Structure of Fibre Cost Model

INCA submission for Ofcom TAR 2026-31

June 2024

Non-confidential

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1 Executive Summary

1 The fibre costing model used by Ofcom to support the forthcoming TAR will be a critical tool in ensuring that the regulatory decisions for the next charge control period are aligned with the aims of incentivising investment in fibre networks and sustaining infrastructure competition.

2 The fair bet principle should be applied to both BT and efficient network competitors and the fibre costing model should therefore take account of the costs of an appropriately scaled and configured reasonably efficient operator (REO) to determine appropriate price levels in the WLA market.

3 A forward-looking LRIC approach is appropriate, with inclusion of markups to cover common and joint costs. It is essential that the scope of the model enables Ofcom to capture differences between the cost structures of Altnets and BT, both within and beyond the access segment, as these will have an impact on whether the regulated WLA price is able to support sustainable Altnet competition. To the extent possible, the model should seek to reflect the full economic replicability costs of an Altnet providing FTTP connectivity in competition to BT.

4 Depreciation should be calculated on a forward-looking economic basis, along with realistic asset lives and replacement capex. Operating costs should be modelled on a causal basis wherever possible, and reflect appropriate and realistic REO assumptions, both in the level and timing of costs.

5 Given the complex nature of the current market structure, and the ongoing process of market consolidation, it is essential that the fibre model is sufficiently flexible to support the costing of representative REO scenarios covering the range of services offered, network scale and topology, take-up levels, market segments, geographic footprints and degrees of overbuild.

6 The network design should be based on technologies used in the current and developing market and must reflect the costs of a modern network architecture designed to provide resilience, flexibility and capacity to meet uncertain levels of future demand.

2 Introduction

7 This paper presents the views of INCA on key structural issues relating to the development Ofcom's fibre costing model, which will be used to support the forthcoming TAR for the period 2026-31.

8 We believe that the TAR fibre model will be a critical tool for Ofcom to ensure that the costs of a reasonably efficient operator (REO) are fully captured and understood. In this context we consider a REO model to be one which represents the costs of efficient Altnets commercially deploying and operating FTTP networks.

9 It is important that the model structure is properly aligned with Ofcom's regulatory objectives; our comments are intended to give an early view on the most important aspects that should be considered.

10 INCA is providing a separate submission concerning the TAR model which will set out key assumptions which must be considered in developing the TAR and the associated cost model.

3 Regulatory objectives

11 In its approach and timetable for the TAR,[1] Ofcom states that it intends to continue with the objectives of incentivising investment and promoting competition[2], with a key focus on promoting sustainable network competition.[3]

12 Ofcom also considers that certainty and stability of regulation is important, given the long-term nature of network investments, and that this includes continuing to support and honour the fair bet principle.[4] Ofcom clarifies in a footnote that the latter means that its policy in setting future charge controls is that BT would be allowed to keep any returns in excess of its cost of capital earned up to that point.

13 In the SSP[5], the UK Government defined the fair bet principle as "one that allows firms making large and risky investments to have confidence that any regulation will reflect a fair return on investment, commensurate to the level of risk incurred at the time of making the investment decision." We note that this definition of fair bet applies to firms making investments, not solely to BT.

14 We understand that Ofcom applies a specific interpretation of the fair bet principle in setting its charge controls for BT, but it is clear that, in order to support Ofcom's objectives of incentivising ongoing investment and sustainable network competition, as well as to comply with government policy, the fair bet principle must also be considered in the TAR to apply to investments of both BT and all efficient network competitors.

15 To ensure that these objectives are met by the forthcoming TAR, it will be essential for Ofcom to have robust information on the costs and structures of fibre network

[1] Telecoms Access Review 2026, Starting work on the 2026-2031 review, 26 March 2024
[2] Para 3.1
[3] Para 3.5
[4] Para 3.1
[5] Statement of Strategic Priorities for telecommunications, the management of radio spectrum and postal services, 29 October 2019, Para 20

deployments by all operator types, including Altnets. The remaining sections of this paper consider the structural issues around the development of such a model.

4 Structural issues

4.1 Costing methodology

16 To incentivise investment in infrastructure by Altnets, it is important that the chosen costing methodology reflects the costs at which efficient Altnets are incentivised to build their own networks rather than purchase wholesale inputs from other operators.

17 INCA believes that a forward-looking Long Run Incremental Costing approach, including a markup for common and joint costs, (FL-LRIC+) is the most appropriate methodology for these purposes; this is consistent with the approach which Ofcom took for the WFTMR fibre model.

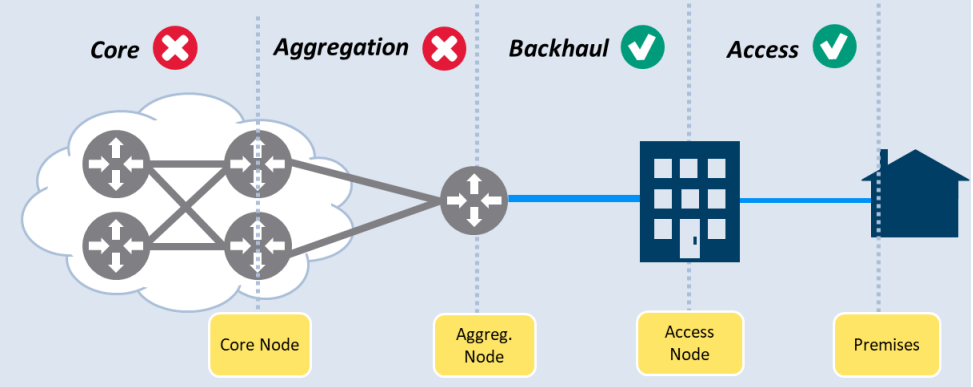
4.1.1 Scope of model

18 The outputs from any FL-LRIC+ model are highly dependent on the underlying assumptions. In particular, for the TAR fibre model, it is important that Ofcom's modelling takes account of the variations in cost structure that can occur in the market, selecting the most appropriate parameters and configurations to support regulatory objectives.

19 In addition to building out new FTTP access networks, operators must provide backhaul connectivity, aggregation and core network functions to offer FTTP services. For an Altnet building only full-fibre networks, these costs are material and incremental, and they can only be recovered from fibre services; but in the case of the incumbent there may be a significant level of sunk and common costs in these network segments, as they include assets which are shared across legacy and non-access services.

20 For the WFTMR fibre model, Ofcom defined the relevant model scope to include only the access segment in order to align with the definition of BT's VULA product to which the price control was applied. This is illustrated in Figure 1 below; although the backhaul segment is shown as included, this is only the case for leased lines and inter-exchange connectivity services, not for FTTP.

Figure 1: Network sections in scope in the WFTMR model[6]



21 However, for a REO model, aimed at ensuring sufficient incentives for ongoing Altnet investment, it is essential that an allowance is made for the additional costs associated with these segments, at least in the period in which Altnets are rolling out their networks, building market share and when consolidation is under way.

22 This also applies where Altnets building fibre access networks do not build their own core, backhaul networks or IT B/OSS systems, but instead lease capacity and use cloud-native solutions. While we understand that Ofcom's intention is primarily to incentivise investment in the fibre access network segment, and not in these other segments (which may already have competitive supply at a wholesale level), it is nonetheless essential that Ofcom's modelling accounts for all of the additional costs incurred by Altnets to deliver fibre services in an efficient manner, including relevant operational and capital costs.[7]

[6] Source: Figure 1, Fixed Telecom Access: Full Fibre Cost Modelling, Model Report, Cartesian

[7] It should be noted that the planned closure of more than 80% of BT's exchanges and the early vacation of those by commercial backhaul providers (which is already happening) will have a material impact on Altnet costs and business cases.

23 This will ensure that Ofcom has the relevant cost information to set the access price remedies at an appropriate level to ensure that the regulatory objectives of sustained investment and competition are maintained, and that the fair bet principle is applied to Altnets, ensuring a level of fair market competition for all efficient players.

24 We therefore suggest that the TAR fibre model should have an expanded scope compared to WFTMR model, to allow a comparison of the core, aggregation and backhaul costs incurred by Altnets with those of BT. As noted above there is a range of approaches that Altnets may use to provide this connectivity so we suggest that Ofcom should identify a limited number of representative scenarios to model.

25 In the BT case, the modelling of these segments should take account of BT's economies of scale and scope, and that many of the costs are sunk. A top-down approach to modelling this is appropriate because it will allow Ofcom to account for the sharing of the network across BT's wide product portfolio; this would be difficult to capture in a bottom-up model.

26 For the Altnet case, a bottom-up approach to modelling is appropriate as the networks are newly constructed and are specific to all-fibre services; relevant top-down data is unlikely to be available. It will nonetheless be important that the modelling is grounded in reality by collecting relevant data from a range of representative operators.

27 If the WFTMR fibre cost model is re-used for the TAR, then additional linked module(s) should be developed to include these segments, generating additional outputs which could then be included in the regulatory cost stack on which the virtual unbundled local access (VULA) price controls are based, in addition to appropriate levels of joint and common costs. In any such case, appropriate modifications to the model must be included to ensure that it is representative of FTTP deployments in the current and developing market.

28 It would be possible to develop a separate model to analyse these costs, but this is less desirable as it would be necessary to align the model dimensions (for example, extent and type of rollout) with the main fibre model to ensure consistency.

4.1.2 Recovery of common costs

29 To fully reflect the costs of a REO in providing FTTP services, an appropriate share of fixed, common and joint costs must be included.

30 In many LRIC models, allocation of joint and common costs is done according to an equi-proportional markup (EPMU). This may be appropriate for common costs such as overheads which have no causal driver, but it can cause material distortions if applied inappropriately to joint service costs.

31 For example, the costs of duct networks (whether built or leased via PIA) would be shared between FTTP PON and leased line services. It is essential that the approach to allocating these shared costs is done on a causal basis, or at least a close proxy to this. If EPMU were to be used, then the model must have sufficient granularity to ensure that the markup is based only on the relevant LRIC costs (for example, the costs of the cables using the ducts); even so, this may not be a close proxy to the actual usage of ducts by the fibre cables.

32 In the WFTMR fibre model, Ofcom initially included leased lines in the REO modelling scenarios and used EPMU to allocate common duct costs between leased lines and FTTP services. During the consultations, it was apparent that this approach gave significant distortions in the common cost allocations; Ofcom then removed the leased line volumes from the model, along with the common cost allocation functionality, which avoided the problem.

33 If Ofcom wish to include leased lines in the TAR model scenarios, then it is essential that an improved common cost allocation method is included. If the WFTMR model is re-developed for the TAR, then this would be included in the cost recovery module, and should provide a causal method for duct cost allocation (for example, based on cable cross sectional areas). If the previous method were used, based on

EPMU, then this would result in material cost distortions between the leased line and FTTP services and under-recovery of common costs from the FTTP product. This is particularly important as some Altnets provide FTTP only and would have to recover all their common costs from the FTTP product.

34 Incumbent cost models typically have to address the issue of common cost allocation of the duct and pole infrastructure between legacy copper and new fibre services. In Ofcom's WFTMR model this was avoided by assuming that all passive infrastructure was either treated as new build or reused existing assets; in the latter case the costs calculated from the relevant PIA prices, in all of the incumbent and REO scenarios. INCA supports this approach and suggests that it is used also for the TAR model.

35 The issue of sharing BT duct and pole costs between legacy and fibre services is nonetheless important in determining the PIA prices; this will be addressed in our further submissions on PIA costing and pricing.

4.1.3 Depreciation

36 Depreciation charges should be calculated on a forward-looking economic basis; this is preferable to historical accounting methods which do not reflect the economic value of assets. Ofcom's WFTMR fibre model used a 40-year cashflow analysis of the capex and used connected service volumes to distribute the recovery of these costs. INCA would support this approach being used in the TAR, assuming that replacement capex is included on realistic asset lives, and that the discount factor used is appropriate to a REO.

4.1.4 Operating costs

37 The approach taken to calculate operating costs should be sufficiently analytical to ensure robust results, appropriate to the type and scale of operator being modelled, whilst avoiding undue complexity. It is important that the timing of costs is considered as well as the overall level as this can have a material impact on overall returns.

38 Certain costs have clear causal drivers, such as PIA charges which are driven by network usage volumes. Other types of cost will not have clear direct drivers, and an activity-based costing (ABC) analysis is likely to be needed to provide robust estimates (accepting the need to avoid undue complexity). Broad drivers, such as cumulative capex, are unlikely to reflect realistic opex levels, except for a limited range of network opex categories.

39 In the WFTMR model, some opex categories were separately identified (for example relating to provisioning costs, service level guarantees and PIA charges) and determined from causal drivers, but over 60% of total opex was treated as a general "other" category and determined as a proportion of cumulative capex.

40 The TAR model should include a more detailed approach to estimate the opex of a REO; this should capture all of the main categories of operating costs[8] as well as the categories in the paragraph above. As Altnets move from an initial network build phase to an operational phase the balance of different categories of operating cost changes; it is important that the TAR model captures this change, which would not be reflected by a broad driver such as capex.

4.2 Choice of operator

41 To ensure that network investment and competition is encouraged and sustained, it is essential that Ofcom bases its fibre cost modelling on a REO approach which fully reflects the costs that efficient Altnets incur in building competing networks. We recognise that market consolidation is under way and that it is likely that the market will evolve to include a lower number of Altnets than are present today, which will gradually result in greater efficiency and economies of scale in the longer term[9]. However, it is also critically important that Ofcom's model takes account of the sustainability of Altnets in the shorter term, before such consolidation is complete,

[8] These are further elaborated in our submission on modelling assumptions.

[9] It is important to recognise that a period of consolidation may in fact result in short term higher operating costs before costs are reduced due to efficiencies and economies of scale.

otherwise there will be a risk of foreclosure which prevents competition from developing in the longer term. INCA does not expect that consolidation, whilst starting to happen now, is likely to materially impact Altnet cost levels over the charge control period. This is because the early post-consolidation phase often entails considerable costs of integration and alignment which will likely easily outweigh any early efficiencies resulting from transactions.

42 To determine, ultimately, appropriate pricing levels that will develop and sustain a competitive FTTP market, INCA holds that Ofcom will need to model representative Altnet scenarios covering the range of services offered, take-up levels, market segments, geographic footprints and degrees of overbuild with other operators.

43 The geographic network footprint is an important parameter which needs careful consideration. Altnets' network build does not generally follow the pattern of BT's exchange areas, which are a result of the historical development of copper networks, but in Ofcom's final WFTMR model the rollout sequence was determined by exchange area, using the duct lengths as a proxy for cost, and proceeding from lowest to highest "cost". As even a relatively small town may contain several exchange areas, this approach results in fragmented deployment areas which do not reflect the reality of either BT or Altnet deployments. New entrants typically build networks over complete towns/settlements and then follow up in adjacent areas, rather than building in isolated postcode sectors or BT exchange areas. These areas of network build will typically contain a variety of geotypes and hence different levels of network cost; so the approach used in the WFTMR leads to an understatement of costs.

44 The TAR model should therefore improve on this methodology. First, the historical deployments to date should be included using actual data from operator footprints. Second, future deployments should be specified to reflect realistic profiles with rollout in one settlement being completed before a new settlement is started.

45 This analysis could be completed outside of the main TAR model; the output would be a sequence of area type data ordered to reflect a realistic build sequence in the

competitive areas. This sequence could then be fed into the TAR model (in the network module, if the structure were the same as the WFTMR model).

46 In the WFTMR model the REO scenarios were differentiated from the BT scenarios according to the following parameters:

- Extent of duct re-usage;
- Asset lives; and
- Scale of deployment.

47 There was a range of other parameters included as inputs to the model, but these were held constant between the BT and REO scenarios. In particular, we note that in the TAR model various parameters should be tailored to specifically reflect Altnet cases; these include:

- Mix of market segments addressed (e.g. B2C or B2B), linking to different types of network architecture used (e.g. P2MP, P2P).
- Market shares and take-up assumptions should be adjusted to reflect the likely degree of competition in each area.
- Take-up profiles should be defined to allow differences between incumbent and Altnets to be captured; experience from deployment so far suggests that the large ISPs are loyal to Openreach and that there are considerable barriers to them using Altnets, which reduces the early penetration levels achievable.

48 While the WFTMR model did not explicitly allow these parameters to be set appropriately, it would be relatively straightforward to incorporate the necessary changes into a new model structure.

49 There is a wide range of other input parameters which have a high impact on unit costs and which may vary between incumbent and Altnet networks. These will be addressed in our submission on fibre costing input assumptions.

4.3 Network design

50 A key aspect of a FL-LRIC approach is the inclusion of modern equivalent assets (MEA). This suggests that the TAR model should be based on technologies and network structures that are used in the current and developing market. For broadband access this will likely be based on XGS-PON technology, with point-to-point fibre used for business services. However, newer technologies such as NG-PON2 should also be considered over the long run.

51 A modern fibre access network is often designed using a combination of rings and tree-and-branch structures, giving the benefits of resilience, flexibility and capacity to meet uncertain levels of future demand (such networks may have a higher cost initially than traditional approaches, but give efficiencies in meeting future demand). This contrasts with BT's network architecture which, for historical reasons, is generally of a tree and branch structure which derives from the legacy copper-based network.

52 Ofcom's TAR model should include alternative infrastructure options to accommodate these differences. We note that the existing WFTMR model includes a tree-and-branch architecture only, and also that the approach taken by Altnets will be influenced by the availability of PIA in many areas. Essentially, the structure, form, and dimensioning of the regulatory cost model used for the TAR should reflect a realistic approach to network design taken by a REO within the current and developing market conditions.

53 Inclusion of an alternative infrastructure design will require a different approach to be taken to the design of the infrastructure module. This should be considered as a requirement when Ofcom commissions the development of the TAR model. If the decision is taken to retain a pure tree-and-branch architecture for the REO model, then it would be necessary to apply some adjustments to the modelled parameters to reflect the differences in cost; this would result in a more complex, less robust and less transparent model.

54 The TAR model should also take account of the increased costs which will be faced by Altnets due to BT's exchange closure programme, which will almost certainly increase backhaul costs for Altnets and may have an impact on own network build as well as availability of PIA and connectivity products.