NERA
ECONOMICS. EXPERTS. EXPERIENCE.

Gure 3.3

Response to Ofcom's TAR

11 June 2025

Introduction

NERA was commissioned by Openreach to produce a report in response to Ofcom's Telecoms Access Review (TAR) 2026 consultation document. The scope of this work covers the extent to which the TAR delivers on the strategy embarked on in the Wholesale Fixed Telecoms Market Review (WFTMR) in 2021, provides a view on Ofcom's approach to setting geographic markets, an exploration of leased lines, and an evaluation of the case for continued commercial restrictions on Openreach.

David Matthew is the lead author of this report.

CONFIDENTIALITY

NERA
The St Botolph Building
138 Houndsditch
London EC3A 7DH, United Kingdom
www.nera.com

Contents

List of Tables

Executive Summary

In 2021[1] Ofcom set out a new 10-year regulatory framework which placed competition from new networks as the critical driver for investment and growth in broadband services and leased lines. Central to this strategy were remedies that anticipated and encouraged competition from new networks, by moving to more limited price caps that would provide headroom for competition to flourish. It was envisaged that as competition grew, this would be reflected in new geographic markets which would mirror the differences in competition that emerged, and in which regulatory remedies would be further relaxed or ended if market power no longer existed.

This strategy deliberately and explicitly intended to give all stakeholders a clear idea of the framework over an extended period (from 2021 to 2031), so that they could make long term investments with confidence. The Wholesale Fixed Telecoms Market Review (WFTMR) was the first phase of this period, and the Telecoms Access Review (TAR) is the second phase. Having set out on this course, there is a strong precedent that it should be continued, absent evidence that the strategy has failed.

Ofcom's strategy has been hugely successful to date, to a degree beyond the expectations held in 2021. There is therefore every reason to expect that the 10-year plan laid out in 2021 should continue to be implemented. This means that the surge in competition that has occurred should be reflected in geographic market delineations that properly capture the variations in competition observed, and a process of further relaxation of regulation to reflect it.

Ofcom has recognised its success and makes clear that it will *"maintain a consistent approach in the period 2021 to 2031 where the evidence indicated our strategy was working"*[2] hence continuing in the 10-year strategy. However, the TAR proposals do not follow the strategy in important respects.

The TAR does deliver on expectations in some important areas. For example, it continues the general approach to price caps in Area 2 and captures the greater-than-anticipated growth in rival networks by expanding Area 2 for WLA markets to cover 90% of premises (an increase from the 70% of premises in 2021).

In other areas, rather than progressing along the path laid out in 2021, Ofcom is proposing to reverse course and adopt a process of re-regulation. This lack of progress is puzzling given that Ofcom has itself trumpeted the success of the strategy on competition and it risks damaging confidence that Ofcom is committed to the pro-competition and pro-investment plan that it says that it is following. This is discussed in **Section 1**.

In this report, we explore the degree to which the TAR has followed the 2021 strategy and highlight the following areas in which the TAR proposals do not reflect the growth in competition observed and anticipated.

In **Section 2**, we explain that in the Wholesale Local Access (**WLA)** market, there are no steps to define separate geographic markets for those parts of Area 2 where competition is substantially greater. This fails to deliver on the expectations set out in 2021 and set a clear path for the future.

---

1 Important elements of this strategy were anticipated in earlier reviews (such as the BCMR 2019 and the Wholesale Local Access market review 2018)

2 TAR 2026-2031, Vol 1, para. 2.21

There has not been an adequate assessment of whether Openreach still has market power in some of these areas, or whether different remedies might be suitable. Inspection of variations in competitive conditions suggests that the following geographic markets should be properly defined:

- **Area 1** markets where Openreach faces two other competing networks. Ofcom set out clear expectations that it would be separating out Area 1 markets in the 2021 WFTMR. We suggest it is appropriate to define Area 1 markets that exist. **We suggest that Ofcom should undertake a proper forward looking SMP assessment, and our analysis indicates that the presence of additional and growing competition may well be enough to find that Openreach does not have SMP. We suggest that suitable remedies should follow (recognising that competitive conditions are strong).** This would enable consumers to benefit from competition on the merits as it evolves.
- The **VMO2 footprint** is a candidate for a distinct geographic market as there are several compelling reasons why competitive conditions in the VMO2 footprint are different from the rest of Area 2. Our analysis suggests Openreach's market share is tending towards 50% and further growth in competition is expected, indicating that Openreach may not have Significant Market Power (SMP) in this review period. **We suggest it is appropriate to properly define the VMO2 footprint and implement remedies that enable Openreach to set different geographic prices and compete with VMO2 commercial offers.** This would enable Openreach to compete on the merits, allowing it to cut prices and offer flexible commercial deals where it is faced with similar offers from the established VMO2 network.

Even if Ofcom is not persuaded that there is effective competition in 2026 in any geographic areas, that may well change during the review period until 2031, and it is expected that large parts of the UK will fall into areas where there is the potential for material and sustainable competition to Openreach. Therefore, **the framework should adapt to dynamic changes over the period and measure the evolution of competition in Area 1s and the VMO2 footprint.**

In **Section 3**, we explore **leased lines**, where the TAR proposes to reverse course and re-regulate. In 2021 Ofcom set the Area 2 market boundary for leased lines to match that for WLA. Ofcom recognised that WLA networks would compete in both leased lines and WLA markets, and that investment in new networks was made in expectation of returns from both WLA and leased lines. Without clear explanation as to why, and in the face of persuasive evidence that the 2021 approach remains fit-for-purpose, the TAR proposes to end this approach and apply much tighter regulation to leased lines than expected in 2021. We discuss reasons why the convergence of WLA and leased line geographic markets is still the case and explore the challenges in using the Network Reach Model (NRM) to capture leased line market boundaries. **We suggest setting the same Area 2 and 3 boundaries for leased lines as for WLA, and suggest it is appropriate to assess competition in mobile backhaul separately from business leased lines.**

In **Section 4**, we discuss that Ofcom's remedies of placing **restrictions on Openreach's ability to compete** were originally intended to be time limited, providing artificial protection to altnets during the "window of opportunity" in the early and particularly risky phase of network investment. Now that the main phase of investment is complete and the foundation for competition firmly laid, the expectations would be a relaxation of these restrictions or at least a clear path towards this. There is no such plan outlined in the TAR, and Ofcom's narrative suggests its underlying objective is to support altnets' take up as a goal (rather than as a stepping stone to incentivising network build).

Protection of competitors (rather than competition) in this way means that customers and end consumers are denied the benefits of competition. Given that Ofcom now expects limited additional build,[3] altnets are moving on from the deployment stage that Ofcom's WFTMR restrictions were designed for, and it is unclear that continued protections are justified for that original purpose. **We suggest removing the restrictions on geographic variations in pricing in the VMO2 footprint, allowing competition law to address concerns about leverage, and laying out a path to relaxation of regulation or deregulation (and clearly signalling the conditions under which it might relax regulation).**

3 TAR 2026-2031, Vol 2, para. 4.174

1. The TAR does not deliver on Ofcom's 10-year strategy to boost competition and investment

In 2021, Ofcom set out a clear 10-year strategy for promoting competition. This was supported by an approach to regulation covering two review periods to 2031, of which the TAR is the second phase. In this Section we provide an overview of whether the TAR proposals deliver on following through on the regulatory commitments made in 2021.

1.1. WFTMR's strategy to promote competition

Ofcom's Wholesale Fixed Telecoms Market Review (WFTMR) 2021-26 was centred on a long-term vision of the UK's telecommunications landscape which focused on promoting competition among and investment in gigabit-capable networks across the UK as the priority. This was consistent with the government's ambition to provide gigabit-capable networks and making them widely available across the UK (with a target of at least 85% of premises having access to a gigabit service by 2025).[4]

Ofcom considered that network competition brings significant benefits to consumers compared to competition based on regulated access to Openreach's network and wholesale services, and a more effective spur for innovation and investment in high quality networks. By promoting network competition, Ofcom aimed to enhance service quality and drive down prices for consumers. This included measures to support new entrants into the market and ensure that existing providers could compete fairly.

This new competition was intrinsically linked to Ofcom's relaxation of price cap regulation in 2021, and it was anticipated that this would be followed by further deregulation as new network build was completed. In the WFTMR, Ofcom stated that:

> *"Over the next ten years we expect to see new providers entering and competing with Openreach and Virgin Media. This will put us on a path to even greater deregulation in the future, allowing competition to replace regulation permanently. Where effective competition emerges, there will be no need for Ofcom to regulate".*[5]

This clear plan to progressively deregulate as competition emerged was good policy founded on Ofcom's long-term preference to see competition replacing regulation, as a better means of delivering benefits to consumers. It was also part of a 10-year regulatory commitment to the industry that their investments in new services and competition with Openreach would be accompanied by further relaxation of price caps and other terms of access to the Openreach network. This would reduce and finally end customers' reliance on regulatory access to Openreach and replace it with the returns available in conditions of competition. If the promised relaxation does not follow the growth in competition, Ofcom would not be delivering on a 10-year commitment that all competitors have been relying upon.

4 HM Treasury, November 2020, CP 329 – National Infrastructure Strategy – Fairer, faster, greener.

5 2021 WFTMR, Vol 4, para. 1.112

1.2. WFTMR has been a success

The growth in competition since 2021 has been dramatic and far more than Ofcom's expectations at the time. According to Ofcom's Connected Nations update (spring 2025), the number of homes able to get gigabit-capable broadband has increased to 25.9 million (86% of the UK's 30.2 million homes).[6] This has exceeded the government's target of at least 85% of premises having access to a gigabit service by 2025.[7]

As matters stand (as of July 2024), build by rival networks has led to a significant increase in the number of premises with a choice of network. 70% (22.5m) of premises now have access to gigabit-capable broadband from at least two networks (one network from another provider in addition to Openreach), and 22% of premises have access to at least three networks[8] with more growth expected.

Ofcom itself has recognized that "*this level of build exceeds what we expected in 2021, giving even more consumers and businesses access to high quality gigabit-capable networks at increasingly attractive prices, allowing them to benefit from new and innovative services that play an important role in supporting economic growth*"[9] and that this "*has led to an increase in the number of premises with access to multiple networks*"[10].

Moreover, the growth is diverse, reflecting new competition from multiple sources.

VMO2

VMO2 is currently the second largest vertically integrated network operator. It has recently entered an agreement with nexfibre whereby nexfibre will carry out VMO2's new FTTP build (in areas where VMO2 is not already present) with VMO2 operating as a build partner. In areas where nexfibre is or plans to be present, VMO2 will act as wholesale customer of nexfibre (as the anchor tenant), and use the nexfibre network to provide retail services. Together, VMO2 and nexfibre will cover up to 23 million premises (80% of the UK) nationwide later this decade.[11]

VMO2's FTTP footprint currently covers 6.8 million premises, comprised of 2.2 million premises via nexfibre, 2.7 million premises under Project Mustang[12], and 1.9 million under Project Lightning. Assuming VMO2 continues upgrading 1.1 million premises annually and adds 400,000 premises per year via nexfibre, they will surpass 10 million premises by the end of FY28.

6 Connected Nations update: Spring 2025, Ofcom

7 CP 329 – National Infrastructure Strategy – Fairer, faster, greener – November 2020

8 Connected Nations 2024: UK Report, Ofcom, 5 December 2024

9 TAR 2026-2031, Vol 1, para. 1.5

10 TAR 2026-2031, Vol 1, para 2.30

11 Virgin Media gigabit broadband now available to 14,000 more homes in Filey and Pickering for first time, Virgin Media O2, 18 February 2025

12 Under Project Mustang, VMO2 also expects to have upgraded its entire HFC and RFOG network to 10Gbps capable XGS-PON FTTP lines by 2028, which will make it more attractive to future ISP partners via wholesale.

VMO2 announced in 2021 that it would be upgrading its HFC network of 14.2 million premises to FTTP by 2028. This is in addition to the existing 1.2 million FTTP footprint premises build under Project Lightning.[13]

This is evidence of substantial progress in the roll-out of gigabit capable networks by VMO2, which is likely to grow further in the next few years.

In addition, to date VMO2 has limited itself to retail competition in broadband but has recently announced its intention to compete at the wholesale level.[14] This would be an important shift in competitive dynamics because VMO2's footprint is already large enough to secure a wholesale deal, and it would have a strong potential to create an additional form of direct constraint on Openreach.

CityFibre

CityFibre is the largest independent full-fibre broadband network in the country (it has the third biggest footprint in the UK after Openreach and VMO2) and has been expanding rapidly. Its network covers over 3.7m premises as of July 2024 and plans to cover at least 8 million premises by the end of 2031 (but possibly as high as 12 million[15]), making it a significant player in the UK full fibre landscape. CityFibre is still in the process of completing network build, gaining take-up and implementing deals with Internet Service Providers (ISPs).

It supplies both WLA and leased lines and has agreements for the provision of mobile backhaul with Vodafone and Three.[16] CityFibre has also entered into agreements with all the large independent ISPs, including Sky, and many smaller ones.[17] The wholesale deal between CityFibre and Sky is notable, as it gives Sky a direct option to move substantial volumes of its customer base from Openreach to CityFibre, and potentially doubles CityFibre's addressable target market. [18]

CityFibre is already a strong competitor, and its competitive impact is expected to increase in the future. It is in a strong position to buy rival fibre builders that might be struggling with rising inflation rates, the increased cost of capital and market competition.[19]

Other altnets

Since 2021, the market has evolved and several additional altnets[20] have reached a considerable amount of network coverage and have gained take-up. Altnets increased their full network coverage to reach 16.4 million premises, keeping pace with Openreach's 17.1 million premises, at the end of 2024.[21] Altnets are still deploying their networks and expect to supply full fibre infrastructure to a

13 Openreach [✂] slide deck

14 Virgin Media O2, Liberty Global and Telefónica kick off plans to create a national fixed NetCo in the UK, Virgin Media O2, 16 February 2024

15 CityFibre's Holden: altnets and backers must pull together for investment-grade nirvana, TelcoTitans, 22 April 2025

16 TAR 2026-2031, Vol 2, para. 4.60

17 Sky reiterates commitment to CityFibre deal in boost to £1.5bn fundraising, Financial Times, 6 April 2025

18 CityFibre wins Sky deal: Altnets shift to wholesale, Enders Analysis, 20 August 2024

19 CityFibre profit shows scale of challenge for UK fibre builders, Telecoms.com, 14 February 2025

20 Altnets are smaller broadband providers that either own their own broadband network or offer a broadband deal that isn't supplied by Openreach or VMO2. CityFibre is also considered one of the UK's altnets.

21 Metrics for the UK Independent Network Sector Report 2025, Point Topic

further two million more premises (18.6 million) by the end of 2025.[22] Almost 750,000 customers decided to switch to an altnet during 2024, leading to 2.7 million live connections (35% growth year-on-year) to independent fixed networks provided by full fibre gigabit capable connections.[23]

Several of these altnets have significant scale. Leading altnets include Gigaclear, Hyperoptic, Community Fibre and Netomnia, amongst others. The current coverage of these four altnets ranges between approximately 0.5 million (Gigaclear) and 1.5 million (Netomnia) premises. Taken together this group of altnets currently cover nearly 5 million premises.[24]

Moreover, there is potential for altnets' scale to growth in the future. To the extent that scale is important in competing effectively, there will be strong incentives for altnets to consolidate. This might be achieved through mergers and acquisitions or joint ventures, or by agreements allowing altnets to offer a consolidated and large-scale product (e.g. if they aim to compete in wholesale). While the nature, extent and timing of any consolidation is necessarily uncertain, if scale is important then we would expect to see movement to achieve it.

Given this success, the expectation is that Ofcom would continue with the plans laid down in 2021 by fulfilling regulatory commitments that growth in competition would be recognised in defining geographic markets and undertaking SMP assessments and remedy decisions that reflect that growth.

1.3. Despite the WFTMR success in increasing competition, the TAR is proposing more regulation

However, the TAR proposes more, not less, regulation overall.

The TAR **decreases regulation** in its expansion of the WLA Area 2 and expansion of leased line High Network Reach (HNR) boundaries, which is welcomed.

However, in several important areas, the growth in competition and network build achieved since the WFTMR clearly merits further market delineations and/or deregulation, but the TAR proposals do not make any further advances towards those outcomes. This means that the growth in competition is not being properly captured or reflected in Ofcom's proposed remedies.

- Even though there are now 1,812 postcode sectors (19% of all postcode sectors) where two or more rival networks to Openreach are currently present, **Ofcom does not (i) capture this difference in competition by defining "Area 1" geographic markets**, (ii) properly consider whether there is SMP in those markets, and (iii) consider whether there should be further deregulation in those markets.
- Even though competitive conditions in the **VMO2 footprint** are plainly very different to the rest of the UK, Ofcom does not (i) adequately consider whether the VMO2 footprint should be defined as a separate market, (ii) properly consider whether there is SMP in that market, and (iii) consider whether there should be further deregulation in that market.

22 UK Altnets: Delivering Affordable, High-Speed Connectivity with Unmatched Customer Satisfaction, page 6, INCA, April 2025

23 Metrics for the UK Independent Network Sector Report 2025, Point Topic

24 TAR 2026-2031, Vol 2, para. 4.62

- Ofcom offers **no further relaxation of price caps**, in either Area 2 or in the more competitive VMO2 footprint or Area 1s.
- Neither does Ofcom offer any path to removal of its **restrictions on Openreach competing on the merits**, even though rival networks are now well established.
- As well as not properly reflecting greater competition in parts of the UK in 2025 Ofcom **does not offer any path to deregulation**, reflecting the almost certain evolution of competition during the 2026-2031 period. Under the TAR proposals there will have been no reflection of the rapid growth in competition achieved for a decade.

As well as stalling on progress to reflect the success in promoting competition, in important respects Ofcom reverses course and, notwithstanding the growth in competition, proposes **increased regulation:**

- Ofcom proposes to **reverse course in leased lines**. The WFTMR proceeded on the well-founded view that competition in WLA networks implied competition also in leased lines, thus using the same geographic boundary for Area 2 for both WLA and leased lines. The TAR proposes to reverse this view and to set a different geographic boundary for each, with no good explanation as to why the WFTMR approach should now be rejected. The result is that substantially greater regulation will be applied to leased lines than would have been the case if the WFTMR approach had been continued.
- Ofcom proposes to substantially **increase restrictions on Openreach's ability to compete on the merits.** There are many elements to this, but chief among them is to change the central objective of the policy from supporting altnets in building new networks (the WFTMR objective) to supporting altnets achieving large market share gains as wholesalers. This policy shift risks permanently "baking in" measures to prevent Openreach from competing on the merits, with the long-term detriments to consumers that inevitably follow from shifting goals from promoting competition to protecting competitors.
- Ofcom proposes **to expand several pre-existing obligations already imposed on Openreach**. Among these are proposals to change the VULA anchor product from the VULA 40/10 service to that of a VULA 80/20 service, the extension of the IEC dark fibre remedy to all BT-only and BT+1 exchanges and extending the geographic pricing restrictions to include connection charges.

Overall, the TAR proposals suggest that Ofcom's progress in delivering its 10-year strategy has stalled, and in places reversed. This will not only prevent the full gains from competition from emerging, but it also risks a loss of confidence in Ofcom's commitment to the strategy that has so far been successful in delivering on its goals.

1.4. Ofcom's market analysis is too cautious in its forward look

Ofcom's proposals to stall or reverse progress appear in many places to reflect a particularly cautious approach when evaluating competitive forces that are still developing and will take fuller effect during 2026-2031.

In the conditions of dynamic competition that Ofcom has so successfully engendered, such uncertainties are inevitable and indeed market uncertainty is itself a feature of dynamic competitive

markets. The WFTMR placed weight on the positive potential provided by competition and set remedies to reflect those possibilities, whereas the TAR proposals dwell on the negatives, emphasizing at every turn that while competitive pressures might emerge, it is too early to be certain that they will.

Some key themes that underpin the caution in Ofcom's TAR proposals are summarized here:

Ofcom appears to have adopted a "wait and see" approach. On several significant issues, Ofcom recognises that there is potential for a significant injection of competition but will wait until 2031 to see how it works out in practice. This applies to:

- **Area 1s** where Ofcom considers it is not appropriate to define a separate market, even though it recognises that the "evidence on presence and take-up indicates there has been a material improvement in competitive conditions since 2021 and that there is potential for competition to develop further during the review period".[25]
  - The potential for **VMO2 to wholesale**, where Ofcom says *"the evidence regarding the actual impact of VMO2 wholesaling is still limited" because "there is currently no track record of VMO2 competing in this way"*[26]
  - The potential for **smaller altnets to consolidate or jointly wholesale**, where Ofcom says "*altnet consolidation could significantly strengthen the competitive positioning of these smaller altnets (e.g. by incorporating them into an existing larger network or by creating an additional large network), such that they become material and sustainable competitors to BT*"[27] but has not used their footprint to determine where there is likely to be the potential for material and sustainable competition to arise. It argues that altnets who cover less than 50,000 premises are less likely to be considered attractive targets for consolidation.[28] Ofcom also looked at altnet business models (e.g. wholesale vs retail) and concluded that "*the likely competitive constraint on BT posed by each of VMO2 and CityFibre was clearly an order of magnitude different from that posed by the other smaller altnets*".[29]
  - The potential for **smaller altnets to supply leased lines,** where Ofcom recognises there are a small number of other altnets who have started to offer leased lines in addition to their WLA business and that volumes could increase going forward, but states there is "*limited evidence of these [altnets] being able to increase their volumes over the past years*".
  - The **use of PIA to reduce dig distances for leased lines**, where Ofcom states that "*the use of PIA for LLA is used to differing degrees by different providers, suggesting that it may not be suitable for every use case*" and "*the impact of PIA for the barriers to entry and expansion in the LLA market over this review period therefore remains uncertain*."[30] Ofcom states the median dig distance of competing networks tend to be relatively short across all geographic

25 TAR 2026-2031, Vol 2, para. 4.106
26 TAR 2026-2031, Vol 2, para. 4.203
27 TAR 2026-2031, Vol 2, para. 4.7
28 TAR 2026-2031, Vol 2, para. 4.82
29 TAR 2026-2031, Vol 2, para. 4.46
30 TAR 2026-2031, Vol 2, para. 5.236

markets (in all cases less than 20m)[31] without acknowledging that PIA may have a greater impact in reducing this dig distance.

- The potential for **dark fibre to be used to supply active leased lines** in Area 3. Ofcom concludes that dark fibre is part of the same product market as leased line access services, on the basis that "*dark fibre providers are equally able to supply leased line access services as any other supplier*."[32] Yet Ofcom proposes a price cap, rather than proposing to leave active leased line prices in Area 3 at current levels and encourage customers to move to dark fibre. This is justified on the grounds that "*in 2023/24, there were 494 DFA rental circuits in use, accounting for a small minority (1%) of all Openreach leased line and DFA circuits in Area 3*"[33] and "*DFA take-up could take some time*".[34]

This "wait and see" approach was deployed in the WFTMR in some respects[35]. However, that was a time when rival build had barely started, PIA was a largely new remedy, and the new regulatory structures were only being put in place. This new environment is one where five years of network build at scale has taken place, PIA is well used, competition is unfolding and there are important new market developments such as Cityfibre's deal with Sky. The "wait and see" approach is unnecessary in many cases now that networks are built, as market developments will occur with or without regulation. For example, VMO2 incentives to wholesale are driven by its desire to grow; altnet consolidation will be occur if there are benefits from scale; and leased lines sales relate to economies of scope for built fibre networks.

In places, Ofcom suggests that a key reason for its caution is that altnets' gains in market sales and shares have been limited to date.[36] **However, large actual losses in Openreach's market share are not a necessary condition for finding that competition is effective**, and Ofcom has adopted this position in the past. For example, in 2021 Ofcom found the Central London Area (CLA) to be effectively competitive, even though Openreach's share in the 2021 CLA market was 50-60%.[37] Over-reliance on actual market share losses is problematic for two reasons:

- The **recency of key developments in competition** and the expectation that these will take fuller effect during the next few years mean that potential competition is much greater than revealed by market share movements in the last few years. For example, altnet build is only now nearing completion, CityFibre's deal with Sky is only now starting to be implemented, and VMO2's wholesaling plans have not yet translated into actual wholesale offers. All these developments are likely to result in substantially greater competition in the next few years than is captured in market share movements to date.

---

31 TAR 2026-2031, Vol 2, para. 5.234

32 TAR 2026-2031, Vol 2, para. 5.18

33 TAR 2026-2031, Vol 4, para. 2.75

34 TAR 2026-2031, Vol 4, para 2.58

35 For example, in Ofcom's March 2021 statement, Ofcom noted that it was too early to draw firm conclusions about the incremental competitive impact of a second rival network and decided that competitive conditions in those postcode sectors were not sufficiently distinct to define a separate Area 1 market.

36 For example, in the context of Area 2, Ofcom notes that Openreach's share of active broadband connections is 61-80%, and while entry and expansion of altnets has started to reduce this market share in some parts of Area 2, it is still high. Ofcom also refers to the fact that Openreach's share of connections is below 50% in a limited number of postcode sectors. (See TAR 2026-2031, Vol 2, para. 4.226 -4.228)

37 TAR 2026-2031, Vol 2, para. 5.132

- Moreover, and in any case, it is well established that **markets can be competitive even if the first mover retains a strong market share**. This is evidenced by the 2021 CLA example above and other examples discussed in Appendix 1. Competition can still arise from various factors, including innovation, differentiation, and the emergence of new players.

Ofcom's wait-and-see approach amounts to a backward-looking approach to market analysis, **without taking a proper forward look.** In the presence of uncertainty as to developments, a forward look requires evaluating what the more likely outcomes are, the degree of uncertainty associated with them; and defining markets, reaching conclusions on market power, and deciding remedies based on that evaluation. Ofcom's approach does not follow this natural path, since it places insufficient weight on new sources of competition which are likely to emerge or increase, because of the uncertainty as to how strong this will be.

1.5. Ofcom should separate its market analysis from its commercial restrictions policy

A frequent theme in the TAR's approach to market definition and market power assessment is Ofcom's concern that if market boundaries are more narrowly drawn and some services are deregulated, this would mean that remedies restricting Openreach's commercial flexibility would not be implementable.

For example, Ofcom states "*we would need to find that the observed level of competition is sufficiently well-established that it would be sustainable longer term and in the absence of any WLA regulation*".[38] Ofcom's logic goes that if those remedies are not applied, then the greater competition observed might not have arisen in the first place, and accordingly it is not appropriate to define narrower markets that reflect the competition that is emerging. This is misguided for the following reasons:

- It is an error to define markets and evaluate SMP to fit Ofcom's desire to apply broad based commercial restrictions on Openreach. The market and SMP analysis should come first, with remedies to follow.
- In particular, the use of the modified greenfield logic to justify its position is not appropriate. The modified greenfield method is designed to address the obvious point that if competition in retail markets depends on upstream wholesale access remedies, it would be wrong to conclude that the presence of retail competition implies that there is no market power at the wholesale level. However, Ofcom repeatedly misuses modified greenfield reasoning to argue that more competitive parts of the UK should not be defined as separate markets, because Openreach might still be able to leverage market power from other areas to distort competition in the more competitive parts. The fact remains that the more competitive areas are more competitive due to the presence of infrastructure competitors, which does not depend on continued access to upstream wholesale access remedies.[39]
- If Ofcom wishes to apply restrictions on Openreach offering contracts that span different geographic markets – including competitive ones – that should be possible under the ex-ante

38 TAR 2026-2031, Vol 2, para. 4.97

39 The rival infrastructure might depend on continued regulated access to PIA, where modified greenfield thinking does legitimately apply.

SMP rules. The principal concern would be that Openreach will offer better terms for geographic areas where it retains SMP, in return for volume commitments that apply to competitive geographic markets. However, if justified, this concern could be addressed by rules that apply to terms of supply in the SMP areas.[40] Indeed this is precisely how general competition law works, where it is well established that a firm's conduct can be held to be an abuse of dominance in markets in which the firm is not actually dominant, so long as there are links to markets where it is dominant (see the EU judgment in *Tetra Pak II* case in the footnote).[41]

- Ofcom may be concerned that, absent an SMP finding, Openreach would be able to cut its prices in more competitive areas. Yet cutting prices in the face of competition is precisely the desired and expected outcome of competition, and a principal purpose of encouraging competition in the first place. Moreover, if some markets are indeed competitive, the remedies should follow (rather than starting from the desired remedy and fitting the market definitions to match it).[42]

These are all good reasons why Ofcom should properly evaluate the different conditions of competition and delineate geographic markets where substantially greater competition is observed on their merits. Ofcom should not avoid this important step in the process by jumping ahead to what it might mean for remedies and fitting the market analysis to that objective.

1.6. Consequences of the departure from the WFTMR plan

Ofcom's proposals to stall and reverse progress in delivering on the WFTMR 10-year strategy are sufficiently important that regulatory credibility may be on the line. The WFTMR was a 10-year strategy that rightly grasped and relied upon the importance of Ofcom setting out a clear path to less regulation as competition evolved. This approach was critical to the incentives of Openreach, VMO2 and altnets to build or upgrade their networks, on the understanding that these efforts would prompt a further retraction of reliance on regulation, ultimately allowing competition to take over and deliver for consumers.

The caution on decisions relating to markets and remedies in the TAR, and the lack of any clear plan to advance matters during the 2026-2031 review period, raises the risk that Ofcom is not committed to delivering on its strategy, to the detriment of competition and consumers. The risk to market participants is that Ofcom is laying the ground for permanent regulation and will not permit market forces to work, thus failing to realise the benefits of the strategy that Ofcom has so successfully embarked upon.

The remainder of this report discusses many of these themes in more detail. It is structured as follows:

---

40 As noted in Section 4.1 it is not clear that continuation of ex ante regulation on this is necessarily justified.

41 Applying the case law from the EU judgment in *Tetra Pak II*, the OFT stated that conduct on a non-dominated market could be abusive, provided that the conduct took place on 'closely associated markets' and is likely to protect or strengthen the position on the dominated markets; or the conduct produces effects on the non-dominated market.

42 It might be that Ofcom separates out geographic markets with more effective competition but still finds that Openreach has SMP. In that case, Ofcom would need to decide the best remedies in those geographic areas, and the concerns would not apply.

- **Section 2** proposes an alternative approach to properly defining separate geographic markets to reflect the large variations in actual and potential competitive conditions and explores whether Openreach has SMP in those areas.
- **Section 3** explains the issues with Ofcom's approach on leased lines, given the convergence between WLA and LL geographic markets.
- **Section 4** makes the case for why restrictions on Openreach's commercial flexibility should be ended.

2. Competition and remedies in WLA

Ofcom has defined a single market for Area 2, which encompasses all geographic areas where Openreach faces actual or potential competition from at least one rival network. However, this broadly defined area covers a range of different competitive conditions, ranging from locations where Openreach is currently the only network and has a market share of close to 100% (but there are plans for a rival network to be built), through to locations which are covered by the long-established VMO2 network plus several altnets (and where Openreach's market share will be much lower).

Large actual and potential differences in competition should be captured by defining different geographic markets, with a robust assessment of SMP and appropriate remedies that are specific to the competitive conditions identified. This approach should be adopted even if there are some prior reasons to think that the market power findings might not change, or Ofcom might reach similar views on remedies. The process of market delineation provides discipline on that assessment, requiring explicit assessments of the relevant evidence and proportionality of remedy decisions in those markets. Ofcom has not followed this approach.

While there are different approaches that might be adopted to properly defining separate markets to reflect the large variations in actual and potential competitive conditions faced, we suggest that the following is a sensible approach:

- **Area 1 includes Openreach plus any two networks.** In these areas there are three important competitors, providing a strong prima facie case to question whether Openreach has SMP and to consider whether different remedies are required. This definition does not discriminate between different networks (i.e., it could be Openreach + VMO2 + an alternative network, or Openreach + two alternative networks)[43].
- **Area 2** covers other areas where Openreach faces a competing network or where there is potential that it might. This would be Ofcom's Area 2, less the Area 1 described above.
- **Area 3** would be areas where there is no potential for competition i.e., the Area 3 that Ofcom has proposed.

Table 2.1: Comparison against Ofcom's proposed markets

	Share of Postcode (and premises) in each Area market	
	Ofcom's proposal	**Our proposal**
Area 1	0% (0%)	**27% (33%)**
Area 2	82% (90%)	**56% (56%)**
Area 3	18% (10%)	18% (10%)

Source: NERA analysis based on Openreach's data of total Openreach connections and premises and estimated network coverage (both as of March 2025). Premises count comes from Ordnance Survey Address Base Premium. Coverage data are based on confirmed street works activity or presence from ThinkPoint data. Ofcom proposal is from paragraph 4.100 on page 71 of the TAR, Vol 2. See Appendix 4 for a detailed explanation of the underlying data.

[43] Openreach, VMO2 + any other network represents a stronger criterion, as VMO2 is an established competitor (noting that VMO2 is present in 94% of postcode sectors with two or more networks).

Notes: Rounding means the figures may not sum to 100%.

These market delineations would capture the main differences in competitive dynamics observed, provide a solid foundation for the SMP analysis, and facilitate better targeting of remedies. It also accords with Ofcom's original ambition with its 2016 Digital Communications Review (DCR) to achieve coverage of three or more competing networks across a substantial number of UK premises.[44]

Enabling Openreach to compete directly with the established networks (including VMO2), would substantially reduce the consumer detriments arising from Ofcom's limits on Openreach's commercial flexibility. Further deregulation or relaxations of price caps in Area 1 should be considered, to fulfil the promises of the 10-year strategy that additional competition would be followed by relaxation of regulation.

The remainder of this report discusses many of these themes in more detail. It is structured as follows:

- In Section 2.1, we assess Ofcom's decision to not define any Area 1s.
  - The WFTMR set out an expectation that locations with at least two competing networks would be separated into Area 1 markets. Despite substantial altnet build that has led to many premises being overlapped by multiple networks, in the TAR Ofcom defines no Area 1 markets.
  - We explain that Ofcom's process to define markets has issues, and that Ofcom has misapplied the "Modified Greenfield" method by noting that the current market position is a result of prior regulation.
  - We comment that defining an Area 1 market does not require Openreach's market share to fall below a threshold, and Ofcom's focus on the relative shares of connections is not sufficient to argue that "Area 1" cannot be distinguished from the rest of Area 2.
- In **Section 2.2, we show that there are likely to be Area 1 geographic markets today**, and present our estimates of Openreach's market share in the geographic areas defined where we note that its market share is substantially lower in Area 1 than in Area 2 or Area 3. This analysis is done consistently with Ofcom's postcode sector approach, but we note that this approach leads to a dilution effect, which systematically overestimates Openreach's market share. We therefore estimate an adjusted market share and show that this dilution effect is relevant, given that it can lead to different outcomes (i.e., it could tip the balance between a finding of SMP or no SMP in some cases).
- In **Section 2.3, we take a forward look and explore several reasons why Openreach's market share is likely to fall in the future**, such that current market shares likely underestimate the effect of potential competition. These include the fact that the recency of altnet build means the full competitive impact is not yet visible on market shares (the "maturity effect") and discrete changes in the wholesale market that could substantially add to the competitive constraints on Openreach (the "wholesaling effect"). We present our estimates of the potential impact of these factors on Openreach's market share in Area 1.

[44] DCR: Strengthening BT's strategic and operational independence, Ofcom, July 2016, paragraph 1.4,

- In **Section 2.4, we explain that the VMO2 footprint is a candidate for a distinct geographic market** as there are several compelling reasons why competitive conditions in the VMO2 footprint are different from the rest of Area 2. We explain that Ofcom's postcode sector approach underestimates VMO2's true penetration, and Openreach may not have SMP in this review period. We lastly explore Ofcom's previous reasons for finding market power in the VMO2 footprint.[45]

Even if Ofcom is not persuaded that there is effective competition in 2026 in any geographic areas, that is very likely to change during the review period until 2031, which will mark 10 years since the pro-competitive agenda started. Based on the evidence presented in this report, it is expected that large parts of the UK will fall into areas where there is the potential for material and sustainable competition to Openreach. Therefore, Ofcom should implement a framework that is operational and that can adapt to dynamic changes over the period and measure the evolution of competition.

We propose that Ofcom should define Area 1 markets that exist today and consider whether different remedies should apply. Suitable remedies should follow from an appropriate definition of Area 1 (in which the competition assessment should recognise that competitive conditions are strong). Ofcom has a suite of interventions that could be deployed, but suggestions of potential remedies Ofcom could consider include:

- The removal of price caps on Openreach to allow the market to set prices in those areas.
- Deregulation to allow Openreach to utilize bespoke services or offers for different communications providers to allow Openreach to respond better to customer preferences.
- An end to geographic price restrictions (see Section 4).
- If the aim is to prevent Openreach from leveraging its position in other Areas, this will be limited by the remedies in those other Areas, and/or is prohibited by competition law.
- Deregulation in combination with commitments from Openreach.

2.1. The need to define an "Area 1" market

The WFTMR set out an expectation that locations with at least two competing networks to Openreach would be separated into Area 1 markets. At the time, Ofcom found that the number of postcode sectors where two rival networks were present was 34 postcode sectors. In the TAR, Ofcom's figures now indicate that there are 1,812 postcode sectors where two or more rival networks to Openreach are currently present, accounting for 19% of all postcode sectors (23% of premises).[46] Yet, the TAR does not find any Area 1 markets and does not propose a mechanism for identifying Area 1 markets during the next review period. This Section explains why there are good reasons for defining separate markets for Area 1. The following sub-sections discuss how:

[45] These reasons were set out in cursory form in the WFTMR. The TAR does not offer any new explanation of why Ofcom thinks Openreach has SMP in the VMO2 footprint. Instead, it refers to the cursory WFTMR reasons. TAR referral back to the WTFMR (TAR 2026-2031, Vol 2, footnote 250, page 70) and WTFMR cursory assessment (Ofcom, section titled *"BT does not have market power in areas of Virgin Media presence"*, para. 8.140-8.149 (pg. 186-187) Vol 2, 2021 WTFMR).

[46] TAR 2026-2031, Annex 7, table A7.1, page 50

- Ofcom set expectations that "Area 1" markets would be identified if customers have access to multiple networks (see Section 2.1.1)
- Market definition is the first step, with a proper SMP assessment to follow, not the other way around. A related issue is the "Modified Greenfield" method has been misapplied (see Section 2.1.2).
- Defining an "Area 1" market does not require market share to fall below a threshold (see Section 2.1.3).

2.1.1. The WFTMR set strong expectations that Area 1 markets would be identified in 2026

In the TAR, Ofcom states that it considered whether to define an 'Area 1' market where competitive conditions are appreciably different from its proposed Area 2 and Area 3. Although it identified several candidate areas, Ofcom considers that *"competition is not yet sufficiently well established in those areas to differentiate them from Area 2"*[47], and therefore does not propose to define an Area 1 market.

This declination to acknowledge the plainly different competitive conditions that arise when there are two rival networks as separate geographic markets does not deliver on the expectations set out in the WFTMR. Upfront in the WFTMR overview, Ofcom laid the marker that:[48]

> ***"In competitive areas (referred to as Area 1 in our analysis)*** *where there is established competition, we will not regulate Openreach's broadband products. We have not identified any such areas at this stage but expect to do so in the future. Customers in these areas would benefit from the choice of multiple networks, so we could remove regulatory restrictions."*

In the WFTMR, Ofcom did not actually define any Area 1 markets, but at the time, there were only 34 postcode sectors with two rival networks present (0.4% of total UK premises, largely reflecting CityFibre's rollout in cities where VMO2 is already present) and network competition had not had time or the broader scale to get going properly. Hence, Ofcom's view was that it was too early to draw firm conclusions about the incremental competitive impact of a second rival network.

The situation is now transformed. In 2021, substantial build was anticipated but was yet to be implemented. That build has now largely been implemented, and the effect is that 19% of postcode sectors now have two or more rival networks (23% of premises are in these postcode sectors). This is no longer a situation where network competition is promised but yet to arrive, but one where there is concrete network competition that will be established for decades to come. Moreover, in 2021, the scale of Area 1s was too small to be consequential. That is no longer the case.

---

47 TAR 2026-2031, Vol 2, para 4.43

48 2021 WTFMR, Vol 1, page 2. We note that, in this paragraph, Ofcom conflates commentary on whether Area 1s should be separated as a matter of geographic market definition and the SMP finding. Naturally, these are in fact separate steps, and geographic market delineation should precede the market power assessment. One plausible outcome may be that (as is plainly the case) Area 1s have sufficiently different competitive conditions to be assessed separately from the rest of Area 2 but, ultimately, Ofcom finds that Openreach still has SMP notwithstanding the higher levels of competition faced.

Accordingly, the reasons in 2021 for not separating out two rival network areas as a separate geographic market no longer apply.

2.1.2. Issues in Ofcom's approach to geographic market definition

The TAR suggests that separating out Area 1 geographic markets would make no difference to the SMP assessment or to the remedies that follow and gives this as a reason for not undertaking a proper assessment of the variation in geographic conditions. For example, Ofcom writes that it is not appropriate to define Area 1s because *"…absent regulation in the WLA market, there are no postcode sectors in which competition is or will become sufficiently distinct from other postcode sectors where there is, or there is likely to be potential for, material and sustainable competition."*[49] Ofcom has effectively formed a preliminary view on SMP and used that to justify not defining an Area 1 market.

Ofcom sets out that it has "*considered how the relative shares of connections vary across the 1,812 postcode sectors, to understand if there is evidence that competition is more established in a sub-set of those 1,812 postcode sectors*". It finds that:

> "*in 321 of those postcode sectors, Openreach's share is below 50%. Across these 321 postcode sectors, 41-50% of all connections are on the Openreach network, 31%-40% on VMO2, and CityFibre's share was less than 10%. This again suggests that the incremental constraint exerted by a second rival network is likely to be limited at present*".[50]

This is the reverse to the method that should be followed. Ofcom should follow the usual course of identifying geographic markets where there are significant variations in competitive conditions and then consider SMP and remedies findings that reflect these variations.

It is possible that Openreach may not have SMP in Area 1s, especially on a forward look to 2031. Combined with anticipated expansion of wholesale competition, and allowing for recent altnet build to mature, this could easily result in areas where Ofcom would find that Openreach does not have SMP during this review period.

This points to a clear need to delineate separate Area 1 markets and to undertake a proper forward looking SMP assessment directed at them. Ofcom should not use the shortcut of arguing that Openreach has SMP, therefore it is not necessary to define a geographic market for the entire market review period.

The "Modified Greenfield" approach is misinterpreted. Ofcom suggests that restrictions on Openreach's commercial flexibility have been important in supporting growth in competition and that this is part of the reason for avoiding narrow markets. It states:

> *"However, the market shares of these rival networks have been achieved with current SMP regulation in the WLA market in place (including certain restrictions on Openreach's commercial flexibility), whereas consistent with a modified Greenfield approach, we need to consider the position of rival networks in the absence of this regulation."*[51]

49 TAR 2026-2031, Vol 2, para 4.108

50 TAR 2026-2031, Vol 2, para 4.101

51 TAR 2026-2031, Vol 2, para 4.103

This misunderstands Modified Greenfield, which is instead about avoiding the fallacy that retail competition exists independently of upstream access remedies that support that retail competition. This explained in more detail in Appendix 2.

2.1.3. Defining an Area 1 does not require market share to fall below a threshold

Large losses of market share are not necessary to define an Area 1. There are several reasons for this. First, the analysis should be on a forward look, and given recency of altnet build actual movements in market shares may take time. Second, rival networks may offer competitive alternatives, but Openreach can match them and thus retain its customers. In markets where there are some switching costs competition may not result in large movements in actual sales.

Neither is it clear that competitors acquiring bigger shares necessarily makes them stronger competitors. It is possible that competition from rivals with low market shares may be *stronger* than more established rivals, because they may have incentives to price aggressively to win take up. [52] Thus, Ofcom's focus on the relative shares of connections is not sufficient to argue that competitive conditions in potential "Area 1" markets are not sufficiently well-established or effective such that they could be distinguished from the rest of Area 2.

2.2. There are likely to be "Area 1" markets today

There are likely to be Area 1 geographic markets. In this section, we adopt Ofcom's postcode sector approach to market definition. We note at the outset that the aggregated nature of postcode sectors will dilute an assessment of geographic markets. Yet even with this dilution effect present, there is sufficient variation in competition between postcode sectors to define an Area 1.

In the following subsections:

- We first **define our proposed "Area 1"** (see Section 2.2.1).
- We present **market shares** (calculated using Openreach data) **for our proposed definition of Area 1, Area 2 and Area 3** (see Section 2.2.2). Note that current market shares will not fully reflect the extent of competition.[53]
- We **explain that Ofcom's postcode sector approach leads to a dilution effect,** which may have important repercussions on SMP assessment (see Section 2.2.3).

---

[52] An example of this is the mobile network Three, which has been considered as a "maverick", having used a penetration pricing strategy when entering the UK mobile market in 2004. The European Commission recognised that *"With low market share and a need to establish its brand, Three had to offer low prices to achieve scale and attract customers… Three had a substantial impact on competition already at this stage. Competition is often driven by small players for which it is imperative to be price aggressive to achieve scale. On the contrary, established operators that already have sufficient scale in an industry with significant fixed costs are under less pressure to achieve subscriber growth and thus are less likely to compete aggressively"*, Case M.7612 - HUTCHISON 3G UK / TELEFONICA UK, para. 496

[53] In the section that follows, we overlay a maturity effect, where recency of build means the full competitive impact is not yet visible on market shares. There is also a wholesaling effect (changes in the wholesale market will increase the effect on market shares).

2.2.1. Defining an Area 1

Continuity of the WFTMR strategy should imply that there are Area 1 markets. Moreover, based on the evidence presented in this report, it is expected that large parts of the UK will fall into areas where there is the potential for material and sustainable competition to Openreach. Therefore, Ofcom should implement a framework that is operational and that can adapt to dynamic changes over the period and measure the evolution of competition in "Area 1" markets.

We think that the main differences in competitive conditions would be captured by the following geographic markets:

- **Area 1 includes Openreach plus any two networks.** In these areas there are three important competitors, providing a strong prima facie case to question whether Openreach has SMP and to consider whether different remedies are required. This definition does not discriminate between different networks (i.e., it could be Openreach + VMO2 + an alternative network, or Openreach + two alternative networks).[54]
- **Area 2** covers other areas where Openreach faces a competing network or where there is potential that it might. This would be Ofcom's Area 2, less the Area 1 described above.
- **Area 3** would be areas where there is no potential for competition i.e., the Area 3 that Ofcom has proposed.

There are clear differences in competitive conditions between these areas, which is demonstrated by the following:

- **Network coverage**. The markets listed have significant differences in actual network coverage by construction.
- **Openreach's market share**. As we show below, using Openreach data, we estimate that Openreach's market share is substantially lower in Area 1 ([✂]%) than is the case for Area 2 ([✂]%) and Area 3 ([✂]%).
- **Indications of pricing differences**. Observed prices are lower in areas where there is an additional rival network provides evidence that a second rival network does have an incremental competitive impact.[55]

[54] Openreach VMO2 + any other network represents a stronger criterion, as VMO2 is an established competitor (noting that VMO2 is present in 94% of postcode sectors with two or more networks).

[55] This datapoint on pricing comes from a report by FDM (FDM - BT Regional Pricing slide pack), which tracked prices across postcode sectors with differing levels of competition, ranging from Openreach only, to Openreach and three or more competing networks. FDM's analysis suggest there is a clear trend of falling prices with each additional rival network. [✂].

2.2.2. Market share differences between our proposed Area 1 compared to Area 2 and Area 3

We estimate that Openreach's market share is substantially lower in Area 1 ([✂]%) than is the case for Area 2 ([✂]%) and Area 3 ([✂]%). Table 2.2 below sets out relevant summary statistics on market share and the share of postcodes in each Area.[56]

Ofcom's proposals are to include 82% of postcode sectors in Area 2 and 18% of postcode sectors in Area 3.

In *purple italics*, we also include Ofcom's description of postcode sectors where two or more rival networks to Openreach are currently present, which would relate to Ofcom's hypothetical Area 1 if it were to define it in this way. According to Ofcom's numbers, this set of postcode sectors accounts for 19% of all postcode sectors. This would mean that Area 2 would be correspondingly smaller.

In the rightmost column of Table 2.2 (in **bold**), we present the same summary statistics but for our proposed definition of Area 1. These markets shares are calculated using Openreach data.

This analysis has been carried out using Openreach's postcode sector level data on Openreach connections, count of premises, and (estimated) rival network coverage. Using the coverage data, we allocated postcode sectors into Area 1 if there at least two networks which had 50% coverage as of March 2025. Area 3 is the same definition used by Ofcom. Area 2 is the residual postcode sectors. Therefore, Area 2 is all postcodes that are not labelled as Area 3 by Ofcom and not in our proposed Area 1. A detailed explanation of the data used for is set out in Appendix 4.

Table 2.2: Estimate of Openreach's market share for each proposed Area 1

		Market definition	
Area	**Variable**	**Ofcom's description**	**Area 1: Openreach plus any two networks (or more)**
Area 1	*Market Share*	*"more than half"*	[✂]
	Postcodes (%)	*19%*	[✂]
	Premises (%)	*23%**	[✂]
Area 2	*Market Share*	[61%-80%]	[✂]
	Postcodes (%)	82%	[✂]
	Premises (%)	90%	[✂]
Area 3	*Market Share*	[91%-100%]	[✂]
	Postcodes (%)	18%	[✂]
	Premises (%)	10%	[✂]

Source: NERA analysis based on Openreach's data of total Openreach connections and premises and estimated network coverage (both as of March 2025). Premises count comes from Ordnance Survey Address Base Premium. Coverage data are based on confirmed street works activity or presence from ThinkPoint data. Ofcom proposal is from paragraph 4.1000 on page 71 of the TAR, Vol 2. See Appendix 4 for a detailed explanation of the underlying data.

[56] Our analysis looks at Area 1 in its entirety. Within Area 1, there will be variation in competition (e.g., due to greater altnet coverage) and there are postcode sectors today with below 50% Openreach market share.

Notes: Market share is estimated using Openreach connections divided by total premises, adjusted based on an Openreach estimate of the broadband penetration rate (percent of premises that have a fixed broadband connection). [✂]

It is worth noting that there are differences between the data we have used for this analysis and Ofcom's data. This means we estimate a larger Area 1 ([✂]% of postcode sectors) than referred to by Ofcom (19% of postcode sectors). There are three drivers of these differences:[57]

- **Timing.** We use more recent data for our estimations (March 2025 compared to July 2024 for Ofcom). Continued altnet entry means there are more postcode sectors where there are two or more rival networks.
- **Definition.** Our proposed Area 1 uses all altnets as we consider this to be a reasonable approach to market definition given network assets are a sunk cost.[58]
- **Approach.** Third, we use estimates of network coverage and therefore our data will not match perfectly with Ofcom's data.

This is discussed in further detail in Appendix 4.

2.2.3. Ofcom's postcode sector approach leads to a dilution effect

The figures in Table 2.2 are market shares in postcode sectors where rival networks are present according to Ofcom's definition of at least 50% coverage. However, these networks do not cover every premise in those postcode sectors, so the observed market shares are a blend of Openreach's share of sales to premises where rival network(s) are present and those where there is no alternative to Openreach. This means that the observed shares will systematically overestimate Openreach's share to premises where it does face rivals. To illustrate the dilution effect, we estimate that Openreach's market share falls to [✂]% in postcode sectors where one rival has at least 95% coverage. This is [✂] percentage points lower than when looking at all postcode sectors where two rivals are present.[59]

We note this dilution effect because where an SMP assessment would be "in the balance", there is a risk that the dilution effect makes the difference between an SMP and a no-SMP finding. Where that is the case, there would be a good case for revisiting the precise application of the postcode sector metric to avoid mistakenly concluding that Openreach has SMP in a locality because competitive areas and uncompetitive areas have been mixed.

---

57 Our expectation is that the first two reasons (timing and altnet definition) explain the difference. If the third reason (estimation noise) is relevant, then our use of estimates may include a few postcodes with coverage below 50%. If this is the case, then our estimated market shares are likely too low (as they capture the effect of including postcodes with less coverage).

58 As explained in the data appendix, Ofcom's approach is to identify 'relevant competitors, which is *"Any altnet with a total coverage of at least 50,000 premises is considered a relevant competitor to BT"*. Using Openreach's estimated network coverage data, we estimate that the vast majority of altnets already cover at least 50,000 premises. This would suggest using all altnets as we have done is a close proxy. However, the wording of TAR 2026-2031, Appendix 7, para. A7.20 suggests a smaller set of seven competitors "*the list of relevant competitors to BT includes: VMO2 (including its use of nexfibre's FTTP network), CityFibre, Gigaclear, Hyperoptic, Community Fibre, Netomnia, [redacted].*"

59 Our figures illustrate Openreach's market position where it faces an actual competitor in the premises concerned. We note that If Ofcom were to redefine an Area 1 in a way that addressed the dilution effect then the number of premises included in that market would be smaller.

2.3. Area 1s may be effectively competitive, on a forward look

The existence of two major competitors is a strong prima facie reason to conclude that Openreach will not have SMP in Area 1.

The main reason Ofcom gives for caution appears to be that Openreach's market share remains above 50%. However, in the Area 1 context there are several reasons to question whether a share below 50% is a reliable threshold for SMP:

- In many areas Openreach may have a share above 50%, but VMO2 will also have a high share. In circumstances where there are two long established competitors it is possible that one of them will have a share somewhat above 50% and the other somewhat below. A two-firm market with shares of 55% and 45% does not look like single firm market power.
- The shares will include a significant "dilution effect" (see our explanation above in Section 2.2).
- In any case (as noted in Section 2.1.3), market shares above 50% do not necessarily imply SMP.

Moreover, competition is currently dynamic, and significant change can be expected during the 2026-2031 review period. Taking a forward look, there are several reasons why Openreach's market share is likely to fall in the future, such that current market shares likely underestimate the effect of potential competition. These include:

- **Recency of altnet build means the full competitive impact is not yet visible on market shares. We refer to this as a 'maturity effect'.** There are two types of the maturity effect:
  - **VMO2 take-up (Section 2.3.1.1).** Nexfibre is expanding the VMO2 network (and VMO2 continues to 'in-fill' parts of the network). Take-up on the newly expanded segment of VMO2-Nexfibre network will be lower than take-up on the legacy segment of the network. Openreach's market share will thus fall as take-up on the newly expanded segment converges to the mature take-up rate.
  - **Altnet take up (Section 2.3.1.2)**. Altnet take-up in a postcode sector grows larger as the Altnet has been present for longer. A maturity curve is estimated to forecast how altnet maturity will likely affect Openreach market share.
- **Changes in the wholesale market will increase the effect on market shares.** There are discrete changes in the wholesale market that could substantially add to the competitive constraints on Openreach and might impact market shares.[60]
  - **Wholesale deal between CityFibre and Sky (Section 2.3.2.1).** This wholesale deal gives Sky a direct option to move substantial volumes of its customer base from Openreach to CityFibre. Ofcom has described this deal as *"still in process of being fully implemented"* yet Sky is expected to start placing customers onto CityFibre's network this year.[61]

[60] Wholesaling adds a new dimension of competition to Openreach. However, whether it actually results in large share losses would depend on Openreach's competitive responses.

[61] TAR 2026-2031, Vol 2, para 4.60(c). Ofcom provides this factor as one of reasons that CityFibre has the *potential* to become a material and sustainable competitor to Openreach, as opposed to *currently* being a material and sustainable competitor.

- **Other altnets may strike wholesale deals in the future (Section 2.3.2.2).** Altnet consolidation may make wholesale propositions stronger (e.g., if consolidation gravitates to the VMO2 or CityFibre networks, then it would add to the scope and scale of wholesale deals that have already been agreed or are planned). Alternatively, consolidation or some form of joint wholesale product from other altnets might produce another major wholesale competitor. This means that competition from VMO2, CityFibre and other altnets may increase during 2026-2031.
- **VMO2's potential (and stated intention) to wholesale (Section 2.3.2.3).** VMO2 wholesaling would (i) further reduce Openreach's market share and (ii) increase ISPs' buyer power in the VMO2 footprint. Further, VMO2 is upgrading its current network and has partnered with nexfibre to grow its footprint. Once VMO2 has upgraded its network, its threat to wholesale could be a substantially larger source of competitive constraint on Openreach than has been the case to date.

Taken collectively, these developments (both actual and potential) will be expected to increase competition. The analysis on reasons why Openreach's market share is likely to fall in the future is set out in the following subsections. The final subsection (Section 2.3.3) shows that reasonable combinations of these forward-looking factors suggest that Openreach's market share could potentially fall below 50%.[62]

2.3.1. Maturity effect – Openreach market share will fall due to increased take-up on recent build by VMO2 and Altnets

As explained above, current market shares are understated because recently built rival networks have not had time to make their full impact. Taking a forward look, a *maturity effect* will likely cause Openreach's market share to fall. Two types of maturity effects are estimated:

- **Maturity of VMO2 (due to nexfibre expansion).** Openreach will lose market share as take-up on the newly expanded part of VMO2's network increases and begins to converge to take-up on the legacy segment of VMO's network.
- **Maturity of altnet take-up.** Altnet take-up in a postcode sector grows larger as the altnet has been present for longer. A maturity curve is estimated to forecast how altnet maturity will likely affect Openreach's market share over time.

2.3.1.1. Nexfibre expansion Maturity Effect

VMO2 is upgrading its current network and has partnered with nexfibre to grow its footprint. Due to recency of build, take-up in the newly expanded segment of the network is likely to be lower than take-up in the legacy part of VMO2's network. On a forward-look, we estimate that Openreach could lose 3 percentage points of market share in our proposed Area 1s due to rising take-up of nexfibre.

To estimate the effect of nexfibre maturity, we divide our proposed Area 1 into postcode sectors where VMO2's coverage has increased (e.g., because of nexfibre expansion) and postcode sectors

62 The actual evolution of market shares will naturally depend on how competition plays out.

where VMO2's coverage has remained constant.[63] The second group is labelled the legacy segment of the network. Table 2.3 compares Openreach's market share in the newly expanded network to the legacy network.

To make an accurate and like-for-like comparison, we also allocate postcode sectors into five different *"Coverage Groups"* based on VMO2's coverage.[64] This step makes sure we are comparing segments that have similar VMO2 coverage (and are therefore comparable).

Table 2.3: Difference in the Openreach market share for the expanded vs. legacy segment of VMO2's network (for our proposed Area 1)

		Openreach market share			
Coverage Group (VMO2 coverage)	Share of premises *(expanded segment relative to entire Area 1)*	Expanded Segment *(VMO2 coverage increase > 2pp since March 2022)*	Legacy Segment *(VMO2 coverage increase < 2pp since March 2022)*	Difference	Effect on Openreach
50%-60%	3.1%	[✂]	[✂]	[✂]	[✂]
60%-70%	4.4%	[✂]	[✂]	[✂]	[✂]
70%-80%	8.1%	[✂]	[✂]	[✂]	[✂]
80%-90%	13.8%	[✂]	[✂]	[✂]	[✂]
90%-100%	16.3%	[✂]	[✂]	[✂]	[✂]
Total effect					[✂]

Source: NERA analysis based on Openreach's data of total Openreach connections and premises and estimated VMO2 network coverage (both as of March 2025). Premises count comes from Ordnance Survey Address Base Premium. Coverage data are based on confirmed street works activity or presence from ThinkPoint data.

Notes: Market share is estimated using Openreach connections divided by total premises, adjusted based on an Openreach estimate of the broadband penetration rate (percent of premises that have a fixed broadband connection). We apply a rate of [✂]. *VMO2 network coverage includes nexfibre and is estimated. Postcode sectors are allocated to five coverage groups (50%-60%; 60%-70%; 70%-80%; 80%-90%; 90%-100%). For each coverage group, we calculate the aggregate market share. Sample is limited to postcodes within our Area 1. We classify a postcode sector as part of the Legacy Network if VMO2 coverage has increased by less than two percentage points since March 2022. For the typical postcode sector, VMO2 network coverage has been constant (i.e., 0 percentage point change). Using this definition, roughly 50% of postcode sectors are classified as part of the Legacy Network and thus roughly half are classified as being on the expanded network.*

The results show that Openreach's market share is systematically higher in postcode sectors where VMO2 has recently expanded its network. This is true for every grouping of VMO2 coverage. As a cross check and simple comparison, Openreach's market share is [✂] percentage points lower in postcodes that are allocated to the legacy segment compared to postcodes that are allocated to the expanded segment [✂]. This lower market share arises even though VMO2 coverage is lower in in postcodes allocated to the legacy segment [✂].

It is plausible that take-up will converge to the take-up achieved in the legacy part of the network as the expanded segment of the network matures. We estimate that the total effect of nexfibre

63 We classify a postcode sector as part of the Legacy Network if VMO2 coverage has increased by less than two percentage points since March 2022. For the typical postcode sector, VMO2 network coverage has been constant (i.e., zero percentage point change). Using this definition, roughly 50% of postcode sectors are classified as part of the Legacy Network and thus roughly half are classified as being on the expanded network.

64 Postcode sectors are allocated to five coverage groups (50%-60%; 60%-70%; 70%-80%; 80%-90%; 90%-100%).

maturity could be a 3-percentage point fall in Openreach market share in Area 1 (i.e., relative to the values set out in Table 2.2 above).

2.3.1.2. Altnet maturity effect

The recency of altnet build means the full effect of competition (as measured by market shares) is not yet apparent. To estimate this impact, we approximate an altnet maturity curve, which traces how Openreach's market share falls as rival altnets mature (i.e., are present for longer). We estimate that Openreach's market share is lower once altnet maturity is accounted for.

As explained in detail in Appendix 4, we use data provided by Openreach to estimate the altnet maturity curve. For each postcode sector, the data records network coverage (for VMO2 and each altnet); premise count; and Openreach connections. Our data is a six-year panel (March 2020 to March 2025). We track how altnet entry into a postcode sector reduces Openreach's market share within that same postcode.[65] Using this data, we estimate an altnet maturity curve for each of our proposed Area 1s. Our approach has the following two steps:

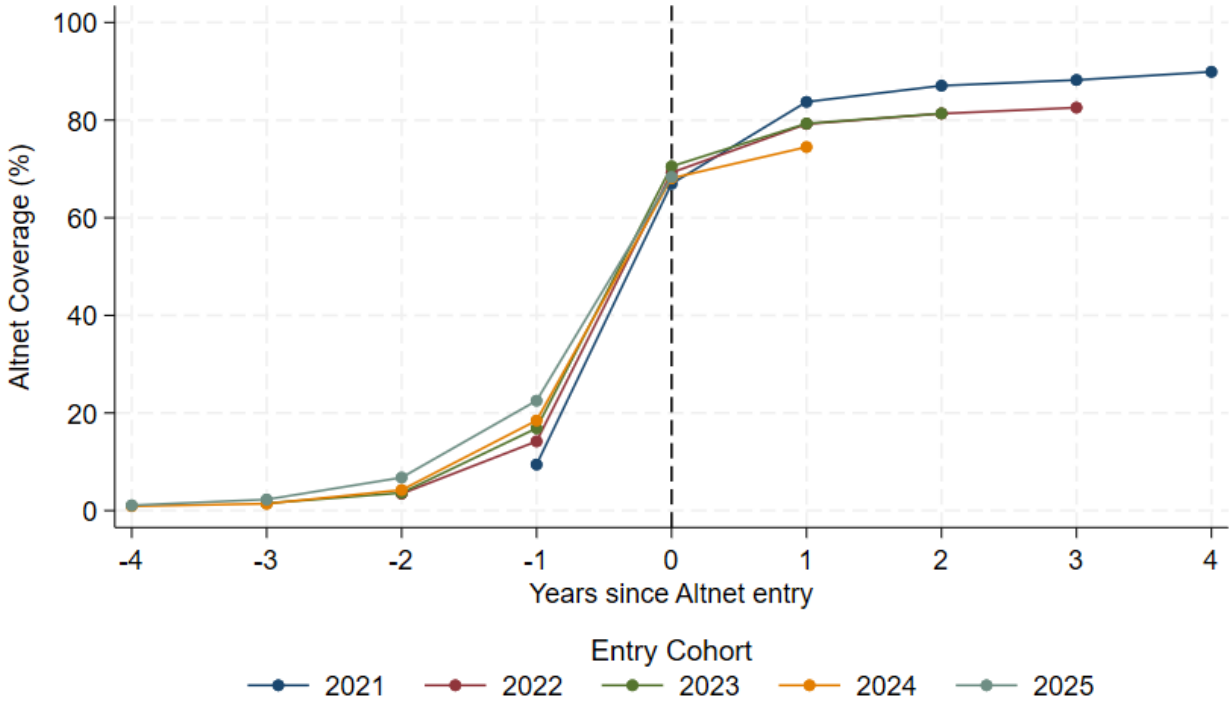
Step 1: Define the entry year. This is the year an altnet enters a postcode sector (based on Ofcom's definition of "presence" which is 50% coverage). Using this criterion, five entry cohorts are defined. A cohort is the collection of postcode sectors with a common entry year (e.g., the 2021 entry cohort means an altnet entered in 2021).

Figure 2.1 below plots how coverage increases within a postcode sector when an altnet enters. The entry pattern is similar for all six entry cohorts and can be summarised as follows:

- *Before entry year:* altnet coverage is effectively zero two years before the entry year and then coverage increases to c.20% the year before entry.
- *Entry year*: altnet coverage rapidly increases from c.20% coverage to c.70% coverage.
- *After entry year:* coverage plateaus one to two years after entry and settles at around 80%-90%.

[65] We use data from 2020 but do not estimate a maturity curve for the 2020 entry cohort as (i) there is no pre-entry market share data; (ii) average coverage is initially over 60%, on average; (iii) there are very few postcodes in the 2020 cohort.

Figure 2.1: Relationship between altnet coverage and years since altnet entry



Source: NERA analysis based on Openreach's data of estimated network coverage (March 2020 – March 2025). Coverage data are based on confirmed street works activity or presence from ThinkPoint data.

Note: The y-axis measures average coverage within a postcode sector (weighted by premises count). The x-axis is years since entry. The entry year is when the altnet had 50% coverage. Negative means years pre-entry.

Step 2: Estimate the altnet maturity curve. This curve measures how Openreach's market share falls for each year since the altnet entered the postcode sector. An initial step is to calculate Openreach's pre-entry market share, which is the average Openreach market share per cohort before entry. To trace out the maturity curve, we then calculate the change in Openreach's market share (relative to the pre-entry market share) for each year after entry. We do this calculation separately for each entry cohort.

Figure 2.2 below presents the results of the maturity curve analysis from the sample of entry cohorts within the VMO2 footprint. It shows the change in Openreach's market share for each year after entry (premises-weighted average over all postcodes within the entry cohort). The figure shows that Openreach continues to lose market share in the most mature cohorts. For instance, between 2024 to 2025, Openreach lost [✂] percentage points of market share for postcodes in the 2021 entry cohort.[66]

Figure 2.2: Change in Openreach market share relative to years since altnet entry

[✂]

[66] Figure 2.2 plots the accumulated market share loss. The yearly difference is therefore the change between year 3 and year 4 for the 2021 cohort.

Source: NERA analysis based on Openreach's data on their market share, and altnet estimated network coverage (March 2020 – March 2025). Coverage data are based on confirmed street works activity or presence from ThinkPoint data.

Note: The y-axis is the change in market share in each year compared to the average market share pre-entry. Market share is estimated using Openreach connections divided by total premises, adjusted based on an Openreach estimate of the broadband penetration rate (percent of premises that have a fixed broadband connection). We apply a rate [✂]. *The x-axis is years since the altnet is present and negative means years pre-entry. The entry year is when the altnet had 50% coverage.*

The implication is that Openreach is likely to keep losing market share in the oldest (i.e., most mature) cohorts. This means the cumulative market share loss in the oldest cohorts (currently measured as [✂]% for four years) should not be interpreted as a ceiling of Openreach's market share loss, given that future years of data are not yet available.

Figure 2.2 highlights that the fall in Openreach's market share is accelerating with more recent entry cohorts, illustrated by the maturity curve for recent entry cohorts being downshifted relative to older cohorts. This downshift signals that Openreach is losing market share at a faster rate in younger entry cohorts compared to more mature entry cohorts.

[✂]

The estimated maturity curve is a reasonable approximation, though it has some limitations. It does not include changes to competition coming from changes to wholesale terms (which is discussed in the next section).[67] Further, VMO2 and Openreach's fibre rollout will likely affect future outcomes. In areas where VMO2 upgrades to full fibre, one possibility is that Openreach losses could be larger, but a lower share is captured by altnets. Working in the opposite direction, Openreach's full fibre rollout might result in a reduced loss of customers compared to periods prior to that rollout.

Step 3: Isolate the additional market share loss due to maturity. The overall effect on Openreach is the additional market share loss due to maturity. This is because altnets have already entered, so that they will be part way through their maturity curve (i.e., they have already affected Openreach's market share to some extent). Thus, only their remaining impact on market share is relevant.

To isolate the additional effect on Openreach from altnet maturity, we assume the 2021 cohort of altnets are already 'fully mature' and so younger cohorts will mature to this level. As explained above, this fall is likely to be conservative as (i) Openreach continues to lose market share in the most mature entry cohorts and (ii) Openreach's market share loss appears to be occurring faster for younger entry cohorts.

We thus consider this approach to be an underestimate and a lower bound. The likely effect will be higher. As a plausible higher value, we consider that a [✂] percentage point reduction occurring for a mature cohort would be plausible. This fall represents a [✂] percentage point further reduction from the 2021 cohort. It would be consistent with:

- Less than two years of maturity for the 2021 cohort at its current rate.
- A mature altnet that achieves 30% market share and takes 20% of market share from both Openreach and 10% from VMO2 (or 15% from each).

In practice the maturity effect means that altnets will have a larger impact on share over time. To the extent that Ofcom feels it should reflect this in a lag between altnet network build and any

[67] VMO2 wholesaling may slow down altnet take-up but would reduce Openreach's market share overall.

changes to regulation, that would simply mean that some changes are deferred for a short period, and it would not provide reason for inaction on those more mature cohorts up front.

Maturity effect – results

Table 2.4 below sets out the age distribution of postcodes (for entry) within Area 1. The table lists the additional maturity effect (for the cohort). The additional effect is multiplied by the cohort's share of premises, to arrive at the cohort's effect on Openreach's market share. The total effect (after four years) is the sum of each cohort's effect.

As set out in the section covering estimation of the maturity curve, we consider two scenarios:

- First, is the additional maturity effect when using the estimated maturity curve.
- Second, on the basis the estimated maturity effect may be conservative, we consider a plausible scenario, in which the 2021 entry cohort continues to mature.

Table 2.4: Effect on Openreach market share of each entry cohort maturing to the effect of the oldest cohort

			Additional percentage point impact on Openreach market share			
			Effect on postcode sectors within the entry cohort		Effect on Area 1	
Entry Cohort	Years to maturity	Share of premises in Area 1 (*a*)	Estimated maturity curve (*b1*)	Plausible uplift (*b2*)	Estimated maturity curve (*a x b1*)	Plausible uplift (*a x b2*)
2021	Mature	[✂]	[✂]	[✂]	[✂]	[✂]
2022	1	[✂]	[✂]	[✂]	[✂]	[✂]
2023	2	[✂]	[✂]	[✂]	[✂]	[✂]
2024	3	[✂]	[✂]	[✂]	[✂]	[✂]
2025	4	[✂]	[✂]	[✂]	[✂]	[✂]
Total Effect					[✂]	[✂]

Source: NERA analysis based on Openreach's data on their market share, and altnet estimated network coverage (March 2020 – March 2025). Coverage data are based on confirmed street works activity or presence from ThinkPoint data.

Note: Our methodology is set out in further detail in Section 2.3.1.2.

The results show that when accounting for altnet maturity, Openreach's adjusted market share is expected to fall by [✂] percentage points relative to its current market share (e.g., as reported in Table 2.2). The fall is calculated at 'full maturity', meaning that all entry cohorts have had four years of maturity and so have reached our estimate applicable to the 2021 entry cohort. Therefore, these estimates relate to 2029. In the interim years, we calculate the fall will be [✂]pp by 2026; [✂]pp by 2027; [✂]pp by 2028; and the total of [✂]pp by 2029.[68]

This estimate of a [✂] percentage point fall is conservative as it assumes (i) Openreach does not continue to lose market share after four years of maturity and (ii) does not account for the fact that

[68] This is calculated by assuming a linear maturity for each entry cohort. For example, for the 2025 entry cohort, the additional effect (within the cohort) is [✂] percentage points per year, which follows as the additional *total* maturity of [✂] divided by four years. We do the same for each cohort and weight by share of premises as before.

Openreach's market share loss appears to be occurring faster for younger entry cohorts. Therefore, a [✂] percentage point fall is a plausible estimate that accounts for the conservative nature of our estimated maturity curve.

2.3.2. Wholesaling effect – Openreach market share will fall due to actual and potential wholesaling changes

The altnet maturity curve presented above assumes a continuation of current trends and does not incorporate discrete changes in the wholesale market:

- **Wholesale deal between CityFibre (third largest network) and Sky (third largest ISP).** This wholesale deal gives Sky a direct option to move substantial volumes of its customer base from Openreach to CityFibre. Ofcom has described this deal as *"still in process of being fully implemented"* and Sky is expected to start placing customers onto CityFibre's network this year.[69] Estimates indicate this deal could reduce Openreach's market share within our proposed Area 1s by [✂] to [✂] percentage points, depending on whether Sky shifts [✂]% or [✂]% of volume to CityFibre (and away from Openreach).
- **Other altnets may strike wholesale deals in the future.** Altnet consolidation may make wholesale propositions stronger (e.g., if consolidation gravitates to the VMO2 or CityFibre networks, then it would add to the scope and scale of wholesale deals that have already been agreed or are planned). Alternatively, consolidation or some form of joint wholesale product from other altnets might produce another major wholesale competitor. Should this occur, it could accelerate Openreach's share losses. An effect of at least [✂] would be consistent with wholesaling altnets achieving a fraction of CityFibre's effect above.[70] This estimate would be conservative if for example, CityFibre were to be the main consolidator of altnets (so that the full effect should be applied).
- **VMO2's potential (and stated intention) to wholesale.** VMO2 wholesaling would (i) further reduce Openreach's market share and (ii) increase ISPs' buyer power in our proposed area 1s. Further, VMO2 is upgrading its current network and has partnered with nexfibre to grow its footprint. Once VMO2 has upgraded its network, its threat to wholesale could be a substantially larger source of competitive constraint on Openreach than has been the case to date. Openreach has previously estimated that this could increase VMO2 market share by [✂] percentage points within their footprint. As an estimate of this effect, we use this value and scale it by VMO2 coverage to arrive at an estimate of up to [✂] percentage points.

69 TAR 2026-2031, Vol 2, para 4.60(c). Ofcom provides this factor as one of reasons that CityFibre has the *potential* to become a material and sustainable competitor to Openreach, as opposed to *currently* being a material and sustainable competitor.

70 The network of all other altnets combined is 30% larger than Cityfibre. Assuming that 50% of this network is wholesaled, then a [✂] fall in Openreach market share due to this channel is consistent with a wholesaling improvement (for these other altnets) that is one third the size of CityFibre.

2.3.2.1. Shares and penetration to date do not capture the effect of the CityFibre wholesale deal with Sky

CityFibre announced a deal to supply Sky, the largest ISP that currently relies on Openreach wholesale access, with wholesale broadband services, doubling CityFibre's addressable target market.[71] Sky migrating premises from Openreach to CityFibre will act to materially reduce Openreach's market share within our proposed Area 1s because:

(i) **CityFibre's network covers a significant share of our proposed Area 1s.** For example, CityFibre serves c.[✂]% of premises in our proposed Area 1 (estimated using Openreach's coverage data).

(ii) **Sky sells a** [✂] **share of Openreach connections.** Openreach estimates that nearly [✂] of Openreach's connections are sold by Sky.[72]

(iii) **Sky could shift the majority of volumes to CityFibre.** For example, Openreach modelling considers that Sky could shift [✂]% of its volumes to CityFibre for households that overlap with both CityFibre and Openreach.[73]

Table 2.5 below shows how factors (i)-(iii) mean that a wholesale deal between CityFibre and Sky would potentially reduce Openreach's market share by [✂] percentage points for our proposed Area 1 (assuming [✂]% migration).

Our estimate is based on CityFibre's coverage today (and therefore overlap with Openreach). It is likely that going forward, the density of CityFibre's network will grow, which would lead to even larger impacts on Openreach's market share.

71 CityFibre wins Sky deal: Altnets shift to wholesale, Enders Analysis, 20 August 2024

72 Openreach, *Investment case & sensitivities,* October 2024. Slide 18. This shows the Openreach broadband market share today ([✂]%) and the share retailed through Sky ([✂]%). By dividing the [✂]% by [✂]% we get the share of Openreach connections sold by Sky ([✂]%). We assume the rate of sales via Sky are the same in area 1 as the UK as a whole. This may be conservative if Sky sells a higher share of Openreach connections where there is more networks present. Our values are consistent with Ofcom data. Ofcom records Sky as having [✂]% of *all* connections (see TAR 2026-2031, Vol 2, para. 2.21). Adjusting this [✂]% figure for VMO2's connections and altnet connections arrives at a figure consistent with [✂]% (i.e., [✂]).

73 Openreach, [✂], slide 5,"[✂]"

Table 2.5: The impact of a CityFibre-Sky wholesale deal on Openreach market share

Variable	Value	Source
Openreach market share in Area 1	[✂]	Table 2.2
(i) CityFibre coverage in Area 1	[✂]	*Openreach estimates of network coverage data*
(ii) Sky sells a large share of Openreach connections	[✂]	*Openreach Investment case & sensitivities - October 2024" (Slide deck for Openreach Board Strategy Day) – slide 18*
(iii) Migration of Sky volumes from Openreach to CityFibre network	[✂]	*Openreach Investment case & sensitivities - October 2024" (Slide deck for Openreach Board Strategy Day) – slide 5*
Effect on Openreach market share (in percentage points)	[✂]	*Multiply all rows*

Source: NERA analysis based on Openreach's data of total Openreach connections and premises and estimated network coverage (both as of March 2025). Premises count comes from Ordnance Survey Address Base Premium. Coverage data are based on confirmed street works activity or presence from ThinkPoint data.

Note: The effect on Openreach is found by starting with the Openreach market share of [✂]% in Area 1. We multiply this by (i) CityFibre coverage in Area 1 of [✂]%; (ii) [✂]% of Openreach connections are sold by Sky; and (iii) Sky migrates [✂]% of customers away from Openreach and to CityFibre. This results in an estimate of [✂] percentage points.

2.3.2.2. Altnet consolidation may lead to wholesale deals

Ofcom suggests that for ISPs to exert buyer power on Openreach, it is a necessary condition that rival networks need *"… sufficient coverage to provide a credible alternative to BT"*.[74] If there are benefits from scale and coverage to achieving take-up, which places altnets in a stronger position to secure wholesale deals, then there is likely to be a general trend of altnet consolidation.

This consolidation could take various forms. It may involve mergers or acquisitions to form larger groups. Another possibility are agreements or joint ventures to supply a consolidated product, or the emergence of market intermediaries that perform that function.

The scope of consolidation might also take different forms. One scenario might be that CityFibre or VMO2 acquire smaller altnets to add to their networks. Since CityFibre is already wholesaling and VMO2 may well decide to do so, this form of consolidation would add directly to the strength of wholesale competition that Openreach already faces. CityFibre has grown (in part) via acquisitions and has indicated plans to continue to expand via acquisition. [75]

74 TAR 2026-2031, Vol 2, para 4.198

75 For example, there was a large expansion to the CityFibre network in 2020, with the acquisition of FibreNation from TalkTalk (ISPreview, 'Cityfibre Buy FibreNation and Set 8 Million UK FTTH Homes Goal'), and the past year it has acquired the networks of Lit Fibre and Connexin (ISPreview, 2025 'CityFibre to Acquire Connexin's UK FTTP Broadband Network'). Looking forward, commentary on CityFibre has indicated that it has "*up to*" 850,000 homes served by other alternative networks "*under M&A exclusivity*" with one example being All Points Fibre Network – "AllPoints Fibre Denies Talk of UK FTTP Network Sale to CityFibre", ISP review, 15 May 2025

Another possibility is consolidation into a third major wholesale competitor, separate from CityFibre or VMO2. The key point is that if achieving scale is an important feature of improving altnets' competitive position, then we would expect some form of consolidation to emerge.

Future wholesale deals from consolidated altnets would contribute further to the fall in Openreach market share caused by the CityFibre-Sky deal or otherwise.

As a rough estimate, we calculate that other altnets (combined) have more coverage in Area 1 than CityFibre. On this basis, [✂] effect would be consistent with the wholesaling altnets achieving only part of the CityFibre effect calculated above.[76]

2.3.2.3. Potential for VMO2 to wholesale

Looking forward, VMO2 may become a stronger competitor to Openreach given its potential (and stated intention) to wholesale. VMO2 wholesaling would (i) further reduce Openreach's market share and (ii) increase ISPs' buyer power in our proposed Area 1. Ofcom's forward look needs to adequately account for this potential strengthening of competition.

In the ordinary course of business, to assess the competition risks it faces, Openreach has examined the likelihood and possible effect of VMO2 wholesaling. Evidence from one board pack from late 2022 indicates that Openreach considered the possibility of VMO2 wholesaling to be around [✂]%, and that the effect of this would be to reduce Openreach's aggregate market share for the UK by [✂] percentage points ([✂] percentage point decrease within the VMO2 footprint).[77] More recent board documents no longer specifically isolate VMO2 wholesaling but instead include nexfibre wholesaling as an input into various [✂].[78]

Using Openreach data, we estimate that VMO2 covers 81% of premises in our proposed Area 1. Therefore, the corresponding drop in Openreach market share in Area 1 would be [✂] percentage points. Compared to 2022, the drop in market share may be smaller due to extensive altnet entry. This is because VMO2 wholesaling would gain the same increase in market share but take some amount of that market share from altnets instead to Openreach.

There are several factors pointing towards VMO2 wholesaling. These include:

- **Ofcom's understanding that VMO2 may wholesale.** For example, Ofcom's comments that VMO2 was *"actively exploring"* wholesale access options and that an unnamed ISP *"may look to agree a wholesale deal with VMO2 at some point in the future"*.[79]
- **VMO2's recent announcements in setting up a wholesaling platform.** VMO2 has plans to create a wholesaling company called "*NetCo*" which would wholesale the combined fibre network of VMO2 and nexfibre. NetCo would seek to expand its footprint through continuing its

[76] The network of all other altnets combined is 30% larger than Cityfibre. Assuming that 50% of this network is wholesaled, then [✂]in Openreach market share due to this channel is consistent with a wholesaling improvement (for these other altnets) that is one third the size of CityFibre.

[77] Openreach, [✂] October 2022. Comparison of modelled take-up rates between Scenario [✂] and Scenario [✂] on slide 6.

[78] Openreach, *Investment case & sensitivities,* October 2024.

[79] TAR 2026-2031, Vol 2, para 4.202

rollout and through potential altnet consolidation. We understand that NetCo could receive the go ahead in late 2025.[80]

- **Upgrading network to full fibre.** Ofcom notes that VMO2 currently offers a connection over a Hybrid Fiber Coaxial (HFC) cable over most of its footprint and this may *"add complexity to any future negotiations with other ISPs"*. VMO2 is however rapidly upgrading its current coaxial network to full fibre. As this upgrade progresses, it is likely that VMO2 will become a more attractive wholesale supplier to major ISPs. One reason is that ISPs may prioritise migrating customers ultimately to a full fibre network and would not wish to move them twice. VMO2's transition to fibre is consistent with VMO2's explanation that the wholesaling platform will "*underpin full fibre take up and roll out"* with the ambition to become *"the clear wholesale choice at scale for other providers as a major alternative to BT's Openreach"*. The takeaway is that a wholesale deal may be more likely as VMO2 continues to upgrade from HFC to full fibre.
- **Network expansion**. VMO2 has partnered with nexfibre to grow this footprint. Broader coverage will add to ISPs' buyer power, since they would be able to threaten Openreach with even larger market share losses by migrating to VMO2.
- **VMO2's experience wholesaling in Ireland.** The Irish subsidiary of VMO2 started wholesaling its HFC/fibre network starting in 2022 (initially with Vodafone, which was later expanded to other ISPs such as Sky).[81] VMO2's Irish network is similar to the UK network in that both networks consist of legacy HFC cable which is being upgraded into a fibre network.[82] VMO2 wholesaling in Ireland suggests that Ofcom is understating the possibility of VMO2 wholesaling when it writes: *"currently no track record of VMO2 competing in this way, and therefore no evidence on the impact it would have in practice over the review period"*.[83]
- **General market trends that suggest that wholesaling may be more attractive now compared to historically.** For instance, VMO2 wholesaling might become relatively more profitable due to: (i) VMO2 losing its broadband speed advantage because Openreach and altnets are supplying full fibre, such that the benefits of capturing retail markups (due to providing a differentiated offering) may now be outweighed by the volume benefits of wholesaling; (ii) Ofcom interventions that have made switching easier, e.g., one-touch switch and requirements to provide information to customers who are out of contract; and (iii) achieving more rapid take-up of the nexfibre network.

---

80 VMO2's initial announcement was in February 2024 (https://news.virginmediao2.co.uk/virgin-media-o2-liberty-global-and-telefonica-kick-off-plans-to-create-a-national-fixed-netco-in-the-uk/) and we understand NetCo plans are currently being reviewed as Telefónica (VMO2's key investor) carries out a strategic review driven by its newly installed executive chairman Marc Murtra (https://www.lightreading.com/fttx/vmo2-pauses-uk-netco-sale-until-telefnica-completes-strategic-review).

81 VM Ireland's announcement of its 2022 Vodafone wholesaling deal (https://www.virginmedia.ie/about-us/press/2022/virgin-media-announces-wholesale-deal-with-vodafone-ireland/) and Sky Ireland's announcement of 2023 wholesaling deal (https://www.skygroup.sky/article/-sky-ireland-and-virgin-media-ireland-announce-landmark-wholesale-deal)

82 Virgin Media annual report Ireland FY2024, page 1

83 TAR 2026-2031, Vol 2, para 4.203

2.3.3. Net effect of Openreach market shares, forward look

Table 2.6 brings together the factors described above to provide an indicative estimate of the combined impacts on Openreach market share when accounting for each of the factors discussed:

- Maturity effects due to:
  - Nexfibre expansion.
  - Altnet build.
- Wholesaling effects such as:
  - The wholesale deal between CityFibre and Sky.
  - The potential for other altnets to wholesale or improve their wholesaling offering (in a similar manner as the CityFibre sky deal). This may include consolidation of altnets.
  - VMO2's potential to wholesale.

Openreach's market share is already below [✂]% in our proposed Area 1 markets where Openreach plus two networks are present. Therefore, these potential evolutions would imply that Openreach's market share in Area 1 will fall below [✂]% during the review period. Some effects are currently occurring, for example, the CityFibre-Sky deal and maturity of altnets and nexfibre, while other factors are a potential effect (e.g., VMO2 wholesaling).

These current factors alone lead to a projection that Openreach's share could drop below [✂]% across Area 1 overall during the 2026-2031 review period (and in some postcode sectors shares will already be below [✂]%).[84] This finding adds to the strong reasons for defining a separate Area 1 geographic market, to the case for finding no SMP on a forward look, or alternatively to look at whether different remedies are suitable.

[84] For instance, Ofcom notes Openreach's market share was below 50% in 321 postcode sectors (as of July 2024). See Ofcom, TAR, vol 2, paragraph 4.101 on page 71.

Table 2.6: Total estimated impact of altnet maturity and wholesaling effect on Openreach market share in Area 1

Effect	Variable	Area 1 (any two rival networks)	Reference
Market share (March 2025)		[✂]	Table 2.2
The percentage points represent the impact (reduction of Openreach market share) of each factor in isolation.			
Maturity	*Nexfibre*	[✂]	Table 2.3
	Altnet	[✂]	Table 2.4
Wholesaling	*CityFibre-Sky*	[✂]	Table 2.5
	Other Altnets	[✂]	Section 2.3.2.2
	VMO2	[✂]	Section 2.3.2.3

Source: NERA analysis based on Openreach's data of total Openreach connections and premises and estimated VMO2 network coverage (both as of March 2025). Premises count comes from Ordnance Survey Address Base Premium. Coverage data are based on confirmed street works activity or presence from ThinkPoint data.

Note: The methodology for each effect can be found at the correct reference e.g., Table 2.4 for altnet maturity.

2.4. The VMO2 footprint is a separate geographic market

Geographic markets are defined based on differences in competitive conditions.[85] There clearly are substantial differences in competitive conditions in the VMO2 footprint compared to the rest of Area 2. VMO2 stands apart from other competitors due to its large scale and its long history of successfully winning substantial market share in WLA (and leased lines). The result is that Openreach's share in areas covered by VMO2 are substantially lower than other areas. A proper assessment might well conclude that Openreach does not have SMP in this area, and even if it does have SMP different remedies to the rest of Area 2 might be suitable.

We note two important framing points for our analysis at the outset.

First, our analysis of market shares applies to the whole of the VMO2 network and is not restricted to the parts of the VMO2 network that would fall under the Area 1 defined above. If Ofcom were to agree that there are many Area 1s then the Openreach market shares for the remaining part of the VMO2 network would be somewhat higher than the figures that we present here.

Second, there is a significant difference in Openreach's market share depending on whether the VMO2 footprint is defined using Ofcom's postcode sector method, or whether it is defined specifically as premises actually passed by the VMO2 network. We estimate that Openreach's market share in the VMO2 footprint is:

85 In the TAR (TAR 2026-2031, Vol 2, para 3.33), Ofcom states that its key consideration in defining geographic market(s) is: *"whether the conditions of competition are sufficiently homogenous across all areas such that we should define a single national market, or whether there are any areas in which competitive conditions are likely to be appreciably different and distinguishable such that we should consider defining sub-national markets."*

- Around [✂]% if we adopt Ofcom's postcode sector approach. This is any postcode sector where VMO2 is present (i.e., has above 50% market coverage).[86]
- Likely to be around [✂]% if we estimate VMO2's market share in its footprint properly defined. By this we mean the premises passed by VMO2.

We think that there would be a case for a no-SMP finding using the postcode sector method. However, if Ofcom were to reach a view that there was SMP on the basis that many premises in the footprint defined using postcode sectors are not passed by VMO2 and where there is no alternative to Openreach, then the natural step would be to consider whether a more tightly defined footprint might better capture the relevant competitive dynamics, and the [✂] would be the correct reference point for that.

In the rest of this section, we:

- Explain that Ofcom's postcode sector approach to market definition underestimates VMO2's true penetration (see Section 2.4.1). This extends to the VMO2 footprint our basic arguments on the dilution effect presented earlier in Section 2.2.3.
- Estimate Openreach's market share in the VMO2 footprint (see Section 2.4.2).
- Discuss that Ofcom does not provide a clear explanation of why it considers that Openreach has market power in the VMO2 footprint (see Section 2.4.3).

2.4.1. Ofcom's postcode sector approach underestimates VMO2's true penetration

Ofcom uses a "postcode sector" approach to delineating geographic markets, where "*an operator will be considered as present in a postcode sector if its existing or planned network covers at least 50% of the premises in that postcode sector*".[87] This approach has an intrinsic dilution effect when it comes to capturing how well competing networks are doing at winning business from Openreach where they pass the premises.

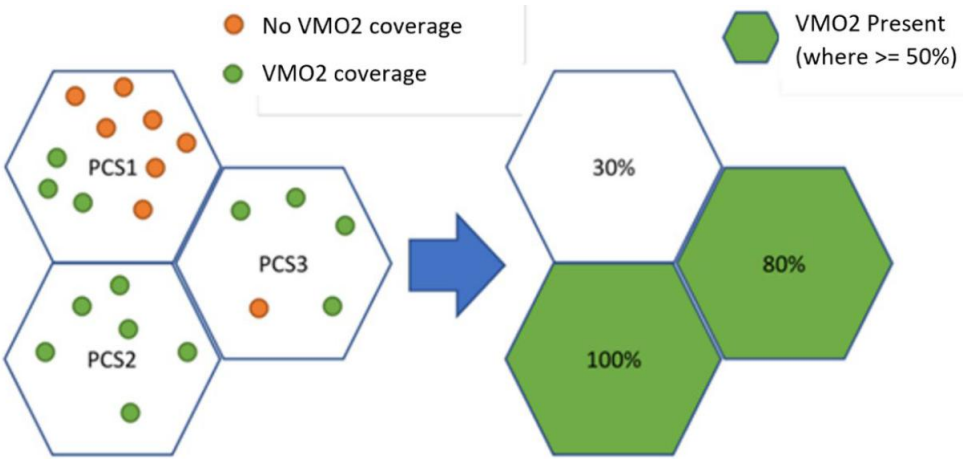
Figure 2.3 below illustrates that Ofcom will consider VMO2 as 'present' in postcode sectors where it is contesting a majority share of premises (e.g., 80% in PCS3), but in postcode sectors where VMO2 only has partial coverage (e.g., PCS1), Ofcom may not consider VMO2 to be 'present'.

VMO2 network coverage averages 84% for postcode sectors where Ofcom has deemed VMO2 as present. The dilution effect can be material as roughly 16% of premises are not connected to the VMO2 network. If VMO2's market share is estimated based on its share of sales in postcode sectors that are more than 50% covered by the VMO2 network, this will substantially underestimate the share of sales that VMO2 wins in premises that it passes.

[86] This definition of a VMO2 footprint will include postcode sectors that have VMO2 plus another altnet and VMO2 by itself. Coverage may not be complete.

[87] TAR 2026-2031, Vol 2, para 4.112

Figure 2.3: Example illustration of Ofcom's approach to assessing coverage



Source: Figure A7.18 on page 50 of Ofcom's TAR Annex 7.

2.4.2. Openreach has much lower shares in the VMO2 footprint, and may not have SMP

We have estimated Openreach's share in the areas covered by VMO2 below, taking account of differences in the degree of coverage of the VMO2 network. This is done by grouping postcode sectors into different *"Coverage Groups"* based on VMO2's coverage in each postcode sector. Then we estimate market share and average coverage for each coverage group.

Figure 2.4 plots Openreach's market share against VMO2 coverage for these coverage groups. It also provides the estimated market share average across all these groups – corresponding to the full area of the VMO2 footprint when defined as postcode sectors where VMO2 passes more than 50% of premises. This shown by the dashed red line.

It is clear from inspection that as VMO2 coverage within a postcode sector is higher, Openreach's market share is lower (and VMO2's market share is higher). Openreach's market share falls at a rate of about [✂] percentage points per 1 percentage point increase of VMO2 coverage. This highlights the potential significance of the dilution effect that occurs under the postcode sector method to defining the boundary of the VMO2 footprint.

The Openreach shares in those coverage areas where VMO2 is estimated to have greater than 95% or 100% coverage provide an estimate of what Openreach's market share would look like if the VMO2 footprint were defined as only premises actually passed by its network.

Therefore, we have two estimates of market share, depending on how the VMO2 footprint is defined:

- Openreach market share is [✂]% in postcode sectors where VMO2 is present.

- Openreach likely only has around [✂]% market share of connections where attention is focused on premises passed by VMO2, and where the dilution effect is small.[88]

On a forward-looking basis, Openreach's market share is expected to fall given the same factors explained in Section 2.3. To be specific, we expect greater take-up of recent altnet and nexfibre network build (plus any additional build that is still to be completed) and wholesaling changes either from VMO2 or Altnets (e.g., CityFibre) will also affect Openreach.

Figure 2.4: Relationship between Openreach market share and VMO2 coverage for eight coverage groups

[✂]

Source: NERA analysis based on Openreach's data of total Openreach connections, premises, and estimated VMO2 network coverage (as of March 2025). Premises count comes from Ordnance Survey Address Base Premium. Coverage data are based on confirmed street works activity or presence from ThinkPoint data.

Notes: The y-axis is the estimated market share per coverage group. Market share is estimated using Openreach connections divided by total premises, adjusted based on an Openreach estimate of the broadband penetration rate (percent of premises that have a fixed broadband connection). We apply a rate of [✂] in Area 1; [✂] in Area 2; and [✂] in Area 3. Postcode sectors are allocated to seven coverage groups (50%-60%; 60%-70%; 70%-80%; 80%-90%; 90%-95%; 95%-99%, 99%-100%). For each coverage group, we calculate the aggregate market share and premises weighted VMO2 coverage.

2.4.3. The TAR does not provide a clear explanation of why Ofcom thinks Openreach has market power in the VMO2 footprint

In the TAR, Ofcom does not assess whether Openreach has SMP within the VMO2 footprint. It merely refers to a cursory assessment in the WFTMR that did discuss whether Openreach would have SMP if it were to assess VMO2 areas separately from non-VMO2 areas.[89] In the WFTMR, Ofcom concluded that it would still expect to find Openreach to have SMP in the VMO2 areas.[90]

As a general remark, referring to an assessment undertaken in 2021 is not adequate. That was a time *before* the huge expansion of rival build by altnets had commenced and *before* it had become plain that altnets would be successfully winning wholesale supply deals with Sky. Moreover, that assessment was itself cursory because Ofcom did not formally delineate a VMO2 market and did not offer a formal SMP assessment. It did not, for example, discuss the implications of the dilution effects that we discuss in Section 2.4.1 above.

---

88 Our estimate of c. [✂]% is consistent with values found in Ofcom's TAR (TAR 2026-2031, Vol 2, para 2.21). Ofcom does not specifically calculate Openreach's market share within VMO2's footprint, but this value can be inferred from VMO2's 20% market share at the retail level, which is then adjusted upwards for the fact that VMO2 had only partial coverage. Using these figures, we can conservatively infer that Openreach's market share could be around [✂]% and it is potentially lower. This value is an approximation and is based on using the midpoint of a range and applies other adjustments. To be clear, within Ofcom's Area 2, Ofcom sets out that VMO2's coverage is 50%-60% (midpoint 55%). Conservatively assuming that VMO2's market share is 20% within Area 2, the 55% coverage midpoint implies a 36% market share within VMO2's footprint. We add an adjustment of 6% for altnets. This adjustment follows from 38% overlap between the VMO2 footprint and altnets and applies the average altnet take-up rate of 17%. This altnet adjustment could be conservative because the VMO2 network can be overlapped by multiple altnets.

89 TAR 2026-2031, Vol 2, footnote 250, page 70

90 WFTMR, Vol 2, para 8.140-8.149 - section titled *"BT does not have market power in areas of Virgin Media presence"* paragraphs 8.140-8.149

Given that there are indications that Openreach's share may be tending towards dropping below 50% and the presence of good reasons to expect that further share losses could occur on a forward look, there is plainly a prima facie reason to expect that a full analysis might not conclude that Openreach has SMP.

In addition, we note that one specific reason Ofcom gave for its view of no-SMP in the WFTMR that no longer applies is Ofcom's view that VMO2 was supplying a premium product. Ofcom argued in the WFTMR that VMO2 was focused on the premium end of the market and thus was differentiated from Openreach. Ofcom wrote:[91]

> *"… it [VMO2] has historically competed by differentiating its retail offering to target customers with a higher willingness to pay through a focus on faster speeds, premium pricing and bundled products"*.

Ofcom's suggestion seems to be that VMO2 was primarily competing to serve customers seeking a higher speed connection, with the implication that VMO2 would be a weaker competitor compared to an otherwise similar network that was competing to serve all customers (i.e., regardless of speed).

Given the extent of FTTP rollout, it is no longer true that VMO2 is a "premium" supplier. Indeed, VMO2 is upgrading the cable element of its network to keep pace with FTTP rollout. Altnet overlap with the VMO2 footprint is already around 40%, before even considering Openreach's FTTP overlap.

[91] 2021 WFTMR, Vol 2, para. 8.144

3. Competition and remedies in Leased Lines

In 2021 Ofcom set the same boundary between Areas 2 and 3 for WLA and LLA geographic markets. This made good economic sense because competing WLA networks can and do use their networks to compete in leased lines as well as WLA. Therefore, in geographic locations where there is actual or potential competition in WLA, there is actual and potential competition for leased lines as well. Moreover, Ofcom's 10-year strategy of promoting competing network investment recognised that new networks generated returns from both WLA and leased line services, thus remedies should be aligned for both.

Ofcom's vision in 2021 was well founded and has turned out to be correct on the facts. Altnet networks and VMO2 have been using their networks to compete in leased lines. Indeed, technologies such as XGS PON have made it easier for them to do this than was envisaged in 2021. Moreover, there is greater convergence on the demand side as well, as business FTTP has been taken up as a substitute for leased lines by some customers.

It is therefore a puzzle as to why the TAR proposes to change course, end the recognition of the interactions between WLA and leased lines, and return to treating leased line markets and remedies in a separate silo.

The TAR does not offer any explanation for the reasons for changing course, save for observing that Ofcom's Network Reach Model (NRM) now works better than it did in 2021, and noting that WLA networks need to offer good service quality and reputation to compete in leased lines. Yet the market fundamentals were the reason for taking a converged approach in 2021, not the practicality issues for the NRM. The observations made by Ofcom that there are extra steps that WLA networks may require to compete in leased lines fall far short of showing that these are significant barriers. Rather, the fact that altnets are competing in leased lines suggests that they are not insurmountable barriers.

The consequences of Ofcom's reversal of position are significant. The TAR proposals will result in more than 10% of the leased lines market being treated separately from WLA and will result in a substantial tightening of regulation. Standing back, the proposals suggest that the right regulatory reaction to the surge in network competition is not to continue along the path supporting investment by competitors and allow the market to take the lead, but to return to detailed cost-based regulation. This will undermine the new competitors and reduce their returns to competing network build.

The remainder of this report discusses many of these themes in more detail. It is structured as follows:

- In Section 3.1, we discuss that the TAR proposes to reverse the pro-competition course set out in the WFTMR. We revisit the original reasons for why Ofcom originally set the same geographic boundary for WLA and LLA services and discuss the rationale in the TAR for moving away from that approach. We explain that the new proposals represent a reversal of Ofcom's WFTMR policy, which amounts to a loss of regulatory continuity and is likely to adversely impact altnets.
- In Section 3.2, we explain that the market evidence shows that the WFTMR strategy was well founded. We set out the reasons why the convergence of WLA and LLA geographic markets (as envisaged by the WFTMR) is still the case, and therefore why the WLA market boundaries

should be applied to leased lines. We present the issues with Ofcom's approach in defining the LLA market and challenge the arguments put forward.

- In Section 3.3, we note that the TAR does not offer persuasive reasons for reversing the course. We explain that Ofcom's observation that it is now practical to use the NRM to identify all the LLA geographic markets is off point. Moreover, and in any case, there are some significant issues with the NRM that raise questions about whether Ofcom is right to think that the NRM better captures leased line market competition than the WLA boundary.

3.1. The WFTMR set expectations for leased lines, but Ofcom changes course in the TAR

The TAR reverses course from the WFTMR with respect to the Area 2 geographic boundary for leased lines with the practical effect of increasing regulation. This section: (i) revisits the rationale presented in the WFTMR; (ii) sets out the change in approach proposed in the TAR and justification for doing so; and (iii) discusses the implications of this change of course.

3.1.1. The WFTMR envisaged the convergence of WLA and leased lines geographic markets

The WFTMR envisaged the convergence of WLA and leased lines geographic markets. This convergence arises primarily because networks that provide WLA can and do use their network to provide leased lines. The remedies implemented in the WFTMR were intended to encourage network build, which relied on returns from both services.

In the WFTMR Ofcom made this plain up front:

> *"In [Area 2] our objective is to promote competition and investment in gigabit-capable networks by Openreach and other operators. These networks typically offer both broadband and leased lines services. The resulting network competition will provide increasing protection for consumers in the long term, and in many areas effective competition may emerge such that the need for regulation falls away."*[92]

> *"The business case for competitive network investment is challenging, with high barriers to entry. The move to gigabit-capable networks offers a window of opportunity for alternative providers to invest in networks. Because these networks will typically offer both broadband and leased lines services, demand from users of leased lines plays an important role (alongside broadband volumes) in some business plans for rival network investment. It also means that the deployment of these networks will lead to greater competition in both the LLA and WLA markets".* [93]

92 WFTMR 2021, Vol 1, para. 2.47

93 WFTMR 2021, Vol 4, para. 1.143

"The fact that much of the planned investment will be in networks providing both broadband and leased lines services reflects the underlying economics of fibre network deployment".[94]

"Potential for material and sustainable competition arising in areas covered by the Virgin Media and/or CityFibre networks, in both WLA services and LL Access services. As the footprints of these networks will be the same for both WLA services and LL Access services… the use of common geographic boundaries for these markets is both reasonable and practical".[95]

"Building a network involves a significant amount of upfront investment, and there are economies of scope (and scale) in building a network to deliver both broadband and leased lines. Using the network to generate as many different revenue streams as possible will help de-risk and improve the commercial business case for investment. The evidence suggests that leased lines are an important source of demand (and revenue) and could play an important role in enabling the business case for competitive network investment."[96]

Accordingly, Ofcom decided to use the same boundary for Area 2 for leased lines as for WLA services.

3.1.2. The TAR decouples WLA and leased lines without sufficient justification

The TAR proposes to reverse the WFTMR approach by ending the recognition of the interactions between WLA and leased lines and returning to treating leased line markets and remedies in a separate silo.

The TAR does not explain the reasons for changing course, save for (i) observing that Ofcom's NRM now works better than it did in 2021 and (ii) noting that there are some steps that WLA networks may require to compete in leased lines. We recap these two points in this subsection.

3.1.2.1. Ofcom's proposed use of the NRM to set Area 2 and Area 3 leased line boundaries

Ofcom's primary reason given for decoupling the WLA and Leased Line geographic boundaries is that it is now "*practical*" to use the Leased Line NRM to identify all the LLA geographic markets i.e., the High Network Reach (HNR) Area, LLA Area 2 and LLA Area 3 (whereas in the WFTMR it was not practical and the NRM was only used to determine the HNR Area geographic market).

However, whether use of the NRM is "*practical*" was not the reason why a single geographic boundary for Areas 2 and 3 was adopted in the WFTMR. The reasons for setting the same market boundary for both WLA and Leased Lines was that WLA networks also compete in Leased Lines. As

94 WFTMR 2021, Vol 4, para. 1.144

95 WFTMR 2021, Vol 2, para. 7.150

96 WFTMR 2021, Vol 4, para. 1.144 –1.145

a first approximation, competitive conditions in both WLA and leased lines will be broadly similar, hence the same metrics should apply to both.

Ofcom does not give a clear explanation of why the WFTMR's reasoning for using the same geographic boundary for Area 2 no longer applies.

3.1.2.2. Ofcom's arguments on why WLA networks may not compete in leased lines

In the TAR, Ofcom finds that **ethernet services delivered over symmetric PONs**[97] (e.g., XGS-PON) should be included within the LLA product market and refers to these services as 'leased line equivalent' services.

However, in terms of WLA providers competing in the LLA market, Ofcom says that many altnets that have entered the WLA market have chosen not to provide leased lines to date, and that the volume of circuits supplied (by entrants such as Zzoomm, Netomnia, brsk and AllPoints) have so far been low.

Ofcom points to several market developments which influence how it has thought about LL competition and how it proposes to define the geographic markets for the 2026-31 review period. Ofcom's position is that most WLA altnets (apart from CityFibre and VMO2) are not competing in leased lines and are not sure that they will, therefore the build by those altnets no longer apply to leased lines. It proposes to identify geographic areas with similar competitive conditions by looking at the number of leased lines only competitors near to demand sites.

3.1.3. Implications of the reversal of course

The unexplained reversal of course from the WFTMR risks a loss of regulatory continuity and the returns that altnets can earn from their investments and credibility.

Leased line sales are, for many altnets, part of their potential business model, and an important part of the WLA investment rationale. In Area 3, Ofcom proposes to substantially tighten regulation of leased lines. It proposes to retain a cost-based charge control on DFA services and implement cost-based charge controls on active leased lines (at bandwidths up to and including 1Gbit/s). This means that altnets operating in Area 3 will find it much harder to win leased lines business, because customers will be able to source from Openreach on tightly regulated terms. These losses will damage altnets' ability to make a reasonable return on their investments in significant parts of WLA Area 2 (that are LLA Area 3).

3.2. WLA networks can and do compete in leased lines

Ofcom's WFTMR position that altnets' new networks compete effectively in leased lines as well as WLA was well founded. Network providers are concerned with deploying their networks and reusing them in the most efficient way possible, often leading to network equipment being used for combinations of business and residential use. As underlying technologies and patterns of demand continue to evolve the distinction between leased line and WLA networks becomes obsolete. Other

[97] A passive optical network, or PON, uses fiber-optic technology to deliver data from a single source to multiple endpoints.

regulators across Europe, such as ARCEP in France, have acknowledged this convergence by reviewing Leased Lines and WLA markets together.

This section sets out the reasons why the WFTMR expectation of convergence of WLA and leased lines geographic markets remains the best approach, and therefore why the WLA market boundaries should be applied to leased lines, highlighting the following points:

- WLA networks can be used to supply leased lines and leased line equivalents, and altnets are already providing these services.
- Actual take-up of rival offers is likely to be affected by timing, which may explain why leased line sales may take time to filter through.
- The hurdles WLA networks face in supplying leased lines that Ofcom relies on are not significant barriers to expansion.
- Business FTTP offers a partial substitute for leased lines.

3.2.1. WLA networks can be used to supply Leased Lines

In the TAR, Ofcom states that although there has been substantial FTTP network build by altnets, many that have entered the WLA market have chosen not to provide leased lines to date.

The TAR relies on the fact that many altnets have so far decided against supplying traditional dedicated leased lines. However, while some altnets may not be supplying dedicated leased lines, some of them are supplying XGS-PON services or could do so. XGS-PON services are a good substitute for leased lines, as Ofcom has recognised. We now step through evidence that (i) XGS-PON is a good substitute for leased lines and (ii) XGS-PON is already being supplied by altnets.

3.2.1.1. XGS-PON is a substitute for leased lines

Firstly, XGS-PON, which many altnets do supply, is enough to compete effectively for traditional leased lines. [98]

This is supported by the following:

- Ofcom itself considers whether a SSNIP of all point-to-point leased lines would be profitable, or whether a sufficiently large number of leased line customers would switch to Ethernet over symmetric PONs (such as XGS-PON). It finds that such a SSNIP would be unprofitable, because a sufficiently large number of leased line customers are likely to consider these services as reasonable substitutes and so would switch to these services in response to a SSNIP in point-to-point leased lines (of equivalent capacity).[99] Important features such as symmetry of upload and download speeds, uncontended capacity and continuity/reliability of the service can be

[98] Telecoms providers may use XGS-PON and other high-speed symmetric PON (e.g., 50G-PON) to deliver residential broadband services, where capacity is shared, as well as high-speed 'leased line equivalent services', where some of the shared capacity can be 'ringfenced' for a particular end-user to whom the capacity appears uncontended, i.e. Ethernet over symmetric PONs. TAR 2026-2031, Annexes 1-22, paragraph A6.44

[99] TAR 2026-2031, Vol 2, para. 5.25

offered on a comparable basis by Ethernet over symmetric PONs (such as XGS-PON) for supported bandwidths.

- While XGS-PON is currently only a substitute up to 1Gbit/s, Ofcom notes that currently, around 90% of leased lines are 1 Gbit/s or less, and most circuits will remain at 1 Gbit/s or less by the end of the review period. [100] [101] Moreover, further technical evolution is expected to mean that Ethernet over symmetric PON technologies will be able to supply higher bandwidths than 1Gbit/s.[102] For example, ITS has become the first UK provider to successfully trial the delivery of dedicated internet access services over 50G-PON.[103]
- In the longer term, providers may upgrade their PON technology, allowing them to offer higher symmetric bandwidths and uncontended capacity. However, only a small proportion of customers require such bandwidths.
- Even where current XGS-PON technology might not be sufficient, Ofcom also noted[104] that a provider delivering services over XGS-PON could install a dedicated point-to-point connection (active leased line service or dark fibre) to deliver a 10 Gbit/s service with uncontended capacity.[105]

Accordingly, XGS-PON is a good substitute for leased lines, and WLA networks are well placed to compete using this technology. In practice, many of them do so, as explained in the next section.

3.2.1.2. Altnets are in fact competing in leased lines

Openreach's two largest competitors clearly do compete in leased lines:

- **VMO2's** network has been used extensively to supply leased lines and VMO2 is the second largest UK supplier of leased lines as a result. This network was originally developed primarily to supply residential services, and therefore sets a clear track record that residential focused networks can be expected to compete successfully in leased lines,
- **CityFibre** is supplying 1Gbit/s leased line equivalents using XGS-PON technology. This has identical quality of service parameters (such as repair times), and is priced the same as its 1Gbit/s point-to-point leased line services. In addition, CityFibre has indicated that it will continue to consider provisioning point-to-point d ark fibre services across its full-fibre network.[106]

---

100 Openreach's survey of end customers, which found that up to and including 1Gbit/s is the most used bandwidth for Ethernet lines ([✂]%). Openreach UK Businesses Connectivity Market 2024 research debrief

101 TAR 2026-2031, Vol 2, para. 5.29

102 The transformation of PON , Ciena, October 10 2023

103 ITS Achieves RoSPA Gold Health & Safety Award, ITS, April 22 2025

104 TAR 2026-2031, Vol 2, para. 5.29

105 The fact that altnets may have been slower to supply dedicated leased lines is likely due to the fact XGS-PON is "good enough". [✂].

106 TAR 2026-2031, Vol 2, para. 5.29

Other altnets focused on the WLA market have also started to offer leased line, including Zzoomm, Netomnia, brsk and AllPoints (competing alongside CityFibre and VMO2, which continue to operate in both WLA and LLA markets).[107]

In addition to VMO2 and CityFibre, other providers offer services over XGS-PON, or are intending to launch similar services during the review period (including nexfibre).[108]

Further, many altnets have XGS-PON capabilities built into their network already, and providers can roll out XGS-PON at the end customer site through use of combi cards.[109] Table 3.1 below presents some examples of substitutes for leased line products.

Table 3.1: Altnet competition in leased lines (using XGS-PON)

Entity	Type	Offering and features
Zzoomm	Business broadband and leased lines	Business broadband and dedicated leased lines (up to 20Gbps dedicated broadband, with 4-hour SLA).
Netomnia (supported by retail operator Brsk)	Business broadband and leased lines	Netomnia has built and deployed 50Gbps capable 50G-PON, based on XGS-PON. Brsk offers full fibre broadband (up to 2Gbps upload and download) and leased line services (up to 10Gbps symmetrical and uncontended).
Commsworld	XGS-PON	Commsworld is leveraging Ciena's XGS-PON broadband solution for its new business-grade 'Ethernet over Fibre to the Premises (EoFTTP)' ultra-high-speed broadband service. EoFTTP provides 1 Gb/s symmetric connectivity with bandwidth guarantees and repair times traditionally only seen with more expensive leased lines.
CityFibre	XGS-PON	A July 2023 article on its website notes that "*By the end of 2023, CityFibre expects to have deployed its XGS-PON equipment into over 90% of its fibre exchanges with the new 2.5Gbps product becoming available to around 20% of its ready for service footprint, currently standing at 2.5m homes.*" The new platform can support symmetrical speeds of up to 10Gbps and is designed to be easily upgraded to 50G PON, virtually unconstrained in its ability to meet future demand. CityFibre also offers a gigabit speed FTTP L2TP product which is a symmetric fibre-only broadband product.
Gigaclear	XGS-PON	Gigaclear offers ultrafast full fibre broadband using XGS-PON technology. Its Enterprise Broadband packages provide reliable connectivity with bespoke options available up to 10Gbps.
ITS (leased line only provider)	XGS-PON and leased lines	ITS delivers lower bandwidth symmetric uncontended leased line services over XGS-PON (e.g. 5 Gbit/s and below). ITS's FibreBright product (over XGS-PON) features symmetric bandwidth, guaranteed capacity services up to 5 Gbit/s and includes a 6-hour fix time and continuous support. For higher bandwidths (e.g. 6-10

[107] TAR 2026-2031, Vol 2, para. 5.65

[108] TAR 2026-2031, Vol 2, para. 5.21 – 5.22

[109] Combo PON allows both GPON and XGS-PON services to be deployed on the same optical distribution network. - Why Combo PON makes next-generation PON better, Technically Speaking, August 10, 2022

Entity	Type	Offering and features
		Gbit/s) and/or dark fibre, these are delivered through a point-to-point connection.
G.Network	FTTP	G.Network's website has a table comparing its 10 Gb FTTP offering to typical leased lines alternatives. It states that "*unlike leased lines, our 10 Gb service offers rapid setup, minimal upfront costs, and competitive rates without the lengthy wait times.*"
Community Fibre	FTTP	Community Fibre's website pitches its business FTTP offerings as offering better value than leased lines, stating "*our high-bandwidth business packages – offering speeds of up to 10 Gbps – provide a faster, more cost-effective alternative to suit businesses of all sizes*." Community Fibre's 5 Gbps product is pitched as "*Excellent for: businesses looking for a leased line replacement with gigabit speeds at a significantly reduced cost*."

Sources: Commsworld Launches Commercial Broadband Service Using Ciena's XGS-PON - Ciena; Business Fibre Broadband | Business Broadband Deals | Community Fibre; CityFibre announces nationwide launch of the UK's fastest... | CityFibre; Products Portfolio - ITS Technology; Business Broadband | The Full Fibre Broadband Network | CityFibre; Full Fibre Broadband for Rural Businesses; Business Leads; Dedicated broadband - Zzoomm

Taking a forward look, it is probable that during the review period other providers may upgrade their PON technology, which would allow providers to offer services with higher symmetric bandwidths, uncontended capacity, and thereby compete in leased lines. This is noted by Ofcom.[110] Indeed some providers are building new networks with XGSPON+, so the network is already ready to compete in leased lines (rather than needing a retrofitted upgrade). This means that the potential for further competition from WLA providers to compete in leased lines in the future.

More generally, the fact that some altnets have not yet started to actively supply XGS-PON substitutes for leased lines may simply reflect their priorities in focusing on recent and ongoing build and marketing broadband. The fact that they have not yet focused on leased lines does not imply any fundamental difficulty in doing so, or a low likelihood that it may arise in this review period, but simply that it is not the early priority. However, if Ofcom implements its TAR proposals such that these suppliers face competition from Openreach dedicated leased lines, actives and dark fibre, supplied in tightly regulated terms, the likelihood that these suppliers will focus on leased lines in due course will be reduced.

3.2.2. Actual take-up of rival offers is likely to be affected by timing

Ofcom argues that leased line volumes sold by altnets offering leased lines in addition to their WLA business have so far been limited.[111] However, the fact that Openreach is not losing more sales to altnets to date is not likely to reflect any fundamental difficulty in competing in leased lines. Other explanations exist, such as the recency of altnet build, and the fact that altnets may not yet be prioritising leased line sales.

[110] TAR 2026-2031, Vol 2, para. 5.92

[111] TAR 2026-2031, Vol 2, para. 5.92

Moreover, it is likely that leased line sales may take time to filter through, even where competitive offers are made. Leased line churn is not typically high (and generally considered lower than for broadband), because customer switching is likely limited by contract duration. Standard contract lengths are typically three years for leased line connections, although some can be up to five years.[112] Moreover, on contract renewal an existing connection may have some advantages over new suppliers, with the result that switching might not be high even in conditions of effective competition.

Given that customer switching is likely limited by contract duration, even if altnets are offering competitive deals in areas where they have built networks, it will take time for that to show up in absolute market shares for leased lines.

Even if Openreach has not to date lost large amounts of market share, there are leading indicators that competition from altnets is indeed having an effect, and that Openreach is seeing losses that seem likely to be partly linked to altnets.

First, business documents from Openreach observe that demand for new circuits is being contested and "ceases" are accelerating, as outlined in Table 3.2 below.

Table 3.2: Openreach Ethernet Access Direct (EAD) performance

	Rest of UK	Central London Area (CLA)	High Network Reach (HNR)	Inter Exchange
Base (% of total base)	[✂]	[✂]	[✂]	[✂]
Net demand FY25 YTD (% change year on year)	[✂]	[✂]	[✂]	[✂]
Ceases FY25 YTD (% change year on year)	[✂]	[✂]	[✂]	[✂]

Source: Openreach CCO business strategy session 28/02/2025 PowerPoint. "Base" refers to the total number of lines. "Net demand" is orders minus cancellations. "Ceases" are the circuits being terminated by the customer.

Table 3.2 indicates that [✂]. Rival leased line networks in the CLA and HNR areas are long-established, so competition is likely mature. The fact that churn is higher in the Rest of UK is consistent with new altnet networks having a growing impact on leased line markets and is suggestive that maturity in share wins for altnets is yet to come.

Second, Openreach has seen an increase in the cease rate since last year (see Figure 3.1). There is a 5.3% increase in ceases caused by organic factors, and 15.1% due to an increased rate of ceasing as end customers exit provider contracts and for aged circuits (more than 6 years old) which are typically out of contract. Openreach has also observed a significant increase in cease rates for circuits that are 3-4 and 5-6 years old this year, which is typically the point when end customers are most likely to switch (as contracts with Ethernet users tend to be 3 or 5 years).

[112] Leased Line Costs | How Much Is a Leased Line in UK?, Expert Market, 18 January 2023

Figure 3.1: Change in cease rate

[✂]

Source: [✂]

This indicates that take-up of rival offers typically occurs as leased line contract lengths come to an end (which are typically longer than broadband contracts) and are therefore affected by timing. [✂].

3.2.3. Comment on Ofcom's argument that WLA networks face impediments in competing in leased lines

Ofcom argues that WLA competitors have impediments to competing in leased lines[113] suggesting that there are barriers to gaining customers once a network is built. Ofcom states that WLA providers would need to invest in their network and operational capability, and reputation and credibility are important characteristics for leased line customers.

However, observing that an altnet may need to incur some additional costs and capabilities to successfully sell leased lines does not imply that there is any prohibitive difficulty that is unlikely to be overcome.

CityFibre and VM02 have led the way, demonstrating that WLA or residential focused networks can and do compete effectively in leased lines. It is also the case that other altnets are competing in leased lines (see Section 3.2.1). These examples show that, while there may be some additional measures altnets need to take to compete in leased lines, these are not in practice stopping that competition from emerging.

Finally, if it does emerge that smaller networks struggle in the ways Ofcom suggests, the expectation is that this will be an additional spur to consolidation into larger groupings that can better capitalise on the assets that have been built.

What is clear is that forcing Openreach to supply dark fibre and actives on tightly regulated terms will undermine the business case for greater focus on leased lines by altnets than has hitherto been the case.

3.2.4. There is increasing convergence on the demand-side

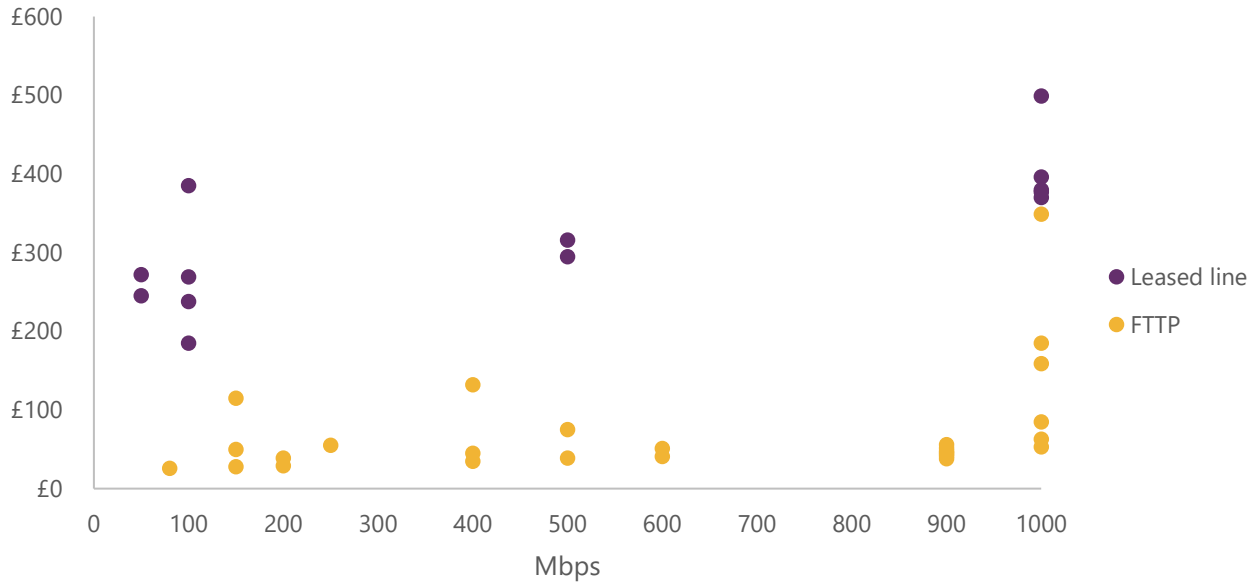
The central reason for using the same Area 2 and Area 3 geographic boundary for WLA and leased lines is that WLA networks can and do also compete in leased lines. This approach is reinforced by the fact that the rollout of FTTP networks is also engendering close competition on the demand-side, since there are some customers that will substitute leased line for FTTP.

Broadband services are likely to be a sufficiently close substitute for leased lines

FTTP already offers a cost-effective connection for businesses that can tolerate some variability in speeds and upload time. To illustrate this point, Figure 3.2 below shows a comparison of the monthly price for business FTTP and leased lines by bandwidth, based on information available online.

[113] Ofcom raises these points in the context of market definition, but we address them here because they appear to be part of Ofcom's reason for setting a different geographic boundary.

Figure 3.2: Comparison of leased lines and business FTTP monthly price



Source: Openreach leased lines and business FTTP price comparison data, based on publicly available information. Prices are based on a 24- or 36- month contract. Note: As of 3 June 2024 (leased lines), 12 Sept 2024 (FTTP).

The monthly price for business FTTP is considerably lower than leased lines prices. Not illustrated in Figure 3.2 is Community Fibre's business FTTP offering of 5 Gbps and 10 Gbps for £225 and £486 per month respectively, highlighting the fact that even faster speeds are available at lower prices than leased line products, which may be attractive for some customers.

[✂].[114]

CityFibre has previously stated that the Business Connectivity and WLA markets depend on the same physical infrastructure and increasingly the same fibre networks. CityFibre was of the view that, as fibre is deployed more widely, the WLA and Business Connectivity markets are likely to converge, primarily due to users of lower speed leased lines moving across to using gigabit speed broadband connections.[115]

There is documentary evidence suggesting that Openreach considers further FTTP rollout poses a cannibalization risk to the Ethernet base, where customers with lower bandwidth Ethernet are the greatest risk. FTTP services that offer faster speeds at lower prices have the highest potential to interest the current Ethernet base.[116]

Looking forward, quality improvements to full-fibre asymmetric broadband services over time could mean that these services become better able to meet the needs of some leased lines customers from a demand-side perspective.

[✂]

[114] Openreach UK Businesses Connectivity Market 2024 research debrief

[115] Promoting investment and competition in fibre networks, approach to geographic markets, CityFibre, 26th February 2019

[116] Openreach UK Businesses Connectivity Market 2024 research debrief

Figure 3.3 below shows the trend in LLA net additions where there is FTTP from Openreach or competitors, [✂]. It presents the rate of net additions (connections minus ceases per 10,000 postcodes), covering EAD bandwidths up to 1Gbit.

Net additions are higher in areas where only Openreach is present (indicated by trend lines in blue), [✂].

Figure 3.3: Openreach LLA rate of net additions per postcode

[✂]

Source: Openreach. Note: Net additions refers to connections less ceases for EAD of 1GB or below. The rate of net additions is the net additions divided by postcodes.

3.2.5. Business FTTP offers a partial substitute for leased lines

In addition, many altnets service business customers with FTTP over GPON, and Openreach offers lower prices on lower bandwidths for leased line services to compete with such FTTP services.

Ofcom observes that LLA customers demand a high quality of service, significantly higher than that required for residentially focused broadband services. This includes better availability service level agreements (e.g. 99.99% or better), faster repair times (e.g. measured in hours rather than days, in the range of 4-6 hours) or longer customer support availability.[117]

However, altnets that compete for business FTTP connections supply high levels of service quality for that purpose, often very close to the service levels offered on leased lines, and many of those altnets also compete in the residential broadband market. The table in Appendix 3 shows that many of the business FTTP services available offer 99.9% service availability targets and fault response and fix times are within a few hours. In most cases, compensation is available if targets are unmet.

This indicates that business FTTP products are not vastly dissimilar to leased line services on features such as service level agreements and repair times. The ability to offer these services in business FTTP seems likely to be a good indicator that high levels of service can also be offered for leased lines as well. While not a perfect equivalent to leased line quality, this also suggests that any difference in features such as service is not likely to be so large as to present a significant hurdle for altnets (residential or business) to overcome.

3.3. Issues in using the NRM to set the Area 2 boundary for leased lines

As summarised above, the TAR proposes to reverse course and set different boundaries between WLA and leased lines using the NRM. Ofcom's primary reason given for decoupling the WLA and leased line geographic boundaries is that it is now practical to use the NRM to identify all the LLA geographic markets. Ofcom states that the NRM is the *"the best way available to us to model the presence of networks that offer leased lines"* in the market, due to improvements in the data available

[117] TAR 2026-2031, Vol 2, para. 2.105

and the fact it can model existing and planned networks.[118] However, Ofcom has not explained why the NRM metric is necessarily better than using the WLA boundary, other than the fact it is now "*practical*" to use the Leased Line NRM.

This Section presents reasons why the NRM is not necessarily better suited for setting the boundary than the WLA metric, even if the objective is to capture leased lines competition. It explains that:

- The indicators used to define the boundary between Area 2 and Area 3 are by nature both merely approximative metrics, and it is not clear that the NRM metric is likely to be a substantial improvement.
- The NRM is not robust to minor changes in its key assumptions, which lack a clear foundation, and lead to large changes in the results.
- The results of the NRM in many cases plainly fails to capture the realities of localised competition.
- Limitations of the NRM have been identified by Ofcom in previous reviews.
- The difficulties of the NRM are reflected in Ofcom's multiple changes to the model specifications across reviews.
- Ofcom's own analysis suggests the NRM results are likely to be highly sensitive to different assumptions as to the input parameters.
- Openreach analysis suggests that the NRM results are highly sensitive to input assumptions.
- Supply of mobile backhaul may be driving some of the differences between the WLA and leased line Area 2 boundary, which needs to be addressed on its merits and not hidden in the technicalities of the metric used.
- Mobile backhaul is important because there has been a large - and unexplained - composition shift in Ofcom's data towards mobile cell sites.

3.3.1. Both the WLA and NRM metrics are approximative

The indicators used to define the boundary between Area 2 and Area 3 are by nature approximative metrics. Neither the WLA nor the leased line metrics are designed or expected to perfectly delineate potentially competitive from non-competitive areas; they are merely reasonable approximations for this difficult task. Given their approximative nature, different metrics will lead to different boundaries, but those differences should only drive the market delineation if the NRM is capturing important differences in competition for leased lines to those that are captured using the WLA metrics.[119] The mere existence of differences in the outcome of the NRM to the WLA metrics is not sufficient to conclude that the NRM is necessarily capturing genuine differences in competitive conditions in leased lines.

[118] TAR 2026-2031, Vol 2, para. 5.106

[119] The NRM does usefully bring in leased line only suppliers, but this addition primarily helps to identify HNR areas, where leased line competition may be stronger than occurs in WLA, rather than delineating between Area 2 and Area 3.

Approximation in the NRM occurs in myriad ways. It uses an arbitrarily chosen data set of businesses (rather than actual leased line customers), it uses an arbitrarily chosen "dig distance", it uses an arbitrarily chosen 65% threshold, and there are other limitations (see 3.3.2.1)

The point is that neither metric is close to perfect in identifying locations where there will or will not be competition to some degree in the future, they are simply two approximative approaches for setting a boundary that will inevitably be imperfect. Thus, while the NRM is one way to draw the boundary for leased lines, the WLA metric provides another reasonable approach. But the WLA metric has the additional and very substantial advantage that it better captures the synergies expected from the use of WLA networks to also supply leased lines and better fits the policy objective of setting remedies that are designed to encourage competing networks, since these rely on returns from both leased lines and broadband.

Accordingly, it is not enough to calculate that the NRM gives a different outcome to the WLA boundary. It should be shown that the NRM is substantially and categorically better at capturing the potential for leased lines competition, and that these differences are sufficiently clear and substantial that they support Ofcom's decision to change the clear course laid out in WFTMR. However, Ofcom does not provide an analysis that the NRM more accurately measures competition as compared to the WLA boundaries, or the significance of any differences.

In fact, there are good reasons to doubt how well the NRM does capture actual and potential competition in leased lines, as we explain in the subsections below.

3.3.2. Ofcom's NRM is not robust and leads to inconsistencies

In this subsection, we elaborate on the nature of the approximations entailed in the NRM, and comment on other questions as to how reliable it is. We discuss:

- A first principles explanation of the limitations of the NRM.
- The NRM's failure to capture the use of PIA, e.g., in its use of a 50m dig distance assumption.
- The NRM's required coverage threshold (65%) is arbitrary.
- Issues with the NRM's data on location of business sites.
- The NRM does not take account of the potential for smaller altnet rollout.
- Looking at specific areas shows how the NRM often reaches conclusions that are plainly not capturing the actual competitive conditions faced.

3.3.2.1. First principles limitations of the NRM

Ofcom's NRM aims to estimate the competitive conditions of LLA in each postcode sector by considering to what extent demand sites can be potentially served by the network operators. Using the LLA demand sites dataset and the physical network infrastructure dataset, Ofcom conducts a network reach analysis to determine the scale and location of competing network deployment.

Ofcom's model estimates the number of demand sites located within 50m of each modelled network site and then classifies each postcode sector based on whether at least 65% of its demand sites were located within 50m of zero (BT only), one (BT+1), or two or more (BT+2) competing networks. For

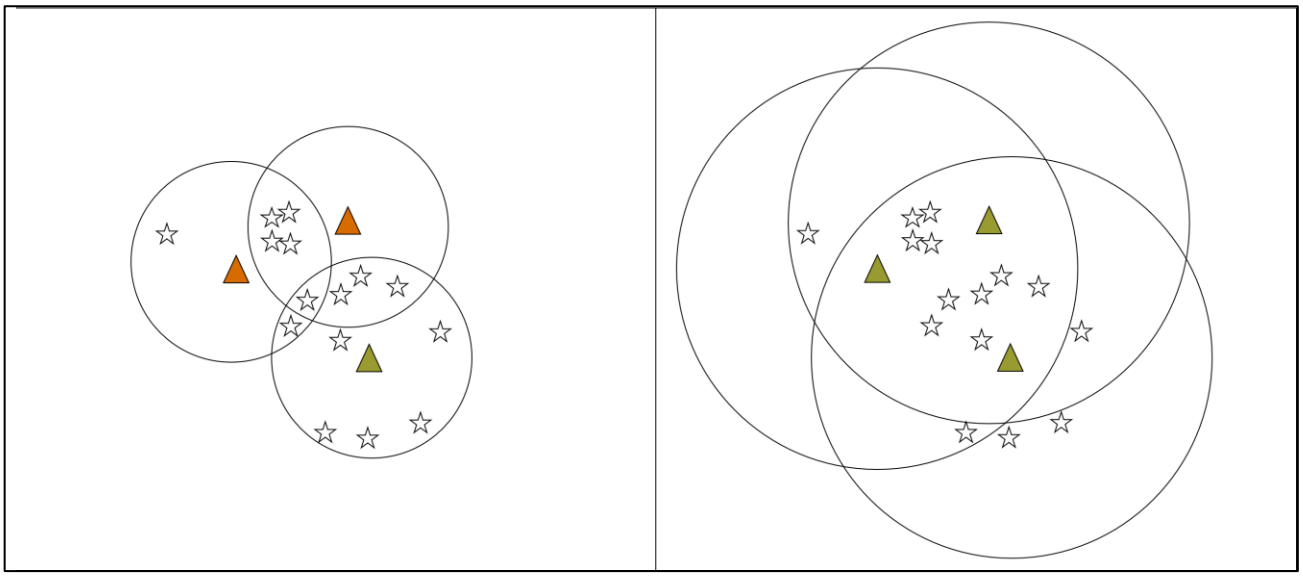
example, if there are two networks in a postcode sector and one of them is within 50m for 75% of the demand sites in that postcode sector, and the other is within 50m for 50%, then Ofcom considers that postcode sector to have one competing network to BT and classifies it as BT+1. The results of this analysis yield:

- The average number of competing networks by geographic market.
- The proportion of demand sites within 50m of a given number of competing networks by geographic market.

In addition to the assessment of presence, Ofcom also considers additional indicators of competitive intensity in the NRM which, according to Ofcom, provide a useful indication of the degree of competition in a particular area and the extent to which alternative operators can impose a competitive constraint on Openreach.[120]

However, Ofcom's NRM is inherently an approximation, and reasonable changes in its assumptions can result in large changes in the results. For instance, the dig distance assumption will mechanically determine which networks are considered able to serve a demand site (discussed in Section 3.3.2.2 below). Figure 3.4 below depicts a stylized example showing how the results change with a change in the assumed dig distance. The example shows three networks and 15 demand sites in a postcode sector. In the baseline scenario the first network has ten demand sites in its proximity, i.e. within the assumed dig distance, the second network has eight and the third network seven. Requiring the networks to have more than 65% of demand sites of the postcode sector in their proximity to consider them able to compete would imply only one network is competitive. In this example, an increase in dig distance results in all three networks becoming competitive.

Figure 3.4: Stylised results of a Network Reach Model with varying dig distances



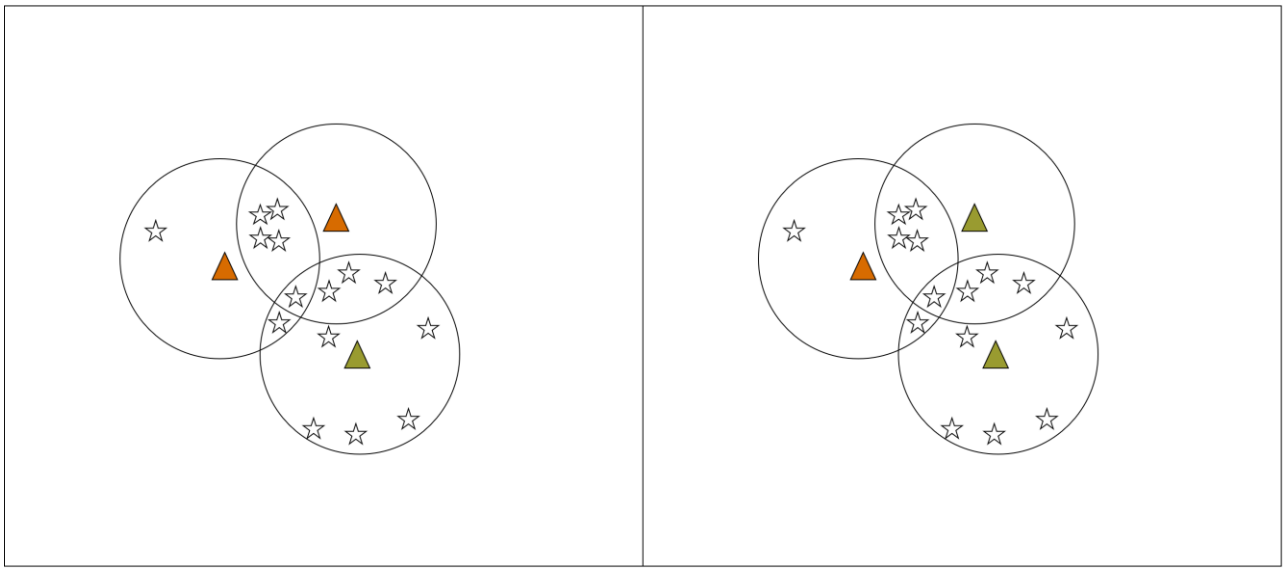
Source: NERA internal analysis.
Notes: The triangles depict the networks in a postcode sector and the stars are the demand sites. The circles represent the

[120] These include density of competing networks within 50m, distance to nearest competing network, proportion of new connections that are on-net (own network or digging) vs off-net (using access to third-party infrastructure), the extent to which competing networks have built, rather than supplied the customer off-net, and dig distances.

assumed dig distance. The left-hand side illustrates the baseline scenario, and the right-hand side is a variation where the dig distance is larger. In the left-hand scenario, only one network crosses the 65% threshold and is therefore counted as a competitive constraint. In the right-hand scenario, all three networks are competitive (highlighted by the green colouring).

Similarly, the required coverage threshold will decide which networks are considered able to serve a demand site (discussed in Section 3.3.2.3 below). Figure 3.5 below depicts another stylized example which further illustrates how the results of a network reach model can change with a change in the required coverage threshold. The example shows the same three networks and 15 demand sites in a postcode sector and the baseline scenario is the same as above, i.e. the first network has ten demand sites in its proximity, the second network has eight and the third network seven. Requiring the networks to have more than 50% instead of 65% of demand sites of the postcode sector in their proximity to consider them able to compete would imply two instead of only one network is competitive.

Figure 3.5: Stylised results of a Network Reach Model with varying coverage thresholds



Source: NERA internal analysis.

Notes: The triangles depict the networks in a postcode sector and the stars are the demand sites. The circles represent the assumed dig distance. The left-hand side illustrates the baseline scenario, and the right-hand side is a variation where the required coverage threshold is lower. The number of demand sites are the same in both scenarios, but due to the lower required coverage threshold, more networks are counted as a competitive constraint in the left-hand scenario.

There are other limitations in Ofcom's approach which suggest that the NRM is not reflective of the real market dynamics for leased lines. The following subsections discuss these limitations in more detail.

3.3.2.2. The NRM does not take PIA into account

Ofcom assumes that a 50m dig distance is a reasonable approximation of how far a network provider can reach to serve a commercial customer.

This 50m dig distance assumption underpinned Ofcom's NRM in the 2019 BCMR. This was based on a mix of evidence, including (i) a cost-model estimating the breakeven point at which it gets more costly to dig further than the additional revenue to be expected from that dig and (ii) data on actual digging behaviour of networks. This is explained further in Appendix 3.

Ofcom chose 50m because this distance would be large enough to cover the area in any given urban postcode, as well as almost 90% of the area in the median postcode, and therefore accurately assesses competitive dynamics in dense areas.[121] Ofcom does not present an assessment that discusses how this assumption fairs in rural postcodes, which are more likely to be within the Area 2 and Area 3 boundaries.

Ofcom maintains this assumption for the 2026 TAR proposals but does not present evidence that the figure used as far back as 2019 is still appropriate. But the growing importance of PIA strongly suggests that rivals are likely to be able to compete for leased line sales that are further away from their networks than may have been the case in the past. Thus, the 50m dig distance assumption used in the TAR is more than six years old, based on outdated financial assessments, and does not account for the potential use of PIA.

One response to the potential to use PIA would be to acknowledge it as an inherent limitation of the NRM (which assumes actual digs) and therefore provide a reason to prefer the WLA boundary. However, even where digging is required, the appropriate dig distance requires proper evaluation. For example, Ofcom might reexamine the dig costs and update its cost model to evaluate whether the 50m dig distance is still appropriate. Updated market prices, the relevant timeframe, the number and range of services that the new connection might be used to supply might all have evolved.

Moreover, there are good reasons to believe that the PIA makes it cheaper to supply commercial customers that are further away from a competitor's network. For example, Openreach estimates suggest PIA enables providers to provide their own fibre connections at a lower price than the cheapest Openreach wholesale Ethernet service for distances up to just under 300m even based on a three-year payback period.[122] PIA allows other network operators to access existing ducts, poles, and other infrastructure owned by incumbents like Openreach's network to serve customers, which significantly reduces the cost and complexity of network extensions.[123] In practice, this means operators can economically extend connectivity to a greater extent than in the past without the need for extensive new works, which Ofcom acknowledged in the TAR.[124]

Thus, by continuing to use the 50m dig distance used in previous reviews, and before the combination of PIA and new network growth applies, Ofcom's analysis will not reflect the evolving competitive conditions.[125]

The possibility that PIA is significantly reducing the dig distances required over time suggests that the NRM is underestimating the actual competition faced. One way to test this is to use the NRM but deploy sensitivities to the dig distance. We do this in Section 3.3.6 below, showing that if a 250m dig distance is used in the NRM, a substantial part of the Area 3s would be redesignated as Area 2, and align more closely to the boundaries indicated by the WLA metrics.

---

121 2019 Business Connectivity Market Review, para 5.80

122 AlixPartners, The competitive impact of duct and pole access on the BCMR 2019 report prepared for BT plc (2019)

123 TAR 2026-2031, Vol 2, para. 2.8-2.9

124 TAR 2026-2031, Vol 2, para. 4.173, 5.252 & 6.56

125 Ofcom acknowledges that PIA can help competitors overcome barriers to entry but dismisses that it is sufficient enough to consider it relevant for leased line supply without developing the argument further. (TAR 2026-2031, para. 5.155 & 5.182)

3.3.2.3. The 65% coverage threshold is arbitrary

For each postcode sector, Ofcom determines the number of relevant LLA competitors located within 50m of each demand site and then classifies each postcode sector based on whether at least 65% of its demand sites were located within 50m of zero, one, or two or more relevant LLA competitors. Thus, for an operator to be considered a competitive constraint in the postcode sector, it must serve at least 65% of demand sites in the area.[126]

The threshold of 65% is higher than the 50% required for WLA and therefore has the potential to understate the actual competitive landscape of the LLA relative to the WLA. Ofcom explained that it considers 65% to be a reasonable range that is neither too high nor too low, but while it may be one reasonable approach, other approaches are likely to be reasonable as well,[127] and it is not clear why different thresholds should be used in the different metrics. This serves to reinforce the point above that the WLA and NRM differences may simply reflect differences in the approximative construction of each metric, which should not be used to reliably demonstrate differences in the actual or potential competitive conditions faced.

In the section on sensitivity analysis (Section 3.3.6 below), we examine the implications of using a 50% coverage threshold in the NRM, showing that the NRM results are indeed quite sensitive to this arbitrary assumption.

3.3.2.4. Issues with the NRM's data on location of business sites

The NRM classifies demand sites as premises of businesses with more than 250 employees, mobile cell sites and data centre access sites.[128] There are several issues with this approach.

- **Restricting businesses to 250 employees:** Restricting business sites to those with 250 or more employees excludes a significant portion of the LLA market, which may result in different NRM outcomes. The 250 limit is arbitrary and restricting sites businesses to 250 employees may not reflect changing consumption patterns in the face of ever-increasing data demands. Ofcom has changed its business datasets over time, each time likely resulting in different model outcomes (see Section 3.3.4 below). Moreover, business sites are just a proxy for where LLA demand resides.
- **Including MNO sites:** Mobile base stations account for a large part of the demand sites in the NRM. It is possible that the NRM is returning different results to the WLA metrics partly because WLA networks do not cover mobile sites as well as business sites, especially in less dense geographic areas. Rather than using the NRM results in an unexamined way, this points to a need to carefully consider competitive conditions for mobile base stations (which may not be well covered by altnets) separately from business leased lines (which may be well covered by altnets). This is explored further in Section 3.3.7 and 3.3.8 below.
- **Determining the locations:** Due to limited availability of the precise location of the demand sites, Ofcom approximates location with the centroid of the postcode in which the demand site is located. The postcode centroid is defined as "*the mean grid reference of all postal delivery*

126 TAR 2026-2031, Vol 2, para. 5.112

127 2019 Business Connectivity Market Review, para. 5.86-5.88

128 TAR 2026-2031, Annex 9, para. A9.14 – A9.22

points in that postcode".[129] Using postcode centroids to approximate site locations in rural areas may be problematic because rural postcodes often cover large, sparsely populated geographic areas. Unlike urban settings where a postcode might represent a few buildings, rural postcodes can span several square kilometers. Assuming the network coverage or demand at the centroid applies uniformly across this wide area ignores the reality that many locations within the postcode may be far from that centroid and in fact that demand sites might locate themselves closer to networks to improve their network coverage. Thus, approximating the exact locations with a postcode centroid might not capture competitive dynamics well.

3.3.2.5. Ofcom does not consider the potential for smaller altnet rollout in its competitive assessment

As discussed in Section 3.2.1.2, many of the altnets that are not included in the NRM do or could compete in leased lines. Thus, the NRM fails to capture a potentially important source of competitive dynamic in leased lines.

3.3.2.6. The NRM produces results that plainly fail to capture local competitive conditions in leased lines

Several results have been observed in Ofcom's NRM (in comparing the 2021 version with the most recent) that do not capture actual competitive conditions. This might indicate that the NRM is unstable. The four examples presented in Appendix 3 below illustrate that it would be short sighted and unreasonable to discourage future build through an Area 3 classification.

This sample where it is observed that Ofcom's NRM does not capture competitive conditions accurately brings into question the robustness of the model and the extent to which it should be relied upon. It is not clear that Ofcom has sufficiently tested the appropriateness of the model for the purposes of classifying leased line areas separately from WLA areas.

3.3.3. Limitations of the NRM have been identified by Ofcom

The traditional purpose of the NRM has been to identify clusters of leased line competition located in the business districts of central urban areas, to delineate the HNR market. However, the TAR proposes to use the NRM to delineate Area 2 and Area 3, which means setting the geographic boundary in less densely populated geographic areas. But Ofcom has previously recognised that the NRM is less well specified for such purposes. In the WFTMR, Ofcom wrote that *"approximations used for our network reach metrics become more significant in less densely populated areas with relatively fewer business locations"*.[130] Ofcom explains that networks have provided more data on their planned builds, which will increase precision of the model.[131] While it is true that more data will mitigate previous dark spots of the model, the fundamental issues such as the approximative nature and the sensitivity of the model have not been addressed.

Ofcom has recognized the approximative nature and limitations of the NRM. For example, in the 2019 BCMR Ofcom agreed with Openreach that "*the choice of the buffer distance needs to take into*

[129] 2019 Business Connectivity Market Review, para. 5.50

[130] 2021 WFTMR, Vol 2, footnote 635, page 154

[131] TAR 2026-2031, Vol 2, para 5.106

account measurement inaccuracies". Ofcom acknowledged the "*assumptions [.] in the network reach analysis need to produce a reasonable proxy for network reach. [A] buffer distance that is too low [is] prone to finding a false negative, [while] a buffer distance that is too high [is] prone to finding a false positive*".[132]

3.3.4. Ofcom's NRM has been subject to multiple changes across reviews

Stepping back, over time the NRM has repeatedly been amended, using different data sources and assumptions, different definitions of the products to be included, and different geographical classifications. This history does not give confidence that the NRM, or the geographic boundaries that it produces, are likely to be stable looking forward.

- **Different demand data:** In the TAR, Ofcom has changed the provider from Market Location (which it used to obtain the information on business sites for the 2019 BCMR and the 2021 WFTMR) to the CACI D&B Business Data.[133] The compositional difference results in fewer business sites being included in the TAR.
- **Different demand composition:** Moreover, the TAR contains a much higher share of mobile base stations than was the case in previous iterations. Ofcom expanded the information it received from MNOs, which means it is difficult to make a direct comparison of the results over time. It would be more appropriate to separate MNO sites out into a separate analysis as Ofcom did for its 2013 BCMR (as discussed in Section 3.3.7 below).
- **Change in supply data in earlier BCMRs:** Comparing the analyses of the 2026 TAR proposals and 2019 BCMR to the analyses conducted as part of earlier BCMRs highlights further methodological departures between the years. For instance, prior to 2019 Ofcom did not include duct network data in its analysis to determine the presence of a network operator.[134]
- **Change in dig distance in earlier BCMRs:** Ofcom chose the 50m dig distance as a balance between the results of a cost model it used for the 2019 BCMR, which indicated the breakeven point for the cost of digging to be around 30m, and data limitations that did not allow to accurately measure short distance. However, in the 2016 BCMR Ofcom assumed 100m as the appropriate dig distance on the basis that this would identify competition in the relevant product market and is consistent with the data of actual dig distance of networks.[135] Going back to 2013, Ofcom argued for 200m as the appropriate distance assumption, as it might have been possible for providers to connect customers from a location deeper in the network such as a duct access that may have extended closer to the customer site.[136]

---

132 2019 Business Connectivity Market Review, para 5.77

133 TAR 2026-2031, Annex 9, para A9.17 & 2019 Business Connectivity Market Review, Annex 12, para A12.14

134 Ofcom only started including duct networks into its analysis after *"Openreach raised the concern that the use of fibre flexibility points for some providers rather than duct network will lower the estimated coverage of rival networks and understate the true "footprint" of these operators, suggesting that we use a longer reach distance for those operators."* Annex 12 to 2019 Business Connectivity Market Review, para A12.9

135 2016 Business Connectivity Market Review, Annex 13, para. A13.53 – A.13.57

136 2013 Business Connectivity Market Review, para. 5.139

- **Coverage threshold:** The classifications from 2019 onwards were made requiring a network to meet the coverage threshold of 65% of demand sites in a postcode sector. Prior to this, Ofcom only considered the average number of providers per business site irrespective of how many premises the networks serve. For instance, in the old definition, if one half of the demand sites were served by Openreach and one additional network and the other half by Openreach and a different additional network, that market would have been classified as having on average one competitor to Openreach. Under the new definition, this market would be considered to have no competitors to Openreach as neither network serves at least 65% of premises.

Table 3.3 below illustrates the differences between the classifications which, in part, result from the changes between the 2026 TAR proposals, the 2021 WFTMR and the 2019 BCMR. It shows that the change in methodology and dataset resulted in an increase in postcode sectors and demand sites in Area 2 between the 2019 BCMR and 2021 WFTMR. This is reversed in the 2026 TAR proposals, with a reduction of postcode sectors and demand sites in Area 2.

Table 3.3: Comparison of Area classification between reviews

Review	2026 TAR proposals		2021 WFTMR		2019 BCMR	
Metric	Postcode Sectors	Demand Sites	Postcode Sectors	Demand Sites	Postcode Sectors	Demand Sites
HNR	935 (9%)	18,526 (12%)	525 (5%)	9,085 (6%)	579 (6%)	9,667 (6%)
Area 2	4,208 (42%)	68,293 (45%)	5,430 (54%)	94,565 (64%)	3,867 (38%)	62,250 (39%)
Area 3	4,591 (45%)	57,976 (38%)	3,867 (38%)	40,041 (27%)	5,430 (54%)	85,789 (54%)

Sources: Table 5.3 2026 TAR, Table 7.7. 2021 WFTMR, Table 5.14 2019 BCMR.

To further illustrate the robustness of the NRM to its assumptions, the next subsection reviews Ofcom's sensitivity analyses.

3.3.5. Ofcom's analysis suggests NRM results are likely to be sensitive to different assumptions as to the input parameters

The NRM results are likely to be sensitive to different assumptions on key inputs. This means that reasonable changes to inputs that are necessarily approximative can have a large impact on the geographic boundaries that the model produces. That would not be a solid foundation for stable geographic boundaries and confidence as to how future regulation will work.

The TAR does not set out how sensitive the NRM results are to different assumptions on the elements of the metrics used, which is insufficient analysis given the shift to relying on the NRM. However, in previous reviews, Ofcom has conducted and presented multiple sensitivities of the results of its NRM. These are presented in Appendix 3. While the analyses are not directly comparable to the current

version of the NRM (due to the inconsistencies in Ofcom's methodology),[137] they are still indicative of the instability of the model with regards to changes in its input parameters. This adds to the reasons for not using the NRM and instead simply to adopt the WLA boundary for Areas 2 and 3.

As demonstrated in Appendix 3, Ofcom's historical network reach analysis highlights that the NRM is highly sensitive to changes in assumptions on input parameters. This view was also acknowledged by the CAT as part of its 2019 judgment on Ofcom's 2016 BCMR, in which there was considerable dispute as to the reliability (i.e., the errors and imperfections it contained) and the informative nature (i.e., what it could tell Ofcom) of the NRM.[138] The CAT did not dismiss Ofcom's conclusions because *"[Ofcom] also looked at additional factors to show the existence of effective competition and did not shut its eyes to the reality of the actual difficulties of network extensions and connections"*.[139]

The point that the NRM suffers from issues stands, when it comes to the question now faced (which is whether the NRM is to be preferred to the WLA boundary in circumstances where the strong expectation is that WLA competition also implies leased line competition).

3.3.6. Openreach analysis suggests that the NRM results are highly sensitive to input assumptions

While Ofcom did not provide sensitivity analyses of the NRM in the TAR, Openreach has endeavoured to model network reach using a similar methodology. Naturally, Openreach does not have access to Ofcom's data, and is not able to replicate Ofcom's model or results.[140,141] For example, the Openreach modelling does not have Ofcom's evidence as to the precise location of competing networks. [✂]. However, Openreach's modelling does provide further corroboration that the NRM results are sensitive to input assumptions.

Openreach's baseline specifications are the same as Ofcom's (i.e., requiring a network operator to be in 50m reach of 65% of demand sites to be considered a competitive constraint).

Figure 3.6 below shows the sensitivities of the model if (i) the coverage threshold is reduced to 50%, (ii) the dig distance assumption is increased to 250m, and (iii) both. The model shows the percentage of postcode sectors in the respective area classifications.

Figure 3.6: Sensitivities of Openreach's own network analysis – coverage threshold and dig distance

[✂]

Source: Openreach [✂].

137 Most notably the different composition of demand sites between the 2019 BCMR and 2026 TAR, as well as the different modelling assumption on the coverage requirement between the 2016 BCMR and 2026 TAR.

138 According to the CAT's judgment, "*both the Appellants and Ofcom appeared to agree that there were potential errors and biases in the [.] model*". Competition Appeal Tribunal, TalkTalk/Vodafone v. Ofcom Judgment 2019, para 194

139 Competition Appeal Tribunal, TalkTalk/Vodafone v. Ofcom Judgment 2019, para 286

140 [✂].

141 For example, Ofcom has access to data directly provided by the network operators, while Openreach relies on public data on FTTP network presence; Ofcom includes large business sites as well as cell sites whereas Openreach only includes business premises but does not restrict those by size.

Figure 3.6 shows that a change in the coverage threshold from 65% to 50% reduces the number of postcode sectors in Area 3 from [✂]. It has a limited impact on the proportion of postcodes considered to be HNR, so it is largely Area 2 that is affected. Assuming a dig distance of 250m instead of 50m reduces the proportion of postcode sectors in Area 3 from [✂], with a greater impact on HNR areas. Adjusting both assumptions together, these effects compound to a decrease from [✂] of postcode sectors being in Area 3.

In addition, in Figure 3.7 below, Openreach looks at the outcomes of the model when including all networks in all areas. As highlighted earlier, Ofcom did not include the footprint of smaller altnets in its analysis, whereas Openreach uses available public data on those altnet networks to assess their impact on the area classification. Thus, the baseline scenario includes only the networks Ofcom includes (i.e. ignoring smaller altnets). Including all networks has the effect of reducing Area 3 postcodes by [✂] from [✂]% to [✂]%.

Figure 3.7: Sensitivities of Openreach's own network analysis – inclusion of Multi Service Networks (MSNs)

[✂]

Source: Openreach [✂].

Openreach considers specifications where the parameters are adjusted for the same sensitivities described above. The results in Figure 3.7show that postcode sectors in both Area 2 and Area 3 are reclassified in two of the three sensitivity tests. A reduction in the coverage threshold results in 10 p.p. fewer postcode sectors being classified as Area 3 compared to the baseline scenario. Increasing the dig distance to 250 decreases postcode sectors in Area 3 by [✂] p.p. It is also worth noting conceptually that if CityFibre were to be added to the Openreach (Ofcom included networks) case, it would be expected that the proportion of HNR areas would increase.

Despite Openreach's modelling exercise differing to some extent from Ofcom's, the results are indicative of the NRM's sensitivity to its assumptions. The results of Openreach's sensitivity analyses are also in line with the results Ofcom presents as part of its sensitivity analyses in previous BCMRs (discussed in Appendix 3). Taken together, Openreach's and Ofcom's sensitivity analyses corroborate that the NRM is unstable and reasonable changes to its input parameters yield significant differences of area boundaries.

3.3.7. There are differences in leased line provision for mobile backhaul compared to business sites

Ofcom's NRM treats mobile base stations in the same way as business leased line users.[142] It is possible that part of the reason why Area 2 is smaller in the NRM than indicated by the WLA market is because altnet networks are closer to business sites than to mobile base stations, especially in less densely populated areas. It may be that the divergence between the WLA and NRM methods is less if attention is focused on business leased lines alone, and competitive conditions for mobile base stations are examined separately.

[142] TAR 2026-2031, Annexes 1-22, para. A9.14

There are good reasons why it makes sense to look at competition to supply mobile base stations separately, as we explain below.

MNOs purchase a substantial volume of leased line access services (including dark fibre) and use these to connect their mobile base stations to a point of aggregation in their core networks, known as mobile backhaul.[143] In general, mobile backhaul is higher value, has more sophisticated procurement, and may have greater PIA potential. As highlighted above, MNOs tend to have demand for higher bandwidths, which Ofcom presumes to grow over time as the 5G rollout continues.[144] Furthermore, due to the nature of their product, MNOs require higher security standards and levels of resilience.[145] Additionally, there is evidence that MNOs consider using PIA to self-supply their mobile backhaul as is the case in other European markets.[146]

Ofcom has previously recognised that the supply of mobile backhaul services might be characterised by the existence of large tenders and the need for nationwide coverage.[147] The 2013 BCMR discussed this extensively, as part of Ofcom's evaluation of whether mobile backhaul and leased lines should be considered one market. Ofcom stated:

> *"it is unlikely that mobile networks will seek to procure services on a circuit by circuit basis. This is related to the geographic spread of a large number of small sites and it is more efficient to groom traffic from individual cell sites over more aggregated backhaul links. MNOs must serve significant numbers of mobile base stations (in the tens of thousands) and often to more remote sites, this means that CPs competing for mobile backhaul must be able to offer significant connectivity to a number of base station sites. This is because delivering services to more than one site on the same network provides the opportunities for efficient aggregation of services over common backhaul links back to the core network. Hence, in order to enjoy those economies of scale, it is more likely that MNOs will require connectivity for a large number of base station sites, which may be distributed over a wide geographic area or even nationally."*[148]

Overall, Ofcom did conclude that mobile backhaul should be in the same market as other leased lines, because *"mobile backhaul is [not] more competitive than other markets"* and *"markets where operators have high levels of network reach are also places where mobile backhaul could be served competitively"*[149] However, this view was focused on the position in HNRs and central London, locations where dense network coverage will likely encompass mobile sites as well as business demand sites. The Area 2 boundaries may be in areas that mobile sites are not similarly covered, and at the same time the question of whether there are different competition issues that apply to mobile sites fail to be addressed.

143 TAR 2026-2031, Volume 2, para. 2.114

144 TAR 2026-2031, Volume 2, para. 5.16

145 TAR 2026-2031, Volume 2, para 2.89

146 2021 WFTMR, Vol 2, para. 2.132 and 2013 Business Connectivity Market Review, para. 4.373

147 2021 WFTMR, Vol 2, para. 6.106 & 8.276

148 2013 Business Connectivity Market Review, para. 4.383

149 2013 Business Connectivity Market Review, para. 4.397

3.3.8. There has been a large composition shift towards mobile cell sites which may affect results in the NRM

There is a large composition shift towards mobile cell sites (and away from large business sites) between the WFTMR and TAR, which means the NRM will likely be systematically underestimating the degree of competition in leased lines for normal business sites.

As shown in Table 3.4 below, in the WFTMR Ofcom's input data is c.90% large business sites (which might be expected to be located closer to WLA networks). In the TAR, Ofcom's input data falls to only c.65% large business sites, which is driven by a large increase in mobile cell sites. Ofcom does not explain this composition shift.

Table 3.4: Comparison of demand site by category (WFTMR21 vs. TAR26)

Type of demand site	WFTMR21	TAR26	Difference
Large business	133,735 (90.4%)	98,454 (64.7%)	-26%
Mobile cell sites	13,125 (8.9%)	53,044 (34.8%)	+304%
Data center	943 (8.6%)	759 (0.5%)	-20%
Total	147,893	152,257	

Source: Table A9.1 on pg. 66 of TAR annex and Table A5.1 on pg. 56 of WFTMR annex.

This change in composition may be exacerbating the possible impact that including mobile has on the NRM results. If mobile sites are further away from the networks of altnets than regular business sites, this would mechanically skew Ofcom's area definitions. Indicative research suggests that while there is a positive correlation between mobile cell sites and population density, this correlation is not perfect, i.e. there are parts of the UK where there are relatively more mobile sites than the population density in that area suggests and relatively fewer mobile sites in areas where the population density is higher. The reasons amongst others include coverage of transport links throughout the country, which will cross both more and less densely populated areas, as well as economic reasons as land prices are cheaper in less dense areas.[150] This bias will likely translate into the assessment of competitive dynamics in more rural areas.

Ofcom also notes this as part of its 2013 BCMR: "*the location of base stations (and hence demand for mobile backhaul) could extend to more remote and difficult to serve areas. Given MNOs' national coverage requirements, mobile base stations were often in rural locations or areas where any network build might be subject to protracted and difficult planning processes or restrictions. Given the remote nature of those sites, it might be the case that fewer OCPs have a network presence to serve base stations in those areas than is the case for general businesses using services provided using leased lines*".[151]

If Ofcom includes mobile base stations in the NRM and the networks of altnets do not cover them, Ofcom's NRM will likely be systematically underestimating the degree of competition in leased lines for normal business sites. Therefore, it is possible that the NRM results are affected by a composition

[150] Office of National Statistics – Comparing population estimates with the density of mobile cell tower locations

[151] 2013 Business Connectivity Market Review, para. 4.327

shift towards mobile demand sites. Thus, the treatment of mobile backhaul is an example of another area where Ofcom's NRM requires further assessment.

If the WLA boundaries are used, and there are some mobile backhaul requirements to not have rival networks in proximity, Ofcom could address that issue on a self-standing basis. That calls for a bespoke assessment of competitive conditions for mobile, taking account of the possibility of MNOs' role as major buyers which have indicated interest in self-supply – e.g. using PIA.

4. Restrictions on allowing Openreach to compete

Ofcom introduced restrictions on Openreach's ability to cut prices in specific geographic areas in the WLA review of 2018 and, in the 2021 WFTMR, Ofcom extended these restrictions to cover other contractual arrangements that might enable Openreach to compete more strongly with altnets. These restrictions have been enforced assiduously, with two detailed and extended reviews of the Equinox 1 and 2 commercial deals. In the TAR, Ofcom proposes to continue with these restrictions and to substantially strengthen them, adding a new objective of supporting altnets gaining market share as an end in itself (and not as a step towards encouraging additional network build) and the intention to prevent Openreach from encouraging more rapid migration of its customers to FTTP.

These proposals to prevent Openreach from competing on the merits in order to give artificial support to the commercial returns of altnets on their sunk investments will result in substantial damage to consumer interests, and risk "baking in" a long-term policy of permanent regulation. This represents a substantial shift by Ofcom of its WFTMR policy, which was to offer temporary support to altnets during the "window of opportunity"[152] to kick-start build of rival networks, but not to provide permanent protection from competition once that build had occurred.

This Section covers the following:

- In **Section 4.1**, we revisit the original reasons why Ofcom originally intended these policies to be time limited, given that continuing them will result in higher prices to consumers and therefore are only justified if they are essential in engendering gains in competition in the long run. We explain that **the new proposals represent a shift away from Ofcom's WFTMR policy that these restrictions should be time limited.**
- In **Section 4.2**, we set out why **there is no good reason to continue with the restrictions until 2031** in order to support new build by altnets.
- In **Section 4.3**, we explain why **the policy shift to protecting altnet take-up as a goal** (rather than as a stepping stone to support new build) **represents a substantial increase in Ofcom's restrictions on competition on merits**, risks permanent regulation to artificially support altnets, and is not justified by the prevailing economics.
- In **Section 4.4**, we explain how altnets are now likely to be sustainable on a forward looking basis, given several are on track to positive EBITDA and they would be able to cover their forward-looking costs even if there were significant reductions in Openreach's pricing.
- In **Section 4.5** we explain that **there is no good reason to prevent Openreach from competing on the merits with VMO2's established network.**
- In **Section 4.6**, we comment on **the evidence for other specific extensions of Ofcom's policy of restricting competition on the merits, and the detriments that may arise.** For example, Ofcom's restrictions on Openreach migrating customers from legacy copper broadband to FTTP, which flies in the face of long run Government and Ofcom policy of promoting this migration (and not preventing it).

[152] 2021 WFTMR, Vol 3, para. 7.56

- In **Section 4.7**, we comment that Ofcom has other policy options available to it that would adequately support the original objectives of (i) providing balanced support to any remaining altnet new build and (ii) ensuring that Openreach cannot leverage its market strength in geographic areas where it will have enduring market power into more competitive areas.

4.1. The economic case that restrictions on competition should be time limited

4.1.1. The restrictions on competition were intended to be temporary

In the WFTMR, Ofcom's primary concern was that anti-competitive behaviour by Openreach could deter new network build. Ofcom stated:

> *"BT could have the incentive, and in the absence of regulation the ability, to foreclose the entry or expansion of competing network operators, to limit this potential competitive threat. This could result from actions including offering geographic discounts to wholesale prices in areas where it faces potential competition from competing networks, other commercial terms including certain kinds of volume discounts or targeted overbuild."*[153]

Ofcom confirmed that its "*concerns in relation to geographic pricing…primarily relate to new network build*"[154] and that Openreach had incentives to "*deter new network build*"[155] during the early phase of rollout and could do so using geographic discounts on wholesale charges. It therefore decided to prohibit geographic discounts on all VULA (including FTTP) in the WLA Area 2 and Area 3 markets; and Ethernet and WDM services in the LLA Area 2 market. Ofcom also identified loyalty discounts or pricing contingent on large volume commitments as a particular concern and required Openreach to provide 90 days' notification of commercial terms where the price or other contractual conditions are conditional on the volume and/or range of services.

When originally introducing the geographic pricing restrictions, Ofcom recognised these restrictions would result in consumers losing out on benefiting from reduction in wholesale charges by Openreach.[156] However, Ofcom considered that the "*potential for consumer harm from this obligation is temporary and limited*".[157] This is because Ofcom *"only envisage[d] restricting BT from having targeted price reductions for VULA in the early stages of network rollout"*,[158] having justified the restrictions on there being a *"relatively small window" of opportunity to encourage new network build*."[159]

Ofcom explained the danger was Openreach's ability to use price reductions in the areas where *"rollout initially happens"* in order to *"discourage wider network competition over a significantly wider area"*.[160] The restrictions therefore sought to prevent Openreach from using geographic pricing to

153 2021 WFTMR, Vol 2, para. 8.57

154 2021 WFTMR, Vol 2, para. 8.328

155 2021 WFTMR, Vol 3, para. 7.11

156 2018 WLA Market Review Statement, Vol 1, para. 11.50

157 2018 WLA Market Review Statement, Vol 1, para. 11.51

158 2018 WLA Market Review Statement, Vol 1, para. 11.51

159 2021 WFTMR, Vol 3, para. 7.56

160 2018 WLA Market Review Statement, Vol 1, para. 11.30

target the *early* phase of new network build, which would deter subsequent investment and stifle wider network rollout.[161] Ofcom did *"not envisage that a provision in this form is likely to be necessary in the longer term"* and agreed that in *"the longer term"* geographic pricing *"may become more common"*.[162]

There were and are good reasons for time limiting these remedies. As well as being unnecessary in circumstances where the build phase is now largely complete, they also restrict competition to the detriment of customers. As we explain below, restrictions on geographic pricing and use of commercial contracting that often facilitates price cuts are likely to result in consumers losing out of the benefits from network competition.

It is also important to emphasize that the restrictions severely hinder Openreach's flexibility in competing with VMO2, should VMO2 decide to compete at the wholesale level (or otherwise). In the WFTMR[163] and the TAR[164], Ofcom has been clear that the restrictions were and are not intended to cover the established VMO2 network, yet the effect of the continuation of the restrictions will be that Openreach is unable to properly compete with VMO2.

4.1.2. Restrictions on geographic discounts

Ofcom's proposed Area 2 now contains many areas where Openreach faces substantially greater competition. This occurs in the footprint of the established VMO2 network, in areas where altnets have overbuilt in the VMO2 footprint, and in some other areas which have been targeted by several altnet networks (see our analysis in Section 2). In leased lines, it is also the case that there are significant variations of competition within Ofcom's Area 2 definition for WLA (which is the boundary that we suggest should be applied to leased lines, applying the same delineations[165] we suggest for WLA in Section 2).

The natural expectation is that this growth in competition will result in downward pressure on prices, yielding benefits to customers. However, restrictions on geographic prices substantially dilute Openreach's incentives to respond to these competitive pressures by cutting prices itself. This is because Ofcom's restrictions mean that if Openreach cuts its price in more competitive areas, it will also need to cut its price everywhere else. The result is that when evaluating the profitability of a price cut, Openreach will need to balance the gains from higher volumes in more competitive areas with the lower profits that result from lower prices everywhere else. Further, the dilution of Openreach's incentives to compete on price will translate into competitors setting prices higher than they would otherwise have done. This is because they can confidently price just under the Openreach "umbrella" in the knowledge that Openreach is unlikely to react by offering lower prices in response. The result is that ISPs and consumers miss out on efficient pricing outcomes, even though competition exists.

161 2018 WLA Market Review Statement, Vol 1, para. 11.30- 11.31

162 2018 WLA Market Review Statement, Vol 1, para. 11.33

163 2021 WFTMR, Vol 3, para 7.137 and FN 480

164 TAR 2026-2031, Vol 3, para. 9.12

165 This need not exclude the HNR areas that have been defined based on particular density of leased line only suppliers.

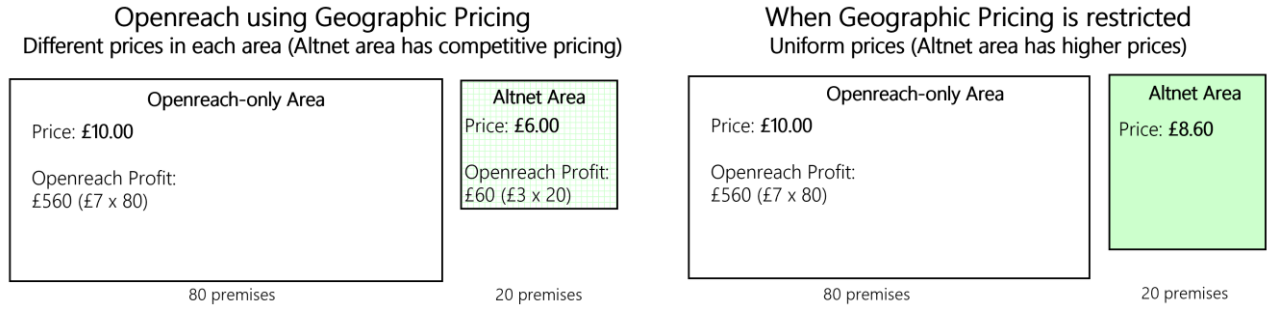
We can illustrate this using a simple example, as set out in Figure 4.4.1 below. Imagine Openreach prices nationally at £10 per household, with each household having a marginal cost of £3. In our example, an altnet deploys a network with partial coverage across the UK. The altnet seeks to win a contract to supply FTTP to a retail ISP (who currently only uses Openreach) in areas that make up 20% of the premises served by Openreach. The altnet knows that, given Openreach has marginal cost of £3 per connection (£7 profit per connection), Openreach is indifferent to the loss of 20% of its customers when the altnet sets a price of £8.60. If there were only 100 households, Openreach's profit would be £560 whether it dropped its price to £8.60 (and retained all 100 premises), or if it kept its national price of £10 (and lost 20 premises to the competition, only serving 80 premises).

Figure 4.4.1: Openreach's options with geographic restrictions (higher altnet prices)

Source: NERA illustration.

However, when Openreach can implement geographic pricing, the altnet will need to price competitively, given that it knows Openreach is able compete on the merits. We illustrate how the constraint of geographic pricing results in customers losing out on the benefits of competition in Figure 4.4.2 below. Given Openreach could then compete against the altnet without having to make a uniform reduction to its price, the altnets will expect Openreach to cut its price further. For this example, we assume that Openreach would cut its price to £6 in the altnet area. As a result, when removing geographic pricing restrictions, ISPs' total wholesale costs fall from £972 to £920, part of which would be expected to be passed on to end consumers.

Figure 4.4.2: Comparison of ISP outcomes when Geographic Pricing is permitted vs. restricted



Source: NERA illustration.

Thus, there are strong theoretical reasons to expect the TAR proposals to restrict geographic pricing will reduce downward pricing pressure and result in losses to consumers.

4.1.3. Restrictions on volume discounts reduce competition

Volume discounts are generally viewed as strongly procompetitive. For example, they can facilitate more intense competition by allowing customers to leverage their countervailing buyer power by negotiating discounts when seeking the best deals from rival suppliers. Therefore, Ofcom's proposal to retain the notification regime for commercial terms that are conditional on the volume of services[166] risks reducing ISPs' - and end consumers' - ability to benefit from increased network competition.

Given that CityFibre is now competing directly with Openreach for wholesale supply to altnets, and that there is strong potential for VMO2 to do the same, exertion of buyer power has the potential to be an ever more important feature of competitive dynamics. However, if Openreach is prevented from offering discounts linked to volumes then these dynamics will be dampened, providing an additional reason why ISPs and therefore end consumers will not obtain the full benefits of more competition.

4.1.4. Restrictions on other commercial terms hinder Openreach's flexibility to offer ISPs bespoke deals that suit their needs

Retail ISPs may have a range of different priorities and in the face of increased competitive pressure from altnets, Openreach will be under growing pressure to find ways to deliver its services in a way that best fits each ISP. By having the full flexibility to strike bespoke individualised deals with ISPs, Openreach will be better placed to provide services in a way that meets differing strategies and needs of each ISP's customers. However, Ofcom's restrictions on other commercial terms hinder Openreach's ability to address individual ISPs' needs.

For example, while an ISP may be eager to migrate its legacy customer base into fibre at an accelerated timeline, Ofcom's other commercial restrictions will reduce Openreach's ability to formulate a deal that allows it to address this ISP's priorities (we address these restrictions further in Section 4.6 below).

4.1.5. The main altnet build phase is well advanced and near to completion

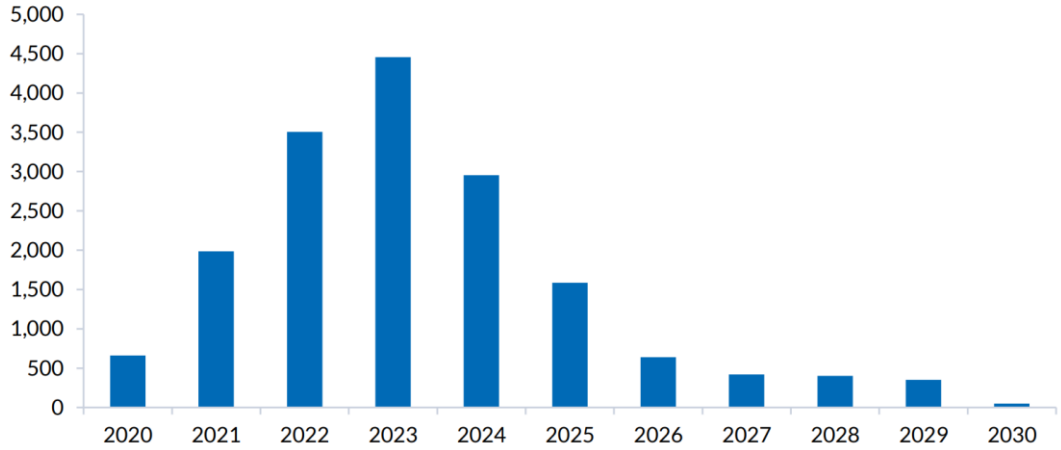
The "early phase" of rollout for which protection was envisaged in the 2018 WLA and 2021 WFTMR is well advanced, and the majority planned build has now occurred. Analysis from Enders Analysis indicates that the large majority of altnet rollout will have occurred by 2026, with the annual rollout by altnets being forecast as 10-20% of the rollout peak in 2023 (see Figure 4.3 below).[167] Ofcom itself recognizes *"that additional network build is expected to be more limited (compared to the build we*

[166] TAR 2026-2031, Vol 3, para. 9.62

[167] Enders Analysis, 2024. 'Altnets in the UK - Waiting for the music to stop' ,'Figure 23: Altnet annual roll-out (000s premises)'

have seen to date)."[168] In this way, the remedies have met their intended purpose, and no action Openreach could take would be able to reverse the deployment of fibre by competitors in the ground.

Figure 4.3: Altnet annual roll-out (000s premises)



Source: Enders Analysis Report 'Altnets in the UK: Waiting for the music to stop' (using Enders Analysis estimates, company reports).

This "small window" where alternative operators are "nascent" is therefore now over, and it would hurt consumers for these restrictions to be imposed for a period of a further 5-years. While there is still some build to come, it is far from clear that further protections are necessary or proportionate to achieve this. Once an altnet has already established a scale, additional build is likely to be more attractive at the margin due to better ability to sell to ISPs and other benefits from economies of scale. Even if a case for some continuation is appropriate, that case would only apply for a period and not until 2031. As we explain below, the networks that are already built assure future competition, since the infrastructure will always continue to pose a competitive constraint on Openreach. This makes any behaviour from Openreach aimed at undermining additional build futile.

However, rather than following through on the expectation of a sunset on these restrictions, the TAR abandons the WFTMR's understandable objective of supporting new build, and now adds supporting altnets winning additional sales as an objective in itself.[169] Ofcom states that it remains of the view that:

> *"Openreach could use geographically targeted price reductions or retail inducements – which involves charging different prices or providing different inducements for the same wholesale access – in order to undermine altnets' ability to become established competitors to Openreach. Altnets face considerable challenges in becoming established and overcoming the incumbency advantages of Openreach"*[170] and *"if altnets increase take-up on their networks this is likely to result in them becoming stronger competitors. Therefore, take-up is important to the development of network competition in the long run. Geographic discounts could deter the use*

168 TAR 2026-2031, Vol 2, para. 4.174

169 TAR 2026-2031, Vol 3, para. 9.19. Ofcom states that there is a *"window of opportunity to drive WLA take-up and become stronger competitors to Openreach"*.

170 TAR 2026-2031, Vol 3, para. 9.9.

of altnets, as well as incremental build, which could in turn weaken the competitive constraint they pose to Openreach in the future."[171]

But the economic case for artificially supporting altnets' ability to grow sales from a network that has already been built is far weaker than the case for protections that support the build itself. Once networks have been built, their costs are sunk, and they will consequently provide a permanent competitive constraint whether they are protected from competition from Openreach or not. Ofcom has shifted the goalposts in the TAR, moving from supporting build to supporting take-up as an end in itself, replacing the objective of protecting competition with that of protecting competitors, with consequential losses to consumers.

4.2. Commercial restrictions are not required until 2031 to support new build by altnets

It is neither necessary nor proportionate to restrict competition in order to bring home Ofcom's original objective for these remedies, which was to support new network build.

4.2.1.1. There is no need for indefinite protections to support additional network build by altnets

Networks with advanced build do not need further protection. As discussed above, the altnet "early build phase" is over and most of the build is complete. Once rival build is well advanced, it is far less plausible that (i) Openreach would have the incentives to engage in loss-making conduct to undermine the final extensions (as we explain directly below) and (ii) any such attempt would have the effect of preventing that build. Competition law provides adequate protections (discussed later in **Section 4.7** below).

Established firms in a market may prefer to deter initial entry or early phase build because successful market entry lowers profits for the existing firm. However, more aggressive competition may result in lower profits in the short run. When entry is just beginning these lower profits might be small, because, for example, prices would only be cut in a few locations (where the entry starts). But if the result is that future entry at scale is deterred the long-term gains could be large. Thus, if there are incentives to compete aggressively for these reasons, they are likely to be strongest in the very early phase of entry.

Using the same strategy to deter additional build once entry is close to complete is far less likely. It can be more costly, for example because price cuts would occur across a much broader area. It would now be very costly for Openreach to cut prices in areas of network build, given that altnets are forecast to pass 18.6m premises by the end of 2025[172] and therefore will cover the majority of UK premises (as noted above in Section 1.3). Further, there is much less to be gained from deterring incremental build, as those networks will continue to exert competitive pressure in regions where fibre has already been deployed.

171 TAR 2026-2031, Vol 3, para. 9.11

172 UK Altnets: Delivering Affordable, High-Speed Connectivity with Unmatched Customer Satisfaction, page 6, INCA, April 2025

More generally the policy trade off also shifts markedly as the network build phase nears completion. If there is more intense competition from Openreach across the newly built altnet areas that will deliver very substantial benefits for customers. Even if that development does result in some reduction in altnets' business case for further build, the magnitude of any impact will be small, and customers' long run interests are not likely to be well served. As explained above, Enders Analysis forecasts that altnet build from 2026 onwards will be 10-20% of the roll-out peak in 2023 (see Figure 4.5).[173] If that is the case, then the policy justification for continued restrictions on Openreach is reduced because the consequential losses for competition and consumers would protect only a modest amount of additional build.

4.3. A shift towards a policy of protecting altnet take-up in itself is unjustified

4.3.1. Networks that are already built assure competition

Once altnet networks are built, they are sunk assets which act as a permanent competitive constraint on Openreach. This will be true even if altnet take-up proves insufficient to recover the costs of building the networks. Given that the fibre is already in the ground, Openreach will always face the prospect of an altnet (or a firm that acquires its assets) pricing on the basis of much lower incremental costs than the costs of building the original networks (i.e., the relatively low[174] marginal cost of connection). Indeed, Ofcom's own estimates (from its 2026 Fibre Cost Model)[175] indicate that sunk capital costs are the single largest cost component for a WLA entrant, accounting for 43% of the unit cost when average customer lifetime is assumed to be 5 years.[176]

This is supported by elementary economics, as once fixed costs are incurred, prices will be determined by a firm's marginal costs. Prices will not be set in relation to average costs (i.e., the price required to recover all the costs of investment). Put another way, once a network is built the costs, risks and barriers to competing are much lower than they were prior to the build occurring.

Even if individual altnets were to become financially unstable, their sunk investments (i.e., existing fibre deployments) will always be used to support network competition. The lasting competitive pressure in areas of high altnet presence comes from the permanent presence of their infrastructure

---

173 Enders Analysis, 2024. 'Altnets in the UK - Waiting for the music to stop', 'Figure 23: Altnet annual roll-out (000s premises)'. Furthermore, the same report observed that in the (highly unlikely) event that the companies carry on operating as they have, coverage net adds in 2026 will be c.15% of the 2023 peak (Figure 1), but with *"consolidation, roll-outs will likely be cut back much further"*.

174 2021 WFTMR, Vol 2, para. 7.119. In the context of explaining the WLA market definition, Ofcom notes *"[there] are significant economies of scale because once the high fixed cost of investment in network build has been sunk, the marginal cost of connecting an individual premise is relatively low."*

175 In the 'base case', Ofcom's Fibre Cost Model assumes that the entrant rolls out to 5 million premises by 2028/29 and achieves a take-up of 33% by year 5 of the deployment. In its 'high-cost scenario', Ofcom's Fibre Cost Model assumes that the entrant rolls out to 8 million premises by 2028/29 and achieves a take-up of 30% by year 5 of the deployment. TAR 2026-2031, Annex 15, paragraphs A15.75 to A15.78.

176 Assuming there is an average customer lifetime of 5-years, connection costs account for 37% of Ofcom's forecast of the overall unit costs for a WLA Area 2 entrant in its base case scenario, while 'Build capex' is 43% of unit costs and 'Opex' is 20% of unit costs. This derived from 'Build capex' (£392.58), 'Connection costs' (£334.33) and per annum 'Opex' (£37.28). TAR 2026-2031, Annex 15, Table A15.4 ('Forecast unit costs for WLA Area 2 entrant cross-check (2024/25 terms)').

and is not dependent on the survival of any company. This is best exemplified by the case of VMO2, which has been able to grow into a major competitor to Openreach, despite much of the original costs of build being written off through consolidations and refinancings[177] after the network was originally built. In particular, NTL, which was the largest original cable operator in the UK, filed for bankruptcy in 2002.[178]

The implication is clear. Whether or not altnets are successful in achieving high take-up will not affect their ability to provide a permanent source of effective competition to Openreach and to VMO2. It follows that there is no good reason to restrict competition and prevent the lower prices and other benefits that it will deliver to consumers in order to artificially support altnets' ability to achieve higher take-up as an objective in itself.

4.3.2. A focus on take-up will ultimately deprive consumers of the benefits of competition

Large sections of Area 2 are covered by established competitors (i.e., CityFibre and VMO2), and prohibiting geographic discounts will impede Openreach's ability to compete with established competitors. This will ultimately deprive consumers of the benefits of that competition. Given the amount of network build that has occurred since the WFTMR, the costs to consumers from maintaining commercial restrictions have increased. However, given that the majority of fibre deployment has already occurred and limited additional build is expected[179], the benefits from maintaining commercial restrictions are greatly reduced.

4.4. Altnets appear sustainable in the long-term, even if faced with significant reductions in Openreach prices

Ofcom's decision to shift its focus towards supporting take-up assumes that increasing altnets' take-up is necessary for them to become financially sustainable. However, evidence indicates that altnets are already well on track to covering their forward-looking costs, which will secure the long-term sustainability. Furthermore, Ofcom's own estimates on forward-looking costs indicates that altnets will be sustainable in the long-term even if Openreach competes harder (i.e., lower its prices) in areas where competition is most intense.

4.4.1. Sustainability depends on altnets covering forward-looking costs

To gauge an altnet's long-term sustainability, it is important to consider its forward-looking costs. Their long-term sustainability will be underestimated by any financial metric that reflects the large, front-loaded costs (e.g., set-up costs, network build, customer connection costs) that are associated

[177] As noted in this 2005 BBC article (NTL seals $6bn Telewest takeover), consolidation occurred among UK's cable operators following NTL recovering from bankruptcy and Telewest undergoing restructuring. NTL and Telewest had been consolidated from "over 100" local cable operators (BBC News, 2002, 'Cable – business without profit'). Telewest and NTL were the predecessors to VMO2.

[178] The Guardian, 2022. 'NTL dumps debt burden' CNN, May 2002. 'NTL files for $17bn bankruptcy'; CNN, 2002. 'NTL's debt: What went wrong?' ("It has around 8.7 million subscribers, mainly in Europe. And in the UK it's the largest cable TV operator, with 3 million customers. So what went wrong?")

[179] TAR 2026-2031, Vol 2, para. 4.174

with fibre deployments, given these costs will only be covered by the increase in revenues that will eventually arrive once the business matures. Metrics that include capital expenditure (such as free cash flow) will be inappropriate, while metrics that exclude capital expenditure (e.g. EBITDA) will provide a better assessment of an altnet's ability to cover its forward-looking costs.

A recent Enders Analysis focuses on EBITDA in when considering altnets' future sustainability.[180] The report observed that the EBITDA of the several of the most mature altnets (i.e., CityFibre, HyperOptic, Community Fibre) were increasing from 2022 to 2023. Furthermore, we observe that since this report was written, several of these mature altnets are now already reporting positive EBTIDA – namely, CityFibre[181] and Community Fibre,[182] with indications that Gigaclear's EBITDA will soon also be reported as positive.[183] However, EBITDA could also underestimate an altnet's long-term sustainability, depending on whether large front-loaded costs are captured in its operating costs (e.g., connection costs).

4.4.2. Forward looking costs are likely to be higher when altnets initially expand their network

Many altnets that currently have low and/or negative EBITDA can still be sustainable in the long-term. This is because an altnet may have much higher operating cost when it is in the early stages of expanding its customer base, driven by the high cost of connection. The high connection costs are illustrated in Ofcom's REO model,[184] which estimates that 'Connection costs' are almost ten times that of per annum Opex cost. This means 70% of all forward-looking costs are incurred in the first year of a customer's lifetime.[185]

While these costs will be recovered over the course of customer's lifetime these high first-year subscriber costs may be reflected in the EBITDA of the year when the connection is made. If so, when an altnet is rapidly connecting customers, its current EBITDA will largely reflect these high connection costs. However, its EBITDA will increase as its business matures and its ratio of connections per year to total subscribers begins to decline.

4.4.3. Altnets will still be able to price as sustainable levels, even if Openreach made substantial cuts to its current existing prices

Ofcom's current estimates in the TAR, indicate a reasonably efficient entrant can recover all of its cost while competing against Openreach's current prices. Ofcom's own estimates also indicate that

---

181 CityFibre, 11 February 2025. 'CityFibre delivers first full year of profitability, with Sky to launch in 2025'

182 Community Fibre, 7 May 2025. 'Community Fibre posts first profit with 82% annual revenue growth'

183 Thinkbroadband, 4 June 2025. 'Interview with Nathan Rundle, CEO of Gigaclear'. During an interview with Gigaclear's CEO, it was noted that Gigaclear will be EBITDA positive this year.

184 In its base case scenario, Ofcom estimates that 'Build capex' is £392.58 and 'Connection costs' are £334.33, while 'Opex' is £37.28 per annum. TAR 2026-2031, Annex 15, Table A15.4 ('Forecast unit costs for WLA Area 2 entrant cross-check (2024/25 terms)').

185 In the first year of a customer's lifetime, an altnet will need to connect the customer and incur one year of other operating cost. Using the unit costs from Ofcom's base case for a WLA Area 2 entrant, this would be 71% of forward-looking costs of a 5-year period: (334.33 + 37.28)/(334.33 + (5*37.28)). TAR 2026-2031, Annex 15, Table A15.4 ('Forecast unit costs for WLA Area 2 entrant cross-check (2024/25 terms)').

Openreach would have to cut the price of its FTTP 80/20 product by more than half in order for an altnet to no longer be able to recover its forward-looking costs. This means that there is scope for significant levels of price competition before altnets' financial stability is under threat.

Ofcom's analysis in the TAR estimated that an entrant operator in WLA Area 2 would have to charge between £11.22 and £17.03 per month to recover its efficiently incurred costs over the modelled period.[186] Furthermore, when looking at the proposed anchor product of FTTP 80/20, Ofcom observes that the Openreach price for FTTP 80/20 for 2026/27 will be £215.33, once it reflects the discounts under the Equinox 2 agreement.[187] This would therefore be £17.94 per month, which Ofcom estimates as being £17.15 in per month in 2024/25 prices.[188] This means that even when applying Ofcom's highest cost scenario, a REO should recover all its costs, including recovery of sunk investments in building the network, when matching the discounted price of the proposed anchor product.

Given that only forward-looking costs are relevant, even if Openreach was to drastically reduce its prices, altnets will still be sustainable in the long-term. In the high-cost scenario from Ofcom's REO model, 'build capex' is £442, while 'connection costs' are £333 and 'Opex' is £40 a month.[189] Assuming a 5-year customer lifetime (which aligns with both the market review period and past Ofcom estimates of the average customer lifetime[190]), this implies a total cost (including build capex) of under £1000 per customer.[191] However, forward-looking costs (i.e., 'opex' over 5 years and 'connection costs') are under £550, or a monthly cost of around £9.[192]

Given Ofcom's estimate of Openreach's discounted FTTP 80/20 price is around £17 per month (in 2024/25 prices) and forward-looking costs are around £9 per month, a reasonably efficient operator modelled using a high-cost scenario will comfortably cover its forward-looking costs. Furthermore, even if Openreach was to make significant cuts to its current Equinox 2 discounts, a reasonably efficient operator modelled using a high-cost scenario would still be able to cover its forward-looking costs.

186 TAR 2026-2031, Vol 4, para. 1.43

187 TAR 2026-2031, Vol 4, para. 1.30-1.37

188 In order to set the charge control for its proposed anchor product with reference to Openreach's current prevailing price, Ofcom proposes to estimate use Openreach's FTTP 80/20 discounted price in 2025/26 and uplift it to what its price would be in the first year of the charge control (2026/27) according to the terms of the Equinox 2 Agreement. Ofcom finds "this is likely to result in a first year price cap of £215.33 for FTTP 80/20". From this we can derive the 2026/27 monthly price (£215.33/12 = £17.94). Ofcom finds this to be £17.15 when expressed in 2024/25 prices. Given that the £17.15 is expressed in terms of 2024/25 prices, it can be compared with the forward-looking costs Ofcom sets out in Table A15.4 ('Forecast unit costs for WLA Area 2 entrant cross-check (2024/25 terms)') TAR 2026-2031, Vol 4, paragraphs 1.34 and 1.43

189 TAR 2026-2031, Annex 15, Table A15.4 ('Forecast unit costs for WLA Area 2 entrant cross-check (2024/25 terms)').

190 Ofcom has previously estimated retail ISPs can expect an average customer lifetime (ACL) to be 5 years. Ofcom, 2015. 'Fixed Access Market Reviews: Approach to the VULA margin Statement', para. 6.460-6.465

191 'Build capex' and 'connection costs' plus five years of 'opex': £442.10 + £333.21 + (5 * £39.84) = £974.51

192 'Connection costs plus five years of 'opex': £333.21 + (5 * £39.84) = £532.41. This would be £8.87 per month. TAR 2026-2031, Annex 15, Table A15.4 ('Forecast unit costs for WLA Area 2 entrant cross-check (2024/25 terms)').

4.5. Openreach would be prevented from competing on the merits with VMO2

One critical area where Ofcom's policies risk denying substantial benefits to customers is preventing Openreach from competing on the merits with VMO2. Ofcom's own estimates indicate that VMO2's existing network covers around 50% of UK premises[193] and VMO2 has repeatedly threatened to shift from its current retail-only model to wholesaling. If VMO2 were to offer a cheaper wholesale price than Openreach as part of a volume deal, there is no good reason why Openreach should not be able to respond by offering a similar deal itself.

Moreover, unlike the protection of altnet new network build, there is no reason for similar protections for VMO2's existing network. Ofcom has itself made plain in the WFTMR that Ofcom's primary concern was Openreach's incentives to use geographic discounts on wholesale charges to "*deter new network build*"[194] during the early phase of rollout. Ofcom's concern did not extend to build by established operators within their existing footprint.[195] Thus, the WFTMR was clear that Ofcom was concerned with protecting nascent competitors, not VMO2's existing network (or the networks of other established operators).

Yet, if the TAR proposals are adopted, the effect would indeed be to prevent Openreach from competing on the merits, because it would be prevented from setting lower prices in the VMO2 footprint specifically, and it would potentially be prevented from offering a volume deal in the VMO2 footprint if that had the potential unintended side-effect of affecting altnets that were present in that area.

4.5.1. The prospect of VMO2 entry into the wholesale market

One of the principal risks for Openreach is VMO2's entry into the wholesale market. VMO2 has indicated it will launch itself as a wholesale competitor to Openreach in this market review period. In 2024, VMO2 explicitly announced its plans to "*create the biggest direct network challenger to BT Openreach in UK history*".[196] Ofcom recognises the potential for VMO2 to provide wholesale services, but Ofcom remarks that there is no track record of VMO2 competing at the wholesale level and therefore it considers that there is "*no evidence on the impact [VMO2] would have over the review period*".[197] But while the fact that VMO2 is not wholesaling in the UK already does leave room for some uncertainty as to the conditions on which it might do so, on a forward look the significant probability that it will wholesale plainly needs to be factored in, especially given VMO2's stated intentions. Moreover, it is not quite right because, as we have already noted in Section 2 above,

193 As indicated above, Ofcom estimates that VMO2 covers 51% to 60% of Area 2, and Area 2 covers 90% of UK premises. TAR 2026-2031, Vol 2, Table 4.4 and Table 4.7.

194 2021 WFTMR, Vol 3, para. 7.11

195 Ofcom clarified that its concerns did not relate to established operators "with a longstanding network with an established and significant customer base". [2021 WFTMR, Vol 3, para. 7.137 and FN 480].

196 VMO2 press release, February 2024. 'Virgin Media O2, Liberty Global and Telefónica kick off plans to create a national fixed NetCo in the UK'

197 TAR 2026-2031, Vol 2, para. 4.201 to 4.205

VMO2 does offer wholesale services to Sky[198] and Vodafone[199] in Ireland. In addition to illustrating VMO2 has a track record of competing at the wholesale level, it also indicates that there are pre-existing commercial relationships between VMO2 and major UK retail ISPs – this should lower the barriers to securing wholesale deals with these ISPs in the UK.

4.5.2. Openreach cannot compete with VMO2 by reducing prices in Area 2

Ofcom has previously argued in the WFTMR that the commercial restrictions do not prevent Openreach from responding in a targeted way to a VMO2 wholesale offer. This argument holds that the restrictions do allow Openreach to cut its prices across the totality of Area 2, which in the WFTMR significantly overlapped with the extant VMO2 footprint.[200] However, looking forward there are two limitations to this view.

- First, even during the WFTMR, Area 2 did not overlap completely with VMO2's footprint (Ofcom's analysis indicated that Area 2 previously covered 70% of premises, and estimated 61-70% of these premises were passed by VMO2).[201] Looking forward, there will be less of an overlap than was the case in the past, since Area 2 now covers 90% of UK premises, while Ofcom estimates that VMO2 covers 51%-60% of these premises.[202] This makes it much harder for Openreach to address entry by VMO2 into the wholesale market through a change in uniform pricing in Area 2. If Openreach sought to address increased competition from VMO2 through a uniform reduction in its prices across Area 2, it would need to reduce its prices in areas where competition is less intense.
- Second, and in any case, Openreach would potentially be restricted in reaching a volume deal or other procompetitive contractual arrangement to match VMO2's offers. In the absence of volume discounts, Openreach is restricted in its ability to respond to the increased competitive pressure it faces when competing for customers that possess particularly strong countervailing buyer power.,

VMO2 will be aware of the tensions that Openreach faces, between reducing prices across Area 2 or no competitive response which would result in a loss of volume. VMO2 will therefore be incentivized to set prices under the Openreach umbrella, in the knowledge that it does not face a likely Openreach price cut in response. If Openreach was able to respond, lower prices would be expected. Although consumers will receive some benefits from a lower price, prices will not have fallen as much as they could if competition was allowed to play out.

198 ISPreview, 2023. 'Sky Reach Wholesale Broadband Deal with Virgin Media in Ireland'

199 Virgin Media, 2022. 'Virgin Media announces wholesale deal with Vodafone Ireland'

200 2021 WFTMR, Vol 3, para 7.105

201 TAR 2026-2031, Vol 2, Table 4.7; 2021 WFTMR, Vol 2, Table 8.1

202 TAR 2026-2031, Vol 2, Table 4.4 and Table 4.7.

4.5.3. Other ways in which Openreach cannot react to the growth in competition

As we explain above in Section 4.1, the restrictions on Openreach's ability to set volume discounts result in customers losing out on the benefits from competition. This affects Openreach's ability to agree bespoke contracts with ISPs who are considering moving some cohorts of their customers (i.e. premises that are in the altnet's coverage area). Openreach is disincentivised from offering price reductions, since it cannot adjust prices without also affecting its revenues for customers that do not face the same level of competition.

4.6. Specific extensions of Ofcom's restrictions on competition

Ofcom proposes some specific extensions to the restrictions on Openreach's commercial flexibility:

- Extending the current notification regime for commercial terms where the price or other contractual terms are conditional on the volume and/or range of services purchased, from 90 days to 120 days.
- Extending the geographic pricing restrictions to include connection charges for VULA products in Area 2, as well as Ethernet and WDM services in LLA Area 2 (compared to the WFTMR, which only restricted pricing on rental charges).
- Extending the geographic pricing restrictions to restrictions on retail inducements.
- Indicating that Openreach commercial terms that significantly accelerate migration to FTTP could be used to exclude altnets.

4.6.1.1. Extending commercial restrictions

Given the increase in network competition, it does not make sense for Ofcom to strengthen the impact of the commercial restrictions compared to the WFTMR. We also observe:

- Ofcom proposes to extend the notification timeline from 90 days to 120 days, given its experience of assessments taking longer to complete that originally anticipated.[203] The time taken to evaluate these policies in full depth indicates how these restrictions will require normal commercial decision making to get bogged down in the regulatory process, adding to the likelihood that desirable benefits will be foregone.[204]

[203] TAR 2026-2031, Vol 3, footnote 268. As Ofcom indicates, *"Producing the 2021 Equinox 1 Statement took 92 days (counting from 1 July 2021 when the offer was notified to 30 September 2021 when this statement was published). Producing the 2023 Equinox 2 Statement took 162 days (counting from 14 December 2022 when the offer was notified to 24 May 2023 when the statement was published)."*

[204] TAR 2026-2031, Vol 3, para. 9.65. Indeed, Ofcom recognizes that *"a longer notification period may delay the introduction of new offers by Openreach"*.

- Schemes such as the "*FTTP end customer voucher scheme trial*"[205] enable Openreach to incentivise migration to FTTP. Such schemes could be a useful measure to encouraging early end-user migration in certain areas.
- In the WFTMR, Ofcom noted that Openreach's existing use of connection discounts were not being targeted at areas where alternative networks were being built, but were instead being used to incentivize FTTP take-up (such as under the 'FTTP only offer v2').[206] As we explain below, Ofcom's proposals should not run contrary to Ofcom's own efforts over the past decade to encourage the modernisation of UK telecoms infrastructure.

4.6.1.2. Commercial terms that accelerate migration to FTTP

Ofcom is concerned that Openreach uses conditional terms to significantly accelerate migration of ISPs' legacy broadband customers to its FTTP network before wholesale altnets can compete. It is concerned that this could have a material impact on the development of network competition in the longer term.[207]

Ofcom suggests that any migration from copper to FTTP on Openreach represents a barrier to take-up for altnets that wholesale, with Ofcom making clear that this concern goes beyond loyalty inducing behaviour.[208] Ofcom provides the example of *"offers conditional on the range and/or volume of services purchased that incentivise accelerated migration may not deter ISPs from switching volumes to altnets but could still raise concerns"*.

Ofcom expresses concern where *"an ISP is not practically able to migrate those customers to an altnet that it would find preferable"*.[209] However, the direct implication of restrictions on conditional pricing that encourages earlier migration would mean a loss of discounts that would otherwise have been offered, which would mean some ISPs' customers would face higher prices for FTTP products.

This suggested opposition to commercial terms that accelerate migration to FTTP places hurdles in the way of using efficient pricing and contracting mechanisms to encourage customers to actually use the new FTTP networks. It therefore runs contrary to Ofcom's efforts over the past decade to encourage the modernisation of UK telecoms infrastructure. It contrasts with the work to date on copper migration, and Ofcom's conclusion on Openreach's offer that encouraged migration (prior to the WFTMR),[210] which Ofcom considered to not raise any competition concerns. It is also inconsistent with broader government objectives of migrating consumers to FTTP to deliver faster, more reliable internet access to all homes and businesses.

---

205 TAR 2026-2031, Vol 2, footnote 254 *"Openreach has already trialled such a scheme in summer 2024. It ran a two-month trial offering £50 One4All gift cards to end customers who ordered FTTP with an ISP of their choice, on the Openreach network. The customer portal briefing is here."*

206 2021 WFTMR, Vol 3, para. 7.85

207 TAR 2026-2031, Vol 3, para. 9.47

208 TAR 2026-2031, Vol 3, para. 9.85

209 TAR 2026-2031, Vol 3, footnote 278

210 Ofcom, 2021. 'Existing Openreach FTTP offers with geographic pricing', para. 3.55. The Openreach 'FTTP Only Offer v2' aimed to encourage migration to FTTP by incentivising access seekers to place a high proportion of new orders as FTTP rather than FTTC/copper.

Similarly, in the Equinox 2 Statement, Ofcom noted the position in the WFTMR was "*supportive of Openreach encouraging migration to full fibre and going beyond our copper retirement regulation to support its FTTP business case*"[211], while being concerned about loyalty inducing terms (e.g., exclusivity discounts).

4.7. Ofcom can address the priority concerns with more proportionate remedies and time limited intervention

We have set out our view above that the TAR proposals to protect altnets' ability to grow actual take-up as an end in itself are not appropriate. These go well beyond the original intention of the commercial restrictions in the WFTMR, which aimed to support the "small window of opportunity" for altnets to build new networks.

As argued above, given that Ofcom now expects limited additional build,[212] altnets are moving on from the deployment stage that Ofcom's WFTMR restrictions were designed for and it is unclear if continued protections are justified for that original purpose. However, to the extent that Ofcom does consider that continued protections are required to support additional build by altnets, there are less restrictive options available than the full set of proposals in the TAR.

4.7.1. Removing the restrictions on geographic variations in pricing

One option would be to end the restrictions on geographic pricing variations, while retaining oversight of contractual arrangements.

Setting lower prices to reflect competition is indisputably a form of competition on the merits (so long as the prices are not at predatory levels). Encouraging price competition of this type directly benefits customers and end consumers. Removing this restriction would enable Openreach to compete directly with VMO2 and therefore deliver the substantial benefits that might be expected if VMO2 decides to wholesale.

The risk that Openreach might have the incentive or ability to use aggressive localized pricing to deter future build by CityFibre or other altnets is far less plausible in circumstances where build is substantially more complete than it was in 2021. As explained above, it is impossible for Openreach to reverse the increase in network competition that has occurred since the publication of the 2021 WFTMR. The restrictions on geographic pricing or other commercial terms simply serve to prevent consumers from benefiting from the increased network competition throughout the country. Moreover, localized pricing does not entail "leverage" between areas where Openreach continues to have market power into those where it faces competition, which is one concern that motivated the introduction of the restrictions.

211 Ofcom, 2023. Statement: Openreach proposed FTTP offer starting 1 April 2023 (Equinox 2), para 3.18.

212 TAR 2026-2031, Vol 2, para. 4.174

4.7.2. Moving to allow competition law to address concerns about leverage

A primary concern that motivated the original restrictions was that Openreach would offer better terms of access where customers had few alternatives in order to win business in areas where it faced competition. This concern is often referred to as "leverage".

Competition law provides an alternative constraint on Openreach's ability to use its continued market strength in parts of the UK to anticompetitively support its services in more competitive areas, indeed including in geographic areas that are sufficiently competitive to be deregulated. For example, Ofcom successfully fined Royal Mail for leveraging its market power as an unavoidable trading partner for non-contestable areas to undermine its rival's ability to effectively compete in contestable areas.[213]

Ofcom's contractual oversight potentially restricts contracting terms in a wider set of circumstances than would apply under competition law. However, competition law does prevent anticompetitive forms of leverage and carries with it high penalties and risks of collective actions for damages. As altnets get ever closer to substantially completing their build phase, less stringent protections such as reliance on competition law should be adequate.

4.7.3. Time limitation of the restrictions

There is a trade-off between the modest protection provided to incremental network build through maintaining the commercial restrictions and the costs to consumers who are prevented from receiving the lower prices.

The longer that Ofcom retains the commercial restrictions, the smaller the gains will be - since there will be a smaller amount of incremental build that could be protected by the restrictions. Furthermore, as time goes on, the potential benefits to Openreach from frustrating incremental build declines, which means there is a lower risk of Openreach seeking to use commercial terms to reduce overall competition. Conversely, as the number of consumers who are in areas of strong network competition increases, the more consumers there will be who will harmed by the ongoing restriction of competition, since the benefits of that competition will not be realised.

Retaining the commercial restrictions extends the remedy well beyond its original objective of protecting areas of initial rollout and new network build. Furthermore, the gains from retaining the commercial restrictions during forthcoming review period will be much lower compared to when in place during the WFTMR review period. Given the large amount of network build that has occurred since the WFTMR, more consumers will be in areas with network competition. Conversely, as there is much less incremental build planned by altnets compared to in 2021-2026, the gains from the commercial restrictions will be much lower.

Ofcom could make a more considered assessment of costs associated with the commercial restrictions versus its dwindling gains. This may allow Ofcom to determine how to relax the restrictions, such that its concerns are addressed, while keeping the loss to customers (from the benefits of network competition) to the minimum necessary.

[213] Ofcom, 2018. 'Discriminatory pricing in relation to the supply of bulk mail delivery services in the UK'

An alternative approach, would be for Ofcom to:

- Keep the restrictions under review and a predilection to vary these restrictions, as market competition evolves throughout the period (i.e., monitoring developments like VMO2 wholesale entry).
- Lay out a path to relaxation of regulation/deregulation (and clearly signalling the conditions under which it might relax regulation).
- Offer a relaxation of Openreach's ability to set geographic discounts and offer commercial terms in areas where competition is greater, supporting competition on the merits.

Appendix 1: Ofcom has a successful history of deregulating based on the strength of the pricing constraint and not based on market shares

This appendix discusses Ofcom's successful track record of deregulating, even in markets where the dominant firm held more than 50% of the market share.

A1.1 Ofcom deregulated the retail fixed voice market in 2006 and 2009, despite market shares above 50%

In 2006, following the successful introduction of LLU wholesale access regulation, Ofcom substantially deregulated retail fixed voice markets by removing retail price controls (**RPCs**). This decision was made despite Openreach's residential market share being 77% in Q4 2005 and Ofcom finding that Openreach still had SMP.

This was a key step in retail market deregulation, taken well before the market structure resembled a broadly competitive one. Ofcom affirmed its "*intention to withdraw from regulation as soon as competitive conditions allow*"[214] and explained that "[r]*e-imposing a price control may* [delay] *the onset of competition by keeping BT's prices at a level so as to deter competition*"[215].

Some regulation remained in place after 2006, aimed at restricting BT's ability to compete flexibly at the retail level. Specifically, Openreach was still subject to conditions under the USO, which meant Openreach was required to price narrowband services on a uniform basis irrespective of geographic location.

However, following the removal of RPCs, retail competition continued to expand. In the subsequent 2009 decision Ofcom concluded that competition was sufficiently well established that further protections for competitors were no longer required, such that consumers would be better off if BT were able to compete more flexibly at the retail level. Ofcom explained that *"allowing BT to operate more freely in the retail market [could result in] enhanced and/or cheaper services for consumers and increased incentives on competitors to innovate."*[216]

Therefore, despite Openreach maintaining a residential market share of 62% in Q1 2009,[217] well above the 50% associated with presumption of dominance under *ex post* competition law, Ofcom expected Openreach's share to fall substantially over the review period and decided that Openreach no longer had SMP.[218]

---

214 Ofcom (2006), Retail Price Controls Review, Statement, para 1.1.

215 Ofcom (2006), Retail Price Controls Review, Consultation, para 4.14.

216 Ofcom (2009), Fixed Narrowband Retail Services Market Review, Consultation, para 7.5.

217 Ofcom (2009), Fixed Narrowband Retail Services Market Review, Statement, Figure 5.2.

218 Ofcom (2009), Fixed Narrowband Retail Services Market Review, Consultation, para 1.9-1.11.

A1.2 Ofcom concluded that Openreach had no SMP for the provision of CI leased lines in the Central London Area, despite some high market shares

In the 2016 BCMR, Ofcom concluded that Openreach had no SMP in the provision of any Contemporary Interface (**CI**) leased lines in the Central London Area (**CLA**). This was against a backdrop of Openreach having some high market shares, especially at lower bandwidths. For instance, Openreach had a 55% share in the medium CISBO[219] market, which included bandwidths of more than 10Mbit/s and up to and including 100Mbit/s.[220]

In its review, Ofcom recognised that Openreach's share of the CISBO market in the CLA was at a level consistent with single firm dominance. It also found the overall evidence on pricing and profitability was at a level consistent with a finding of Openreach SMP.[221]

However, Ofcom explained that *"[its] analysis has identified that there is sufficient choice of alternative infrastructure to ensure that end-users will be protected by effective and sustainable competition"*.[222] In that decision, Ofcom ultimately *"placed greater weight on the extent of rival infrastructure supporting competition for CISBO services at any bandwidth"* than solely considering market shares.[223]

Ofcom also decided to uphold its 2016 decision during the 2019 BCMR. In the consultation, Vodafone criticised Ofcom's conclusion that Openreach did not have SMP despite Openreach's increasing market share in the CLA between 2016 and 2019.[224] While Ofcom acknowledged Openreach's high market share, it argued that there was sufficient rival infrastructure in the CLA to exert a strong competitive constraint on Openreach, and rivals could further deploy infill network extensions during the review period using the unrestricted Physical Infrastructure Access (**PIA**) remedy, which would further reduce Openreach's competitive advantage.[225]

A1.3 Ofcom's history of deregulation extends also to markets outside of the telecoms sector such as Pay TV

In 2010, Ofcom concluded a review of the pay TV market and identified competition concerns arising from Sky's practices in the supply of premium sports content. Ofcom imposed a wholesale must-offer (**WMO**) obligation on Sky, requiring Sky to offer to wholesale its Sky Sports 1 and 2 channels to other pay TV retailers with certain prices and terms set by Ofcom.[226]

---

219 CISBO stands for Contemporary Interface Symmetric Broadband Origination (CISBO) services, and refers to the wholesale leased line services provided using newer technologies i.e. Ethernet and WDM.

220 Ofcom (2016), BCMR, Statement, Vol 1, table 4.4, page 138

221 Ofcom (2016), BCMR, Statement, Vol 1, para 4.461.

222 Ofcom (2016), BCMR, Statement, Vol 1, para 1.24.

223 Ofcom (2016), BCMR, Statement, Vol 1, para 4.462.

224 Ofcom (2019), BCMR, Statement, Vol 2, para 6.22

225 Ofcom (2019), BCMR, Statement, Vol 2, para 6.168

226 Ofcom (2015), Review of the Pay TV WMO, Statement, paras 1.1-1.2.

In its subsequent 2014 review, Ofcom concluded that Sky continued to hold a strong market position and that its content had the potential to impact competition. In particular:[227]

- Sky would continue to hold 75% of the available matches for the 2016/17-2018/19 seasons.
- Sky held a share of around 50% in the retail pay TV market, even when revenues and supply from the wider triple-play market (i.e. fixed line + broadband + pay TV) were considered.
- Sky's share of revenue from key sports channels was over 70% (albeit having fallen by around 10% since 2010) and its share of expenditure on sports rights was over 60%.

Ofcom noted that that *"Sky could, in principle, have incentives to withhold supply of its key content, and to set prices that did not enable fair and effective competition, in order to protect its market position."* However, the evidence showed that Sky was not acting on those incentives.[228]

Ofcom further found that Sky was supplying widely and the terms of supply it imposed (e.g. reciprocal supply) were not prejudicial to fair and effective competition. It therefore concluded that regulation was no longer needed[229] and that it would continue to monitor the market to ensure that any potential concerns did not materialise.[230]

In its 2014 review, Ofcom also mentioned developments in the pay TV sector since 2010 which are listed below, and which were *"relevant to [their] review of the WMO obligation."*[231]

- Existing pay TV providers had grown (BT and TalkTalk), and new providers had entered (e.g. EE), or planned to enter (e.g. Vodafone).
- Providers were increasingly competing to provide bundles of pay TV services with other communications services (e.g. triple-play packages which include fixed telephony and broadband).
- Technological developments meant content was available through several different devices, particularly with the increasing presence of over-the-top (OTT) on-demand services, e.g. Netflix, Amazon Prime and NOW TV.
- The availability of sports content also widened. In addition to bundling its Sky Sports channels with its own pay TV service, Sky made this content available on wholesale terms to several pay TV providers, and its NOW TV service offered it on a stand-alone basis across various platforms and devices. In addition, BT launched its BT Sport channels and invested significantly to build up a portfolio of sports content.

227 Ofcom (2015), Review of the Pay TV WMO, Statement, paras 1.16-1.19.

228 Ofcom (2015), Review of the Pay TV WMO, Statement, para 7.6.

229 Ofcom (2015), Review of the Pay TV WMO, Statement, para 1.35.

230 Ofcom (2015), Review of the Pay TV WMO, Statement, para 1.36-1.38.

231 Ofcom (2015), Review of the Pay TV WMO, Statement, para 3.2 and 1.5-1.6.

Appendix 2: Modified Greenfield Approach (MGA)

Telecoms regulation has used wholesale access regulation (and now PIA) to support competition in retail (and now wholesale access) supply. The result is that regulation in one market can impact competition in a downstream, *vertically related*, market. A technical issue of market definition and SMP assessment can arise because of this, because market definition and SMP assessment in wholesale access draws on competitive conditions in retail markets. As competitive conditions in retail markets may depend directly on the wholesale access remedies, there is potential circularity in reasoning. This could result in the regulator concluding that retail markets were competitive and wholesale access remedies were therefore no longer required, even if the retail market competition observed depended heavily on the wholesale remedies continuing.

The Modified Greenfield Approach was developed to avoid this circularity by requiring the analyst to evaluate competition in retail markets on the assumption that the wholesale access remedies did not exist. Thus, retail markets would be deemed competitive only where that competition would arise if there was no wholesale access regulation, typically from an end-to-end competitor like the VMO2 network.

In the TAR, Ofcom motivates its view that there should be no geographic delineation of Area 1 markets with an argument that this follows from the Modified Greenfield Approach. This argument attempts to extend the Modified Greenfield approach from its straightforward role in markets that are vertically related (upstream/downstream) to a much broader claim. That is, if markets are separated *horizontally* (as separate geographic markets are), and regulation in one of those markets potentially influences competition in another, a single market and related SMP assessment should be defined. This is a misapplication of the Modified Greenfield Approach.

A2.1 The purpose of the Modified Greenfield Approach

The EC guidelines on market analysis describe the MGA as follows:

> *"NRAs should determine whether the underlying retail market(s) is (are) prospectively competitive in absence of wholesale regulation based on a finding of single or collective significant market power, and thus whether any lack of effective competition is durable.*
>
> *To this aim, NRAs should take into account existing market conditions as well as expected or foreseeable market developments over the course of the next review period in the absence of regulation based on significant market power; this is known as a Modified Greenfield Approach. On the other hand, the analysis should take into account the effects of other types of (sector-specific) regulation, decisions or legislation applicable to the relevant retail and related wholesale market(s) during the relevant period.*
>
> *If the underlying retail market(s) is (are) prospectively competitive under the Modified Greenfield Approach, the NRA should conclude that regulation is no longer needed at wholesale level."* [232]

[232] Communication from the Commission — Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services Text with EEA relevance., para 16-18

In parts of the TAR, Ofcom continues to echo this approach. Annex 5 of the TAR 2026 explains:

> *"[W]hen identifying wholesale markets for the purposes of section 79(1) of the Act, we start with an analysis of corresponding retail (or other downstream) market(s). We do not formally define the retail market(s) but consider if it is (they are) prospectively competitive in the absence of wholesale regulation based on a finding of SMP, and therefore whether any lack of effective competition is durable.*
>
> *If the underlying retail market(s) is (are) prospectively competitive under these circumstances, we would conclude that regulation is no longer needed at the wholesale level. If the underlying retail market(s) is (are) not prospectively competitive, then we identify the corresponding wholesale market(s)."* [233]

Ofcom has also been consistent in its understanding across reviews as it describes its approach in the same way for both the 2021 WFTMR and the 2019 BCMR.[234]

As the text above explains, the Modified Greenfield method is designed to address the vertical links between upstream wholesale access regulation and downstream retail market competition. It is there simply to address the obvious point that if competition in retail markets depends on upstream wholesale access remedies, it would be wrong to conclude that the presence of retail competition implies that there is no market power at the wholesale level.

A2.2 Misapplication of Modified Greenfield in the TAR

However, in important parts of the TAR, Ofcom departs from the straightforward logic described above, by attempting to extend the concept to situations where regulation in one geographic market might have indirect effects in a separate geographic market.

Ofcom is concerned that absent regulation, Openreach could have the incentive to engage in exclusionary behaviour by "*offering geographic discounts to wholesale prices in areas where it faces potential competition from rival networks, other commercial terms including certain kinds of volume discounts, or targeted overbuild*".[235] The argument proceeds that interventions to limit Openreach's conduct can affect competition in more than one geographic areas, and therefore competition in all areas are contingent on regulatory intervention, thus all areas are in the same market on Modified Greenfield reasoning.

This reasoning bears no connection with the use of Modified Greenfield for vertically dependent markets. Firstly, the reasoning applies to horizontally related markets, not vertically related ones. Secondly, unlike traditional Modified Greenfield, the issue is not that competition in one geographic area is directly dependent on supply of regulated products in another. Ofcom's concern is simply to stop Openreach from cutting prices in specific areas or to limit its ability to contract across areas; in the extreme version to prevent "leverage" between horizontally related markets.

---

233 TAR 2026-2031, Annex 5, para. A5.17-A5.18

234 2021 WFTMR, Annex 1, para. A1.19 & A1.20; 2019 BCMR, Annex 1, para. A1.15.

235 TAR 2026-2031, Vol 2, para. 4.192-4.194

Concerns about potential "leverage" across distinct markets has a long history in other contexts[236], but it does not lead to any need to define a single market or conclude that there is SMP across all the activities or areas affected.

For example, in competition law it is well established that abuse of dominance can occur in a separate market, in which the dominant firm does not have market power, so long as that market is related to another market where the dominant firm does have market power. Competition law does not infer from this that there is a single market or that the dominant firm in practice has SMP in both markets on the logic that if the dominant firm leveraged its power, it might be possible to engineer that outcome. The market definition and SMP finding for different market is applied to the facts in those markets, and risks of inappropriate conduct are dealt with through competition law rules preventing anticompetitive leverage between them.

[236] In economics, see for example the Chain Store Paradox, which considers an incumbent that sells in a number of different markets but faces entry initially in only one. The analysis considers whether it is rational for the incumbent to respond to this entry by aggressively cutting prices in that market in order to deter entry in others. See Reinhard Selten, The chain store paradox, (1978) Theory and Decision, p 127-159.

Appendix 3: Network Reach Model

A3.1. Business FTTP offers a partial substitute for leased lines

Table: Comparison of leased line and business FTTP service availability

Service type	Provider	Product name	SLA / Target	Compensation if target not met
Leased line	BT	Btnet	100% availability	Reduction in rental charges: - For outages <10hrs, one day's rental charge for each hour of down time. - Max reduction per quarter capped at 10 hrs of outage (worth 10 days' rental charge). For resilient options, rental reduction applies to both primary and secondary circuits.
Leased line	VMO2	Dedicated internet access	Singlehomed (DIA Lite or Multi Tenant) - 99.85% Singlehomed (DIA) - 99.90% Resilient - 100%	10% of monthly rental if target not met. If there's a Fault: 10 / 20% off monthly rental for 0-3 / 3-10 hours of outage. If Fault lasts beyond 10 hrs, additional 5% monthly rental for every additional hour.
Leased line	Vodafone	Dedicated internet access	Single Service No Resilience - 99.90% Resilient Service Dual Parent (Diverse Internet Edge Routers) - 99.95% Resilient Service Dual Parent (Fully Diverse) - 100%	Single service No Resilience: 2.5% of one month's recurring charges per hour for each affected customer site for 1-15 hours, 50% of one month's recurring charges for >15 hours. Resilient service Dual Parent: 5% per hour for 1-15 hours, 100% for >15 hours.
Leased line	Hyperoptic	Dedicated fibre	100%, 5-hr SLA period / fault response time for unplanned loss of service.	One day's package charge per hour beyond SLA period, capped at 10 days' charge. For faults beyond 15hrs, one day's package charge per full day fault is not fixed (50% if completed by 1pm), capped at 10 days' charge.
FTTP	BT	Business broadband	Fault fix time: Report by 21:00 on a working day, the fault should be fixed before - Standard care package: end of the second working day (up to midnight).	If 4G Assure service fails to activate within 30 minutes of you reporting a fixed line fault, leaving the customer without a broadband connection, the customer may be eligible to receive £25 compensation (one compensation claim per month).

Service type	Provider	Product name	SLA / Target	Compensation if target not met
			- Assured care package: end of next working day (up to midnight).	One week's rental credit for each day (or part day) past the target fault fix time. Compensation claims are capped at 12 days.
FTTP	VMO2	Business broadband	99.9% a year, 12-hr fault response time.	Service credit amount equal to the number of days without service / 365, multiplied by the amount actually paid by the customer under current Option in the previous 12 months.
FTTP	Community Fibre	Business broadband	99.9%, 4-hr fault response time. No peak-time slowdowns.	Not specified
FTTP	Hyperoptic	Business broadband	99.9%, SLA period/fault response time for unplanned loss of service is up to 23.59hrs of next business day after fault reported (150 Mb, 500 Mb, 1 Gb plans) / second business day after fault reported (50mb, 100 Mb plans).	50 Mb and 100 Mb plans: One day's package charge per day beyond SLA period (50% if fixed by 1pm), capped at 10 days' charge. 150 Mb, 500 Mb, 1 Gb plans: One week's package charge per day beyond SLA period (50% if fixed by 1pm), capped at 10 weeks' charge.

Source: Openreach SLA comparison data, based on publicly available information

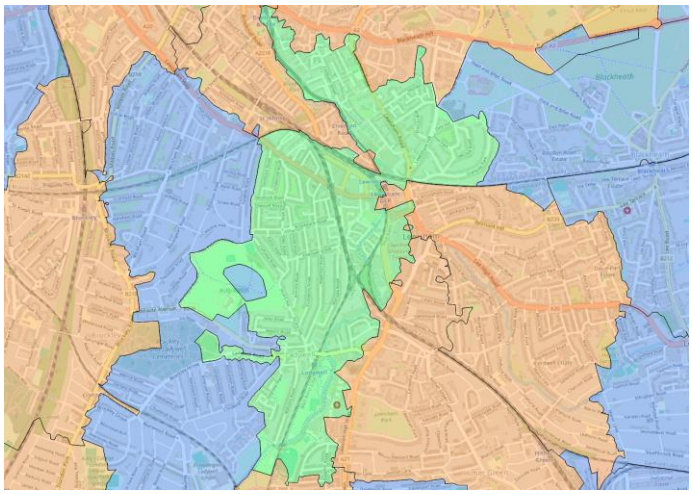
A3.2. Examples where the NRM produces results that do not reflect competitive conditions

Example 1: Lewisham

Lewisham is a commercial hub yet has moved from HNR (under WFTMR) to Area 3 (under the TAR). The reclassification of the postcode sector[237] highlighted in green in the figure below, covering part of central Lewisham, is incongruent with the surrounding areas which as classified as HNR (orange) or Area 2 (blue) in the TAR.

[237] SE13 7

Reclassification of Lewisham (London) from HNR to Area 3



Source: Openreach based on Ofcom's NRM

Example 2: York

The map below shows postcode sectors in York, including part of the centre, which have moved from HNR (under WFTMR) to either Area 3[238] (green) or Area 2[239] (blue). It is unclear why it would be appropriate to view these areas as less prospectively competitive than in 2021, or to determine that these areas are unlikely to see competitive build. This does not reflect competitive conditions, given their proximity to the centre of a major city.

It is even more difficult to justify these area definitions given the build that has taken place since WFTMR. In 2023, CityFibre said they expected to complete their network rollout across York.[240] In March 2024, nexfibre had already rolled out to 13,000 homes and businesses in York.[241] According to Thinkbroadband's data, this rollout has taken place in many of the areas highlighted on the map below which have been moved out of HNR.

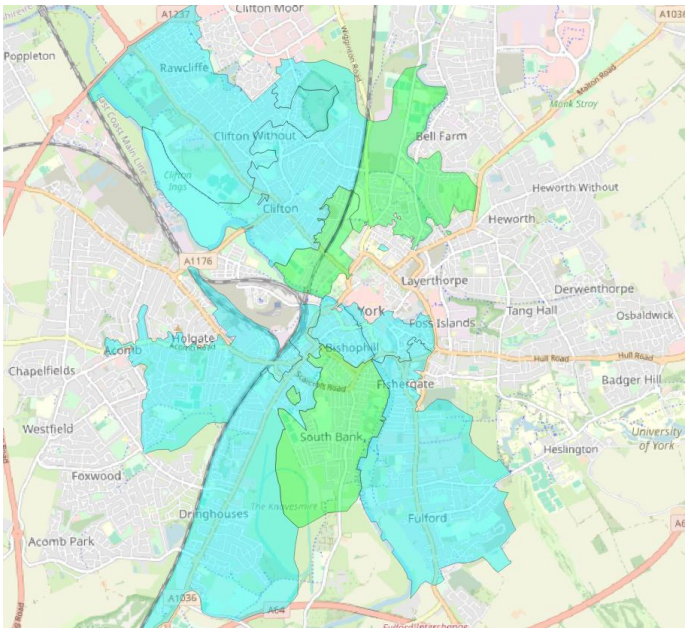
[238] YO31 8, YO30 7, YO23 1

[239] YO30 5, YO30 6, YO24 4, YO24 1, YO1 6, YO1 9, YO10 4

[240] CityFibre continues full fibre rollout in York connecting... | CityFibre

[241] Virgin Media gigabit broadband now available to 13,000 homes in York for first time - Virgin Media O2

Reclassification of York from HNR to Area 2/3



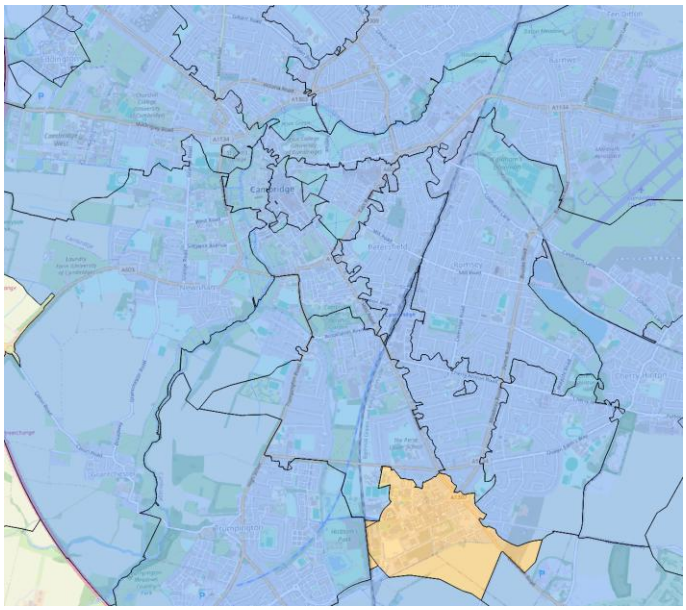
Source: Openreach based on Ofcom's NRM

Example 3: Cambridge / Addenbrooke's hospital

The map below shows almost all of Cambridge as Area 2 (blue) under the TAR, except for the postcode sector[242] (orange) which has moved from Area 2 (under WFTMR) to Area 3 (under the TAR). It is unlikely that one specific postcode sector would be less competitive than the rest of Cambridge. This postcode sector is also almost entirely covered by the large regional Addenbrooke's hospital campus and other research sites such as a major R&D facility for AstraZeneca. Given the nature of the site and the potential demand for leased lines to medical and research facilities, the NRM result does not seem accurate.

[242] CB2 0

Cambridge Area 2 and reclassification of Addenbrooke's hospital from Area 2 to 3



Source: Openreach based on Ofcom's NRM

Example 4: Brent Cross

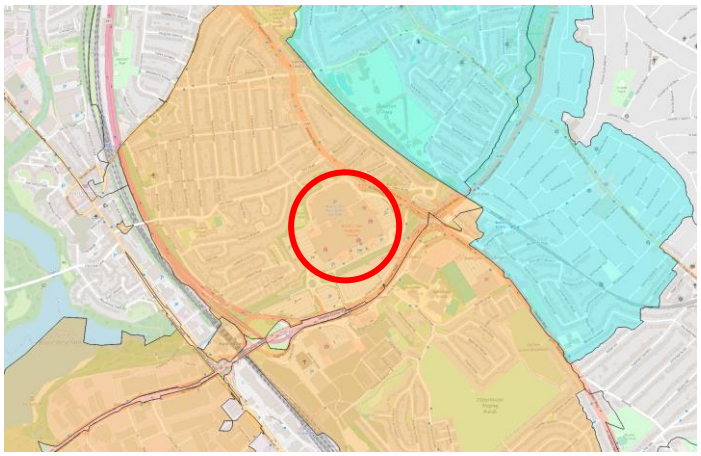
The map below shows postcode sectors which have moved from HNR (under WFTMR) to Area 2[243] (blue) or from Area 2 to Area 3[244] (orange). Many of the surrounding areas have maintained their HNR or Area 2 classification, so it is surprising that these two postcode sectors, which are WLA Area 2, have regressed in their classification.

It is particularly surprising that the postcode sector highlighted in orange is now considered Area 3 under the TAR, as it contains the large Brent Cross shopping centre (circled). This is an area that competitors would likely consider as an opportunity for business. Given the surrounding areas are HNR/Area 2, it seems counterintuitive that competing networks that exist nearby (in comparatively less business-heavy areas) would not also offer service to the shopping centre.

[243] NW4 2, NW11 9

[244] NW4 3, NW2 1, NW2 7

Reclassification of Brent Cross from HNR to Area 2, or Area 2 to Area 3



Source: Openreach based on Ofcom's NRM

A3.3. Ofcom's rationale for the 50m dig distance assumption

Ofcom assumes that a 50m dig distance is a reasonable approximation of how far a network provider can reach to serve a commercial customer.

The assumption is the same as for the 2019 BCMR which was based on a mix of evidence, including (i) a cost-model estimating the breakeven point at which it gets more costly to dig further than the additional revenue to be expected from that dig and (ii) data on actual digging behaviour of networks. Ofcom finds the cost model to indicate dig distances of 27m for 100Mbit/s circuits and 34m for 1 Gbit/s circuits assuming a three-year payback period.[245] [246] Looking at the actual dig distance, Ofcom finds the median dig distance was shorter than 25m.[247] Ofcom assessed using 25m as dig distance, however, considers that data limitations do not allow it to measure short distances accurately. Furthermore, because a shorter dig distance would only cover 22% of the area of the median postcode, Ofcom concludes that this will severely underestimate actual network reach.

Ofcom chooses 50m because this distance would be large enough to cover the area in any given urban postcode, as well as almost 90% of the area in the median postcode, and therefore accurately assesses competitive dynamics in dense areas.[248] However, this implies that at least half of the postcodes will have less than 90% of their areas covered by this assumption. Ofcom does not present an assessment that discusses how this assumption fairs in rural postcodes, which are more likely to be within the Area 2 and Area 3 boundaries.

[245] Ofcom also tests a sensitivity where the payback period is five years instead of three. Ofcom finds that this increases the dig distance but would still be below 50m.

[246] 2019 Business Connectivity Market Review, para 5.63

[247] 2019 Business Connectivity Market Review, para 5.70

[248] 2019 Business Connectivity Market Review, para 5.80

A3.4. Ofcom has conducted and presented multiple sensitivities of the results of its NRM.

BCMR, 2019

The figure below presents the analysis from the 2019 BCMR, showing the impact of changing the buffer distance and the network coverage threshold on the size of areas with similar levels of rival network coverage, measured by the numbers of postcode sectors, large business sites and end customers connected in 2017. Ofcom assessed the impact of varying the dig distance assumption (25m, 50m and 100m) and the coverage threshold requirement (50%, 65% and 80%).

Figure: Impact of changing the buffer distance and the network coverage threshold (BCMR 2019)

	Number (share[580]) of postcode sectors								
	Buffer distance = 25m			Buffer distance = 50m			Buffer distance = 100m		
Network coverage threshold	*50%*	*65%*	*80%*	*50%*	*65%*	*80%*	*50%*	*65%*	*80%*
BT Only[581]	6,922 (69%)	8,230 (83%)	9,004 (90%)	4,914 (49%)	5,912 (59%)	7,007 (70%)	3,992 (40%)	4,600 (46%)	5,368 (54%)
BT+1 rival network	2,785 (28%)	1,554 (16%)	845 (8%)	4,306 (43%)	3,506 (35%)	2,535 (25%)	4,238 (42%)	4,154 (42%)	3,691 (37%)
HNR areas	267 (3%)	190 (2%)	125 (1%)	754 (8%)	556 (6%)	432 (4%)	1,744 (17%)	1,220 (12%)	915 (9%)
Total UK excl. the Hull Area	**9,974 (100%)**	**9,974 (100%)**	**9,974 (100%)**	**9,974 (100%)**	**9,974 (100%)**	**9,974 (100%)**	**9,974 (100%)**	**9,974 (100%)**	**9,974 (100%)**

Source: Table A13.1 Ofcom BCMR 2019 Annex, Ofcom network reach analysis. Note: BT Only postcode sectors are defined as those where no more than a proportion of large business sites corresponding to the network coverage threshold have a rival network to BT within the buffer distance.

This shows that varying the dig distance from 50m to 25m (holding the network coverage threshold of 65% constant) increases the proportion of "BT Only" postcode sectors by 24 percentage points (or 40%). Increasing the dig distance to 100m reduces this proportion of postcode sectors by 13 percentage points (or 22%).

Varying the required threshold for a network operator to be considered present to 50% or 80% (holding the dig distance of 50m constant) results in fluctuations of 11 percentage points (or 18%) of "BT Only" postcode sectors in both directions.

Moving from the most restrictive assumptions (25m dig distance and 80% network coverage threshold) to the least restrictive assumptions (100m dig distance and 50% network coverage threshold) more than halves the share of BT Only postcode sectors (from 90% to 40%) and increases the share of HNR areas from 1% to 17%.

These examples highlight that the NRM has historically been sensitive to assumptions of the model parameters.

BCMR, 2016

The figure below presents the analysis from the 2016 BCMR, which shows a similar story. Increasing the assumption on average network reach from 100m to 200m has a significant impact on the results of the presence of competitors across the UK.

Figure: Impact of changing the depth of network reach (BCMR 2016)

Competitive indicators	Metrics		CLA	LP	CBDs in other cities****	Rest of UK (exc. Hull)
Rival infrastructure	Average network reach* (100 metres)		6.2	2.5	2.8	0.8
	Average network reach (200 metres)		8.0	4.1	4.3	1.1
	Average network reach (500 metres)		9.5	6.5	6.9	1.9
	Depth of network reach – 100 metres (200 metres)**	1+	100% (100%)	96% (99%)	97% (99%)	61% (71%)
		2+	99% (100%)	68% (91%)	79% (95%)	15% (30%)
		3+	98%(100%)	40% (78%)	55% (84%)	5% (12%)
		4+	93%(100%)	22% (59%)	30% (65%)	2% (5%)
		5+	83% (98%)	11% (37%)	15% (46%)	1% (2%)

Source: Table 4.4 BCMR 2016.

Ofcom's analysis showed that the CLA, the London Periphery (LP) and the Rest of UK (RoUK) including Central Business Districts (CBDs) are geographic areas that show differences from each other in terms of the presence and density of rival infrastructure. The figure shows that 100%, 96%, 97% and 61% of postcode sectors would be in reach of Openreach and one alternative provider in the CLA, LP, CBDs in other cities, and RoUK, respectively. Varying the depth of network reach from 100m to 200m when considering BT plus one alternative provider, these proportions change to 100%, 99%, 99% and 71%, respectively.

However, this sensitivity becomes more pronounced when looking at postcode sectors in reach of Openreach and two other providers. Varying the assumption on the depth of network reach by increasing it from 100m to 200m has the effect of increasing the proportion from 68% to 91% in LPs, 79% to 95% in other CBDs, and 15% to 30% in RoUK. The effect is even more pronounced when looking at postcode sectors in reach of Openreach and three or more providers.

Appendix 4: Explanation of data used for the WLA analysis

Openreach does not have access to Ofcom's data of total fixed connections or actual (and planned) coverage. We have therefore used Openreach and external data to estimate market shares and coverage.

In this data appendix, we introduce the data we use in the WLA section (Section 2). We explain how we use data on Openreach connections, count of premises, and rival network coverage to estimate market shares. Importantly, we show that our data aligns with values reported in Ofcom's analysis.

The rest of the data annex sets out:

- The raw datasets, which are coverage data, take-up data, and Ofcom's postcode sector classifications (Section A4.1).
- The broadband "take-up rate" which enables the use of Openreach's data on connections per premise to estimate a market share (Section A4.2). The take-up rate is used because not all premises have a connection.
- The extent to which Openreach data aligns with Ofcom's data (Section A4.3).
- Comments on the data (Section A4.4).

A4.1 Raw data and sources

The WLA data analysis draws upon two data sets supplied by Openreach. Both datasets record data at the level of postcode sector-month and cover the period of January 2020 to May 2025.[249] The datasets are:

- **Take-up data:** Openreach connections and premises count. In terms of sources:
  - Count of Openreach connections comes directly from Openreach.
  - Premises count is from the Ordnance Survey Address Base Premium.[250] The premises per postcode is constant over months and as of May 2024.[251]
- **Coverage data:** Estimated coverage for two rivals that have the broadest coverage (within the postcode sector). These are the two rivals with the broadest coverage as of May 2025.
  - Coverage data is compiled from various external sources on a postcode basis and managed and shared by the Network Strategy team within BT. These include confirmed street works activity, ThinkPoint data, and Steetworks data (e.g. OneNetwork, Aurora, Symology).

[249] The take-up data additionally has data for April and May 2025. We restrict the data to March 2025 for consistency.

[250] Ordnance Survey, Address Base Premium - (https://www.ordnancesurvey.co.uk/products/addressbase-premium)

[251] Referred to as Epoch 110.

  - VMO2's coverage includes all its gigabit-capable technologies (HFC Cable, VM Mustand and Lightning FTTP, nexfibre FTTP, and Upp FTTP). Coverage for all other Altnets' coverage is for FTTP. Altnets are grouped together if they are under common ownership.[252]

- **Ofcom's geo-classification of postcode sectors in the TAR consultation:** This is Ofcom's market classification (i.e., Area 2 or Area 3) of each postcode sector.[253]

The coverage and take-up dataset records data at monthly frequency (the data is recorded at the last day of the month). All values reported are as of March 2025. For the maturity curve analysis, we track a time series using data for March of each year leading to a panel of six yearly observations that spans from March 2020 to March 2025. However, our results should be interpreted as applying to market shares estimated as of March 2025 (e.g., set out in Table 2.2)

A4.2 Aligning Openreach data of take-up per premise to Ofcom's data of take-up per fixed line connection

Openreach data allows us to calculate an estimate of market share. Directly using the data would only allow us to calculate take-up *by premises* (which is Openreach connections divided by an estimate of total premises).[254] To arrive at an estimate for market share, we need to adjust the count of premises to account for the fact that not all premises have a broadband connection. This adjustment requires an estimated broadband penetration rate, which is the share of premises that have a fixed broadband connection.

The table below sets out our calculation of the broadband penetration rate per Area. This is based on Openreach's data on total connections (Openreach and other providers) and premises. A key point is that we estimate a higher take-up rate in areas with more competition. For example, only [✂]% in Area 3, but [✂]% in Area 1.

It is logical that the penetration rate is higher in more competitive areas for two reasons. First, networks are more likely to enter areas where there is more demand, and one part of higher demand is a higher penetration rate. Second, greater competition typically acts to expand the market as competing networks will encourage premises to take up fibre.

252 This includes (VMO2, nexfibre, and Upp); (Netomnia and BRSK); (FullFibre and Digital Infrastructure); (AllPoints, Swish, Giganet and Jurassic); as well as (Community Fibre and Box Broadband)

253 Ofcom, Schedule 2 WLA postcode sectors (20 March 2025), https://www.ofcom.org.uk/phones-and-broadband/telecoms-infrastructure/consultation-promoting-competition-and-investment-in-fibre-networks-telecoms-access-review-2026-31

254 Premises include both residential and business premises.

Table: Take-up rates applied to each Area

Area	Share of premises	Broadband take-up rate *(% of premises with a fixed connection)*	Explanation of value
National take-up rate	100%	[✂]	**Data** – Openreach data of total connections divided by total premises.
Area 1 Our proposal	33%	[✂]	**Data** – Openreach data of total connections divided by total premises (if at least one competitor present).
Area 2 Postcodes sectors that are not Area 1 or Area 3	57%	[✂]	**Estimate** – Estimated so that the national take-up rate is [✂]% given the take-up rate is [✂]% in Area 3 and [✂]% in Area 1.
Area 3 Ofcom's definition of Area 3	10%	[✂]	**Data –** Openreach data of total connections divided by total premises (no competitor present).

Source: Openreach data on broadband connections and premises (as of January 2025).
Note: see step-through of calculations below.

The calculation of the broadband take-up rate per area starts from premise level data:[255]

- **National take up rate:**
  - On a national level, Openreach estimates a national take-up rate of [✂]**%.**
  - This is estimated using the total number of broadband connections by the total number of premises.
- **Take-up rate where only Openreach is available**:
  - Openreach estimates a lower take-up rate of [✂]**%** where only Openreach is present and that [✂]**%** of premises only have access to Openreach.
  - This take-up rate is estimated by dividing the number of Openreach broadband connections by the number of premises that only have access to Openreach.
- **Take-up rate where Openreach plus another network is available.**
  - Openreach estimates a higher take-up rate of [✂]**%** when Openreach faces at least one rival. [✂]**%** of premises have access to Openreach plus one rival.
  - This take-up rate is estimated by first calculating the number of connections of premises that have access to at least one rival network. This is total connections minus connections that only have access to Openreach. The same is done for premises. Then, we divide the estimated number of connections (with access to multiple networks) by the number of households (with access to multiple networks).

We then use these two data points to define the take-up rate per area. Specifically:

255 These take-up rates apply as of January 2025.

- **Our proposed Area 1 take-up rate uses the** [✂]**% take-up rate.** This is based on Openreach plus at least one other network**.** In Area 1, most households will have access to at least one network and in many instances will have access to two networks or more.
- **Area 3 take-up rate uses the** [✂]**% take-up rate.** This is based on the take-up rate of only Openreach. Premises in these postcode sectors will typically only have access to Openreach.
- **Area 2 take-up rate is** [✂]**%.** This is estimated so that the national rate is [✂]%, given our take-up rates for Area 1 and Area 3. This follows as the take-up rate of Area 1 is [✂]% and it is [✂]% of premises, plus the take-up rate in Area 3 is [✂]% and it is 10% of premises. The take-up rate in Area 2 must be [✂]% for the national rate to be [✂]%

We expect the estimated take-up rate in Area 1 to be robust to the distribution of networks across a postcode sector. Openreach's data suggests that if another network is present in addition to Openreach, it covers on average around [✂]% of the area. This means that the penetration rate in that area would be just under [✂]%.[256]

We further expect this estimate to be conservative if there are two networks present. The data suggests that a second network would cover around [✂]% of an area. Penetration rates should be higher where those networks overlap as increased competition could create incentives for higher take up due to lower prices and better quality of service. This could result in take up rates above [✂]% if penetration rate increases to [✂]% where there is overlap between two networks in addition to Openreach.[257]

A4.3 Openreach data is representative of Ofcom's data

Openreach's data is representative of Ofcom's data.[258] The table below shows that Openreach's data is closely matched to Ofcom's values when considering the same period of July 2024. In the main report, we use the latest data of March 2025. Naturally, between July 2024 and March 2025, altnet entry has meant that the count of postcodes sectors with two or more rivals present has increased, while the count of postcodes with no rival present has fallen.

256 [✂]

257 [✂]

258 The implication is that our use estimates should not cause a systematic bias. This would occur, for example, if Openreach market shares systematically were understated relative to their true values. Naturally, the use of (unbiased) estimates will introduce random noise applicable to ***individual*** postcodes. However, this random noise should cancel out when assessing averages across many postcode sectors.

Table: Number of postcode sectors with different number of rivals – a comparison between Ofcom values and Openreach data

	Ofcom TAR	Openreach data	
	July 2024	July 2024	March 2025
2 + Rivals	1,812 (19%)	2,128 (22%)	2,624 (27%)
1 Rival	4,722 (48%)	4,520 (47%)	4,326 (45%)
No Rival	3,253 (33%)	2,955 (30.1%)	2,653 (28%)

Source: NERA analysis based on Openreach's data of total Openreach connections and premises and estimated network coverage (both as of March 2025). Premises count comes from Ordnance Survey Address Base Premium. Coverage data are based on confirmed street works activity or presence from ThinkPoint data. Ofcom proposal is from paragraph 4.1000 on page 71 of the TAR, Vol 2.

Notes: Openreach data has 9,603 postcodes vs. Ofcom's data set of 9,789 postcodes. This is explained in the next subsection.

The table above shows there are differences between the data we have used for this analysis and Ofcom's data. This means we estimate a larger Area 1 (27% of postcode sectors) than referred to by Ofcom (19% of postcode sectors). There are three drivers of this differences:[259]

- **Timing.** We use more recent data for our estimations (March 2025 compared to July 2024 for Ofcom). Continued altnet entry means there are more postcode sectors where there are two or more rival networks. The table above shows that this factor explains most (but not all) of the difference.
- **Definition.** Our proposed Area 1 uses all altnets as we consider this to be a reasonable approach to market definition given network assts are a sunk cost.[260] Given Ofcom's description, we are not fully certain on which altnets are included. It is possible that if we use only the altnets that Ofcom has included then the difference disappears. At the very least, it will be reduced.
- **Approach.** We use estimates of network coverage and therefore our data will not match perfectly with Ofcom's data.

A4.4 Notes on the data

We merge the three datasets of take-up, coverage, and Ofcom's geographic classification. Ofcom's geographic classification has 9,787 postcode sectors. Our merge leads to 184 postcode sectors that are not matched with our take-up and coverage data (less than 2% of postcode sectors).

We have not undertaken an analysis of the non-matches. Given that over 98% of postcode sectors do successfully match, we do not expect this to affect our analysis in any material way.

259 Our expectation is that the first two reasons (timing and altnet definition) explain the difference. If the third reason (estimation noise) is relevant, then our use of estimates may include a few postcodes with coverage below 50%. If this is the case, then our estimated market shares are likely too low (as they capture the effect of including postcodes with less coverage).

260 As explained in the data appendix, Ofcom's approach is to identify 'relevant competitors, which is *"Any altnet with a total coverage of at least 50,000 premises is considered a relevant competitor to BT"*. Using Openreach's estimated network coverage data, we estimate that [✂] altnets already cover at least 50,000 premises. This would suggest using all altnets as we have done is a close proxy. However, the wording of TAR 2026-2031, Appendix 7, para. A7.20 suggests a smaller set of seven competitors "*the list of relevant competitors to BT includes: VMO2 (including its use of nexfibre's FTTP network), CityFibre, Gigaclear, Hyperoptic, Community Fibre, Netomnia, [redacted]. ..*"

Section A4.3 above shows that our data is broadly representative of Ofcom's data. Here, we note how data is compiled can affect the data for *individual* postcode sectors.

- **Take-up data**
  - **Broadband connections can exceed premise count.** In a very small number of postcode sectors, the count of Openreach connections exceeds the count of premises. For example, this occurred in [✂] postcode sectors in March 2025. These postcode sectors were typically small (e.g., over half have below 100 premises). The effect should be minor as market share are weighted by premises count, so a small number of postcode sectors with many broadband connections will not skew the data. We understand that a typical example of affected postcodes is where exchanges are located, but there are other reasons as well. For example, a particular postcode could have a Transport for London cabinet with dozens of broadband lines, but that cabinet is not considered to be a premise.
  - **Premise count is constant over time:** Historical Openreach shares are calculated using a constant 2024 premise count as denominator, this may understate Openreach shares if there were fewer premises in the past.
- **Coverage data**
  - **Only records two rival networks.** Our data will miss instances where there are more than two rivals. This would affect, for example, our analysis of market share within the VMO2 footprint (as VMO2 coverage would be recorded as zero if two altnets have higher market share). We expect the effect of this to be small.
  - **Aggregates up using postcode units (applying the December 2023 definition).** This effectively assumes that aggregating coverage using 2023 December postcode units is representative of postcode units today. This factor is minor as postcode units are typically constant over years and included postcode units should be representative of postcode units that are dropped.

Appendix 5: Expansion of DFX remedies for IEC

Ofcom's IEC proposals in relation to the provision of DFX are to tighten regulation, notwithstanding the TAR finding that there has been a substantial increase on competitive new network build since the WFTMR. IEC is therefore another instance in the TAR where Ofcom reverses the pro-competition approach that was set out in the WFTMR.

A5.1 Limits on DFX to avoid undermining investment in the WFTMR

In the WFTMR, Ofcom required Openreach to provide active IEC services at all BT-only and BT+1 exchanges. However, Ofcom only required Openreach to provide charge-controlled dark fibre for inter-exchange (DFX) at BT Only exchanges with no competing networks close by (i.e., BT-Only exchanges which are not within 100m of a competing PCO network). Ofcom did not require the provision of DFX remedy to BT-Only exchanges with a nearby PCO or BT+1 Exchanges.

Ofcom's reasoning in the WFTMER for limiting the availability of DFX was due to the remedy's "potential impact on investment".[261] Ofcom recognized that the lower prices for services between BT exchanges would deter competing telecom providers from connecting to a BT exchange to provide backhaul services and investing in competing routes to backhaul traffic.[262] Given that undermining investment would ultimately undermine network competition, dark fibre was only made available at exchanges where investment was unlikely – these being BT-only exchanges with no competing networks close by (i.e. where the nearest competing PCO network is more than 100m away).[263]

A5.2 Proposed extension of DFX to BT-Only and BT+1 exchanges

In the TAR, Ofcom now proposes to require Openreach to expand the availability of the cost-based charge controlled DFX remedy to all BT-Only exchanges (now also including those with a nearby PCO) and BT+1 exchanges. This is in addition to proposing that Openreach continue to provide the existing active IEC services at all BT-only and BT+1 exchanges.[264] This means that Openreach will now have to provide DFX to c.1,300 additional exchanges.[265]

Ofcom's reasons for expanding the availability of DFX to all BT-Only exchanges and BT+1 exchanges, is primarily due to the Ofcom's view that further investment into network competition at these exchanges is unlikely.[266] Ofcom's considers investment into network competition is unlikely due to its view that investment into IEC by competing networks since the WFTMR has been limited[267] and

[261] 2021 WFTMR, Vol 3, para 6.153

[262] 2021 WFTMR, Vol 3, para 6.154

[263] 2021 WFTMR, Vol 3, para 6.155

[264] TAR 2026-2031, Vol 3, para 8.5

[265] In the TAR 2026-2031, Ofcom finds there to be 4,216 BT-Only exchanges and 731 BT+1 exchanges. This compared to the 3,652 BT-Only exchanges in the WFTMR that were BT-Only with no competing networks close by (there were found to be 4,275 BT-Only exchanges in the WFTMR, and 623 of these were BT Only with a nearby PCO). Ofcom, TAR 2026-2031, Annex 10 Table A10.1: 'Number of exchanges by classification'; TAR 2026-2031, Vol 3, para. 8.38

[266] TAR 2026-2031, Vol 3, para. 8.39 and 8.41

[267] Ofcom considers that restricting DFX to BT-Only exchanges with no competing networks close by in the WFTMR has yielded limited benefits, observing that 51 of exchanges previously classified as BT-Only with no close by PCO have

its view that providers' plans to roll out to additional BT exchanges are unlikely to have a material impact.[268] Ofcom also expects that incentives for PCO investment in IEC is likely to decline as the exchange exit programme progresses.[269] As a result, Ofcom states its new objective is "to secure effective access to, and downstream competition based on, Openreach's network, rather than to promote network competition." [270]

A5.3 Expanding DFX will undermine previous investment made by PCOs that connect to BT+1 exchanges

Ofcom's approach risk undermining the existing investments that have been made in connecting to the 91 exchanges that went from BT Only to BT+1 since the WFTMR.[271] PCOs that may have invested into connecting to BT exchanges to provide IEC will now have to compete against Openreach cost-based DFX product, when they might not have expected to face these alternatives under the previous regulatory policy.

Furthermore, Ofcom's proposals could undermine use of connectivity provided by the PCOs at the 731 BT+1 exchanges where Openreach would now have to provide DFX. While customers would already have had the ability to purchase Openreach active IEC services from all BT-Only and BT+1 exchanges, given that Ofcom highlights the attractiveness of DFX compared to active IEC service,[272] many are likely to shift from their existing use of PCO's products to DFX.

Given that Ofcom's proposal undermines investments into connecting to BT exchanges that occurred since the WFTMR and could encourage telecoms providers to shift away using connections from PCO to an increased dependency on Openreach products, it runs contrary to the WFTMR's original 10-year strategy for a pro-competition approach.

A5.4 Expanding the availability of DFX could undermine investment in competing routes to backhaul traffic

Ofcom's rationale for its proposal to expand the availability of DFX largely centres on the limited effect of its proposal on further investment into connecting to BT exchanges. However, in the WFTMR Ofcom cited a second reason for restricting the availability of DFX to BT-Only exchanges (without close competing infrastructure), which was that DFX had the potential to deter investments in competing routes to backhaul traffic (which would not directly connect to the BT exchanges).[273] It is not clear whether Ofcom has taken this second reason into account in the TAR.

been reclassified at BT+1 or BT+2 and 70 exchanges classified as BT+1 have been reclassified as BT+2. TAR 2026-2031, Vol 3, para 8.38

268 TAR 2026-2031, Vol 2, para 6.31

269 TAR 2026-2031, Vol 3, para 8.39

270 TAR 2026-2031, Vol 2, para 8.40

271 TAR 2026-2031, Annex 10, Table A10.2

272 TAR 2026-2031, Vol 3, para. 8.34-8.35

273 2021 WFTMR, Vol 3, para. 6.154

Moreover, while Ofcom cites limited prospects of further investment into connections to BT exchanges as a reason for the expanding the availability of DFX,[274] this potentially overlooks the how current limits on DFX could have improve incentives to invest into competing routes to backhaul traffic that do not depend on making additional connections to BT exchanges. The extent to which there have been increased investment into such competing routes could not be measured through looking at the additional connections to BT exchanges alone.

It may be that alternative network competition has expanded since the WFTMR. As Ofcom has recognized, there has been very substantial growth in new network build since the WFTMR.

[274] TAR 2026-2031, Vol 3, para. 8.39 and 8.41

NERA

QUALIFICATIONS, ASSUMPTIONS, AND LIMITING CONDITIONS

This report is for the exclusive use of the NERA client named herein. This report is not intended for general circulation or publication, nor is it to be reproduced, quoted, or distributed for any purpose without the prior written permission of NERA. There are no third-party beneficiaries with respect to this report, and NERA does not accept any liability to any third party.

Information furnished by others, upon which all or portions of this report are based, is believed to be reliable but has not been independently verified, unless otherwise expressly indicated. Public information and industry and statistical data are from sources we deem to be reliable; however, we make no representation as to the accuracy or completeness of such information. The findings contained in this report may contain predictions based on current data and historical trends. Any such predictions are subject to inherent risks and uncertainties. NERA accepts no responsibility for actual results or future events.

The opinions expressed in this report are valid only for the purpose stated herein and as of the date of this report. No obligation is assumed to revise this report to reflect changes, events, or conditions, which occur subsequent to the date hereof.

All decisions in connection with the implementation or use of advice or recommendations contained in this report are the sole responsibility of the client. This report does not represent investment advice nor does it provide an opinion regarding the fairness of any transaction to any and all parties. In addition, this report does not represent legal, medical, accounting, safety, or other specialized advice. For any such advice, NERA recommends seeking and obtaining advice from a qualified professional.

NERA
The St Botolph Building
138 Houndsditch
London EC3A 7DH, United Kingdom
www.nera.com

NERA UK Limited, Registered in England and Wales, No 3974527
Registered office: The St Botolph Building, 138 Houndsditch, London EC3A 7DH