SPC Network

Improving the PIA Cost Model in light of the upcoming Telecoms Access Review

Prepared by SPC Network on behalf of: All Points Fibre, Community Fibre, Gigaclear, Netomnia and nexfibre

Non-confidential

July 2024

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About SPC Network

SPC Network was founded in 2003 and has worked for over 50 clients worldwide. We undertake Strategic Policy Development in platform and networked industries by combining the knowledge of our consultants with specific and valuable skills to ensure rigorous analysis and exceptional advice. Our core consultancy team and network of partners have substantial experience in industry and consulting meaning that we understand the practical issues and challenges facing the market. Through advanced academic training, we have developed the key skills and rigorous approach needed to support our clients in the policy debate.

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1 EXECUTIVE SUMMARY

1. Access to Openreach's physical infrastructure is critical for many companies building fibre networks across the United Kingdom. Using Openreach's ducts and poles allows competing Fibre Network Builders (FNBs) to develop competing networks faster, further, and cheaper than building their own, thereby bringing the benefits of competition to more consumers than would otherwise be the case. The importance of Physical Infrastructure Access (PIA) is such that it is highly unlikely that it can ever be available on a fully deregulated basis.

2. When Ofcom first set out a PIA obligation on BT, there was little data on which to assess the costs of supplying access to third parties since the infrastructure had not yet been made available to other companies. This meant that some of the elements of the cost model were based on best estimates rather than on hard facts.

3. In the past few years that situation has changed as more companies have begun to use PIA to build networks. Today more information is, or should be, available and Ofcom and Openreach are better placed to calculate the costs of providing PIA more accurately.

4. This report has been commissioned by All Points Fibre, Community Fibre, Gigaclear, Netomnia and nexfibre which, collectively, represent more than five million homes passed by fibre. These companies had three motives for this report.

5. First, the BT Regulatory Financial Statements (RFS) for 2023 show a large discrepancy in the price charged by Openreach to external customers for PIA and the internal price it charges itself. The former was based on the regulated price set by the Ofcom in the 2021 Wholesale Fixed Telecoms Market Review (WFTMR), adjusted for the charge control, whilst the latter was set to ensure Openreach earned no more profit than its regulated cost of capital.

6. This led to the anomalous outcome where the external price resulted in a Return on Capital Employed (ROCE) massively in excess of BT's regulated Weighted Average Cost of Capital (WACC) and where the internal price for duct related infrastructure was negative.

7. Second, the companies recognised that, at the time of the WFTMR, there was little information about how PIA would be used by Fibre Network Builders (FNBs) and,

therefore, the model used to calculate the cost of PIA was subject to several best estimates.

8. However, in the intervening period PIA has become more widely used, so the best estimates probably understate the actual usage. The level of PIA usage also means that Openreach should now have access to much more information than in 2021, and so more accurate costs and, therefore prices, can be calculated.

9. Third, whether the underlying economics of Openreach's business cases examined by the Openreach Monitoring Unit (OMU) are questionable and, therefore, call into the question the reliability of the OMU's competitive scrutiny.

10. The five companies, therefore, asked SPC Network to undertake a detailed analysis of the PIA Cost Model with a view to (a) identifying where changes could be made to improve the accuracy of the model and prices now that more data is available, and (b) understanding why internal and external prices differ and what can be done to address their concern that prices do not appear to comply with the strict equivalence that Ofcom sought in the application of the No Undue Discrimination (NUD) regulation.

11. In our detailed analysis, we have considered issues related to the regulatory framework, ducts, poles and both ducts and poles, and have developed a list of 53 Suggested Changes to the model. We have also identified five strategic issues.

12. **First,** it is clear from the BT Regulatory Financial Statement (RFS) that charging principles are not consistent between internal and external charges for PIA as the former are set to achieve a specific ROCE and the latter to comply with Ofcom's charge control. This difference is, in our view, detrimental to establishing effective competition and may be discriminatory. Ofcom needs to take action to address this matter.

13. We make the following recommendations:

    - Prices used internally by Openreach for PIA services are set at the same level as the external price paid by the FNBs.
    - Ofcom to review the degree of transparency in the supply of PIA and whether Openreach performs according to the standards of "strict equivalence", and to consult the industry on the above.

- If Openreach is found not to comply with these standards, then Ofcom should impose an Equivalence of Input (EOI) obligation on BT with regards to PIA.

14. **Second,** a key problem the higher than expected level of PIA usage highlighted is that Openreach is able to over-recover the cost of the infrastructure and that FNBs are paying more than is necessary. To correct this, we propose that PIA prices should remain set on a nationally averaged basis and built into the glide path, but in future the PIA prices should be based on Ofcom forecasts of the weighted average number of FNBs using the relevant infrastructure over the period of the charge control.

15. **Third,** the PIA model uses Current Cost Accounting (CCA) with costs adjusted each year for inflation using the Consumer Price Index (CPI) for operating costs and the Retail Price Index (RPI) for assets. A direct consequence of this is that very different final year unit prices can arise for any given compound annual growth rate (CAGR) depending on the inflation forecast for just the final year. This makes the model very sensitive to the final year inflation forecasts which are *de facto* the most uncertain.

16. The recent spike in inflation from 2022 to 2024, whilst extreme, illustrates this very well as it caused the internal transfer price of ducts to become negative, meaning Openreach WLA services were in effect being ***paid*** to utilise PIA assets.

17. A much fairer approach would be to carry forward the asset values at the final year of the current model (2025/26) and use those asset values to derive the new base year values. This will smooth out the impact of the differences between the forecasts from the current model and actual events in a manner that is fair to both Openreach and the FNBs.

18. **Fourth**, Ofcom recognised that FNBs would be unlikely to remove fibre from the lead-in service when a customer switches to an alternative provider and introduced a 10% discount to reflect this. However, rather than apply this discount to the whole simplified lead-in service, it was applied to the lead-in duct only and not to the other components: the single bore spine duct and the joint boxes.

19. We propose that the 10% discount should be applied to the whole simplified lead-in service price and that the discount should increase as the cumulative impact of churn increases. Our modelling indicates that if the installation of final customer connections after 2025/26 continues at the forecast rate of that year, then the required discount rate for 2030/31 should be 35%.

20. **Fifth**, during Openreach's rollout of fibre, it will make significant additional use of PIA assets. This has the potential to temporarily decrease the unit prices of various PIA services followed by an increase when the copper cables are removed.

21. In the WFTMR, Ofcom updated the share of duct-based PIA service costs that would be borne by FNBs so that it would not be impacted by the copper to fibre transition. However, the same was not done for pole-based PIA. It will, therefore, be necessary to address this in the TAR to ensure there is no double counting when Openreach has both fibre and copper cables on the same pole.

2 INTRODUCTION

2.1 Background and Brief

22. Fibre Network Builders (FNBs) are an important part of the telecoms sector competitive landscape, as companies such as those which commissioned this report and which collectively represent over five million homes passed by fibre, build out their own fibre networks in competition with Openreach. Companies which provide intermediate and end-user services using their own fibre are able to compete on both price and quality of service, thereby bringing dynamic benefits to users of ultrafast broadband access.

23. To deliver these benefits at cost and at speed, access to the physical infrastructure of Openreach (its ducts and poles) is a critical input. Between 2022 and 31st March 2023 there has been significant growth in the use of the Physical Infrastructure Access (PIA) by FNBs of up to 630%, as shown in Table 1. We would expect this growth to continue in 2024 and beyond.

Table 1: External Use of PIA: 2022 - 2023

PI Rentals	2022	2023	Growth	Measure
Lead in duct	26,069	95,144	365%	Lead-ins
Spine duct - 1 bore	2,855	10,377	363%	Km
Spine duct - 2 bore	2,568	3,489	136%	Km
Spine duct - 3+ bore	2,189	5,172	236%	Km
Poles multi end-user attachment	22,063	98,932	448%	Attachments
Poles single end-user attachment	19,346	121,909	630%	Attachments
Pole top equipment	22,075	80,287	364%	Attachments
Cable up poles	13,920	57,858	416%	Attachments

Source: BT Regulatory Financial Statements 2022 and 2023. Section 6.1.1

24. PIA is important as an input because it is considerably more efficient than building a new physical infrastructure access network for three main reasons. First, it prevents the duplication of an asset that already exists and can be used by operators other than Openreach. Second, if FNBs do not have to build their own infrastructure, they can roll out their networks much faster, taking competition to consumers earlier. Third, using existing physical infrastructure is considerably cheaper than self-build, thereby allowing

competition to develop in areas where it would not be economically viable for companies to build their own networks.

25. The cost of building a duplicate physical network overlapping Openreach is such that it is unlikely that there will ever be a competitive PIA market, so it will need to remain a regulated input for the foreseeable future.

26. When Ofcom first set out an obligation on BT to provide other companies access to its ducts and poles, there was little data on which to assess the costs of supplying access to third parties since the infrastructure had not yet been made available to other companies. This meant that some of the elements of the cost model were based on best estimates rather than on hard facts.

27. In the past few years that situation has changed as more companies have begun to use PIA to build networks in competition with Openreach. Today more information is, or should be, available and Ofcom and Openreach are better placed to calculate the costs of providing PIA more accurately.

28. This report has been commissioned by All Points Fibre Network, Community Fibre, Gigaclear, Netomnia and nexfibre. These five companies are significant users of PIA for both local access networks and the final connection to customer premises. The rental charges they pay to Openreach, therefore, represent a significant element of their operating costs.

29. The companies provided data to SPC Network to inform this report. That data has not been directly referenced in the report due to some of it being confidential, but it did help us gain a detailed understanding of the operational challenges they face.

30. There were three main motives for this report.

31. First, the BT Regulatory Financial Statements (RFS) for 2023 show a large discrepancy in the price charged by Openreach to external customers for PIA and the internal price it charges itself. The former was based on the regulated price set by Ofcom in the 2021 Wholesale Fixed Telecoms Market Review (WFTMR), adjusted for the charge control, whilst the latter was set to ensure Openreach earned no more profit than its regulated cost of capital.

32. This led to the anomalous outcome where the external price resulted in a Return on Capital Employed (ROCE) massively in excess of BT's regulated Weighted Average Cost of Capital (WACC) and where the internal price for duct related infrastructure was negative.

33. Second, the companies recognised that at the time of the WFTMR there was little information about how PIA would be used by Fibre Network Builders (FNBs) and, therefore, the model used to calculate the cost of PIA was subject to several best estimates.

34. However, in the intervening period PIA has become more widely used than perhaps was expected by either Ofcom or Openreach, so the best estimates from the last market review probably understate the actual usage significantly. This means that the impact of such usage will in turn have a greater effect than anticipated. The level of PIA usage also means that Openreach should now have access to much more information than in 2021, so more accurate costs, and therefore prices, can be calculated.

35. Third, there are a number of concerns about overbuild decisions taken by BT, some of which have been reported to the Openreach Monitoring Unit (OMU) by the companies who commissioned this report. The companies pointed out that these decisions were made in contrast to statements made in the 'rolling OMR' exercises used to define intervention areas by BDUK as well as significant unexplained changes to the 'Fibre First' plans. In some cases, Openreach is reported to have overbuilt in subsidised areas. The OMU has assured the companies that detailed examinations of Openreach's business cases have been undertaken and no further action was deemed necessary.

36. The five companies therefore asked SPC Network to undertake a detailed analysis of the PIA Cost Model with a view to (a) identifying where changes could be made to improve the accuracy of the model and prices, now that more data is available, (b) understanding why internal and external prices differ and what can be done to address their concern that prices do not appear to comply with the strict equivalence that Ofcom sought in the application of the No Undue Discrimination (NUD) regulation, and (c) whether the underlying economics of Openreach's business cases are questionable and, therefore, whether the competitive scrutiny undertaken by the OMU may be questionable.

37. In our detailed analysis, we have considered issues related to the regulatory framework, ducts, poles and both ducts and poles in Sections 3, 4, 5 and 6 below. We have developed a list of 53 Suggested Changes to the model (labelled SC01 – SC53) and we have identified each suggested change as delivering one or more of four benefits: Regulatory consistency, cost reductions, fair competition, and transparency.

38. The table overleaf shows the list of Suggested Changes and the benefits they deliver. A more detailed table is included as Annex A.

39. All the issues we have raised in this report are important but there are five strategic issues that we particularly wish to bring to Ofcom's attention. Some of the non-strategic issues are more technical in nature and, as such, should be relatively straightforward to resolve.

2.2 Regulatory Framework (Section 3.2)

40. In the WFTMR Ofcom decided that PIA should be provided under a No Undue Discrimination (NUD) obligation, which is defined as:

> *"…when an SMP provider does not reflect relevant differences between (or does not reflect relevant similarities in) the circumstances of customers in the transaction conditions it offers, and where such behaviour could harm competition."*[1]

41. Ofcom said that it would *"interpret the condition as requiring strict equivalence where possible with discrimination permitted only in cases where Openreach can demonstrate that a difference in respect of a specific service, system or process is justified."*[2]

42. Explaining why it did not impose an Equivalence of Input (EOI) obligation, Ofcom said that *"To implement full EOI today would … require extensive re-engineering with the associated disruption and cost. However, given the importance of PIA, Openreach should be able to demonstrate that any difference between its own use and use by other providers is justified."*

43. As well as supplying PIA to FNBs, Openreach supplies it to itself. This means that it raises an internal transfer charge when using its own physical infrastructure. The volumes, unit prices, revenues and ROCE for both external and internal supply are reported in BT's RFS.

[1] Ofcom (2005) "Undue discrimination by SMP Providers" para 3.5.
[2] Ofcom (2021) WFTMR Statement para. 3.74.

As noted above, the difference in the internal and external prices reported in the RFS is one of the motives for this report.

Suggested Change	Section	Topic	Regulatory Consistency	Cost Reduction	Fair competition	Transparency
Regulatory Framework Issues						
SC 01	3.1	Internal vs external prices in RFS			Y	
SC 02	3.1	PIA-WLA linkage in RFS				Y
SC 03	3.1	Summary-PIA linkage in RFS				Y
SC 04	3.2	Strict equivalence criteria				Y
SC 05	3.2	Potential EOI obligation				Y
Issues Related to Duct						
SC 06	4.1	Adapt Excel for multiple FNBs		Y	Y	
SC 07	4.1	Multiple FNB data gathering		Y	Y	
SC 08	4.2	PIA service order cf RFS				
SC 09	4.2	Excel base year costs cf RFS				Y
SC 10	4.2	New base versus previous final year analysis findings	Y			Y
SC 11	4.3	Lead-in discount component parts		Y	Y	
SC 12	4.4	Randomisation of inputs in Excel model				Y
SC 13	4.4	Excel model to take account of FNB usage			Y	Y
SC 14	4.4	RFS internal volumes cf Excel model				Y
SC 15	4.4	Excel model to retain duct quantities information				Y
Issues Related to Poles						
SC 16	5.1	Check no double counting of copper and fibre	Y		Y	
SC 17	5.1	Available Openreach pole utilisation data	Y		Y	Y
SC 18	5.1	Pole utilisation to reflect fibre rollout	Y			
SC 19	5.1	Final drop count to still reflect customer numbers	Y		Y	
SC 20	5.2	More detailed analysis of pole usage; no reference to whether nominally DP, Feeder, or Cable	Y		Y	Y
SC 21	5.3	Transmission cables on poles			Y	
SC 22	5.3	Openreach cables-up-poles data	Y			Y
SC 23	5.3	Cables-up-poles forecasts in next Excel model version	Y			Y
SC 24	5.3	Openreach manifolds data	Y			Y
SC 25	5.3	Analysis of manifold usage by Openreach cf FNBs	Y		Y	
SC 26	5.3	Manifolds forecasts in next Excel model version	Y			
SC 27	5.3	Openreach single/multi user data	Y			Y
SC 28	5.3	Single/Multi user forecasts in next Excel model version	Y			
SC 29	5.3	Alternative approach to pole usge cost recovery	Y		Y	
SC 30	5.4	Analysis of pole usage by Openreach cf FNBs	Y		Y	Y
SC 31	5.4	Single-user versus multi-user cost multiplier	Y		Y	
SC 32	5.4	Comparison of base year costs with RFS				Y
SC 33	5.4	New base versus previous final year analysis findings	Y			Y
SC 34	5.5	Check no double counting of pole-related opex				Y
SC 35	5.5	Excel model to be explicit on pole-testing costs			Y	
SC 36	5.5	Formal check/audit on pole-testing costs	Y			Y
SC 37	5.5	Check on Openreach pole data availability and accuracy				Y
Issues Common to Duct and Poles						
SC 38	6.1	Source of base year data for next Excel model release	Y			
SC 39	6.1	Formal comparison of total COW costs versus those used in Excel model	Y			Y
SC 40	6.1	Formal review of COW codes for use in next Excel model release	Y			Y
SC 41	6.1	Formal review of new HCA costs by COW since last base year	Y			Y
SC 42	6.1	Carry forward of model final year asset cost forecasts to base year of next Excel model release	Y			Y
SC 43	6.2	Network Adjustments cost limit and how Openreach own costs are audited	Y			Y
SC 44	6.3	Network Adjustments process concerns			Y	Y
SC 45	6.4	Lead-in discount value for next Excel model release	Y	Y	Y	
SC 46	6.4	Adoption of year-by-year lead-in discount values	Y	Y	Y	
SC 47	6.5	Approach when RPI no longer available	Y			
SC 48	6.6	Adoption of constant CAGR for both CPI and RPI in each modelled year	Y		Y	
SC 49	6.6	Carry forward of model final year asset cost forecasts with adjusted RPI CAGR	Y		Y	
SC 50	6.7	Incorporate PIA usage/forecasts into the next Excel model release, and also multiple FNB		Y	Y	
SC 51	6.8	Forecast of additional capex in next Excel model release			Y	Y
SC 52	6.8	Comparison of Openreach unit costs versus Openreach ECC pricelist			Y	Y
SC 53	6.9	Consultation with industry on any proposed changes to WACC			Y	Y

44. In our view, these differences are counter to the determination by Ofcom in its 2018 Wholesale Local Access market review where it stated:

> *"…when Openreach charges itself internal transfer charges, it must do so in a manner that is consistent with the charging principles that it applies to determine charges faced by telecoms providers using PIA, to the extent that a different approach cannot be justified. These internal transfer charges would then be relevant to any subsequent assessment of whether Openreach's prices for the relevant downstream services are appropriate."*[3]

45. It is clear from the RFS that charging principles are not consistent between internal and external charges as the former are set to achieve a specific ROCE and the latter to comply with Ofcom's charge control. This difference is, in our view, detrimental to establishing effective competition and to ensuring that FNBs are able to compete with Openreach. Ofcom needs to take action to address this matter.

46. In this report we make the following recommendations:

- Prices, in the form of transfer charges, used internally by Openreach for PIA services, such as in the BT RFS but also for all other purposes, are set at the same level as the external price paid by the FNBs.
- Ofcom adapts the required RFS layouts in such a way that there is a clear and transparent linkage between the PIA section (6.1.1) and the WLA section (7.1.2), to the extent that the transfer charging is visible for each individual PIA service and that the amounts contained within the PIA section have corresponding entries to those in the WLA section. Furthermore, CCA adjustments should also be shown within the 7.1.2 for each individual PIA service.
- Ofcom to review the degree of transparency in the supply of PIA and whether Openreach performs to the standards of "strict equivalence" and to consult the industry on both these areas.
- If Openreach is found not to comply with these standards, then Ofcom should impose an EOI obligation on BT with regards to PIA.

[3] WLA Market Review Statement 2018, Volume 3, para 3.55.

2.3 Share of PIA Service Costs and Fibre Network Builders (Sections 4.1, 5.3, 6.7)

47. A key problem that the higher than expected level of PIA usage has highlighted is that Openreach is able to over-recover the cost of the infrastructure and FNBs are paying more than is necessary. The model is based on an assumption that only Openreach and one other operator uses any piece of physical infrastructure at any one time, but this is clearly not the case in some parts of the country. We reference data from Point Topic in this report showing that up to four companies are active in some areas.

48. To ensure that FNBs are not paying an excessive amount for PIA we propose an alternative approach detailed in paragraphs 96 – 103 for duct, 185 – 194 for poles, and 274 – 283 for matters affecting both ducts and poles.

49. To ensure consistency across time and place, we propose that PIA pricing should still be set on a nationally averaged basis and built into the glide path, but in future be based on Ofcom forecasts of the weighted average number of FNBs using the relevant infrastructure over the period of the charge control.

2.4 Lead-in Service (Sections 4.3, and 6.4)

50. In the WFTMR, Ofcom decided to replace the existing lead-in service with a new simplified lead-in service whereby FNBs would purchase the three components as a bundle. Ofcom also recognised that that FNBs would be unlikely to remove fibre from the lead-in service when a customer switched to an alternative provider and introduced a 10% discount to reflect this.

51. However, rather than apply this discount to the whole simplified lead-in service, it was applied to the lead-in duct only and not to the other components: the single bore spine duct and the joint boxes. This implies that the FNB would not remove its fibre from the lead-in duct but would remove it from the spine duct and the joint box. We do not think this is realistic. We therefore propose that the 10% discount should be applied to the whole simplified lead-in service price.

52. We also propose that the discount should increase as the cumulative impact of churn increases which will inevitably happen over time. Our own modelling indicates that if the installation of final customer connections after 2025/26 continues at the forecast rate of that year, then the required discount rate for 2030/31 would be 35%.

2.5 Impact of CCA in an Uncertain World (Section 6.6)

53. The PIA model uses Current Cost Accounting (CCA) with costs adjusted each year for inflation using the Consumer Price Index (CPI) for operating costs and the Retail Price Index (RPI) for assets. Per-unit costs for each PIA service are calculated for each modelled year. However, only the first and final years of the period are actually used in the calculation of the X in the CPI+/-X formula.

54. Changes in the underlying asset values are carried forward from year to year, adjusted for inflation. However, holding gains are specific to the year in which they arise. They influence the per unit costs of PIA services forecast only for that year and are assumed to be consumed in that year. Thus, holding gains arising in any year, other than the first and final one, form no part of the final year price and, therefore, have zero impact on the value of X. Inflation spikes that occur in the intervening years will benefit Openreach (the increases in asset values are carried forward) but are disadvantageous to the FNBs (holding gains are ignored). We have illustrated this effect in paragraph 263.

55. A direct consequence of this is that very different final year unit prices can arise for any given compound annual growth rate (CAGR), depending on the inflation forecast for just the final year. This makes the model very sensitive to the final year inflation forecasts which are *de facto* the most uncertain.

56. The recent spike in inflation from 2022 to 2024, whilst extreme, illustrates this very well since it caused the internal transfer price of ducts to become negative, meaning Openreach WLA services were in effect being ***paid*** to utilise PIA assets.

57. Even where there is no inflation spike forecast, inflation does tend to vary in waves or cycles and, all other things remaining equal, the impact on the final year unit prices could be significant depending on whether the final year coincides with the forecast being at the crest or trough of the wave. As this would essentially be a random event, we argue that a much fairer way to include the impact of inflation in the model would be to assess the CAGR of the relevant forecasts and then apply that to every individual year modelled. This would tend to smooth out the impact and provide a fairer balance between Openreach and the FNBs.

58. Although there are still two years remaining of the forecast period for the current version of the PIA Excel model, a comparison between the original inflation forecasts and the

actuals, where available, and latest forecasts indicates that the modelled inflation indices will undershoot significantly. Using current OBR forecasts for the remaining two years, we have calculated the undershoot for CPI to be around 7.4% and for RPI to be around 11.0%.

59. The RPI index undershoot means that the final year asset values in Openreach's CCA accounts will be significantly higher than those in the current model. This, in turn, means that if those Openreach asset values are used to derive the new base year values for the next version of the Excel model, there will be a significant disjoint which will again favour Openreach at the expense of the FNBs.

60. A much fairer and more even-handed approach would be to carry forward the asset values at the final year (2025/26) of the current model and use those asset values to derive the new base year values. The actual 2025/26 Openreach final year CCA asset values, coupled with latest OBR inflation forecasts at that time, should still be used to assess the new final year values in the next model version which presumably ends in 2030/31. The effective CAGR asset inflation rate could then be adjusted to achieve the required glide path between the existing forecast levels in the final year of the current Excel model and the new forecast levels in the final year of the next version of the model. We believe this will smooth out the impact of the differences between the forecasts from the current model and actual events in a manner that is fair to both Openreach and the FNBs.

2.6 Effects of Copper Removal from Poles (Section 5.1)

61. There has been much discussion among FNBs about the potential impact on PIA prices from Openreach's own transition from copper to fibre. Openreach will make significant additional use of PIA assets during its rollout of fibre. This has the potential to temporarily decrease the unit prices of various PIA services since the unit price is derived by dividing the total attributed annual cost of a PIA service by the aggregate quantity of its use. Then, when the copper cables are removed once they become redundant, the reverse could occur and the prices could rise again.

62. In the WFTMR, Ofcom updated the share of duct-based PIA service costs that would be borne by FNBs so that this would not be impacted by the copper to fibre transition. However, the same was not done for pole-based PIA. It will, therefore, be necessary to address this in the TAR to ensure there is no double counting where Openreach has both fibre and copper cables on the same pole.

63. In our view, Openreach should now have sufficient information on pole utilisation to allow Ofcom to update the model taking account of actual usage. For example, where Openreach fibre coverage is 100%, the pole data for fibre-related attachments, manifold and cables could be used, and copper data largely ignored, and in other areas the copper related utilisation could be used.

3 REGULATORY FRAMEWORK ISSUES

3.1 BT/Openreach RFS

Current Ofcom Approach

64. One of BT's annual obligations, due to its status as a Significant Market Power (SMP) operator, is the publication of a formal set of Regulatory Financial Statements (RFS). Following the last Wholesale Fixed Telecoms Market Review (WFTMR), Ofcom modified the requirements with the aim of improving the reporting of Physical Infrastructure Access (PIA). Indeed Ofcom, in its included statement in the 2022 RFS, stated that this was to:

> *"… ensure duct and pole services are separately reported and the allocation of costs between PI and downstream markets is clear."*

65. The key table in the RFS, with regards to PIA, is 6.1.1 "Physical Infrastructure Summary". This identifies each PIA service individually and clearly separates out "internal" usage used by Openreach for downstream services such as Wholesale Local Access (WLA) from "external" usage where PIA is sold to other Fibre Network Builders (FNBs).

66. As far as we understand it, the precise layout, and indeed calculations, used in section 6.1.1 of the RFS were formally stipulated to BT by Ofcom. We assume, therefore, that what we shall refer to as the "clarity linkage" (ensuring that the allocation of costs between PIA and downstream markets is clear) between PIA and WLA was also formally stipulated to BT by Ofcom.

Observations

67. Having studied the RFS for both 2022 and 2023 in some detail, we have made a number of important observations, which we discuss below.

PIA Pricing

68. There is no consistency between "internal" and "external" pricing. External PIA pricing is essentially based on the published Openreach price lists, presumably using weighted averaging in cases where the published price changed during the financial year. Internal PIA pricing, on the other hand, is a calculation designed to provide the "allowed" Internal Return on Capital Employed (ROCE).

69. In the 2023 RFS[4], the impact of this different approach is dramatic, with an internal ROCE of 6.8%, an average external ROCE of 22.4%, and one PIA service showing an external ROCE of 321.8%. The other stark difference can be seen with the average prices which became negative for internal prices on all duct related PIA services. This means that the PIA division is, in effect, paying downstream Openreach services, such as WLA, to use duct related PIA services rather than charging for them. We would argue that this runs against the determination by Ofcom in its 2018 WLA Review[5] that:

> *"…when Openreach charges itself internal transfer charges, it must do so in a manner that is consistent with the charging principles that it applies to determine charges faced by telecoms providers using PIA, to the extent that a different approach cannot be justified. These internal transfer charges would then be relevant to any subsequent assessment of whether Openreach's prices for the relevant downstream services are appropriate."*

Impact of Current Cost Accounting (CCA)

70. Both the 2022 and 2023 RFS illustrate the potential impact of CCA where the forecast inflation rates in the current PIA Excel model differ significantly from the rates that actually occurred. The external prices were based on the forecast inflation rates and should have, albeit approximately, resulted in the regulated ROCE had the actual inflation rates not been significantly different.

71. In the 2022 RFS[6], the internal prices for duct-related PIA services are significantly lower than the external regulated prices, but they are still positive numbers. It was in 2023 that the inflation rate differences (forecast to actual) were so severe that they produced negative prices.

72. We accept that the recent inflation spike was both unexpected and, arguably, something of a one-off event. However, this does not alter the fact that Openreach has, in effect, achieved a much higher ROCE for PIA services for the last two financial years than is permitted under Ofcom regulation. Furthermore, the reduced and, in 2023 negative, internal prices for duct-related PIA services, could allow, *ceteris paribus*, Openreach to reduce its WLA prices to the detriment of the FNBs.

[4] BT RFS 31 March 2023, section 6.1.1, current year.
[5] WLA Market Review Statement 2018, Volume 3, para 3.55.
[6] BT RFS 31 March 2023, section 6.1.1, prior year.

73. We have calculated what the external revenues would have been if the external prices had been set to achieve the regulated ROCE and compared those to the actual external revenues. This shows that Openreach enjoyed a windfall gain of £2.0 million for FY 2022, and £8.8 million for FY 2023. The table below shows how we calculated the total for FY 2023 utilising data from section 6.1.1 of the RFS for that period.

		Revenues at External Prices		Revenues at Internal Prices	
Financial Year 2022/23	External Volume	External average price	Total Revenue (external prices)	Internal average price	Total Revenue (internal prices)
PI rentals					
Lead-in duct	95,144	9.94	945,731	(1.23)	(117,027)
Spine duct - 1 bore	10,377	310.00	3,216,870	(6.25)	(64,856)
Spine duct - 2 bore	3,489	200.00	697,800	(3.35)	(11,688)
Spine duct - 3+ bore	5,172	140.00	724,080	(2.92)	(15,102)
Facility hosting (per manhole entry)	78,569	9.43	740,906	(1.92)	(150,852)
Facility hosting (per joint box entry)	857,673	2.24	1,921,188	(0.33)	(283,032)
Poles - multi-end-user attachment	98,932	5.65	558,966	6.74	666,802
Poles - single-end-user attachment	121,909	2.21	269,419	1.84	224,313
Pole top equipment	80,287	1.66	133,276	1.90	152,545
Cable up a pole	57,858	1.10	63,644	1.50	86,787
Total PI rentals			**9,271,880**		**487,890**
				Implied Windfall Gain:	**8,783,990**

Source: BT RFS for financial year 2022/23

74. We discuss issues resulting from the use of CCA further in section 6.6.

Audit Checking

75. In the current year table in section 6.1.1 of the 2023 RFS, the internal revenue does not equal the internal volume multiplied by the internal average price for all three "Spine Duct" PIA services. Indeed, it is out by around a factor of ten, as illustrated in the table below.

Financial Year 2022/23	Internal Volume	Internal average price	Volume * Price	Internal Revenue shown in RFS
Spine duct - 1 bore	755,891	(6.25)	**(4,724,319)**	**(42,800,000)**
Spine duct - 2 bore	357,418	(3.35)	**(1,197,350)**	**(11,100,000)**
Spine duct - 3+ bore	579,431	(2.92)	**(1,691,939)**	**(16,400,000)**

Source: BT RFS for financial year 2022/23

76. On the assumption that the entries for Opex and MCE are correct, it would seem to us that the error is in the calculation of the internal average price and not the internal revenue. However, we are somewhat surprised that such a basic error made it past the auditors.

77. If we are correct in our suspicion that the error is in the calculation of the internal average price, then the windfall gain for 2022/23 rises to £9.5 million, as illustrated below.

Financial Year 2022/23	External Volume	Revenues at External Prices: External average price	Revenues at External Prices: Total Revenue (external prices)	Revenues at Internal Prices: Internal average price	Revenues at Internal Prices: Total Revenue (internal prices)
PI rentals					
Lead-in duct	95,144	9.94	945,731	(1.23)	(117,027)
Spine duct - 1 bore	10,377	310.00	3,216,870	(56.36)	(584,848)
Spine duct - 2 bore	3,489	200.00	697,800	(31.06)	(108,368)
Spine duct - 3+ bore	5,172	140.00	724,080	(28.13)	(145,488)
Facility hosting (per manhole entry)	78,569	9.43	740,906	(1.92)	(150,852)
Facility hosting (per joint box entry)	857,673	2.24	1,921,188	(0.33)	(283,032)
Poles - multi-end-user attachment	98,932	5.65	558,966	6.74	666,802
Poles - single-end-user attachment	121,909	2.21	269,419	1.84	224,313
Pole top equipment	80,287	1.66	133,276	1.90	152,545
Cable up a pole	57,858	1.10	63,644	1.50	86,787
Total PI rentals			**9,271,880**		**(259,168)**
				Implied Windfall Gain:	**9,531,048**

Source: BT RFS for financial year 2022/23

Clarity Linkage

78. We totally support Ofcom's intention that the allocation of costs between PI and downstream markets should be transparent. However, the current structure of the RFS does not achieve this.

79. If PIA services were offered to the FNBs on the basis of Equivalence of Inputs (EOI), this might be less impactful. However, these services are currently offered on the basis of No Undue Discrimination (NUD). Consequently, the threshold level for transparency must be set very high, so the FNBs can be satisfied that there really is no undue discrimination between the way that Openreach offers PIA to itself and to the FNBs.

80. To achieve the required level of transparency, the internal revenues from section 6.1.1 of the RFS should be broken down by each PIA service in section 7.1.2. At the moment section 7.1.2 only contains a single row labelled "Attribution of PI costs". Furthermore, the totals from section 7.1.2 should correspond to the total internal revenue from section

6.1.1 and, if there really has to be a difference, then this is fully justified as a note in section 7.1.2.

81. Given that section 7.1.2 firstly shows HCA operating costs and, secondly, CCA adjustments, the latter should also show a clear breakdown of the CCA adjustments for each PIA service.

82. Similar enhancements to section 5.1 should also be made, again ensuring that the totals in section 5.1 tally with those in section 6.1.1.

83. **Summary of Suggested Changes**

SC 01. Prices in the form of transfer charges used internally by Openreach for PIA services, such as in the BT RFS but also for all other purposes, are set at the same level as the external price paid by the FNBs. [para 68 and 69]

SC 02. Ofcom adapts the required RFS layouts to provide a clear and transparent linkage between the PIA section (6.1.1) and the WLA section (7.1.2), to the extent that the transfer charging is visible for each individual PIA service and that the amounts contained within the PIA section have corresponding entries to those in the WLA section. CCA adjustments should also be shown within section 7.1.2 for each individual PIA service. [para 80 and 81]

SC 03. Similar enhancements are also made to section 5.1 of the RFS. [para 82]

3.2 No Undue Discrimination Obligation

Current Ofcom Approach

84. PIA is currently provided under the No Undue Discrimination (NUD) obligation which is intended to prevent discrimination occurring that may distort competition in the market. NUD is interpreted by Ofcom as when Openreach "does not reflect relevant differences between (or does not reflect relevant similarities in) the circumstances of the customer in the transaction conditions it offers, and where such behaviour could harm competition"[7]

85. Ofcom decided not to impose an Equivalence of Input (EOI) obligation on the basis that Openreach has been using its physical infrastructure for many decades and that to

[7] WFTMR Statement Para 3.71.

implement full EOI would require extensive re-engineering with associated disruption and cost. [8]

86. However, Ofcom also decided that where Openreach supplies PIA directly to a downstream division of BT, for example to BT Wholesale, then Ofcom would not expect any differences in treatment to be justified and, therefore, Openreach would be required to provide PIA under EOI.

87. It is clear from the 2018 WLA Market Review Statement that there was some discussion by stakeholders, notably the Passive Access Group (PAG), TalkTalk, Telefonica and Three, arguing for the imposition of EOI to support development of the product. Openreach argued against the imposition of EOI.

Observations

88. When EOI and Functional Separation were introduced as part of Ofcom's strategic review of telecommunications in 2005, they were designed to prevent BT discriminating in favour of itself when supplying upstream inputs within BT. This entailed placing most upstream services into Openreach and leaving downstream activities elsewhere in BT. However, the current approach leaves PIA and Wholesale Local Access (WLA) in the same operating division, which goes against the principles set out in the strategic review, and so does not remove Openreach's incentive or ability to discriminate in favour of itself.

89. The remainder of this report shows in detail how the PIA cost model contributes to a lack of transparency and confusion about the appropriate price for PIA. This is despite Ofcom interpreting NUD in the 2018 WLA Review Statement as "*requiring strict equivalence in respect of all processes and sub-products that contribute to the supply and consumption of duct access*". [9]

90. **Summary of Suggested Changes**

SC 04. Ofcom to review the degree of transparency in the supply of PIA and whether Openreach performs to the standards of "strict equivalence", and to consult the industry on the above.

[8] WLA Market Review Statement 2018, Volume 3, paras 3.39 through 3.57.
[9] WLA Market Review Statement 2018, Volume 3, para 3.46.

SC 05. If Openreach is found not to comply with these standards, then Ofcom to impose an EOI obligation on BT with regards to duct and pole access.

4 ISSUES RELATED TO DUCT

4.1 Share of Total PIA Service Costs allocated to Fibre Network Builder (FNB) use

Current Ofcom Approach

91. In the 2021 WFTMR review, Ofcom decided to change the allocation percentages that had previously been used to determine what proportion of the allocated per-unit cost for duct-related PIA services should be borne by an FNB using that facility. The percentages determined by Ofcom are shown in the table below along with, for comparison, previous percentages that had been used and were based on utilisation rates.

PIA Service	2021 WFTMR	January 2020	PIMR 2019
Lead-in duct	90% (incl. 10% discount)	90% (incl. 10% discount)	100%
Single bore duct	50%	50%	50%
2 bore duct	25%	19.3%	22.1%
3+ bore duct	10%	8.8%	9.8%
Manholes	3.3%	3.3%	3.3%
Joint boxes	15%	14.4%	14.6%

92. Ofcom stated in its January 2020 consultation that *"…telecoms providers should pay as a share of this unit cost based on measures of relative utilisation"*[10]. In its November 2020 consultation, Ofcom modified its thinking somewhat following feedback from the respondents. Ofcom was particularly concerned to avoid a situation where the percentages borne by the FNBs would reduce as Openreach's own utilisation rose whilst it deployed its own full fibre infrastructure, and then they would rise again as the copper cables were removed and Openreach's utilisation fell back[11].

93. Ofcom acknowledged the uncertainty that existed in 2020 regarding how FNBs would utilise PIA services in their network deployments and stated that its judgement *"is based on our assessment of how competing telecoms providers might use the physical infrastructure over the medium term, the opportunity to earn revenues related to that*

[10] 2020 WFTMR Annex 20, para A20.25

[11] Nov. 2020 WFTMR Consultation, paras 3.12 through 3.14

usage, and the consequential impact on Openreach's opportunity to earn revenues from its own network".[12]

94. For multi-bore ducts, Ofcom stated that it remained of the view that an FNB would not be able to reach all end customers by utilising, and thus paying for, just one sub-duct and determined that if an FNB needed two sub-ducts then it would pay twice as much.[13]

95. In the paragraph 3.18[14], Ofcom stated the overall objectives that it should seek to ensure:

- A level playing field exists between Openreach and the FNBs.
- Openreach has the opportunity to recover its efficiently incurred costs.

Observations

96. In essence, Ofcom has concluded that where an FNB addresses all end customers in any given area then both Openreach and that FNB will require to install/utilise:

- One sub-duct each for single bore duct. Thus, two in total, one for Openreach and one for the FNB, each bearing 50% of the cost.
- Two sub-ducts each for 2 bore duct. Thus, four in total, each bearing 25%.
- An average of five sub-ducts each for 3+ bore ducts. Thus, ten in total, each bearing 10%.
- An average of 15.15 entries each for manholes. Thus, 30.3 in total, each bearing 3.3%.
- An average of 3.33 entries each for joint boxes. Thus, 6.67 in total, each bearing 15%.

97. We would agree that the percentages determined by Ofcom do not seem unreasonable when compared to the previous values that were based on Openreach statistics on actual utilisation. However, they are clearly based on the assumption that there is only one independent FNB utilising the infrastructure alongside Openreach.

98. Since the time of the 2021 WFTMR, there has been a very large take up of PIA services by the various FNBs. It is also now the case that in many areas there are two or more FNBs

[12] Nov. 2020 WFTMR Consultation, para 3.16.
[13] Nov. 2020 WFTMR Consultation, para 3.17.
[14] Nov. 2020 WFTMR Consultation, para 3.18.

actively utilising the same infrastructure alongside Openreach. We discuss this further in section 6.7.

99. In order to prevent, or at least minimise, the scope for cost over-recovery by Openreach, we would argue that it is necessary to adapt the percentages to account for areas where two, three, or more FNBs are utilising the same infrastructure. Assuming that all of the FNBs present in a given area would also utilise the infrastructure in the same way as the first, then it is quite straightforward to calculate revised percentages that could apply to a specific area. We show these in the table below.

	Share of total unit cost per FNB				
# of FNBs	1	2	3	4	5
Single bore duct	50.0%	33.3%	25.0%	20.0%	16.7%
2 bore duct	25.0%	16.7%	12.5%	10.0%	8.3%
3+ bore duct	10.0%	6.7%	5.0%	4.0%	3.3%
Manholes	3.3%	2.2%	1.7%	1.3%	1.1%
Joint boxes	15.0%	10.0%	7.5%	6.0%	5.0%

100. The FNBs are unlikely to want the pricing structure to become granular, for example, different percentages are used for each group of postcode sectors. An alternative to this would be for Ofcom to gather the relevant information during the 2026 TAR and use this to calculate weighted averages that could then be applied across the whole country, thereby maintaining national pricing of duct-based PIA services. Ofcom would need to assess/forecast how this might develop over the years covered by the TAR. This analysis could then be used within the TAR version of the Excel model to calculate:

- The weighted average percentages for each modelled year.
- The relevant unit prices for each year.
- The glide path to be adopted.
- The new values for X in the CPI+/- X formula.

101. We would urge Ofcom to consider adapting the next version of the PIA Excel model and/or the price control mechanism to take account of areas where premises are now passed by multiple FNBs utilising the same Openreach PIA infrastructure and highlight how this is forecast to evolve over the review period.

102. We are conscious that Ofcom periodically collects detailed information at the postcode sector level on which FNBs are present in which areas. We, therefore, feel that this could be adapted to source the required information in the future by requiring the FNBs to state, at the postcode sector level, where they are present, and whether they are utilising PIA or undertaking their own build. Ofcom could then aggregate this information for use in the Excel model for the base year and use it to help produce a forecast of how it might be expected to evolve. We would urge Ofcom to consider implementing such a solution, or equivalent, as part of the next market review.

103. **Summary of Suggested Changes**

SC 06. Ofcom to adapt the next version of the PIA Excel model and/or the price control mechanism to take account of areas where premises are now passed by multiple FNBs utilising the same Openreach PIA infrastructure and highlight how this is expected to evolve over the review period. [para 101]

SC 07. Ofcom to implement the necessary data gathering process that would allow it to gather the relevant information from all relevant stakeholders at the postcode sector level on how many independent FNBs were utilising the PIA services. [para 102]

4.2 Capex Attribution across PIA Services

Current Ofcom Approach

104. Ofcom sources the starting year cost data from Openreach's accounting systems according to an agreed set of accounting codes between Openreach and Ofcom. The data extracted is also, where necessary, broken down between different time periods.

105. Openreach had not, historically, stored the attribution of capex in alignment with the various PIA services, and indeed prior to PIA it had no reason to do so. It, therefore, provided Ofcom with recommended attribution percentages for use in the Excel model based on internal Openreach analysis. One analysis had already been prepared for Ofcom by Openreach as part of Ofcom's 2018 WLA market review. As part of the WFTMR process, Openreach provided Ofcom with a new analysis. Openreach felt that the new analysis should be used for all duct-related assets. Ofcom, however, disagreed and elected to only use the new analysis for assets installed after 31 March 2018.

106. Hence, assets installed prior to the end of FY 2017/18 were attributed across the duct-related PIA services according to percentages that had been used during the 2018 WLA

market review. Those installed after this date were attributed according to Openreach 's more recent assessment. The attribution percentages used are shown below[15]:

	Installation Date	
	Pre 31/3/18	Post 31/3/18
Lead-in duct	9.4%	10.2%
Spine duct – single bore	36.6%	40.1%
Spine duct – 2 bores	9.7%	11.9%
Spine duct – 3+ bores	15.3%	11.7%
Joint boxes	17.4%	16.3%
Manholes	11.7%	9.7%
Total	**100.0%**	**100.0%**

107. At the time that the WFTMR took place, the BT RFS did not contain individual rows for each PIA service. However, at the conclusion of the WFTMR, BT was instructed to modify the layout of the RFS so that there were specific rows for each service. This was first implemented in the 2022 RFS but, since the RFS contains prior year data, it also produced results for the 2021 financial year.

108. The two tables below compare the costs in the current Excel model for FY 2020/21[16] with those contained in the 2022 RFS[17] for the same financial year.

	Opex (FY 2020/21)		
	PIA Model	RFS	Ratio
Lead-in duct	28.55	25.7	90%
Spine duct – single bore	111.89	102.6	92%
Spine duct – 2 bores	29.72	25.8	87%
Spine duct – 3+ bores	45.77	37.4	82%
Joint boxes	52.63	43.7	83%
Manholes	35.08	31.9	91%
Total	**303.65**	**267.10**	**88%**

[15] PIA Excel model, worksheet [D&C Cost Forecasts], rows 31 through 45 for year 2019/20.
[16] PIA Excel model, worksheet [D&C Forecast UCs, Charges & Xs], rows 5 through 20.
[17] BT RFS 31 March 2022, section 6.1.1, prior year.

MCE (FY 2020/21)			
	PIA Model	**RFS**	**Ratio**
Lead-in duct	451.48	474.8	105%
Spine duct – single bore	1,770.56	1,882.30	106%
Spine duct – 2 bores	475.12	479.8	101%
Spine duct – 3+ bores	704.05	703.9	100%
Joint boxes	821.73	810.9	99%
Manholes	542.72	589.6	109%
Total	**4,314.17**	**4,466.50**	**104%**

109. Although the costs are similar between the Excel model and the RFS, they are not identical. This could potentially be for one or more of three reasons:

- The source cost data in the Excel model has been "randomised" by Ofcom (+/- 20%)[18].
- The source cost data refers to FY 2019/20 and thus the model has had to forecast the FY 2020/21 values.
- The attributions used by BT in the RFS differ from those used in the Excel model.

Observations

110. The list of PIA services in the Excel model is in a different order to that in the RFS, in that in the Excel model Joint Boxes are listed before Manholes. Although we totally appreciate that this is a minor issue, we would like to request that Ofcom ensures that the order is the same as in the RFS in the next version of the Excel model otherwise it is easy to forget and get confused.

111. During the last review, there was no possibility to compare the source cost data with the published RFS. In the next review this should be both possible and practical. We would, therefore, request that Ofcom ensures that stakeholders can indeed compare like-for-like for the model base year and, in particular:

- Any randomisation used in the model inputs for the public version of the Excel model is made in a way which results in totals that correspond with those in the RFS.
- The attributions used by BT in the RFS are the same as those used in the Excel model. If the RFS process needs to be modified to achieve this, then BT is made aware of this in good time and/or Ofcom publishes the necessary reconciliation information at the time

[18] PIA Excel model, worksheet [Style Guidelines], row 21.

of the next review statement with BT also including such reconciliation information in the next RFS.

112. Clearly, BT will have invested further in its assets since the last data was extracted by Ofcom relating to FY 2019/20, and the next data extract will differ from that forecast in the current Excel model. For example, these differences will occur due to:

- Forecast investments in capex differing from the actuals.
- Differences between the forecast inflation rates and the actuals impacting the necessary CCA adjustments.
- Forecasts for "Network adjustments" differing from the actuals. We note that such adjustments could include work carried out by Openreach on its own behalf as well as work carried out by the FNBs and later reimbursed by Openreach .

113. We would strongly encourage Ofcom to review how the final year forecasts in the current Excel model differ from those extracted from BT's and/or Openreach's systems for the base year of the next version of the model. We would also urge Ofcom to share with other stakeholders what those differences are; what analysis Ofcom has undertaken to understand the reasoning behind those differences; and what, if any, conclusions and/or actions Ofcom has taken following that analysis. This would greatly enhance transparency of the review process and help reassure the FNBs that increases in the capex amounts are justified.

114. **Summary of Suggested Changes**

SC 08. PIA service order in next version of the Excel model is adapted to correspond to that in the RFS. [para 110]

SC 09. Base year costs in the next version of the Excel model are like-for-like compared to the relevant RFS. Randomisations of source costs in the new Excel model version are made such that the totals by each PIA service are still correct and not randomised. [para 111]

SC 10. Analysis of findings, following a comparison of new base year actuals with final year forecasts in the current Excel model, are shared with the stakeholders. [para 113]

4.3 Lead-in Service – Component Parts

Current Ofcom Approach

115. In the 2021 WFTMR, Ofcom decided to replace the existing lead-in services, whereby FNBs purchased separate services, lead-in duct, lead-in links, and facility hosting, for each new end-user connection that they ran a fibre to, with a new "simplified lead-in service". With the new service, the FNB would pay a standard charge that would, in effect, be a weighted average of the previous separate service charges. Ofcom noted[19] that this would "remove the current complex and burdensome process for telecoms providers and reduce administrative overheads such as verification and record-keeping".

116. The randomised component quantities for the new lead-in service to be found within the current Excel PIA model[20] comprise:

- 11.330 metres of lead-in duct
- 10.362 metres of single-bore spine duct
- 0.407 joint box exits

117. Essentially, the above quantities are assumed to allow for a fibre cable connection to be made by the FNB between the end-user premises entry point and the nearest fibre distribution point.

118. Alongside the introduction of the new simplified lead-in service, Ofcom also recognised that when end customers churn away from using the fibre of a specific FNB, that operator is unlikely to judge it worthwhile to physically remove the fibre connection. Ofcom's reasoning was that the costs of doing so, and perhaps having to reinstall that fibre later, were prohibitive compared to the saving in lead-in service charges, and that leaving the fibre in place would make regaining the customer much more straightforward in future. This is also the same approach taken by Openreach, Virgin Media, and all other fixed access network providers.

119. In recognition of this situation, Ofcom decided to reduce the simplified lead-in service charge for all users by a set percentage – initially set at 10% of the lead-in duct cost.

[19] 2021 WFTMR Volume 4, paragraph 4.134.
[20] PIA Excel model, worksheet [Input data], rows 22 through 24.

Observations

120. The current PIA Excel model actually includes inputs that would allow a percentage discount to be applied to all three of the component parts to the simplified lead-in service, but the 10% reduction is only entered for the lead-in duct with 0% used for the other component parts.

121. We note that the reason Ofcom decided to introduce the discount was to recognise that the final fibre connection from the distribution point to the entry to the end-user premises would not be removed should the end-user churn to a different provider. However, what has actually been modelled, and therefore costed, is that the FNB leaves the fibre in the lead-in duct but removes it from both the single-bore spine duct and the joint box. We are confident that Ofcom would accept that, from both a technical and commercial perspective, this simply would not happen.

122. We would, therefore, argue that it would make sense for Ofcom to adapt the PIA Excel model in the TAR to achieve a consistency of treatment across the three component parts of the simplified lead-in service. Indeed, leaving the model as it currently stands would result in an ever-increasing amount of over recovery of the cost of both single-bore spine duct and joint boxes. To put this into context, for the final year of the current PIA Excel model, this would amount to £0.49 for each lead-in service purchased (£11.31 with no discount for spine duct and joint box entries compared to £10.82 with a 10% discount). By the end of the next review period in 2031, the aggregate annual total could easily exceed a million pounds of cost over recovery, assuming that by then over two million lead-in services have been purchased by the FNBs.

123. **Summary of Suggested Changes**

SC 11. The inputs within the PIA Excel model are adjusted such that the same percentage discount is used for all three component parts of the simplified lead-in service. [para 122]

4.4 Base Year Asset Volumes

Current Ofcom Approach

124. For duct-related assets, Ofcom sourced the quantities from Openreach for the periods ending 31st March 2019 and 31st March 2020. Ofcom then took a simple average to arrive

at a mid-year point for the 2019/20 financial year. These became the base year quantities for the assets involved.

125. The model then increased those quantities for every modelled year according to forecast percentage growth rates, which were also provided to Ofcom by Openreach. Both the starting quantities and the growth percentages have been randomised in the public version of the model.

126. Under Ofcom's direction, BT publishes "Internal Volumes" in section 6.1.1 of its RFS each year. However, the units of usage are not the same as those used in the model even in cases where both are given as "km". The table below illustrates this for FY 2022/23.

	2022/23			
	RFS		Model	
	Quantity	Units	Quantity	Units
Lead-ins	8,989,988	lead-ins	96,648	km
Spine duct – single bore	755,891	km	321,702	km
Spine duct – 2 bores	357,418	km	64,793	km
Spine duct – 3+ bores	579,431	km	61,161	km
Joint boxes	56,549,375	entries	6,329,974	units
Manholes	6,891,558	entries	196,174	units

Observations

127. If we understand correctly, the randomisations adjusted the data provided by Openreach by a random factor between -20% and +20%, with each item of data being randomised differently. One impact of this is that the data for the years 2018/19 and 2019/20 provided by Openreach could potentially look strange to the observer seeing it only after the randomisation had taken place. An illustration of this is that the number of km of single bore duct, according to the input data in the model, reduced by around 190,000 km from 2018/19 to 2019/20.

128. We would urge Ofcom to reconsider which data really does need to be randomised, especially since much of it is now available within the BT RFS documents. Where Ofcom concludes that randomisation is still required, we would also urge Ofcom to do it in a way that does not show misleading trends from year to year.

129. We can appreciate why the units of usage are different between those used in section 6.1.1 of the RFS and those in the model since the RFS is, in effect, stating the amount purchased in an equivalent manner to how the FNBs purchase PIA services. However, we would argue that, for transparency reasons, there ought to be a way of comparing the data in the RFS with that in the model.

130. We found that by dividing the actual quantities in the Excel model[21] by the relevant percentage shares stipulated by Ofcom during the last review[22], we arrived at similar quantities to those in section 6.1.1 of the RFS. We have illustrated this below.

	2022/23				
	RFS		Model		
	Quantity	Units	Physical Quantity	Ofcom Factor	Revised Quantity
Lead-ins	8,989,988	lead-ins	96,648	0.0113	8,530,108
Spine duct – single bore	755,891	km	321,702	0.50	643,404
Spine duct – 2 bores	357,418	km	64,793	0.25	259,170
Spine duct – 3+ bores	579,431	km	61,161	0.10	611,608
Joint boxes	56,549,375	entries	6,329,974	0.15	42,199,824
Manholes	6,891,558	entries	196,174	0.03	5,944,676

131. We are far from convinced that the above illustration is representative of any actual correlation. However, we do find the results interesting and would argue that Openreach has clearly found a method of recording its own usage of the PIA assets in a manner not dissimilar to that in effect assumed within the current Excel model. We are, therefore, of the opinion that these quantities could be referred to in, and indeed utilised within, the next version of the Excel model. This would considerably improve the clarity of the proportionate use of assets by Openreach and the FNBs, especially now that FNB usage is significant.

132. We would, therefore, suggest that Ofcom adapts the model so that it records both the physical quantity of an asset class, such as single-bore duct, and Openreach and FNB usage of that asset class. The current version of the PIA Excel model, developed back in 2020 when the use of PIA services was still extremely low, adopted a somewhat theoretical

[21] PIA Excel model, worksheet [D&C Vols], rows 33 through 38.

[22] PIA Excel model, worksheet [Parameters and Assumptions], rows 25 through 29, and worksheet [Input data], row 22.

approach to PIA service pricing. We would argue that the next version could perform its calculations based on actual usage in the base year by both Openreach and the FNBs, and then forecast usage over the period covered by the model. This in turn would enable model results to be compared more directly with section 6.1.1 of the RFS so that all stakeholders would be able to see how well real take up and usage compares with the forecasts in the model.

133. For this to be meaningful, however, we urge Ofcom to require BT to adapt the RFS in a way that the "Internal Volumes" in section 6.1.1 are adequately explained so that is clear what the numbers actually relate to and how they have been calculated. We also recommend that the necessary adaptations to those calculations are made to prevent double counting during the period when Openreach is transitioning to a full-fibre local access network.

134. For the avoidance of doubt, we would still maintain that the next version of the PIA Excel model should retain information on the physical quantities of the duct-related PIA assets.

135. **Summary of Suggested Changes**

SC 12. Ofcom to reconsider which data really does need to be randomised, especially since much of it is now available within the BT RFS documents. Where Ofcom concludes that randomisation is still required, it is done in a way that does not show misleading trends from year to year. [para 128]

SC 13. Ofcom adapts the model so that it not only records, for example, the physical quantity of an asset class, such as single-bore duct, but also records both Openreach and FNB usage of that asset class. The next version is adapted to perform its calculations based on actual usage in the base year, by both Openreach and the FNBs, and then forecast usage over the period covered by the model. [para 132]

SC 14. Ofcom requires BT to adapt the RFS such that the "Internal Volumes" in section 6.1.1 are adequately explained in terms of what the numbers actually relate to and how they have been calculated. Necessary adaptations to those calculations are made to prevent double counting during the period when Openreach is transitioning to a full-fibre local access network. [para 133]

SC 15. The next version of the PIA Excel model should retain information on the physical quantities of the duct-related PIA assets. [para 134]

5 ISSUES RELATED TO POLES

5.1 Potential effects of Copper Removal/Retirement

Current Ofcom Approach and associated Observations

136. There has been much discussion among FNBs about the potential impact on PIA prices with Openreach's own transition from copper to fibre. During Openreach's rollout of fibre, it will make significant additional use of PIA assets. This has the potential to temporarily decrease the unit prices of various PIA services since the unit price is derived by dividing the total attributed annual cost of a PIA service by the aggregate quantity of its use. Then, when the copper cables are removed, the reverse could occur and the prices could rise again.

137. During the last market review, Ofcom updated the share of duct-based PIA service costs that would be borne by FNBs so that it would not be impacted by the copper-fibre transition. However, the same was not done for pole-based PIA services. At the time of the last market review, there was very little Openreach fibre-to-the-home in the access network. However, by the time of the upcoming TAR the situation will be very different. As of 16 May 2024, for example, BT stated[23] that it now covers 13.8 million premises and is aiming to have covered 25 million by the end of 2026.

138. The diagram below shows the (randomised) Pole Utilisation Data that is currently used within the PIA Excel model[24]. We assume that this is purely Openreach usage but, even if it is not, the impact would have been very slight in 2020.

[23] https://www.ispreview.co.uk/index.php/2024/05/bt-group-grows-fttp-to-13-81m-uk-premises-as-openreach-picked-for-project-gigabit.html.
[24] PIA Excel model, worksheet [Input data], rows 140 through 157.

Pole Utilisation Data			
Type of Pole	**Value**	**Date**	**Measure**
DP poles - pure	9,370,082	01 April 2020	Single Premise attachments
	-	01 April 2020	Multi premise attachments
DP poles - mixed	2,835,708	01 April 2020	Single Premise attachments
	548,432	01 April 2020	Multi premise attachments
Feeder poles - pure	3,326,527	01 April 2020	Single Premise attachments
	-	01 April 2020	Multi premise attachments
Feeder poles - mixed	1,510,570	01 April 2020	Single Premise attachments
	796,651	01 April 2020	Multi premise attachments
Cable poles	-	01 April 2020	Single Premise attachments
	1,236,485	01 April 2020	Multi premise attachments
All poles	0.29		Average number of cables up a pole
Ratio of manifolds to poles	44.27%		

139. We note that no distinction is made as to whether the input quantities relate to copper or fibre usage. Most likely this was because the fibre usage was so small that it was insignificant at the time and, thus, of no concern to Ofcom.

140. Clearly, if this data is simply updated for 2025 the numbers will change hugely, potentially almost doubling. Ofcom will, therefore, need to address this situation in the next review in order to deal with two specific issues:

- Ofcom needs to take care that there will be no double counting where both fibre and copper Openreach cables exist on the same pole.
- The model will need to account for the large amount of FNB use of poles.

141. How Ofcom will be able to adapt the next iteration of the PIA Excel model might well depend on how well Openreach records the aggregate usage across the pole estate and on a per-pole basis. We would certainly encourage Ofcom to engage with Openreach at the earliest opportunity so that it can understand better what information is actually available within Openreach's systems. Additional observations and commentary on this is provided in the next section, 5.2 Definition/Usage of different "types" of . For the remainder of this section, we limit our observations to how best Ofcom might address the potential impact of Openreach's copper-fibre transition.

142. One option that Ofcom might choose to take is to assume that the Openreach usage levels, forecast in the PIA Excel model for the end of the current review period, continue to reflect just copper-based attachments, manifolds and cables up poles, and essentially represent the steady state levels of attachments necessary for Openreach to reach all

relevant premises. Whilst this would be a non-ideal assumption, it might be a necessary one if proper data is not yet available from Openreach's systems. However, if this were the case, we would urge Ofcom to force Openreach to improve its record keeping so that by the end of the next review period proper and adequate data on pole utilisation is available and on a pole-by-pole basis.

143. If, as should be the case by now, Openreach's systems do have the requisite information on pole utilisation, then the model could be populated accordingly. Thus, for example, in areas where the coverage is 100%, the pole data for fibre-related attachments, manifolds and cables could be used, and in other areas the copper-related utilisation. One slight caveat with this would most likely be that, even in areas where the fibre coverage is 100%, it is still likely that not all premises covered will actually be taking Openreach fibre. To account for this, we would suggest that the data on copper single-user attachments for copper is used rather than for fibre. However, this would clearly need to be done on a pole-by-pole basis.

144. **Summary of Suggested Changes**

SC 16. The next version of the PIA Excel model is carefully adapted to ensure that there is no double counting of copper and fibre-based attachments, manifolds and cables up poles. [para 140]

SC 17. Ofcom engages with Openreach at the earliest opportunity so that it can understand better what information is actually available within Openreach's systems in relation to pole utilisation data. [para 141]

SC 18. To the extent practical, the information on pole utilisation reflects the fibre rollout, only reverting to copper where the fibre coverage in an area has yet to reach 100%. [para 143]

SC 19. Even where fibre coverage is 100%, the final-drop cable count continues to reflect cables running to all premises, using the data for copper-based final-drops (single user attachments) when necessary. [para 143]

5.2 Definition/Usage of different "types" of Poles

Current Ofcom Approach and associated Observations

145. The current PIA Excel model refers to three different "types" of poles:

- DP poles

- Feeder poles
- Cable poles

146. Neither in the Excel model, nor in the Ofcom documents comprising the WFTMR, are these different "types" of pole defined. Whilst one can make inferences about the role of each pole, it would be beneficial to have the terms properly defined both in the model and the WFTMR documents. This would be especially useful for readers who are not conversant with access network technologies and topologies.

147. We have drilled back in time through previous market reviews and have found references dating back to at least 2011. We strongly suspect that the reason that these specific terms are used is that they are the same terms that Openreach uses internally and that BT has presumably used for many decades.

148. In simplistic terms, our assumption is that:

- **DP poles** are poles that host the drop-wire cables that connect to the end-user premises.
- **Feeder poles** are intermediate poles that allow multi-core cables to make their way to the relevant DP pole(s).
- **Cable poles** are poles where a cable rises from an underground duct up to the top of the pole.

149. Unfortunately, in reality, and in the Excel model, both DP poles and Feeder poles exist in "pure" and "mixed" forms. Thus, in many cases, DP poles host feeder cables and Feeder poles host drop wires. It is also common to see one pole that has all types of attachments on it. A walk around a town will quite quickly result in seeing pole with single and multi-user attachments, a manifold at the top, and a cable running up it. This makes us suspect that the label attached to a particular pole merely represents its intended use when the pole was first installed but may bear little relation to its actual use years later.

150. Openreach has stated[25] that it tests around 500,000 poles each year, corresponding to approximately 10% of the pole estate. This provides Openreach with a perfect opportunity to record/correct/update its documentation. Given the number of years that

[25] 2021 WFTMR Volume 4, para 4.42.

have passed since PIA was introduced, Openreach should, by now, have an excellent computerised record of each individual pole, documenting precisely what each individual pole is used for in practice: how many cables are up it; how many manifolds are on it; and how many multi-user and single-user attachments there are. Furthermore, the record should be able to separately identify Openreach usage from FNB usage and Openreach copper-related usage from Openreach fibre-related usage. Therefore, Openreach should not be allowed to use the absence of such documentation as a reason not to be able to provide Ofcom with the relevant data.

151. On balance, we suggest that, with respect to the upcoming TAR, the time has now come where Ofcom should move away from the ambiguous and broad-brush terms currently used to categorise poles to a new approach where a pole is just that – a pole. This would replace the current situation within the Excel model where a single total number of poles (worksheet [Parameters and Assumptions], row 69) is attributed to a number of different pole types via a set of percentages supplied by Openreach, copied below for clarity and sourced from worksheet [Inputs], rows 129 through 133.

DP poles - pure	23.5%
DP poles - mixed	11.6%
Feeder poles - pure	30.7%
Feeder poles - mixed	11.8%
Cable poles	22.5%
Total	**100.0%**

152. The improved analysis could allow for a more targeted allocation of costs to the pole-related PIA services to lessen the current likelihood of the over recovery of costs on busy poles and the potential cross-subsidisation of pole revenues from urban/city areas towards rural/very rural areas. We discuss our proposed approach to this improved analysis in Section 5.3.

153. **Summary of Suggested Changes**

SC 20. The current categorisation of poles in the PIA Excel model between DP, Feeder and Cable poles is removed and replaced by a more detailed analysis of pole usage sourced from Openreach's systems. [para 151]

5.3 Share of Total PIA Service Costs allocated to FNB

Current Ofcom Approach

154. The current method of allocating pole costs to pole-related PIA services is quite convoluted. The basic process, however, is as follows:

- All of the pole costs are gathered together into a single amount. Thus, costs related to so-called DP poles, feeder poles and cable poles are treated as one overall amount.
- This single amount is then attributed between the three basic types of usage according to attribution percentages set by Ofcom. Single and multi-user attachments attract 90% of the cost, manifolds 7%, and the remaining 3% is attributed to cables running up the poles. These percentages are somewhat arbitrary but are set, in Ofcom's view, at levels that should hopefully send the correct signals to the market. We discussed these earlier in Section 5.3.
- For each of these three categories, the total attributed cost in then divided by the *total* number of poles to arrive at a "cost per pole" for each category. There is, therefore, no attempt at this stage to, for example, divide the cost attributed to cables up poles only by the total number of poles that have cables running up them.
- The model now treats each category separately in terms of how the final "per unit of usage" price that should be charged for the relevant PIA service(s) is assessed.

Cables Up Poles

155. The basic cost per pole for cables up poles for FY 2019/20, based on the bullet points above, was £0.5312.

156. Openreach supplied Ofcom with the likelihood of a cable up a pole, again based on all poles and not just cable poles, totalling 0.29.

157. Ofcom then decided to increase this by a factor of 1.8, totalling 0.522. The thinking behind this was that Ofcom concluded that not all cables running up poles were used by Openreach for the access network since there were also a number of transmission cables.

158. The basic cost per pole for cables running up poles was then divided by the 0.522 factor to produce the unit cost for the cable up pole PIA Service. This was then rounded to the nearest penny, resulting in a price of £1.02 for FY 2019/20.

Pole Top Equipment (Manifolds)

159. The basic cost per pole for manifolds on poles for FY 2019/20, based on the bullet points above, was £1.2395. Unlike with cables up poles though, this amount was not used in subsequent calculations. Instead, the total cost attributed to manifolds (£5,749,577 in FY 2019/20) was used.

160. Openreach supplied Ofcom with the probability of there being a manifold on a pole, again based on all poles. This is in the model as (randomised) 44.27%. Ofcom then used this to calculate the number of Openreach manifolds, which was 2,053,738 for FY 2019/20.

161. Ofcom then assumed that the FNBs would only attach a manifold to DP poles, of which in FY2019/20 there were estimated to be 1,627,249. This resulted in a total number of 3,680,987 manifolds.

162. The total cost attributed to manifolds was then divided by the total number of Openreach and FNB manifolds to produce the unit cost for the manifold PIA Service. This was rounded to the nearest penny, resulting in a price of £1.56 for FY 2019/20.

Facilities on Poles (Single and multi-user attachments)

163. The model starts by assessing the number of attachments per pole. This is done separately for single-user attachments and for multi-user attachments.

164. For single-user attachments, the model adds together single-user attachments on "pure" DP poles (poles that do not have any multi-user attachments on them) with those on "pure" Feeder poles. It then divides this by the number of "pure" poles. The result for FY 2019/20 is 5.05 attachments per pole although, strictly speaking, this is for attachments per "pure" DP/Feeder pole. The model does not consider additional single-user attachments by the FNBs, on the basis that an FNB single user attachment will act as a replacement for an Openreach one, or vice versa, if the end customer reverts back to an Openreach feed at a later date.

165. For multi-user attachments, the model only considers the so-called "cable" poles. It divides the number of multi-user attachments on cable poles by the number of "cable" poles. The result for FY 2019/20 is 1.18. The model then adds 1 to this to account for FNB multi-user attachments, resulting in a total attachments per pole figure of 2.18 but, again, this is only for "cable" poles.

166. The model now divides the unit cost for attachments per pole, which relates to all poles and not, for example, just "pure" poles or "cable" poles, and is £15.9364 in FY 2019/20, by the two factors noted above - one for single-user and one for multi-user. This results in unit costs per pole per attachment of £3.1557 for single-user attachments and £7.2955 for multi-user attachments. Again, here, "pole" refers to all poles.

167. These are then multiplied by a factor of 0.8359 to arrive at the relevant PIA service cost which is rounded up the nearest penny. The factor is labelled in the model as a "Mixed poles attachment coefficient". In reality, it is simply a factor that has been calculated in such a way that the full cost allocation takes place only if Openreach usage is taken into account. As a formula, the factor is:

=[total costs attributed to attachments] / SUMPRODUCT([Total single:multi user attachments], [Unit costs per single:multi cable attachment per pole (for all poles)], ["Total" single:multi attachments per pole (pure poles for single, and cable poles for multi)] /)], [single:multi attachments per pole (pure poles for single, and cable poles for multi)]

Observations

Cables Up Poles

168. Ofcom's rationale for only scaling up by 80% was:

"The 80% uplift recognises that a cable up a pole attachment may not be substitutional to Openreach's existing attachments and that Openreach poles also carry transmission cables (hence a 100% uplift is not appropriate)." [26]

169. Setting the factor at 1.80 is essentially the same as saying that only 90% of the cables running up the poles are used by Openreach for the access network, with the remaining 10% being transmission cables. We note here that no definition/explanation is provided by Ofcom of what it, or indeed Openreach, actually means by the term "transmission cable".

170. We would argue that Openreach should seek, and be able, to recover the cost of a pole from *all* users and usages. Thus a "transmission cable" should also bear some of the cost of the pole, and we would suggest that it should recover at least the same cost as an Openreach access network cable or an FNB access network cable. Acting as Ofcom currently does within the model, in effect, means that the FNBs are being used to

[26] 2021 WFTMR: Annex 18, para A18.55.

subsidise the transmission cables which we do not consider to be appropriate. We would therefore urge Ofcom to reconsider this point.

171. We are surprised that, at least at the time of the last market review, Openreach did not seem to have much of an idea of exactly how many cables ran up its pole estate.[27] We would hope that in the intervening five years to the next review that Openreach will have addressed this shortcoming in its data recording and documentation. This is especially the case given that it tests roughly 10% of its pole estate each year and is clearly able to record the existence of cables up those poles at the time of the test. We would, therefore, urge Ofcom to ensure that Openreach provides accurate data on the usage of poles for cables running up them so that this information can be incorporated into the next version of the PIA Service Excel model.

172. There has been a high take up of PIA services by FNBs since the last market review, coupled with a rapid and extensive rollout of full fibre by Openreach itself. Ofcom will, therefore, need to take due account of data provided by Openreach, and potentially the FNBs themselves, when assessing cables up poles usage in the next review. Openreach usage will also need to be assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre cables up poles during the transition period to full fibre. We would, therefore, urge Ofcom to take these points on board in the next market review.

Pole Top Equipment (Manifolds)

173. We have two specific observations with the current approach for calculating the unit cost of the manifold PIA service. The first of these is that, as with cables up poles, there is only a broad estimate about how many manifolds Openreach has installed on its pole estate.

174. We expect that in the five years to the next review that Openreach has addressed this shortcoming in its data recording and documentation given that it is clearly able to record the existence of manifolds on poles at the time of the pole tests. We would, therefore, urge Ofcom to ensure that Openreach provides accurate data on the usage of poles for manifolds so that this information can be incorporated into the next version of the PIA Service Excel model.

[27] 2021 WFTMR: Annex 18, footnote 813

175. Our second observation is that the model currently assumes that only DP poles can have manifolds attached to them. Given that feeder poles in the model have both single and multi-user attachments, we would question whether that assumption is correct. We would also point out that real-world observations show that poles with cables up them can also host manifolds. We would, therefore, consider that a safer assumption is to assume that the FNBs would most likely require the same number of manifolds as Openreach. We would urge Ofcom to consider this in the next review, taking into account data provided by both Openreach and the FNBs on actual hosting of manifolds on poles.

176. As mentioned already for cables up poles, there has been a high take up of PIA services by FNBs since the last market review, coupled with a rapid and extensive rollout of full fibre by Openreach. Ofcom will, therefore, need to take due account of data provided by Openreach, and potentially the FNBs, in the next review. Openreach usage will also need to be assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre usage of poles during the transition period to full fibre. We would urge Ofcom to take these points on board in the next market review.

Facilities on Poles (Single and multi-user attachments)

177. The necessity for the "Mixed poles attachment coefficient" in our view illustrates well the lack of any real causality behind the final per unit costs for the relevant PIA services. We totally accept that, at the time, Ofcom was faced with having to deal with the limited amount of detail available in the data supplied by Openreach. As such, we can also accept the approach taken by Ofcom as a good, albeit first, attempt on how to approach the challenge.

178. However, with a five year gap between the previous market review and the next one, we feel that the approach needs to be carefully reconsidered. In particular, we believe that Openreach should be required to provide much more detailed information on usage across its pole estate, and without reference to what are essentially meaningless labels on pole "type", that is, DP, Feeder and Cable. We would, therefore, urge Ofcom to (a) require much better information from Openreach on pole usage, and (b) reconsider the current approaches taken to assessing the required per unit prices for single and multi-user attachments.

179. As mentioned already for cables up poles, there has been a higher than expected take up of PIA services by FNBs since the last market review, coupled with a rapid and extensive rollout of full fibre by Openreach. Ofcom will, therefore, need to take due account of the data provided by Openreach, and potentially the FNBs, in the next review. Openreach usage will also need to be assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre usage of poles during the transition period to full fibre. We would, therefore, urge Ofcom to take these points on board in the next market review.

A revised approach based on more targeted cost recovery

180. Ofcom quite clearly states its overall objectives with regards to the setting of the per unit PIA prices for pole-related products[28]. These are:

- Creating a level playing field between Openreach and other telecoms providers.
- Allowing Openreach to be able to recover its efficiently incurred costs.

181. We do, however, have two specific concerns with the current approach, which are:

- It assumes that there will only ever be one FNB utilising a pole in addition to Openreach. Whilst this might have been the case in 2020, it is most evidently not the case in 2024, and this trend is expected to continue over the coming years.
- No account has been taken for Openreach's own deployment of full fibre over the poles. Again, in 2020, this was not really a big issue. However, in the years since then Openreach has scaled up its full fibre deployment which will result in double counting of Openreach's own use of PIA services. This will continue to be the case until Openreach removes the legacy copper cables from its pole estate.

182. We propose an alternative approach for the next market review. Our starting point for this is that we are assuming that Openreach has full, detailed records of its complete pole estate and that these records document fully, pole-by-pole, exactly which operator, that is, either Openreach itself or a specified FNB, has facilities on that pole and what those facilities comprise.

[28] 2021 WFTMR Volume 4, para 4.115.

183. We also assume that these records reside on a database and are capable of being extracted and/or processed in accordance with standard database queries on relevant available fields. This would allow the data records to be analysed/summarised in a number of different dimensions. Such analysis could be conducted either by Openreach itself, or by an approved third party such as Ofcom, or Ofcom's representatives/consultants.

184. In particular, for any/every specified group of poles it would be possible to identify:

- Which operators, Openreach, FNBs, and if relevant other companies, are present on those poles.
- How many end-customer premises are reached by those poles. The important point here is how many single-user attachments are required by an operator, whether it is Openreach or an FNB, in order to reach every single end-customer premises.
- For Openreach, what facilities are being used by copper-based infrastructure and what are being used by full-fibre-based infrastructure aggregated by type of facility (single-user attachment, multi-user attachment, manifold, cable up pole).
- For each FNB that is present, what facilities are being used, again aggregated by type of facility.

185. Our suggested approach is as follows:

- The Excel model calculates, as it does now, the average annual cost per pole.
- This per-pole cost is multiplied by the number of poles in the selected group. This represents the total cost for that group of poles which needs to be recovered by Openreach for its own use and the FNBs that are present.
- That total per-pole cost is attributed, as it is now, between the three different usages: attachments, manifolds, and cables up poles. As a default, the percentages could remain 90%, 7%, 3%, although this should be open to consultation by Ofcom in the next review.
- An equivalence factor is used to convert multi-user attachments into "equivalent" (from a cost recovery point of view) single-user attachments. This factor already exists in the model, although it is not an input but rather a consequence of the approach

used. It can be derived by comparing the per-unit cost of multi-user attachments with single-user attachments in worksheet [Poles Fcast UCs, Charges & Xs], rows 78 and 79], as illustrated below.

Modelled charge (per cable attachment)	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Single [row 78]	£2.64	£2.93	£2.30	£2.34	£2.53	£2.53	£2.63
Multi [row 79]	£6.10	£6.78	£5.32	£5.42	£5.85	£5.85	£6.09
Multi / Single "equivalence" factor	2.31	2.31	2.31	2.31	2.31	2.31	2.31

- The factor currently in the model is 2.31, thus, one multi-user attachment is cost-recovery equivalent to 2.31 single-user attachments. Again, this factor should be open to consultation in the next review.
- Information on the total usage by Openreach and the FNBs of all facilities (single-user attachment, multi-user attachment, manifold, cable up pole) is extracted from the database for the poles contained within the specified group. As with the current version of the Excel model, minimum FNB usage would be set to reflect a single FNB being present, with this increased for areas where there are multiple FNBs. The Openreach usage is, where necessary, converted to a full-fibre equivalent level of usage, avoiding any double counting where both copper and fibre Openreach cables are present. Single-user attachments are capped at the number required by one operator to reach all of the addressable end-user premises.
- The multi-user attachment total quantity is converted into the relevant number of single-user attachments.
- The quantity of single-user attachments is divided into the total cost attributed to that facility to calculate the per-unit cost of each single-user attachment. The conversion factor, for example 2.31, as described above, is used to calculate the per-unit cost of each multi-user attachment.
- Similar calculations are performed to establish the per-unit costs of manifolds and cables up poles.
- A final cross-check is carried out to make sure that the total cost allocated to that group of poles has, indeed, been fully recovered, but not over-recovered, by those using the poles.

- The single-user attachment discount is applied separately since this process results in a per-unit price *before* such a discount.

186. To assist Ofcom in understanding our approach further, we have included with this report a simple Excel worksheet containing a worked example of the approach in action.

187. In the table below we show the results for 2019/20 of using the approach at a country level and assuming one FNB is present with full coverage. The table also shows the per-unit outputs of the PIA Excel model and multiplying those by the same quantities. The "Overall Total" shown for the PIA model differs slightly from the actual total cost input for that year due to the current approach which produces slightly different quantities overall than our suggested approach.

	Per unit		Quantities	Total Amounts	
	Our Approach	PIA Model		Our Approach	PIA Model
Single-user attachment	£2.55	£2.64	17,042,887	£43,527,688	£44,993,222
Multi-user attachment	£5.90	£6.10	5,163,174	£30,461,493	£31,495,361
Manifold	£1.40	£1.56	4,110,742	£5,754,714	£6,412,758
Cable up pole	£0.92	£1.02	2,692,829	£2,466,306	£2,746,685
			Overall Total:	£82,210,201	£85,648,026
			Per Pole:	£17.71	£18.45

Notes:
Data relates to FY 2019/20
Per pole cost in the model is £17.71
Number of poles in the model is 4,642,808

188. The approach outlined in the above bullets addresses both of our concerns with the approach currently used in the PIA Excel model. Thus:

- The final per-unit costs will take multiple FNBs being present into account since this will result in greater usage of the poles.
- It accounts for Openreach's own deployment of full fibre over the poles. Where possible/practical full fibre usage data will be used. Where necessary, copper usage will be used as a proxy.

189. As with ducts, Ofcom periodically collects detailed information at the postcode sector level regarding which FNBs are present in which areas. We, therefore, feel that this could be adapted to source the information required in the future by requiring the FNBs to not only state, again at the postcode sector level, where they are present, but also whether they

are utilising pole-based PIA or undertaking their own build. Ofcom could then aggregate this information, along with Openreach's own usage, for use in the Excel model.

190. If required, it would also be straightforward for Ofcom to use the same approach to assess and compare how areas with just a single FNB present contrast with those having two or more FNBs present.

191. Openreach and the FNBs might not wish the pricing structure to become (very) granular, such that, for example, different percentages are used for each postcode sector. An alternative to this would be for Ofcom to gather the relevant information during the 2026 TAR and use this to calculate weighted averages that could then be applied across the whole country, thus maintaining national pricing of pole-based PIA services. If this approach is followed, then Ofcom would need to assess/forecast how this might develop over the years covered by the TAR. This analysis could then be used within the TAR version of the Excel model to calculate:

- The weighted average percentages for each modelled year.
- The relevant unit prices for each year.
- The glide path to be adopted.
- The new values for X in the CPI+/-X formulae.

192. We would strongly urge Ofcom to consider our alternative approach as a method of better enabling it to achieve its objectives of a level playing field coupled with cost recovery, but not over-recovery.

193. We fully accept that our proposed solution might be more complex than the current method, particularly with regards to data gathering and analysis of the extent of multiple FNB presence. However, we are of the opinion that this will be inevitable if Ofcom is to achieve its objectives in a fair and transparent manner.

194. **Summary of Suggested Changes**

Cables Up Poles

SC 21. Ofcom to reconsider not apportioning any cost to transmission cables running up poles and, instead, consider treating them at least equally with other cables running up poles. [para 170]

SC 22. Ofcom to insist that Openreach provides accurate data on the use of its poles for cables running up them. [para 171]

SC 23. Ofcom takes due account of data provided by Openreach, and potentially the FNBs themselves, when assessing cables up poles usage in the next review. Openreach usage is also assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre cables up poles during the transition period to full fibre. [para 172]

Pole Top Equipment (Manifolds)

SC 24. Ofcom to insist that Openreach provides accurate data on the hosting of manifolds on its poles. [para 174]

SC 25. Ofcom to reconsider the current assumption that manifolds will only exist on DP poles and whether a safer assumption is to assume that the FNBs would most likely require the same number of manifolds as Openreach does. Ofcom to take into account data provided by both Openreach and the FNBs on actual hosting of manifolds on poles. [para 175]

SC 26. Ofcom takes due account of data provided by Openreach, and potentially the FNBs themselves, when assessing manifolds usage in the next review. Openreach usage is also assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre manifolds on poles during the transition period to full fibre. [para 176]

Facilities on Poles (Single and multi-user attachments)

SC 27. Ofcom to (a) require much better information from Openreach on pole usage, and (b) reconsider the current approaches taken to assessing the required per unit prices for single and multi-user attachments. [para 178]

SC 28. Ofcom takes due account of data provided by Openreach, and potentially the FNBs themselves, when assessing single and multi-user attachment usage in the next review. Openreach usage is also assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre single and multi-user attachments on poles during the transition period to full fibre. [para 179]

A revised approach based on more targeted cost recovery

SC 29. Ofcom to consider our alternative approach as a method of enabling Ofcom to improve on achieving its objectives of a level playing field coupled with cost recovery, but not over-recovery. [para 192]

5.4 Capex Attribution across PIA Services

Current Ofcom Approach

195. As is the case with ducts, Ofcom sources the starting year cost data for poles from Openreach's accounting systems according to an agreed set of accounting codes between Openreach and Ofcom. Historically, Openreach depreciated poles over a twenty year life time. As Ofcom has decided that poles should now be depreciated over a forty year time period, this was adjusted for within the model itself. Openreach also intended to use a forty year life for poles installed from April 2021.

196. Unlike with ducts, that have only one unit of usage (sub-ducts), poles have three distinctly different types of usage, each with its own PIA service attached:

- Single and multi-user cable attachments, comprising two PIA services.
- A pole-top manifold, used to connect cables together.
- Cables that run up the side of the pole, generally from a passing underground duct.

197. Ofcom recognised that there was no cost-causal way to attribute the cost of poles across these various pole-related PIA services. Instead, Ofcom arrived at a set of attribution percentages that it felt would help "contribute to incentivising efficient use of space on a pole."[29] These percentages meant that 90% of the cost was allocated to single and multi-user cable attachments, 7% to manifolds, and the final 3% to cables running up the side of poles.

198. At the time that the WFTMR took place, the BT RFS did not contain individual rows for each PIA service. However, at the conclusion of the WFTMR, BT was instructed to modify the layout of the RFS so that there were specific rows for each service. This was first implemented in the 2022 RFS but, since the RFS contains prior year data, it also produced results for the 2021 financial year.

[29] 2021 WFTMR: Annex 18, A18.44.

199. The two tables below compare the costs in the current Excel model for FY 2020/21 with those contained in the 2022 RFS for the same financial year.

Opex (FY 2020/21)

	PIA Model	RFS	Ratio
Attachment costs	66.94	62.70	94%
Manifold costs	5.21	4.90	94%
Cables up poles costs	2.23	2.10	94%
Total	**74.38**	**69.70**	**94%**

MCE (FY 2020/21)

	PIA Model	RFS	Ratio
Attachment costs	223.43	194.30	87%
Manifold costs	17.38	15.10	87%
Cables up poles costs	7.45	6.50	87%
Total	**248.26**	**215.90**	**87%**

200. As stated previously for ducts in Section 4.1, although the costs are similar between the Excel model and the RFS, they are not identical. This could potentially be for one or more of three reasons:

- The source cost data in the Excel model has been "randomised".
- The source cost data refers to FY 2019/20 and thus the model has had to forecast the FY 2020/21 values.
- The attributions used by BT in the RFS differ from those used in the Excel model.

Observations

201. The attribution percentages adopted by Ofcom are clearly arbitrary, having no basis in cost-causation. That, of course, does not make them wrong, or indeed unreasonable. As a cross-check, we calculated what the attributions would be if all attachments were treated the same at this point. Thus, a single or multi-user attachment counts the same as a manifold and the same as a cable running up a pole. The table below shows how this cross-check compares with Ofcom's view.

	Cross-check	Ofcom View
Attachments	85%	90%
Manifolds	9%	7%
Cables up poles	6%	3%

202. In reality, the use of slightly different attribution percentages is unlikely to make much difference to the final aggregate amounts paid for pole-related PIA services *as long as* the proportionate usage of the services by the FNBs is broadly similar to that of Openreach (noting that our comments in section 5.1 will apply here also). This is an area where Ofcom's desire to incentivise efficient pole usage will come into play. Should pole usage by the FNBs differ markedly from that of Openreach, then this could lead, *ceteris paribus,* to cost over or under recovery. As part of the next review, Ofcom should compare the actual usage of poles by the FNBs with that of Openreach in its fibre rollout and with that assumed in the current PIA model. Ofcom should then consider whether the current 90/7/3 attribution remains reasonable in its view.

203. We note that there is nothing in the initial attribution of costs that distinguishes between single-user and multi-user attachments, with 90% of the pole costs attributed to the aggregate of these. An allocation/attribution between single and multi-user does take place later on in the PIA Excel model, but the means by which this is done is convoluted in our view, and thus not at all transparent. The overall effect however, which we presume was Ofcom's broad intention, is that each multi-user attachment attracts N times the cost of each single-user attachment, with N equating to 4.26. This compares with a ratio of 6.60 in the raw number of single to multi-user attachments. At first sight, this would appear to indicate that the cost ratio does not adequately reflect the relative pole usage. We would accept that there might be other factors that would tend to favour a lower ratio, such as a desire to lessen any cost under recovery for rural poles where the only attachment is one multi-user attachment. However, we note that there is nothing in the PIA Excel model calculations that alludes to this. Ofcom should reflect on how the cost of single-user attachments should compare to multi-user attachments during the next review. Ofcom should also consult with the industry on this specific matter, especially given that there is now a considerable take-up of pole-related PIA services.

204. At the time of the last review, it was not possible to compare the source cost data with the published RFS. In the next review this should be both possible and practical. Ofcom should ensure that stakeholders can compare like-for-like for the model base year and, in particular:

- Any randomisation used in the model inputs for the public version of the Excel model are made such that the totals correspond with those in the RFS.
- The attributions used by BT in the RFS are the same as those used in the Excel model. If the RFS process needs to be modified to achieve this, then BT is made aware of this in good time and/or Ofcom publishes the necessary reconciliation information at the time of the next review statement, with BT also including such reconciliation information in the next RFS.

205. Clearly, BT will have invested further in its assets since the last data was extracted by Ofcom relating to FY 2019/20, and the next data extract will differ from that forecast in the current Excel model. For example, these differences will occur due to:

- Forecast investments in capex differing from the actuals.
- Differences between the forecast inflation rates and the actuals impacting the necessary CCA adjustments.
- Forecasts for "Network adjustments" differing from the actuals. We note that such adjustments could include work carried out by Openreach on its own behalf as well as work carried out by the FNBs and later reimbursed by Openreach.

206. We strongly encourage Ofcom to review how the final year forecasts in the current Excel model differ from those extracted from Openreach's systems for the base year of the next version of the model. We would also urge Ofcom to share with other stakeholders what those differences are, what analysis Ofcom has undertaken to understand the reasoning behind those differences, and what, if any, conclusions and/or actions Ofcom has taken following that analysis. This would greatly enhance transparency of the review process and also help reassure the FNBs that increases in the capex amounts are justified.

207. **Summary of Suggested Changes**

SC 30. Ofcom to compare the actual usage of poles by the FNBs with that of Openreach in its fibre rollout and with that assumed in the current PIA model. Ofcom should then

consider whether the current 90/7/3 attribution remains reasonable in its view, justify its stance, and modify it accordingly if not. [para 202]

SC 31. Ofcom reflects on how the cost of single-user attachments should compare to multi-user attachments during the next review. Ofcom also consults with the industry on this specific matter, especially given that there is now a considerable take-up of pole-related PIA services. [para 203]

SC 32. Base year costs in the next version of the Excel model are like-for-like compared to the relevant RFS. Randomisation of source costs in the new version of the Excel model is only done where absolutely necessary and in such a manner that the totals by PIA service are still correct and not themselves randomised. [para 204]

SC 33. Analysis of findings, following a comparison of new base year actuals with final year forecasts in the current Excel model, are shared with the stakeholders. [para 206]

5.5 Pole Testing Costs 'assumed' in the Model

Current Ofcom Approach

208. During the last review, Openreach indicated that they were proposing to test around 500,000 poles each year and provided Ofcom with a forecast of the relevant pay and non-pay costs of doing so.[30] These costs, which roughly total around £20 million a year, are included in the PIA Excel model as operating costs in addition to the "normal" pole-related opex.

Observations

209. We note that the costs provided by Openreach for pole testing are very similar to the total of the "normal" pole-related opex. This may well be a total coincidence, but it really should be clearly stated that they are not in fact one and the same. We would urge Ofcom in the next review to check carefully that the pole testing costs were not included in the "Pay & non-pay costs" of the "2019/20 Base Year Pole Cost Data" Also, we would request Ofcom to make it explicit in the next version of the PIA Excel model whether the costs included in the "Base Year Pole Cost Data" include or exclude the pole testing costs.

210. Given that the pole testing costs aggregate to a significant amount of money, in the next review Ofcom should undertake some form of a formal check/audit that the number of

[30] 2021 WFTMR Volume 4, para 4.42.

poles actually tested by Openreach in the current period reasonably corresponds to the numbers implied by the costs in the PIA Excel model.

211. It is unclear to us what data Openreach has routinely kept on its pole estate in the past. By "data", we mean the type of data that might be expected to be stored on a GIS database, for example:

- Pole identification number/label.
- Pole location coordinates.
- Pole attachments – such as single and multi-user attachments, manifolds and cables running up the pole.
- Which attachments relate to Openreach's own usage and which relate to FNB usage.

212. Clearly, the testing of an individual pole provides Openreach with a perfect opportunity to review its records and update them accordingly.

213. Having said this, we would expect that, following the last review, it should have been clear to Openreach how important it was that such data is recorded, checked periodically, and updated as necessary. Given that five or more years will have passed by the time of the next review, coupled with the fact that Openreach claims to test roughly 10% of its pole estate annually, the records ought to be very accurate by that time. We would, therefore, urge Ofcom to impress on Openreach that Ofcom now expects the pole records to be both comprehensive and accurate. Such accurate data will prove to be a valuable resource for Ofcom as it updates the current PIA Excel model.

214. **Summary of Suggested Changes**

SC 34. Ofcom to check, and confirm to stakeholders, that there was no double counting in pole-related opex, and that the pole testing costs in the current Excel model are in addition to the base year pay and non-pay costs. [para 209]

SC 35. Ofcom to make it explicit in the next version of the PIA Excel model whether or not the base year pay and non-pay costs for poles includes or excludes costs specific to pole testing. [para 209]

SC 36. Ofcom to undertake a formal check/audit of the forecast pole-testing costs, and thus number of poles tested annually, against the numbers in the current Excel model, and to share its findings with stakeholders. [para 210]

SC 37. Ofcom to establish what data Openreach currently stores on a pole-by-pole basis, such as within a GIS database, and Openreach's current practices regarding the checking and updating of this data each time a pole test is carried out. As part of this, Ofcom to impress on Openreach the importance of this data being up-to-date and accurate, and that Openreach is expected to take whatever action is necessary to ensure this is the case. [para 213]

6 ISSUES COMMON TO DUCTS AND POLES

6.1 Sourcing of new Base Year Capex and Opex data

Current Ofcom Approach

215. For duct-related PIA assets, the current PIA Excel model takes its base year cost data from Openreach's CCA accounts for the year 2019/20. These essentially form the starting point for the cost modelling that takes place to calculate the per unit prices for the PIA services for each of the modelled years up to 2025/26. The information is extracted in accordance with an agreed set of cost codes (referred to by Openreach/Ofcom as COW codes, where COW is short for Class of Work). Thus, costs related to those codes are automatically assumed to be 100% relevant to the PIA services.

216. For pole-related PIA assets, the process differed. This was due to the way in which Openreach recorded poles historically, with their costs being booked to a variety of different cable classes of work. Openreach, therefore, undertook the necessary work to provide Ofcom with estimates for GRCs, NRCs and CCA depreciation. This information was used as the basis for the base year costs in the Excel model although Ofcom adjusted the NRCs upwards, as explained in Annex 18 of the 2021 WFTMR.[31] Openreach informed Ofcom at that stage that it intended to move the pole-related costs to a new COW from 1 April 2021.

Observations

217. Ofcom should confirm in due course what approach it will adopt for the next version of the Excel model, for example substituting the 2019/20 data from Openreach with that corresponding to the relevant new base year and with pole-related costs sourced from the new pole-specific COW.

[31] 2021 WFTMR Annex 18, para A18.35 and associated footnotes.

218. From a transparency perspective, we would urge that the next version of the Excel model should show the total cost associated with each individual COW, along with the cost that has been apportioned to PIA services. There should also, within the model itself, be a brief descriptor attached to each code regarding what it covers. If less than 100% has been attributed to PIA services the reason for this should be provided along with the method undertaken to calculate the percentage used. We accept that the numbers that are visible in the public version of the model might need to be randomised, but this should not stop the improved transparency from being implemented.

219. It is not uncommon for businesses to revise their coding structures from year to year and, indeed, to vary their working assumptions regarding which codes various cost items should be allocated to. Openreach will be able to provide initial advice to Ofcom on any changes that have occurred since the last market review. However, we would urge Ofcom to undertake a formal review/audit of any relevant changes that have taken place.

220. We would suggest that Ofcom also undertakes a formal review/audit of the costs that have been allocated to the relevant COW codes in the years since the last market review. The aim of this would be to make sure, to the extent practical, that only the costs that should be allocated to those codes have been allocated to those codes. This is best done using the HCA cost data since that relates to actual spend and is not clouded by CCA adjustments.

221. The current PIA Excel model produced a forecast of costs up to and including the 2025/26 financial year. The glide path aiming point was then set at the per unit price of the PIA service in nominal terms, thus including the impact of the aggregated forecasts for CPI over the period. However, due to the large inflation spike over the last few years, the actual Openreach prices as of 1 April 2024 have already exceeded, often significantly, those forecast for 2025/26 by the Excel model. A consequence of this is that the Openreach CCA accounts will also have GRCs and NRCs that are significantly higher than those forecast by the Excel model. We have already noted that this has produced significant windfall gains for Openreach, none of which are passed through to the FNBs since the glide path calculations in the model do not take into account the CCA impacts of inflation rates not being as forecast.

222. Ofcom should consider carefully the implications of this mismatch and, to the extent practical, address it in the next review in order that the FNBs are not disadvantaged by Openreach's windfall gains. We would suggest that one way in which this could be addressed is to carry forward the final year GRC and NRC values from the current model into the new version and to recover the differences gradually over the modelled timeframe. We discuss this further in section 6.6.

223. **Summary of Suggested Changes**

SC 38. Ofcom should confirm in due course what approach it will adopt for the next version of the Excel model, for example substituting the 2019/20 data from Openreach with that corresponding to the relevant new base year and with pole-related costs sourced from the new pole-specific COW. [para 217]

SC 39. The next version of the Excel model should show the total cost associated with each individual COW along with the cost that has been apportioned to PIA services. There should also, within the model itself, be a brief descriptor attached to each code regarding what it covers. If less than 100% has been attributed to PIA services the reason for this should be provided along with the method undertaken to calculate the percentage used. [para 218]

SC 40. Ofcom to undertake a formal review/audit of any relevant changes that have taken place to the use of classes of work, including the introduction of new COW codes relevant to PIA services. [para 219]

SC 41. Ofcom also undertakes a formal review/audit on the HCA costs that have been allocated to the relevant COW codes in the years since the last market review. [para 220]

SC 42. Ofcom to consider carrying forward the final year GRC and NRC values from the current model into the new version and to recover the differences gradually over the modelled timeframe. [para 222]

6.2 Network Adjustments Costs

Current Ofcom Approach

224. Network adjustment costs are the costs incurred either by Openreach directly, or by the FNBs who then apply to have their costs recovered from Openreach to the extent

applicable. They are intended to cover situations such as an FNB encountering a blocked duct and needing to unblock it prior to it being usable for PIA services.

225. The cost forecasts included within the current Excel model are based on a cost per home passed and are the same as those used by Ofcom in its WLA 2018 review[32]. For FY 2019/20 this was £67.74 per premise passed, comprising £51.08 for duct-related infrastructure, and £16.66 for pole-related infrastructure. These costs then rise in the Excel model each year in accordance with the forecast RPI for that year.

226. To illustrate how the model works, if there are 1,000 premises passed by the FNBs in one particular year then the model will assume an additional 1,000 * £51.08 for duct-related work, ***plus*** £1,000 * £16.66 for pole-related work. This assumption is regardless of how many of those 1,000 premises passed are actually served by duct and how many by poles. In essence, the model is assuming a constant proportionate mix of premises served by duct as opposed to poles.

227. These additional costs are added into the asset base (ducts and poles sections as relevant) for each year, and then treated the same as the underlying assets already there.

228. Ofcom imposed a financial limit of £4,750 per km of spine duct on the network adjustment costs that could be recovered in this way. This relates to actual network adjustment costs incurred in real life rather than being included as forecasts within the Excel model. Costs above that limit were to be recovered directly from the telecoms provider requesting the work[33].

Observations

229. Although Ofcom imposed a financial limit of £4,750 per km of spine duct, there is nothing within the WFTMR documentation that we could find to explain exactly on what basis this would be applied. Possible interpretations could theoretically include:

- As an overall average across all of the km of spine duct across which an FNB is (currently) utilising PIA services.
- As above, but on a per exchange area basis.

[32] 2021 WFTMR Annex 18, para A18.6.
[33] 2021 WFTMR Volume 4, para 4.167.

- As a limit on a rolling km along the route of each spine duct. For example, if the whole £4,750 of cost has been incurred at one point, then any further work within one km of that point will not be recoverable.
- As a limit on the actual length over which the work is necessary. For example, if there was a blockage affecting a 50m stretch of spine duct, then the maximum recoverable amount would be 50/1000 * £4,750, equating to £237.50.
- Whether multiple FNBs could recover the same charge across the same spine duct. In particular, would any distinction be made between Openreach and the independent FNBs? At its bluntest, this might mean that Openreach could reject a claim on the basis that Openreach itself had already incurred the full amount over that route as part of its own full fibre deployment.
- Would Openreach itself also be subject to the £4,750 per km limit, and if so how would this be demonstrated, from a transparency perspective, to Ofcom?

230. We would encourage Ofcom, as part to the next review to be explicit on how the £4,750 limit, or whatever the new amount is, should be applied by Openreach. We would further encourage Ofcom to be more explicit in how Openreach's own network adjustment costs are audited in this respect, since we note the use of the word "estimated" in the final bullet of paragraph 4.181[34].

231. **Summary of Suggested Changes**

SC 43. Ofcom, as part to the next review, to be explicit on how the £4,750 limit, or whatever the new amount is, should be applied by Openreach. Ofcom also to be more explicit in how Openreach's own network adjustment costs are audited in this respect. [para 230]

6.3 Network Adjustments Process

FNB Concerns

232. The FNBs that have funded this report have reported to us a number of concerns that they have with the Network Adjustments Process. Of particular concern were the Verification charges levied by Openreach and the potential ability of Openreach to reject

[34] 2021 WFTMR Volume 4, para 4.181.

reimbursements for work, such as unblocking blocked ducts, undertaken and paid for by the FNBs directly with no right of appeal by the FNBs.

Observations

233. We have undertaken a preliminary review of the processes that FNBs must follow, compared to those that Openreach itself follows, based on the content of the June 2024 version of the "Internal Reference Offer" published by Openreach. Since PIA is currently provided by Openreach on the basis of NUD rather than EOI, there is a need for Openreach to demonstrate to stakeholders that it is adhering to Ofcom's strict interpretation of NUD.[35] The Internal Reference Offer, as we understand it, represents Openreach's formal position supporting its view that there is no case of undue discrimination.

234. Our initial review of the document raises some concerns about whether the current situation provides the required level of transparency and level playing field specifically with regard to Network Adjustments.

235. Before the introduction of PIA, Openreach was required to have formal processes in place with its own sub-contractors when faced with Network Adjustments issues. For example, when Openreach needed to deploy a cable in an existing duct, its sub-contractors might encounter a blockage. The sub-contractor would then need to raise this with Openreach and get approval for the necessary work and cost to resolve the issue. Openreach would clearly need to take due care to ensure that the work was indeed necessary, reasonable, and at an acceptable level of cost. There would also undoubtedly have been cases where, for one reason or another, Openreach refused to reimburse the sub-contractor for the work that had been undertaken.

236. Our understanding of the Network Adjustment Process leads us to raise the following five concerns that Ofcom should address.

237. **Concern One**. If Openreach is able to reject re-imbursement of a higher proportion/value of Network Adjustments made by FNBs than is the case with its own sub-contractors, this could in effect mean that Openreach is enjoying a discount on the overall cost of resolving blocked ducts and other similar issues. Thus, if the processes that are currently in place, which are not identical with those that must be followed by Openreach sub-contractors,

[35] See paragraph 41 above.

are unduly onerous on the FNBs and/or contain too many clauses that allow Openreach to unreasonably reject reimbursement, then this could constitute evidence of discrimination.

238. **Concern Two**. Openreach levies a charge on the FNBs for Verification at various stages of the Network Adjustments process. Our funding FNBs have expressed a view that the scope of these charges seems to be growing over time, and that they are forced to pay the same charge regardless of the work involved by Openreach. We appreciate that Openreach incurs costs in undertaking the verification work and, indeed, equivalent costs when doing likewise for its own sub-contractors. However, as far as we are currently aware, there is no transparency on whether the charges levied on the FNBs are overall reflective of the underlying costs incurred by Openreach in undertaking the necessary activities. This potentially could represent a lack of transparency due to the use of NUD as the obligation rather than EOI.

239. **Concern Three**. We presume that the work that Openreach undertakes for verification of its own sub-contractors will be booked as "own work capitalised", meaning that it will be added to the PI asset base and then recovered from all users of those assets, including Openreach. However, verification charges for Network Adjustments required by the FNBs are charged through to the FNB requesting the adjustment and, as such, will not form part of the PI asset base. This could give rise to another discrimination issue. It also raises the possibility that Openreach might be aware of, for example, blockages, and simply wait for FNBs to discover them since this will result in a lower overall cost to Openreach for their resolution.

240. **Concern Four**. The verification charges levied on the FNBs represent a revenue stream for Openreach. There is, therefore, a transparency issue over whether the costs behind those revenues are offset against the revenues and not swept up alongside other "own work capitalised". If the latter was taking place, then Openreach would, in effect, be reimbursed twice for the same costs, first directly by the FNBs and then by the costs forming part of the PI asset base. This raises a further potential discrimination issue.

241. **Concern Five**. When FNBs are planning to undertake intrusive work in/on Openreach infrastructure, they are under an Openreach obligation to inform Openreach each and every time in advance of where that work will be taking place; when it will be taking place; and the personnel involved. This is referred to as "Whereabouts". Whilst this might

initially appear somewhat bureaucratic, it is necessary to assist Openreach in ensuring the ongoing integrity of its network and identifying if/when unauthorised personnel are accessing it. Furthermore, it helps to provide an audit trail should damage occur whether to Openreach or to FNB infrastructure. Openreach has expressed concern that the level and accuracy of Whereabouts is not where it should be. The OTA is of the view that 70% compliance by an FNB should be regarded as "good". Openreach, however, wishes to get compliance up to 90% and is now, reportedly, threatening contractual action to those not reaching 90% by the end of 2024 although it does not disclose compliance rates among its own engineers.[36] We also understand that FNBs find that requests for Network Adjustments reimbursement can be rejected, with no recourse to future remedy, simply due to Whereabouts information being either absent or inaccurate, such as referring to a different date or even time of the same day. This concern gives rise to further transparency and level playing field issues.

242. In our view, the concerns expressed above are sufficiently plausible that they should be addressed by Ofcom as part of the TAR. At the very least Ofcom should undertake the necessary work to satisfy itself that there are no issues with regards to discrimination and should justify its position on this to stakeholders. Where either transparency issues and/or level playing field issues are accepted as being present then Ofcom should address these as part of the TAR including, potentially, a move away from NUD and towards EOI.

243. **Summary of Need for Ofcom Review**

SC 44. Ofcom should review the above concerns and undertake the necessary work to satisfy itself that there are no issues with regards to discrimination and should justify its position on this to stakeholders. Where either transparency issues and/or level playing field issues are accepted as being present then Ofcom should address these as part of the TAR, potentially including a move away from NUD and towards EOI.

6.4 10% "Final Drop" discount

Current Ofcom Approach

244. During the 2021 WFTMR, Ofcom consulted on a new approach to pricing the final-drop connection to the end-user premises in order to recognise that not all installed final-drop

[36] https://www.ispreview.co.uk/index.php/2024/06/openreach-toughen-whereabouts-stance-for-altnet-uk-broadband-engineers.html.

connections would consistently generate revenue for the operator concerned whether that be the FNB or, indeed, Openreach. Ofcom concluded that all FNBs should continue to pay a PIA service rental charge when an end-customer moved to a different provider but that the average charge should be reduced to reflect a certain proportion of final-drop connections not being in use.

245. In many respects this approach mirrors what would occur if the FNB utilised its own duct, since the operator there would still be expected to provide an average return to its investors across all of its final-drop infrastructure. Ofcom settled on a reduction of 10% based on the following assumptions[37]:

- There is no demand at the start of the period, but it grows steadily out to the end of FY 2025/26.
- The contract period is typically 12 to 18 months in duration.
- There is a churn rate of between 10 and 20%.

246. Ofcom noted in the footnote to paragraph 4.98 that the 10% discount recognised that there was a limited ability for end-customers to churn over the five year period, and that this meant that the 10% figure did not represent a steady state calculation.

Observations

247. We have undertaken our own modelling of the impact of churn on the percentage of active end-customers over the current period, based on a contract length of 18 months and a monthly churn of 1% for all customers "out of contract", and a market share of homes passed by the PIA services of 20%. From this modelling, we calculated that:

- A discount of around 9% reflected the weighted average over the period up to the end of FY 2025/26 which supports Ofcom's assessment of a 10% discount following the 2021 WFTMR.
- Just looking at the final 12 months, the required discount had risen to nearly 16%.

[37] 2021 WFTMR Volume 4 para 4.97.

- Assuming no further installation of final-drops after 2025/26, the required discount for each subsequent 12 month period rises each year and reaches around 43% for FY 2030/31.
- If the installation of final-drops after 2025/26 continues at the forecast rate for that year, then the required discount for 2030/31 reduces from the 43% to around 35%.

248. From our modelling, we would definitely concur that Ofcom should not regard the current 10% discount as a steady state value. We would thus urge Ofcom to reflect on what the new figure should be for the next review period.

249. We would further encourage Ofcom to consider whether the discount should progressively rise for each modelled year, taking into account the forecast additions in new final-drop connections for each modelled year. Our reasoning for this is that it would better reflect the forecast evolution of the market, and prevent the need for a single, sharp change in the discount every five years.

250. **Summary of Suggested Changes**

SC 45. Ofcom to reflect on what the appropriate discount should be for the next review period. [para 248]

SC 46. Ofcom to consider whether the discount should progressively rise for each modelled year instead of being, in effect, a weighted average forecast. [para 249]

6.5 RPI as Inflation Measure

Current Ofcom Approach

251. During the 2021 WFTMR, Ofcom decided to continue to use RPI as the most appropriate measure for asset inflation with regards to all of the relevant PIA assets.[38] Ofcom cited its past analysis that had suggested that the PIA asset price inflation had been close to RPI and definitely more than CPI.

252. Although there is a view that the ONS is likely to discontinue publishing the RPI at some stage in the future, Ofcom was confident that it would continue to be available for the duration of the current market review period.

[38] 2021 WFTMR Volume 4, para 4.58.

Observations

253. The next market review period is likely to extend out to around 2031, assuming it to cover a five year period from the end of the current review. Unless there is a change of heart within the Government, it is likely that the RPI will no longer be published by the ONS. This is especially the case as the ONS itself has clearly stated that it is in favour of abolishing it, at least in its present form.[39] One option for the ONS is to continue to publish an RPI, but to change its method of calculation, so that it is aligned with the CPIH.

254. We agree with Ofcom and Openreach that PIA asset inflation should continue to be assumed higher than CPI, especially since both Openreach and Ofcom have looked into this a number of times in the past.

255. We do, however, feel it would be appropriate for Ofcom to consider in the next review how PIA asset inflation should be addressed within the next version of the PIA Excel model. We can think of three practical alternatives that Ofcom could consider here:

- Continue to use the existing RPI within the model as long as it is available, perhaps reverting to CPIH for the final year or so.
- Move to CPIH from the start of the next modelling period and standardise on that throughout the next period.
- Move to a fixed percentage higher than CPI (such as CPI+1, as mentioned by Ofcom in footnote 38).

256. **Summary of Suggested Changes**

SC 47. Ofcom should consider how best to take account of the upcoming demise of the current method of calculating RPI. Our current thinking is that a move to a fixed percentage above CPI might be most appropriate, especially as it should help to make the PIA service price forecasts, and actuals, more stable with changes in inflation rates. [para 255]

[39] https://www.ons.gov.uk/news/statementsandletters/ukstatisticsauthoritystatementonthefutureoftherpi.

6.6 Impact of CCA in an Uncertain World

Current Ofcom Approach

257. The current PIA Excel model forecasts costs in nominal terms based on the Current Cost Accounting (CCA) methodology. Costs are adjusted each year for inflation using RPI for assets and CPI for operating costs.

258. Per-unit costs for each PIA service are calculated for each modelled year. However, only the first and final years of the period are actually used. These form the starting and ending point unit costs and are compared to see how much the ending point unit cost differs from that which would have been arrived at just by adjusting for inflation. Inflation, in this context only refers to CPI.

259. The aggregated difference between inflation and the modelled per unit price in the final year is then used to calculate the "X" for use in the CPI +/- X% formula. Starting prices are then set at those modelled for the starting point and Openreach is subject to the relevant CPI +/- X% price control which limits prices that can be charged in subsequent years.

260. Due to the use of CCA, holding gains, resulting from the forecast inflation in any one year, are calculated and influence the per-unit costs of the PIA services forecast for that year. Holding gains are specific to the year in which they arise. Thus, although the underlying asset values are carried forward from year to year adjusted for inflation, holding gains are assumed to be consumed in the year in which they arise.

Observations

261. Due to the use of CCA, holding gains, resulting from the forecast inflation in any one year, are calculated and influence the per-unit costs of the PIA services forecast for that year. Holding gains are specific to the year in which they arise. Thus, although the underlying asset values are carried forward from year to year adjusted for inflation, holding gains are assumed to be consumed in the year in which they arise.

262. To illustrate the potential impact of this, the model will potentially produce very different final year unit prices depending on the year-by-year inflation profile even if the CAGR is the same in each case. This makes the model very sensitive to the final year inflation forecasts which are *de facto* the most uncertain ones used in the model. It also means that inflation spikes that occur in the intervening years will benefit Openreach and be

disadvantageous to the FNBs. This latter point applies both when the spike has been forecast and when it has not been forecast but occurs in practice.

263. In the two tables below, we compare the impact in the current PIA Excel model of a forecast inflation spike that occurs in the final year (top table) or year 2022/23 (bottom table).

		Additional increase only in final year inflation				
	Base	**1%**	**3%**	**6%**	**9%**	**12%**
CAGR RPI	2.63%	2.88%	3.37%	4.10%	4.81%	5.50%
CAGR CPI	1.83%	2.08%	2.57%	3.29%	4.00%	4.70%
Single bore spine duct	£0.37	£0.34	£0.28	£0.19	£0.10	£0.01
Single user pole attachment	£2.37	£2.24	£1.99	£1.62	£1.24	£0.86
Single bore cf base		**92%**	**76%**	**51%**	**27%**	**3%**
Single user cf base		**95%**	**84%**	**68%**	**52%**	**36%**

		Additional increase only in 2022/23 inflation				
	Base	**1%**	**3%**	**6%**	**9%**	**12%**
CAGR RPI	2.63%	2.89%	3.38%	4.11%	4.83%	5.53%
CAGR CPI	1.83%	2.08%	2.57%	3.30%	4.01%	4.71%
Single bore spine duct	£0.37	£0.37	£0.38	£0.39	£0.40	£0.41
Single user pole attachment	£2.37	£2.38	£2.42	£2.46	£2.51	£2.56
Single bore cf base		**100%**	**103%**	**105%**	**108%**	**111%**
Single user cf base		**100%**	**102%**	**104%**	**106%**	**108%**

264. As can be seen in the top table, a spike that has been forecast to occur in the final year has a dramatic effect on the resulting PIA service prices in that year and, hence, in the intervening years via the glide path.

265. The bottom table, however, shows that if the forecast spike occurs in an earlier year, even though the CAGR is broadly the same, the impact on the final year PIA service price goes in the opposite direction and increases.

266. An extreme real-life example of the effect discussed above can be found in the 2023 RFS, where the internal transfer prices used by Openreach went significantly negative for duct-related PIA services. VULA services were essentially being ***paid*** to utilise the PIA assets, rather than paying to use them as, of course, was still the case for the FNBs.

267. Even where there is no inflation spike forecast, inflation does tend to vary in waves or cycles and, all other things remaining equal, the impact on the final year unit prices could be significant depending on whether the final year coincides with the forecast being at the

crest or trough of the wave. As this would essentially be a random event, we would argue that a much fairer way to include the impact of inflation in the model would be to assess the CAGR of the relevant forecasts and apply that to every individual year modelled. This would tend to smooth out the impact and, we would argue, provide a fairer balance in impact between Openreach and the FNBs.

268. We would, therefore, urge Ofcom to consider using a constant CAGR for both CPI and RPI for each forecast year within the next version of the PIA Excel model.

269. Although there are still two years remaining of the forecast period for the current version of the PIA Excel model, a comparison between the original inflation forecasts and the actuals, where available, and latest forecasts indicate that the modelled inflation indices will undershoot significantly. Using current OBR forecasts for the remaining two years, we have calculated the undershoot for CPI to be around 7.4% and for RPI to be around 11.0%.

270. The RPI index undershoot means that the final year asset values in Openreach's CCA accounts will be significantly higher than those in the current model. This, in turn, will mean that if those Openreach asset values are used to derive the new base year values for the next version of the Excel model, there will be a significant disjoint. This disjoint will favour Openreach at the expense of the FNBs.

271. We would argue that a much fairer, and even-handed, approach would be to carry forward the final year of the current model and use those asset values to derive the new base year values. We would still accept, however, the Openreach final year asset values, coupled with latest OBR inflation forecasts at that time, being used to assess the new final year values in the next model version. The effective CAGR asset inflation rate should also be adjusted to achieve the required glide path between the two. We believe this will smooth out the impact of the differences between the forecasts from the current model and actual events in a manner that is sufficiently fair to both Openreach and the FNBs.

272. We would, therefore, urge Ofcom to consider carrying forward the final year asset values from the current model into the next version of the PIA Excel model and adjusting the RPI inflation index such that the model will still trend towards the actual forecasts of Openreach's CCA asset values by the end of the new model period.

273. **Summary of Suggested Changes**

SC 48. Ofcom to consider using a constant CAGR for both CPI and RPI for each forecast year within the next version of the PIA Excel model rather than using the actual forecast for the applicable years. [para 268]

SC 49. Ofcom to consider carrying forward the final year asset values from the current model into the next version of the PIA Excel model and adjusting the RPI inflation index so that the model will still trend towards the actual forecasts of Openreach's CCA asset values by the end of the new model period. [para 272]

6.7 FNB Installed Base Volumes

Current Ofcom Approach

274. The current version of the PIA Excel model was developed in 2020 when there was still very little take-up of PIA services by the FNBs. The model calculations were, therefore, based much more on Ofcom's view of expected usage on a particular duct segment or pole than on actual usage.

275. There are forecasts within the model, based on data supplied by the FNBs at the time, but only with regards to "Number of homes passed using PIA", and not with regards to actual (forecast) quantities of the specific PIA services.

276. The only usage within the model of the homes-passed forecasts was to calculate costs for the "Network Adjustments". These activities are necessary to get the infrastructure into a state so it is usable by the FNBs, for example to clear a blocked duct. The average cost of this is expressed as "per home passed" and has been set at £67.74 by Ofcom, with £16.66 of that deemed to be pole-related and the remainder duct-related. The amounts are then capitalised each year addressed by the model. We discuss network adjustment costs further in Section 6.2.

Observations

277. The current model assumes a total take-up of PIA services over the period to FY 2025/26 of around (a randomised) 2.9 million homes passed. However, the actual deployment by 31st March 2026 will be considerably more than this. For example, Think Broadband[40] states that as of May 2024 around 34.5% of UK premises are now covered by alternative

[40] https://labs.thinkbroadband.com/local/

FNBs, that is, excluding Openreach, Virgin Media and KCOM. This would equate to over 10 million premises.

278. Point Topic[41] stated that, as of March 2023, "98 local authorities had overlapping networks from three independent fibre providers". The table below, produced by Point Topic, shows its view of the situation at that time.

Number of independent fibre providers	Premises passed March 2023	Postcodes passed March 2023	Premises added since Dec 2023
1	4,204,440	199,619	+460,176
2	511,459	19,337	-246,296
3	1,653,369	73,334	+598,589
4	278,637	11,047	+28,363
5	12,914	551	+167
6	1,398	54	-
Total	6,662,217	303,942	840,999

Source: Point Topic

279. A recent update from Point Topic[42] resulted in somewhat different data. Below is table 8 from the pdf downloadable from Point Topic.

FTTP altnets	Premises passed	Business sites passed	Households passed
1	10,671,711	543,116	10,128,595
2	1,278,444	61,557	1.216,887
3	87,849	3,088	84,761
4	6,517	52	6,465
Total	12,044,521	607,813	11,436,708

Source: Point Topic

280. Although the *actual* number of premises currently passed by independent FNBs is uncertain to us, what is clear is that it is now a substantial number and, as such, needs to be taken account of.

281. The evidence provided by both Point Topic and Think Broadband illustrates very well how successful PIA has become. We do accept that not all of these premises will be passed

[41] https://www.point-topic.com/post/uk-premises-passed-q1-2023.
[42] https://www.point-topic.com/post/two-or-more-fttp-networks-covered-7m-uk-premises-in-q1-2024.

using PIA services although we are in little doubt that the vast majority of them will be. Clearly, by the start of the next modelling period the numbers will have grown further, particularly as the above data does not include any input for nexfibre. In our view, this makes it crucial that the next version of the PIA Excel model references the actual uptake in PIA services as of its base year and contains a realistic forecast of how this is expected to evolve further in the period covered by the next review.

282. We would therefore urge Ofcom to incorporate up-to-date data, using its information gathering powers, on the existing usage of PIA services within the next version of the Excel model. Included within this should be specific acknowledgement of the number of premises passed by multiple alternative FNBs. We would further urge Ofcom to focus on the pressing need to adapt the Excel model to address clear cases of cost over recovery by Openreach where multiple non-Openreach FNBs utilise the same PIA infrastructure.

283. **Summary of Suggested Changes**

SC 50. Ofcom to incorporate up-to-date data on the existing usage of PIA services within the next version of the Excel model. Included within this should be specific acknowledgement of the number of premises passed by multiple alternative FNBs. Ofcom to also focus on the pressing need to adapt the Excel model to address clear cases of cost over recovery by Openreach where multiple non-Openreach FNBs utilise the same PIA infrastructure. [para 282]

6.8 Future Installation Costs "assumed" in the Model

Current Ofcom Approach

284. The current PIA Excel model includes forecast costs, essentially, increases to the asset base, to cover network expansion by Openreach over the period covered by the model. The volume forecasts are (randomised) inputs in the model provided by Openreach for each year covered by the model. For duct-related assets, a single aggregated amount has been provided by Openreach for each year in question. For pole-related assets, Openreach provided volume forecasts for each of the four relevant COW and these were multiplied by a per-pole cost input also provided by Openreach. The per-pole cost was then increased by the relevant RPI percentage each modelled year.

Observations

285. In addition to the aggregated costs for duct-related capex that Openreach supplied, the model also contains the necessary data to do a bottom-up comparison. This is essentially a calculation that mirrors the way the model assesses new capex for poles.

286. The unit prices for 2018/19 were provided by Openreach and are contained in worksheet [Input data], rows 116 through 121. These are currently only used by the model to create a set of attribution percentages (in worksheet [D&C Vols]) that are applied to the total cost base to split that total between the various duct-related PIA services.

287. The additional quantities can be sourced from worksheet [D&C Vols], rows 33 through 38, which contain the forecast mid-year volumes, by simply comparing the current year with the previous year.

288. The bottom-up comparison results are shown in the table below:

	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	Total
Openreach aggregated forecast	£266m	£205m	£300m	£389m	£329m	£399m	£465m	**£2,353m**
Model calculation based on Openreach input data	£141m	£159m	£214m	£273m	£338m	£364m	£297m	**£1,786m**
Openreach forecast as % of calculation	***189%***	***129%***	***140%***	***143%***	***97%***	***109%***	***156%***	***132%***

289. The table clearly shows that in every year but one the Openreach aggregated forecast was significantly higher than the bottom-up calculation, which is based on input data provided by Openreach. Substituting the aggregated forecasts with the calculated amounts resulted in a reduction in the final year prices for duct-related PIA services of around 5%.

290. We are of the opinion that the bottom-up method is much more in-line with how the additional capex should be assessed within a model such as this. This is particularly the case since the necessary inputs already exist within the model and the additional capex for poles is already calculated that way. We would urge Ofcom to consider adapting the next version of the Excel model accordingly.

291. To the extent practical, we have also compared the unit prices contained in the model in worksheet [Input data][43] with those published by Openreach for regulated Excess Construction Charges (ECCs). Whilst direct comparisons are not straightforward, we get the impression that at least some of the unit costs in the model are significantly higher

[43] rows 116 through 121 for duct-related assets and row 244 for poles.

than those for ECCs. For example, the unit cost of a pole in the model for FY 2019/20 is (randomised) £752.29, whereas for the same period in the Openreach pricelist it was only £419.68.

292. We would urge Ofcom to undertake a comparison between the Openreach provided unit costs and the Openreach ECC pricelist during the next review as a cross-check on the data supplied by Openreach, and in the interests of transparency to the FNBs. To the extent practical, unit costs within the next version of the model should reflect the ECC price or at least follow the same underlying logic with differences documented and justified.

293. **Summary of Suggested Changes**

SC 51. Ofcom to consider adapting the next version of the Excel model to calculate additional capex spend on duct-related assets within the model using inputs source from Openreach rather than simply accepting Openreach aggregated forecasts of capex spend over the period. [para 290]

SC 52. Ofcom to undertake a comparison between the Openreach provided unit costs and the Openreach ECC pricelist during the next review as a cross-check on the data supplied by Openreach, and in the interests of transparency to the FNBs. To the extent practical, unit costs within the next version of the model to reflect the ECC price or at least follow the same underlying logic with differences documented and justified. [para 292]

6.9 WACC

Current Ofcom Approach

294. Ofcom currently assesses the Weighted Average Cost of Capital (WACC) on a periodic basis and uses the outcome in its charge control regulations to stop BT, and hence Openreach, earning a ROCE greater than WACC on price regulated services. However, the manner in which prices of PIA are reported in the RFS has meant that BT has earned a ROCE well above WACC on the external supply of PIA and a negative price was set to achieve the regulated ROCE on internal prices.

Observations

295. The WACC of any company is an empirical matter, based on observation and experience, and varies with the cost of debt and the perceived risk the company poses.

296. A small percentage-point change in WACC, if fed through the cost model, could lead to a substantial change in price. Although it would be inappropriate to expect BT to earn a ROCE below WACC, any upward change needs to be justified.

297. **Summary of Suggested Changes**

SC 53. Where a change in WACC might be required, Ofcom should consult with the industry to ensure such a change is justified.

Annex A: Detailed List of Suggested Changes

Suggested Change		Regulatory Consistency	Cost Reduction	Fair competition	Transparency
Regulatory Framework Issues					
1	Prices (in the form of transfer charges) used internally by Openreach for PIA services, such as in the BT RFS but also for all other purposes, are set at the same level as the external price paid by the FNBs.			Y	
2	Ofcom adapts the required RFS layouts to provide a clear/transparent linkage between the PIA section (6.1.1) and the WLA section (7.1.2), to the extent that the transfer charging is visible for each individual PIA service and that the amounts contained within the PIA section have corresponding entries to those in the WLA section. Furthermore, CCA adjustments should also be shown within section 7.1.2 for each individual PIA service.				Y
3	Similar enhancements are also made to section 5.1 of the RFS.				Y
4	Ofcom to review the degree of transparency in the supply of PIA and whether Openreach performs to the standards of “strict equivalence” and to consult the industry on the above.				Y
5	If Openreach is found not to comply with these standards, then Ofcom has to impose an EOI obligation on BT with regards to duct and pole access.				Y
Issues related to duct					
6	Ofcom to adapt the next version of the PIA Excel model and/or the price control mechanism to take		Y	Y	

	account of areas where premises are now passed by multiple FNBs utilising the same Openreach PIA infrastructure and highlight how this is expected to evolve over the review period.				
7	Ofcom to implement the necessary data gathering process that would allow it to gather the relevant information from all relevant stakeholders at the postcode sector level on how many independent FNBs were utilising the PIA services.		Y	Y	
8	PIA service order in next version of the Excel model is adapted to correspond to that in the RFS.				
9	Base year costs in the next version of the Excel model are like-for-like compared to the relevant RFS. Randomisations of source costs in the new Excel model version are made such that the totals by each PIA service are still correct and not themselves randomised.				Y
10	Analysis of findings, following a comparison of new base year actuals with final year forecasts in the current Excel model, are shared with the stakeholders.	Y			Y
11	The inputs within the PIA Excel model are adjusted such that the same percentage discount is used for all three component parts of the simplified lead-in service.		Y	Y	
12	Ofcom to reconsider which data really does need to be randomised, especially since much of it is now available within the BT RFS documents. Where Ofcom concludes that randomisation is still required, it is done in a way that does not show				Y

	misleading trends from year to year.				
13	Ofcom adapts the model so that it not only records, for example, the physical quantity of an asset class, such as single-bore duct, but also records both Openreach and FNB usage of that asset class. The next version is adapted to perform its calculations based on actual usage in the base year, by both Openreach and the FNBs, and then forecast usage over the period covered by the model.			Y	Y
14	Ofcom requires BT to adapt the RFS such that the "Internal Volumes" in section 6.1.1 are adequately explained in terms of what the numbers actually relate to and how they have been calculated. Necessary adaptations to those calculations are made to prevent double counting during the period when Openreach is transitioning to a full-fibre local access network.				Y
15	The next version of the PIA Excel model should retain information on the physical quantities of the duct-related PIA assets.				Y
Issues related to poles					
16	The next version of the PIA Excel model is carefully adapted to ensure that there is no double counting of copper and fibre-based attachments, manifolds and cables up poles.	Y		Y	
17	Ofcom engages with Openreach at the earliest opportunity so that it can understand better what information is actually available within Openreach systems in relation to pole utilisation data.	Y		Y	Y

18	To the extent practical, the information on pole utilisation reflects the fibre rollout, only reverting to copper where the fibre coverage in an area has yet to reach 100%.	Y			
19	Even where fibre coverage is 100%, the final-drop cable count continues to reflect cables running to all premises, using the data for copper-based final-drops (single user attachments) when necessary. - not sure if this makes sense	Y		Y	
20	The current categorisation of poles in the PIA Excel model between DP, Feeder and Cable poles is removed and replaced by a more detailed analysis of pole usage sourced from Openreach's systems.	Y		Y	Y
21	Ofcom to reconsider not apportioning any cost to transmission cables running up poles and, instead, consider treating them at least equally with other cables running up poles.			Y	
22	Ofcom to insist that Openreach provides accurate data on the use of its poles for cables running up them.	Y			Y
23	Ofcom takes due account of data provided by Openreach, and potentially the FNBs themselves, when assessing cables up poles usage in the next review. Openreach usage is also assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre cables up poles during the transition period to full fibre.	Y			Y
24	Ofcom to insist that Openreach provides accurate data on the hosting of manifolds on its poles.	Y			Y

25	Ofcom to reconsider the current assumption that manifolds will only exist on DP poles and whether a safer assumption is to assume that the FNBs would most likely require the same number of manifolds as Openreach does. Ofcom to take into account data provided by both Openreach and the FNBs on actual hosting of manifolds on poles.	Y		Y	
26	Ofcom takes due account of data provided by Openreach, and potentially the FNBs themselves, when assessing manifolds usage in the next review. Openreach usage is also assessed to reduce, to the extent practical, the likelihood of double counting of Openreach copper and fibre manifolds on poles during the transition period to full fibre.	Y			
27	Ofcom to (a) require much better information from Openreach on pole usage, and (b) reconsider the current approaches taken to assessing the required per unit prices for single and multi-user attachments.	Y			Y
28	Ofcom takes due account of data provided by Openreach, and potentially the FNBs themselves, when assessing single and multi-user attachment usage in the next review. Openreach usage is also assessed to reduce to the extent practical the likelihood of double counting of Openreach copper and fibre single and multi-user attachments on poles during the transition period to full fibre.	Y			
29	Ofcom to consider our alternative approach as a method of enabling Ofcom to improve on achieving its	Y		Y	

	objectives of a level playing field coupled with cost recovery (but not over-recovery).				
30	Ofcom to compare the actual usage of poles by the FNBs with that of Openreach in its fibre rollout and with that assumed in the current PIA model. Ofcom should then consider whether the current 90/7/3 attribution remains reasonable in its view, justify its stance, and modify it accordingly if not.	Y		Y	Y
31	Ofcom reflects on how the cost of single-user attachments should compare to multi-user attachments during the next review. Ofcom also consults with the industry on this specific matter, especially given that there is now a considerable take-up of pole-related PIA services.	Y		Y	
32	Base year costs in the next version of the Excel model are like-for-like compared to the relevant RFS. Randomisation of source costs in the new version of the Excel model is only done where absolutely necessary, and in such a manner that the totals by PIA service are still correct and not themselves randomised.				Y
33	Analysis of findings, following a comparison of new base year actuals with final year forecasts in the current Excel model, are shared with the stakeholders	Y			Y
34	Ofcom to check, and confirm to stakeholders, that there was no double counting in pole-related opex, and that the pole testing costs in the current Excel model are in addition to the base year pay and non-pay costs.				y

35	Ofcom to make it explicit in the next version of the PIA Excel model whether or not the base year pay and non-pay costs for poles includes or excludes costs specific to pole testing.			Y	
36	Ofcom to undertake a formal check/audit of the forecast pole-testing costs, and thus number of poles tested annually, against the numbers in the current Excel model, and to share its findings with stakeholders.	Y			Y
37	Ofcom to establish what data Openreach currently stores on a pole-by-pole basis, such as within a GIS database, and Openreach's current practices regarding the checking and updating of this data each time a pole test is carried out. As part of this, Ofcom to impress on Openreach the importance of this data being up-to-date and accurate, and that Openreach is expected to take whatever action is necessary to ensure this is the case.				Y
Issues Common to Duct and Pole					
38	Ofcom should confirm in due course what approach it will adopt for the next version of the Excel model, for example substituting the 2019/20 data from Openreach with that corresponding to the relevant new base year and with pole-related costs sourced from the new pole-specific COW.	Y			
39	The next version of the Excel model should show the total cost associated with each individual COW along with the cost that has been apportioned to PIA services. There should also, within the model itself, be a brief descriptor attached to each	Y			Y

	code regarding what it covers. If less than 100% has been attributed to PIA services the reason for this should be provided along with the method undertaken to calculate the percentage used.				
40	Ofcom to undertake a formal review/audit of any relevant changes that have taken place to the use of classes of work, including the introduction of new COW codes relevant to PIA services.	Y			Y
41	Ofcom also undertakes a formal review/audit on the HCA costs that have been allocated to the relevant COW codes in the years since the last market review.	Y			Y
42	Ofcom to consider carrying forward the final year GRC and NRC values from the current model into the new version and to recover the differences gradually over the modelled timeframe.	Y			Y
43	Ofcom, as part to the next review to be explicit on how the £4,750 limit, or whatever the new amount is, should be applied by Openreach. Ofcom also to be more explicit in how Openreach's own network adjustment costs are audited in this respect.	Y			Y
44	Ofcom should review the above concerns and undertake the necessary work to satisfy itself that there are no issues with regards to discrimination and should justify its position on this to stakeholders. Where either transparency issues and/or level playing field issues are accepted as being present then Ofcom should address these as part of the TAR, potentially including a			Y	Y

	move away from NUD and towards EOI.				
45	Ofcom to reflect on what the appropriate discount should be for the next review period.	Y	Y	Y	
46	Ofcom to consider whether the discount should progressively rise for each modelled year instead of being, in effect, a weighted average forecast.	Y	Y	Y	
47	Ofcom should consider how best to take account of the upcoming demise of the current method of calculating RPI. Our current thinking is that a move to a fixed percentage above CPI might be most appropriate, especially as it should help to make the PIA service price forecasts, and actuals, more stable with changes in inflation rates.	Y			
48	Ofcom to consider using a constant CAGR for both CPI and RPI for each forecast year within the next version of the PIA Excel model rather than using the actual forecast for the applicable years.	Y		Y	
49	Ofcom to consider carrying forward the final year asset values from the current model into the next version of the PIA Excel model and adjusting the RPI inflation index so that the model will still trend towards the actual forecasts of Openreach's CCA asset values by the end of the new model period.	Y		Y	
50	Ofcom to incorporate up-to-date data on the existing usage of PIA services within the next version of the Excel model. Included within this should be specific acknowledgement of the number of premises passed by multiple alternative FNBs. Ofcom to also focus on the		Y	Y	

	pressing need to adapt the Excel model to address clear cases of cost over recovery by Openreach where multiple non- Openreach FNBs utilise the same PIA infrastructure.				
51	Ofcom to consider adapting the next version of the Excel model to calculate additional capex spend on duct-related assets within the model using inputs source from Openreach rather than simply accepting Openreach aggregated forecasts of capex spend over the period.			Y	Y
52	Ofcom to undertake a comparison between the Openreach provided unit costs and the Openreach ECC pricelist during the next review as a cross-check on the data supplied by Openreach, and in the interests of transparency to the FNBs. To the extent practical, unit costs within the next version of the model to reflect the ECC price or at least follow the same underlying logic with differences documented and justified.			Y	Y
53	Where a change in WACC might be required, Ofcom should consult with the industry to ensure such a change is justified.			Y	Y

Annex B: Glossary of Terms

A55: An Openreach process/process step that FNBs must follow when requesting NA. Openreach then undertake Verification of the A55 to verify that the work is necessary, reasonable, and acceptable.

CBT: Connectorised Block Terminal. Ofcom refers to this as a Manifold.

CCA: Current Cost Accounting

CPIH: A potential replacement for RPI

COW: Class of Work. This is the set of accounting codes used by Openreach to record costs.

DFE: Departure from Estimate. An Openreach process that FNBs must adopt when they find that the Network Adjustment is more complex/costly than originally anticipated. The process utilises an agreed financial threshold for DFE requests below which the FNB does not have to seek pre-approval for DFE work to be carried out.

D Pole: Defective pole. A term used by Openreach to indicate that a specific pole has been deemed defective for some reason.

DP: Distribution Point

ECCs: Excess Construction Charges

EOI: Equivalence of Inputs

FNB: Fibre Network Builder. These are the competing operators that are deploying their own fibre infrastructure and making use of Openreach's PIA services.

FY: Financial Year

ISP: Internet Service Provider

NA: Network Adjustment. These are adjustments that need to be undertaken in order to make the Physical Infrastructure usable, for example the unblocking of a blocked duct.

NA Process: The process that FNBs must adopt and follow in order for them to be reimbursed for expenditure that they incur on making necessary network adjustments effectively "on behalf of" Openreach. Openreach has equivalent processes in place that it uses for its own build partners when they uncover the need for such network adjustments.

NoI: Notice of Intent. A process step Openreach requires from an FNB prior to it conducting intrusive work with Openreach's Physical Infrastructure.

NUD: No Undue Discrimination

PI: Physical Infrastructure

PIA: Physical Infrastructure Access

PTC: Path to Collaboration. An Openreach process whereby a specific FNB gains the confidence of Openreach that the FNB itself can be relied upon to conduct some of the necessary verification steps with regards to NA orders.

RFS: BT's annual Regulatory Financial Statements

ROCE: Return on Capital Employed

SMP: Significant Market Power

TAR: Telecoms Access Review, basically the new name for the WFTMR and which is due to be completed in 2026.

Verification: Effectively a set of Openreach processes, or process steps, that Openreach uses to verify various aspects of PIA. Examples include: checking that Network Adjustments are necessary; checking that the costs incurred in NA are reasonable; checking that DFE requests are reasonable; and checking that NA and/or DFE work is complete and acceptable.

VULA: Virtual Unbundled Local Access

WACC: Weighted Average Cost of Capital

WFTMR: Wholesale Fixed Telecoms Market Review, the last of which was completed in 2021.

Whereabouts: An Openreach process required of the FNBs, for example in order to conduct a non-intrusive survey of some Openreach Physical Infrastructure. Whereabouts information is required from the FNBs in order that Openreach is formally made aware of both where and when FNBs will be active. Openreach states that this is required for health and safety, security, quality, and audit purposes.

WLA: Wholesale Local Access. These are the fibre/fibre-based wholesale services that Openreach provides to the retail ISPs.