launched a full cost-attribution review, eventually formalised as the Ofcom Review of BT's Cost Attribution Methodologies (CAR), first as part of the 2014 FAMR/BCMR package. In the CAR consultation, Ofcom stated that several of BT's attribution rules (particularly for overheads/common costs) may not meet its "Regulatory Accounting Principles", and that revised, more transparent and robust attribution rules would be required prior to relying on BT's RFS for future charge controls or price-setting.

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