



Response to Ofcom's Discussion Paper: Connectivity you can count on

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Introducing VodafoneThree

In June 2025, Vodafone UK and Three UK merged to become VodafoneThree. This is the start of an exciting new chapter in UK communications, allowing citizens and consumers to benefit from a market leading operator with the scale, resources and innovative spirit to deliver game-changing connectivity for the UK.

The merger will boost the UK's terrestrial mobile coverage including in very hard-to-reach areas via Direct to Device satellite connectivity. VodafoneThree and its shareholder Vodafone plc operate satellite ground stations across Europe supporting both our own and third-party commercial operations.

To find out more about VodafoneThree, our brands and how we are building the United Kingdom's best network, visit: [Building the UK's Best Network | VodafoneThree](#)

Introduction

1. VodafoneThree welcomes Ofcom's discussion paper, Connectivity you can count on, and its proactive, considered examination of the UK's mobile network quality. We strongly support Ofcom's assessment that the quality of UK mobile connectivity is not yet where it should be and welcome its ambition to create the conditions necessary for the UK to become a leading market for mobile performance.
2. For many years, Ofcom's approach to the mobile sector has been to support competition among MNOs and MVNOs, complemented by measures to ensure customers are treated fairly and can switch provider easily. Low prices were identified as the key indicator of effective competition. These remain important objectives, but we are pleased to see Ofcom recognising that its duty to further the interests of citizens and consumers in the mobile market encompasses promoting quality – not just affordability. Ofcom's additional Growth Duty adds a further dimension to the importance of industry investment in good consumer outcomes.
3. This recognition is timely. While the regulatory approach to date has delivered falling prices, we have also seen mobile network investment in the UK falling steadily, from £2.3bn in 2020 to £2.0bn in 2022 and £1.8bn by 2024 with a consequent decline in network quality.¹ An increasing commoditisation of mobile connectivity means that consumers focus largely on price as the most important factor when choosing operator, even as they note a desire for better quality. This means that investment in high quality networks doesn't result in more customers.
4. When the market rewards operators based on who offers the lowest price, operators who do not invest do not lose many customers, while those who do are not rewarded, creating a race to the bottom on quality and price. As Ofcom rightly notes in this discussion paper, this cycle needs to be broken if the UK is to get the network quality it needs for productivity, growth, and innovation.
5. The VodafoneThree merger provides the scale necessary to begin reversing this trend. VodafoneThree is committing £11 billion of private capital to deliver nationwide 5G Standalone coverage, targeting 99.96% population reach by 2034. This investment will raise the bar for UK mobile quality and stimulate a competitive response across the market. However, the merger alone cannot resolve the wider structural problems that are limiting investment incentives: aggressive price-led competition and lack of quality differentiation (due to overly restrictive Net Neutrality rules), in addition to long-standing policy barriers such as planning restrictions, rising energy and spectrum costs and government-imposed obligations.
6. We believe that enabling consumers to understand differences in quality by increasing transparency and availability of information through Map Your Mobile is an important first step. The market needs to shift from a race to the bottom on price to competition on quality. Equipping consumers with the tools to make informed choices would strengthen incentives for MNOs to compete and invest in better networks. We provide further information on how Map Your Mobile is working to date below, as well as additional informational remedies that Ofcom could put in place.
7. While these measures are important, however, they do not address the more fundamental challenge that sits at the heart of the UK's mobile market – whether the market is capable of supporting sustained investment in network quality over the long term in view of the increasing commoditisation of mobile connectivity. Our response outlines the structural threats that risk undermining a shift to quality.

¹ Connected Nations 2025

8. We also welcome Ofcom's recognition that there remain specific parts of the country and specific environments where the market alone will not deliver the outcomes that the UK now requires. Rail corridors, rural communities, indoor environments and urban deployment challenges continue to require action beyond normal competitive market dynamics.
9. In commercial areas like urban and public indoor spaces, coordination problems and a rigid planning system continue to slow down investment. In uncommercial areas, there is a need for new funding models (rather than imposing new obligations and costs on MNOs) – whether that is private investment from train companies, a Critical National Infrastructure (CNI) levy or government subsidy. We therefore support Ofcom's efforts to reduce deployment barriers and advocate for the sector across government.
10. This response is structured around three points: first, the drivers behind declining mobile network quality; second, consumer-led quality improvements are a good start, but must be considered alongside ongoing commoditisation of mobile and structural threats; and third, Ofcom's four focus areas correctly identify where action is needed, but commercial and uncommercial deployment barriers need fundamentally different approaches to resolve.

Section 1. Commoditisation of mobile limits incentives to invest in mobile network quality

1. In the consultation, Ofcom finds that the UK ranks towards the bottom in comparisons of mobile network quality in advanced economies. The reasons, in Ofcom's view, are two – people don't have enough information on network performance, and Vodafone and Three faced challenges as sub-scale operators prior to their merger.
2. This section discusses the key reasons why, from our perspective, the UK does not have quality of connectivity that it deserves. Chief among them is the growing commoditisation of mobile connectivity in the UK, with large numbers of consumers choosing operator based largely on price and joining MVNOs 'en masse'.
3. When the market rewards operators based on who offers the lowest price, operators who do not invest in the network do not lose many customers, while those who do are not rewarded for the higher costs of doing so. This creates incentives to 'skimp' on network quality and investment and, ultimately, results in a race to the bottom on both quality and price. **The key to improve mobile quality outcomes in the UK is for Ofcom and Government policy to prioritise investment and create the right incentives – i.e. to make investment pay.**

Competition in UK mobile focuses largely on price

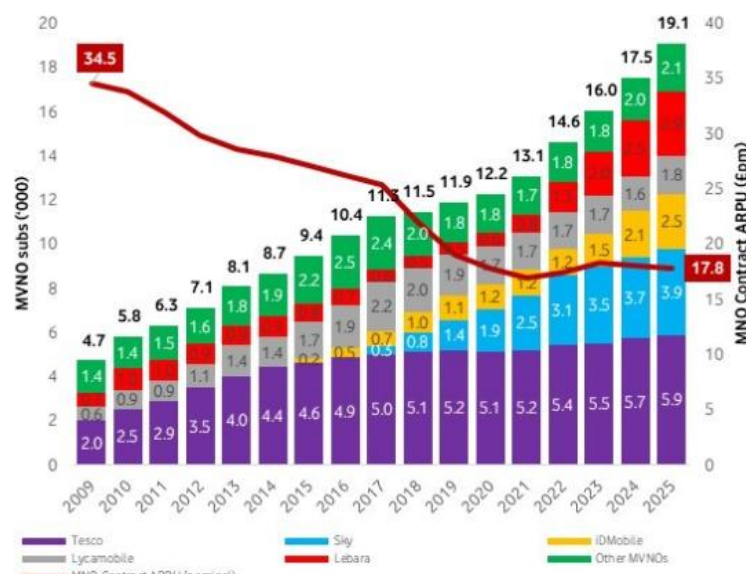
4. Mobile was a luxury product at the time the Communications Act 2003 was introduced. Today, mobile connectivity is a basic necessity, and the underlying networks are critical national infrastructure. The profitability of the market has gone down, just as our collective dependence on it has gone up. This needs to be reflected in a refreshed regulatory and policy environment that enables and promotes their deployment.
5. Compared to other OECD countries, the UK's performance outcomes are poor. The reasons for this are complex, with interactions across planning restrictions, energy and spectrum costs, differences in geography and regulatory regime. The central economic reality is that mobile connectivity is a capital-intensive infrastructure business. Networks require substantial upfront investment, long-term planning, ongoing upgrades, resilience measures, spectrum acquisition and increasingly significant expenditure to support future technologies. These investments involve high sunk costs and long payback periods, which demand investor trust in sustainable returns.
6. Since 2013, MNOs have invested large sums to upgrade tens of thousands of masts across the country, first to 4G and now to 5G and 5G Standalone. As each new technology is deployed, investment costs become sunk and marginal costs are low, giving MNOs strong incentives to fill excess capacity by offering cheap deals to MVNOs and new customers. This competition can drive retail and wholesale prices down to very low levels (i.e. the marginal cost to serve), with some MNOs earning insufficient returns for long periods of time (as Vodafone and Three both did before the recent merger).²
7. In parallel, the commoditisation of mobile connectivity further reduces MNOs' incentives to invest in better networks. As both Ofcom and the CMA have noted, market competition today focuses on price to a

² Ofcom's Future Approach to mobile markets and spectrum. Conclusions paper (Dec 2022)

greater extent than quality.³ Price is the single most important factor, with 84% of people citing it as a reason for choosing operator.⁴ Consumers generally tend to be less informed and engaged with information on quality of network performance than on price.⁵

8. Largely as a result, MVNOs are growing strongly at the expense of network builders. There are now over 100 MVNOs in the UK.⁶ MVNOs tend to operate in the low-cost segment, pricing very aggressively and focusing competition on price. MVNOs account for 19.1m subscribers at the end of 2025 (over 20% market share, up from 6% in 2009).
9. Consumers in the UK are discovering that [CONFIDENTIAL 8<] so are moving to MVNOs in large numbers. MVNO growth reflects strong retail competition, but it also highlights a growing imbalance between those who sell connectivity and those who fund and operate mobile networks. MNOs have had to launch cheaper online sub-brands (VOXI, Smarty, Talkmobile and Giffgaff) that operate without high-street stores to compete with MVNOs.
10. Due to these market trends, average revenue per user (ARPU) for contract customers has halved since 2009 (even in nominal terms), from £35 to £18 in 2025. Blended ARPU (for contract and pre-pay users) have similarly declined over the past decade, from £19 in 2015 to £10 in 2025. This sustained decline in ARPU has materially reduced the revenue base available to support investment in network capacity, coverage, resilience and quality.

Figure 1. MVNO subscribers (m) and MNO contract ARPU (£pm)



Source: VodafoneThree estimates based on Enders Analysis.

11. MVNO growth has significantly accelerated in recent years. The key drivers include:
 - The cost-of-living crisis pushing people to cheaper MVNO deals since 2020.
 - Switching is easier than ever since Auto-Switch was introduced in 2019, weakening consumer's attachment to MNO brands.

³ Ofcom's Future Approach to mobile markets and spectrum. Conclusions paper (Dec 2022)

⁴ CMA Final Report (Dec 2025)

⁵ Ofcom, Net Neutrality Review Statement (Oct 2023), para 7.33

⁶ State of the UK MVNO market

- The pandemic led to a shift away from MNO shops and towards online distribution, expanding MVNOs' addressable market.
- Consumers are holding onto their handsets for longer and moving to cheaper SIM-only tariffs – which account for 50% of all residential mobile phone subscriptions at the end of June 2025 (up from 44% in 2024).
- Entry and switching barriers for MVNOs have been significantly lowered – eSIM adoption, digital onboarding and the existence of MVNEs providing “MVNO in a Box” platforms make entry into the mobile market easier than ever.⁷

The commoditisation of mobile is only going to intensify in the future

12. These trends are only going to intensify in the coming years. MNOs are forecast to continue to lose connections to their main brands in the UK every year from 2025 to 2029. By contrast MVNOs are expected to grow from 20% today to 25% market share of subscribers by 2029:⁸
 - Non-traditional players such as fintechs (e.g. Revolut, Monzo, Starling), utilities (e.g. Octopus), supermarket chains (Lidl), household retailers (AO) and others are launching mobile propositions quickly and at scale, bundling connectivity with their core services – potentially cross-subsidising mobile.
 - As condition for approval of the merger by the CMA, VodafoneThree must provide wholesale access to MVNOs at competitive wholesale prices and with equivalent service (the Wholesale Reference Offer Commitment), and to offer MVNOs with pre-existing agreements with VUK or 3UK the option to extend those (the Rollover Commitment), creating the conditions for continued MVNO growth and increased commoditisation of mobile.
 - Similarly, our commitment to roll out a 5G network across the UK (the Network Commitment) will bring a large amount of capacity to the market, putting further downward pressure on mobile prices.
13. Looking further ahead, the mobile market could be transformed over the next decade. Today, most users buy mobile on a standalone basis, not bundled with other services. Increasingly, however, customers buy airtime as part of a bundle via digital apps and online services in which mobile connectivity is just an add-on. Apple, Google, Amazon, Revolut, Monzo, Klarna, Octopus, AO, PCWs and many others can bundle mobile connectivity into their ecosystems via their app. Mobile connectivity then becomes part of a bundle to be used as a retention tool (not a standalone product) that may be sold at a loss to reduce churn from their core services (energy, banking, etc) and lock customers into the ecosystem.
14. The combination of eSIM and AI brings new business models that can radically alter the mobile landscape. PCWs, digital banks and utilities powered by AI will soon be able to recommend the cheapest available mobile plans to consumers and, if empowered by them, switch people to those plans automatically when out of contract based on their actual usage – like “autopilot connectivity” that always finds the best deal.
15. Similarly, customers may buy ‘always best network’ plans, where users switch between networks dynamically depending on cost, signal quality, or speeds, with AI making these decisions in the background.

⁷ For example, US-based mobile service platform provider Gigs, founded in 2020, underpins Klarna's mobile service. Gigs provide MVNOs with a platform to launch mobile services – from wholesale connectivity to billing, subscription management and “AI-powered” customer service. eSIM Go is based in the UK and launched in 2020. It offers an “automated MVNO-in-a-box”.

⁸ UK Operators' Main Brands Face Years of Subscriber Losses - CCS Insight (Aug 2025)

16. These market trends threaten to accelerate the commoditisation of mobile connectivity, whilst simultaneously risking consumer disenfranchisement from the market as their demand for quality and services gets disintermediated by AI agents. If MNOs are pushed further into the background, users can become indifferent about who provides their connectivity. Price would become an even more important dimension of competition, further reducing the share of revenues that accrues to network builders and limiting incentives to invest in the UK's Critical National Infrastructure.

Section 2. Competition on quality: Ofcom's proposals are a strong start, but must go further

17. We welcome Ofcom's efforts to help people compare the performance of different networks in the places that matter most to them. Helping consumers make informed choices would incentivise mobile operators to invest in quality improvements. This is an important first step to address the commoditisation of mobile.
18. On its own, however, improving consumer transparency won't be enough to address the structural changes facing the UK mobile market. This section sets out three further areas where Ofcom and Government action is needed to improve operator's investment incentives: reform of restrictive Net Neutrality rules, a new licensing regime for UK telecoms, and a shift in policy from a narrow focus on price to one that encourages investment on mobile quality, security and resilience, recognising the critical importance of mobile as CNI.

We welcome Ofcom's efforts to improve consumer understanding of quality

19. Ofcom proposes a new ambition for good performance, including a benchmark that ensures at least 90% of an operator's crowdsourced measurements meet a defined standard for speed and latency.⁹ Meeting this standard would, in Ofcom's assessment, place the UK in the top third of OECD countries in terms of network performance. We agree and would even go further – the UK's mobile performance needs to remain in step with global benchmarks if we are going to be technological leaders.
20. In order to meet this ambition, Ofcom proposes to i) rely on improvements brought about by the VodafoneThree merger (and competitive responses by other operators); ii) develop Map your Mobile further to support competition on quality and help people compare network performance; iii) engage industry, Government and other stakeholders to discuss potential solutions in urban areas, indoor shared spaces, rural areas and the rail network.
21. This is part of the answer, but the market dynamics affecting the long-term sustainability of competition in mobile go well beyond this narrow view. We welcome Ofcom's acknowledgement that the VodafoneThree merger will deliver a step change in connectivity for the UK, and support Ofcom's proposals to engage stakeholders, improve transparency and develop Map Your Mobile further. Helping consumers compare networks is an important first step in shifting the market away from a race to the bottom on price and towards competition on quality.
22. As you will see in the rest of our response, we believe that consumers should have access to information on quality to enable them to make smart choices for their connectivity needs. We were pleased to see the publication of nationwide performance maps by operator for the first time. The postcode-level information available in Map your Mobile is helpful, but the nature of mobile means that consumers benefit from knowing how a network generally performs beyond their usual locations.
23. We would like to see those maps published more regularly, alongside national **MNO league tables**. Ofcom already uses consumer-facing league tables and comparative reporting to influence operator's behaviour in areas such as complaints and customer service. The same logic should apply to network quality.
24. We would also like to see Ofcom's good performance metrics (based on Opensignal's methodology)

⁹ Download speeds ≥ 5Mbps & upload speeds ≥ 1.5Mbps & latency ≤ 50ms

further adopted by **Price Comparison Websites (PCWs)** and believe that Ofcom should issue strong guidance – at least to their accredited PCWs. Consumers should be able to assess value for money by considering price, allowance, customer service and network quality together, rather than being nudged towards price alone.

25. PCWs and Ofcom's Map your Mobile should also make **clear that MNOs and MVNOs may offer different quality of experience**, even if they are on the same network. For example, some MVNOs have speed caps or restrictive fair use policies that would make a difference to a consumer's experience of network performance in the real world.

Further action is needed to improve incentives to invest in quality

26. Transparency remedies alone, however, cannot shift the market towards competition on quality. With only over a million visitors since launch, further developing Map your Mobile is unlikely to address the key problem – how to improve investment incentives when mobile connectivity is increasingly commoditised. Network builders earn a diminishing share of revenues in the value chain. Ofcom needs a more ambitious plan to ensure that MNOs who invest in improving their networks are adequately rewarded for doing so.
27. New business models in which connectivity is bundled into devices, apps or wider digital ecosystems, used as a loss leader, or switched dynamically between providers based on price or performance are changing the landscape. The risk is that future competition is determined not by who delivers the best network, but by who can most effectively cross-subsidise connectivity, bundle services or control access to customers via their digital ecosystems.
28. This poses not only a threat to MNOs' retail revenues and customer relationships, but also to traditional MVNOs whose smaller scale and tight margins would likely mean they would be the first driven out of the market by artificially low prices. Big Tech, Starlink, fintech (Revolut, Klarna, Monzo), energy firms (e.g. Octopus), household retailers (AO), Price Comparison Websites and other players possess significant financial resources, large customer bases, control over distribution channels, or positions of strength in adjacent markets that allow them to compete on fundamentally different terms from infrastructure operators.
29. Such developments represent more than a commercial challenge. Telecommunications networks are critical national infrastructure and an essential foundation of economic growth, digital transformation and national resilience. When MNOs earn inadequate returns, investment signals weaken across the entire market. The consequences are reduced incentives to deploy new technologies, lower infrastructure investment, weaker resilience and ultimately poorer outcomes for consumers and the wider economy.
30. The impact may not be visible immediately, but it becomes increasingly apparent over time through lower quality, slower innovation and reduced strategic capability. VodafoneThree's £11bn commitment will deliver a step-change in 5G quality in the UK, and we expect it to foster a competitive response. That, however, only takes us to the end of this investment cycle. Looking to the future, if the commoditisation of mobile continues on this trajectory, we foresee renewed structural underinvestment, further consolidation to increase scale again or the need for direct government intervention.
31. We believe that Ofcom should take three key actions to address the problem of commoditisation of mobile connectivity: reform of restrictive Net Neutrality rules, a new licensing regime for UK telecoms, and a shift in policy from a narrow focus on price to one that encourages investment on mobile quality, security and resilience, recognising the critical importance of mobile as CNI. We discuss each in turn.

Reform of restrictive Net Neutrality rules

32. First, **Ofcom should actively continue to support principles-based Net Neutrality reform:** Competition on quality relies on the ability to offer meaningfully differentiated services. Net Neutrality rules reduce investment incentives because they force MNOs to treat all traffic equally, limiting their ability to offer higher quality propositions for customers and businesses willing to pay a premium. The framework was designed for the best-efforts internet, not for innovative retail propositions requiring guaranteed performance or supporting critical and enterprise-grade use cases.
33. Government is currently reviewing whether the UK's current Net Neutrality regime remains fit for purpose. We appreciate Ofcom's work to support innovation within the existing legislative framework and would like to see it go further in its advice to government to advocate for reform. Ofcom should stand by its 2023 recommendation of a new, principles-based Net Neutrality legislation that is less prescriptive and unlocks commercial innovation and investment.¹⁰

A new licensing regime for telecoms

34. Second, Ofcom should support the government's intention to consult on a licensing regime to strengthen accountability in the telecoms sector as part of its Fraud Strategy 2026-2029.¹¹ The General Authorisation regime currently offers no mechanism to vet potential new entrants and ensure they are delivering strategic connectivity services according to the UK's best interests. Ofcom's own knowledge of the regulated providers under its control is ad hoc, with no formal notification or assessment process. We have previously requested a list of PECS in the UK for the purposes of scams and fraud management, and such a list does not exist.
35. The General Authorisation regime was introduced in 2003 to lower barriers to entry to a market that was still developing. Telecoms is now a much more sophisticated market, and its social value is inextricably linked to its economic value. We believe that there needs to be a rebalancing: keep barriers to entry low but still retain standards that reflect the importance of long-term sustainability, security, and sovereignty of telecoms.
36. A licensing regime would create a formal entry gateway requiring every operator to meet minimum standards on security, sovereignty, resilience, and competitive behaviour, including a prohibition against anti-competitive cross-subsidisation. This elevates the regulatory regime in line with the needs of mobile as a national security asset and raises that accountability bar – whether it is tech firms skewing the market, or even future MNO obligations that would otherwise have to be included in spectrum licences. Connectivity 'you can count on' is not just a question of performance – it is fundamentally about resilience and reliability that goes beyond commercial deployment.
37. Whether this is done under a new licensing regime or by amendments to the General Conditions and sections 33 and 34 of the Communications Act 2003 is a matter for government. However, we believe that Ofcom should support the principle that the sensitivity of the market requires tighter control at point of entry, including the expectation that certain criteria be met ex ante – and approval for entry withheld until they are.

¹⁰ Statement Net Neutrality Review

¹¹ [CP 1523 – Fraud Strategy 2026-2029 Disrupting crime, supporting economic resilience and delivering justice](#)

A new approach to regulation

38. Third, Ofcom and Government's approach to regulating the mobile market needs to be more mindful of the consequences of focusing on keeping prices low. In exercising its Growth Duty, Ofcom should put creating the regulatory environment for improved mobile quality at the heart of its work programme going forward. We are concerned that Ofcom does not cost in the risk of regulatory failure when intervening in the mobile consumer market.
39. His Majesty's Treasury's Green and Magenta Books set out best practice for establishing the economic case for public sector intervention, and the methodology for conducting a robust ex-post evaluation of the success of that intervention. This ensures that there are clear Critical Success Factors (CSFs) expected from an intervention, a measurable way of assessing the effectiveness of the intervention, and a route to accountability for government. Such ex-post evaluations are a useful feedback loop, ensuring that future impact assessments have more data points to draw from, and are better able to anticipate externalities.
40. Ofcom does not set Critical Success Factors in its impact assessments and has no set requirement to produce an ex-post evaluation of its interventions. Where Ofcom has conducted ex-post evaluations, the lack of clear CSFs against which to evaluate an intervention has led to some unclear conclusions. In its [ex-post evaluation of mobile annual best tariff notifications \(ABTNs\) and end-of-contract notifications \(ECNs\)](#), Ofcom concluded that, despite the intervention having no statistically significant effect on consumer behaviour and welfare, ECNs had a "positive impact on customer engagement" in the round. This does not create a clear feedback loop for the next time intervention is considered, and the long-term cumulative impact of intervention – both in terms of benefits delivered and costs to industry - is not captured.
41. To encourage investment in better networks, the regulatory approach in the mobile sector needs to shift from a narrow focus on price to encouraging investment on mobile quality, security and resilience, recognising the critical importance of mobile as CNI. In its Statement of Strategic Priorities for telecommunications, the management of radio spectrum, and postal services, government recognises explicitly the trade-off between short-term prices and long-term investment:
- "Promoting investment and competition in the fixed telecoms market should continue to be prioritised over regulatory measures to further reduce retail prices in the near term."*¹²
42. This approach has been hugely successful in fixed telecoms, shifting the market away from price-based competition towards investment and growth. Ofcom's change of policy has driven large-scale entry into the market by Altnets and has pushed the incumbents Openreach and VMO2 to raise their own investment. The fixed industry is now delivering investment in full fibre of £3–6bn a year, with full fibre coverage rising from 6.9 million premises (24 percent) in 2021 to 23.7 million (78 percent) by July 2025. This provides a clear example of the importance of policy and regulation in incentivising market change to deliver better outcomes for the UK.
43. Government and Ofcom should adopt a similar policy in mobile. Although mobile is less regulated than fixed telecoms (so the same regulatory levers are not available), it is still possible to adopt a genuinely pro-growth, pro-investment framework that treats mobile consistently as CNI, allows performance-based differentiation, supports sustainable returns for network builders, and ensures new funding mechanisms for the costs of public policy obligations that the market won't deliver on its own.

¹² <https://www.gov.uk/government/publications/statement-of-strategic-priorities-for-telecommunications-the-management-of-radio-spectrum-and-postal-services/statement-of-strategic-priorities-for-telecommunications-the-management-of-radio-spectrum-and-postal-services>

44. We recognise that addressing these structural issues may require new regulatory approaches to intervention and market support. However, the mobile market is in an unprecedented space – never has connectivity been so necessary for daily life, nor the market power of potential new entrants been so global and complex.
45. If Ofcom's ambition is to improve quality, then it must also consider the conditions necessary to sustain the investment required to deliver that quality. We are at a critical point in the development of the mobile market, and Ofcom has a duty to be the canary in the coalmine for government to avoid entrenched market distortion that could lead to long-term decline in investment in maintaining quality and missed opportunities for investment in innovation for 6G and beyond.
46. In 2020, the Science and Technology Committee launched an inquiry into the resilience of telecommunications infrastructure in the wake of the decision to remove Huawei from the 5G supply chain. There, Ofcom's duties to further the interests of citizens as regards the resilience of mobile infrastructure were specifically linked to monitoring how that infrastructure was being built, and keeping government and the NCSC informed of major resilience risks.¹³ The same imperative could now be applied to the risk of chronic below-cost pricing and consequent underinvestment.

¹³ [UK telecommunications infrastructure and the UK's domestic capability - 28 October 2020](#)

Section 3. Four focus areas: the right areas, with different policy solutions

47. VodafoneThree shares strongly Ofcom's and Government's ambition for better connectivity across the UK. This section sets out our views on Ofcom's specific proposals. We support Ofcom's identification of four priority areas: urban deployment, shared indoor spaces, rail connectivity and rural areas. These are the right areas to examine because they reflect the environments where consumers most often experience a gap between the connectivity they need and the performance currently delivered.
48. We also welcome Ofcom's recognition that it has an important advisory role to play in these areas. In many cases, Ofcom may not hold the direct policy levers itself, but it can make a valuable contribution by building the evidence base, identifying where market outcomes are falling short, and supporting government and other public bodies to remove barriers or develop appropriate interventions.
49. The policy response, however, needs to distinguish clearly between commercial areas where investment is viable, but barriers need to be removed, and uncommercial areas where the economics are more fundamentally challenging. Forcing commercial rollout beyond what is commercially viable may deliver improvements but comes with risk in a market where financial returns are already low, and where additional unfunded obligations have a direct knock-on effect on the capacity and incentive to invest elsewhere.

Commercial areas: remove barriers to deployment

50. As Ofcom notes, urban centres and shared indoor public spaces often suffer from coordination failure. Demand in these locations is high, and investment can often be commercially rational, but deployment is constrained by planning restrictions, site access challenges, wayleaves, local authority processes, access to street furniture, building-owner incentives and high operating costs.
51. Urban deployment illustrates the point clearly. Better performance in towns and cities often requires new sites, upgrades to existing infrastructure, access to rooftops or street furniture, and timely replacement where sites are lost through redevelopment or notices to quit. These are not areas where the market lacks demand; they are areas where the costs, delays and uncertainty of deployment can prevent otherwise rational investment. Shared indoor spaces raise a similar set of issues. There is already a market for operator-funded and customer-funded indoor solutions, but outcomes depend heavily on the incentives and procurement decisions of building owners.
52. Ofcom has an important role to play in building understanding amongst local authorities, landlords, estate managers and public bodies of their part in improving mobile connectivity. Ofcom should, however, also speak for industry with government on legislative changes that can unlock deployment. It should support our asks for planning and energy reform by providing trusted, neutral evidence on the impact these barriers have on network quality, consumer outcomes, resilience and economic growth. Energy costs are a particular concern. Where marginal commercial cases are already finely balanced, rising electricity costs and policy-driven non-commodity charges make upgrades or new deployment harder to justify.

Uncommercial areas: consider funding and shared responsibility

53. Rail connectivity and rural areas present a different challenge. These are areas where the market can

improve outcomes to an extent, but where the commercial case will often remain weak because costs are high and demand is geographically dispersed. The VodafoneThree merger will materially improve the economics of network deployment and support better coverage and quality across the UK, including transport corridors. Emerging direct-to-device satellite services may also play a role in improving basic connectivity in some hard-to-reach areas. These developments are important and should be allowed to deliver before further intervention is designed.

54. However, these initiatives will not eliminate the underlying economics of the hardest-to-serve locations. Beyond what the market can reasonably deliver, further improvements in rail and rural connectivity are likely to require collaboration and new funding models. This has already been recognised with the government's investment in Project Reach. Better connectivity on trains benefits passengers, train operators, government, public services and the wider economy, but those benefits are not captured solely by MNOs.
55. Similarly, deeper rural coverage can deliver social, economic and resilience benefits that exceed the private commercial return available to the operator deploying the infrastructure. In those circumstances, the question is not simply how to mandate more deployment, but how to fund outcomes that society and government want but the market cannot sustainably deliver on its own.
56. MNOs cannot simply be expected to absorb new costly obligations. As set out above, the long-term sustainability of investment in high quality networks is by no means guaranteed. Imposing further obligations without a sustainable funding route may appear attractive in the short term because it avoids direct public expenditure, but it ultimately weakens the investment case for the very networks on which consumers, MVNOs, businesses and public services rely. Each new unfunded obligation reduces the capital available for commercial rollout and risks perpetuating the cycle in which intervention becomes necessary because the sector's investment capacity has been further weakened. Where new obligations are needed, new funding models must also be designed.
57. We therefore recommend three practical steps for improvements in the four focus areas:
 - **A new UK CNI levy for improvements that the market won't deliver on its own:** we recognise that public funding is limited, but that does not mean that imposing regulatory obligations on MNOs is "free". For improvements beyond what the market can deliver, Ofcom should work with government to design a new UK CNI levy to fund them. This is not a request to raise consumer bills. In fact, we believe the levy should be placed on the wholesale layer only, with no requirement for customer pass-through. A targeted CNI levy should be imposed directly on MVNOs to pass on to their host MNO to deliver the new obligation.
 - Its function would be to spread the cost of new deployment and public-interest obligations more fairly across all mobile service providers, delivering better, more resilient digital infrastructure. To date, where there have been new obligations to improve coverage, those obligations have been shouldered by the MNOs. However, the shift from coverage to quality, and the increasing market share of MVNOs, highlights the role that all mobile service providers play in how consumers access mobile connectivity. Both MNOs and MVNOs should take on new connectivity obligations to ensure all UK consumers are getting the same commitment to improved performance.
 - As it stands, strong competition prevents MNOs from passing on the (largely fixed) cost of new government obligations. When new compliance costs are imposed on MNOs, it is impossible to open long-term wholesale contracts to recoup those costs, despite MVNOs also benefitting from the

existence, resilience and quality of national mobile networks. A CNI levy set by Ofcom or government, linked to the cost of deployment, would help ensure that the cost of critical national infrastructure is shared more sustainably across mobile service providers, and does not fall solely on the network builders.

- **Ofcom should vocally support planning and energy reform:** in commercially viable areas, reducing deployment friction and policy-driven operating costs can tip marginal cases in favour of investment. Ofcom should use its evidence base and advisory role to support reform of planning rules, local authority processes, street furniture access, building-owner engagement and energy cost structures that currently make network deployment slower, more expensive and less predictable.
- **Annual Licence Fees replaced with deployment commitments:** Ofcom should think creatively about how to administer Annual Licence Fees (ALFs), including converting them from a cash extraction mechanism into coverage and quality obligations. ALFs currently remove substantial funds from the mobile sector each year without directly supporting connectivity outcomes. A better model would allow those sums to be partially retained or credited where MNOs deliver agreed public-policy outcomes, such as rural coverage, rail connectivity, resilience or other network quality improvements that the market would not otherwise fund. There are now six EU countries which have chosen to extend licences for 'free' in exchange for better coverage and performance. This is a tried and tested method for delivering network improvements and is within Ofcom's gift.

Section 4. Consultation questions

57. This section sets out our responses to Ofcom's questions in the consultation, including further detail to that provided in earlier sections.

The quality of mobile connectivity we want to see

Question 1: What are your views on the use of the Map Your Mobile good performance metric and how should the measure evolve over time?

57. VodafoneThree welcomes the introduction of a formal UK benchmark for mobile network quality, particularly one that focuses on consistency of performance. After extensive study, the CMA's Final Report in the VodafoneThree merger found that reliability is the most important network quality metric, followed closely by speeds, then latency (in that order).¹⁴ Ofcom's proposed approach of setting a reliability benchmark for a performance metric defined by speeds and latency perfectly complements that finding.
58. Ofcom's proposed threshold (≥ 5 Mbps download, ≥ 1.5 Mbps upload and ≤ 50 ms latency) reflects the baseline of customer needs today. While 50ms of latency is relatively ambitious, download speeds of 5 Mbps represent the bare minimum of data performance, essentially taking the place of a 'not good coverage' metric
59. In practice, consumers increasingly judge connectivity in terms of whether it enables them to perform everyday digital tasks, rather than whether a particular technology or coverage layer is present. A service that cannot consistently deliver 5 Mbps is, from a consumer perspective, often indistinguishable from having no useful signal at all. For that reason, we consider the proposed threshold to be a sensible replacement for traditional notions of "coverage", providing a more meaningful, user-centric yardstick of basic connectivity.
60. However, if Ofcom wants to define actually 'good' performance, it should be looking to the speeds that consumers need to use their mobiles unrestricted. There is a risk that defining 'good' performance solely by reference to present-day consumer behaviour could inadvertently establish a lower long-term ceiling than exists in comparable markets – lower than will be required to support emerging enterprise, public sector and innovation use cases.
61. This would sit uneasily alongside Ofcom's growth objectives and the wider policy ambition for advanced digital infrastructure. Importantly, these higher expectations should not be deferred to some unspecified future date. Infrastructure investment decisions are made over long time horizons, and demand develops in response to the capabilities that networks make available. If more advanced capabilities are expected in future, the appropriate investment and demand signals need to be established now.
62. We therefore believe that Ofcom should adopt a tiered, outcome-based framework. Under such an approach, the proposed threshold would continue to serve as the benchmark for 'decent' connectivity, ensuring consumers have confidence that basic digital services will function effectively. Alongside this, **a higher performance tier of 'excellent' or 'seamless' connectivity should be published** – for example 30 Mbps – reflecting the realities of modern mobile connectivity and creating clear incentives for continued network development. This would ensure that the regulatory framework supports both inclusion and growth, rather than treating connectivity as a binary concept. And it allows consumers to truly understand

¹⁴ [Final report](#)

whether the operator they are thinking of switching to will serve their needs.

63. On the other hand, the latency metric of 50 ms overdelivers on customer demand as it stands today, which likely futureproofs it for the next few years. A rigid view of it, however, risks hampering D2D before it is launched. [✂].
64. Where D2D provides the only coverage, such as in remote rural areas or Areas of Outstanding Natural Beauty, a mobile service that can deliver that capability should be considered good. Extremely expensive terrestrial deployments, which would likely be opposed on aesthetic grounds by local communities, should not be the arbitrary threshold for such areas. To mitigate the risk of a skewed definition of good latency, Ofcom should restrict it to the terrestrial network and set [✂] for D2D services. Given that areas served exclusively by D2D will be almost entirely unpopulated and uncommercial, applying greater flexibility to the technology will still result in a good consumer experience while remaining proportionate and reducing negative externalities.
65. In terms of the measure's evolution over time, Ofcom's existing market monitoring through its own policy research and through our information submissions for Connected Nations and other projects will help identify changes in traffic and usage patterns. We are hopeful that Ofcom's continued examination of the mobile market and its quality outcomes over the coming years will proactively keep the metric current.

Question 2: what are your views on the usefulness of: the 90% figure as a benchmark applicable across geographies and based on crowdsourced data, and whether the 90% benchmark is realistic and sufficiently ambitious?

66. It is safe to say that a standard of connectivity that places us in the bottom third of OECD countries is not adequate for the UK's global ambitions. Consumers and businesses in the UK are now engaging with the economy primarily online, the UK government has set out its ambitions to be a world leader in AI, and the next generation of industrial innovation is predicated on reliable connectivity. We note Ofcom's definition of reliability as consistency of experience rather than the more technical availability of signal. We are supportive of this consumer-friendly approach. We have all been in situations where the handset shows 'full bars' but websites aren't loading. No plain-English description of that scenario would include the word 'reliability'.
67. We believe that closing the gap from today's 79% average good performance to 90% is realistic, however we believe that a futureproof benchmark should go further. The data is stark. There are many other countries offering their consumers better mobile connectivity than our 79% average, which means it is technologically and commercially doable.
68. Reaching 90% does not put the UK at the global top – it raises it to the top third of comparable countries, as of today. This makes it a catch-up benchmark, not a future-facing standard: if other countries continue improving, we need to be aiming for tomorrow's comparable 'good'. This is not only a reasonable ambition; it is imperative to sustain the digital economy. For the UK to reach the top *and remain there*, the 90% benchmark needs to be monitored and updated regularly, tracking international comparators to remain ambitious into the future.
69. VodafoneThree's network commitment is expected to deliver significant improvements across the UK, changing both the quality of experience for our customers but also the competitive landscape for our competitors. Opensignal has already published coverage and speed benefits that it has seen from its

crowdsourced data.¹⁵ This will have ripple effects on investment in mobile infrastructure across the country, standing us in good stead.

70. The question isn't whether a high benchmark is realistic – it has to be to deliver the network quality the UK deserves. The question is whether a combination of the market, and the solutions identified in the discussion paper will get us there. We were disappointed to see Ofcom's diagnosis that there is "no clear evidence of UK-specific structural factors that would account for the UK's relative underperformance".¹⁶
71. WPI research recently published the Mobile Market Index,¹⁷ revealing that low planning flexibility, and high energy and ongoing spectrum costs all constrain the UK more than other comparable countries. Where those particular constraints are comparable, as they are in France, a policy environment that explicitly prefers rollout to low prices¹⁸ has driven better consumer outcomes.
72. As outlined in the introduction, we believe that Ofcom's proposals are a necessary and important start but they cannot take us to 90% and beyond on their own. There needs to be a much broader examination of the mobile market's structural dynamics, and a holistic consideration of what intervention might be needed to support its long-term sustainability and continued quality improvements. Addressing those challenges will be the difference between mobile connectivity struggling just to catch up, and mobile connectivity that keeps pace with demand and expectation.

Market-led improvements in mobile network quality

Question 3: What information do customers need about network quality to choose the best network for their needs, and where are the main gaps in current provision of that information? How well does Map Your Mobile currently meet customer and stakeholder needs, and what specific improvements would make it more useful?

73. We are pleased to see Ofcom recognising the role that consumers can play in driving quality outcomes. Increasing quality-consciousness is critical for stimulating demand for quality and shifting competition away from just price and towards real value. A big part of why consumers don't engage with quality metrics is because there are many different sources, all with comparable authority but different methodologies. MNOs advertise their networks by using metrics and reports that favour them (sometimes in exchange for payment), making subjective claims that the Advertising Standards Agency (ASA) often finds misleading ("UK's best network", "unrivalled", "unbeatable"), reducing comparability and trust among users.
74. Ofcom's consumer research published alongside this paper showed that consumers consider quality to be comparable enough to largely disregard it as a decision-making factor. The lack of a single authoritative league table has contributed to this dilution, as meaningful comparison of quality claims would require an in-depth methodological comparison. That is why Ofcom, as the regulator, should establish Map Your Mobile as the flagship performance assessment tool for the UK, and supplement it with a **regularly updated MNO league table**.
75. This can essentially build on the national performance maps first published in this discussion paper, establishing them as the flagship performance measurement source for the UK. As mentioned in Section 1, the statistic used for the league table should be **Ofcom's 'good' metric, but it should also be set**

¹⁵ [Better experience, faster speeds, wider coverage: Early impact of the Vodafone–Three UK merger](#) | Opensignal

¹⁶ Consultation, para 2.26

¹⁷ [Mobile Market Index — WPI Strategy](#)

¹⁸ ["It's the end of pro-low-cost regulation": Arcep Chairman Sébastien Soriano answers questions from Le Figaro \(7 April 2016\)](#) | Arcep

alongside an 'excellent' metric. Consumers don't just want to know whether they'll be able to send a message, they want to know whether their provider will deliver the performance they're actually looking for from their phones for all regular usage, whenever they need it.

76. Publishing this league table regularly is in-keeping with Ofcom's approach to consumer information today. Ofcom already publishes comprehensive information to help consumers understand the price and consumer service elements of the mobile service and accredits several online price comparison sites (e.g. SIM-only Finder) which provide information on prices for mobile,¹⁹ ensuring that prices and tariff information are accurate, transparent, comprehensive and up to date.
77. Ofcom also publishes satisfaction with customer service reports, including its quarterly complaints and 'Comparing customer service' reports. Both reports are designed to help consumers choose provider by looking beyond price and are explicitly intended to incentivise providers to improve customer service.²⁰
78. Ofcom presents the results in helpful operator league tables that are widely reported by the media and price comparison websites. Operators invest time and money in their contact channels to improve their position in these rankings. Ofcom's complaints ranking [✂]. Doing the same for network quality and performance would help quantify the difference and drive improvements towards a clear end goal.



79. However, for this to have the full effect, **network performance measurements need to apply to all providers, not just MNOs**. Now, MVNO performance is assumed to fully track their host MNO, which means that consumer perception is that they can get the same quality of experience for a fraction of the cost – contributing to the commoditisation of the market that has resulted in this race to the bottom.
80. However, MVNOs often have speed and capacity caps built into their contracts. Some have quite restrictive fair use policies (for example, we are aware that Revolut's fair use policy for their unlimited tariff is 150GB). Thick MVNOs with their own core network will also have technological differences in performance. Without a clear comparison of the nuances of performance between all providers, consumers will still tend towards price. We would like to see clearer, consumer-friendly explanations of how network performance on MVNOs actually works.
81. We also believe that Ofcom should **require Price Comparison Websites (PCW) to display the Map Your Mobile performance metric** (enhanced with the 'excellent' metric recommended above) prominently alongside all mobile tariffs. At present, consumers are able to compare providers easily on price, data allowances and handset offers, but quality information is typically separated from the purchasing journey and must be actively sought out.
82. This creates an information asymmetry which reinforces competition on price alone, despite network quality being a key determinant of the customer experience. Voluntary adoption is unlikely to be sufficient, as comparison websites have strong commercial incentives to optimise around price and conversion. Requiring the consistent presentation of independently measured quality indicators would ensure that consumers receive balanced information at the point of purchase, enable meaningful comparison between providers, and reduce the current over-emphasis on price. This would support more effective consumer choice, help align competition with network investment and service outcomes, and

¹⁹ Use an Ofcom-accredited price comparison site to find the best deal

²⁰ Telecoms and Pay-TV Complaints: Background and Methodology - Q3 2025

increase the impact of Ofcom's wider work to improve transparency through Map Your Mobile and related performance reporting.

Connectivity in busy areas

Question 4: What do you think are the biggest barriers to achieving better mobile performance in town and city centres and why? What do you think should be Ofcom's main priorities for our future work in this area? What information would stakeholders, especially local authorities / planning authorities find useful for Ofcom to provide further insights on and why?

83. Unlike rural areas, densely populated urban areas are commercially attractive for investment because the economics of deployment are more favourable. Not only are there more customers to serve by definition, it is also generally easier to access electricity and fibre backhaul. However, as Ofcom recognises in the Consultation, delivering seamless and reliable mobile connectivity in some urban places remains challenging, largely due to constraints within the planning system.
84. To improve network quality and mobile performance, MNOs must either upgrade their existing infrastructure or deploy new sites. In many cases, this requires either a full planning process or the securing of prior approval under the General Permitted Development Order (GDPO). Whether a full planning application, an application for prior approval or a notification is needed is dictated by permitted development rights (PDRs), with the dimensions of a site or an upgrade usually being the main factor in the type of planning process, if any, that applies.
85. Despite the fact that MNOs are now overwhelmingly focused on straightforward upgrades rather than building new sites, the current regime continues to present a major barrier to deployment, because it is restrictive in where it sets the thresholds for prior approval and full planning. It therefore continues to introduce significant cost, delay and uncertainty into network deployment and upgrades. Other challenges include inconsistent decision making across planning authorities and site losses resulting from Notices to Quit (NTQs). Collectively, these issues increase the cost and complexity of deployment and slow the rollout of 5G networks across the UK.
86. The Government has launched a review of the planning framework for telecommunications development in England, with which VodafoneThree is actively engaging. We would appreciate Ofcom's support with industry's asks of government, particularly as digital infrastructure beds into its new departments as of July 2026. Below, we provide a brief overview of the key points raised in our submissions to Government.
- **Permitted development rights (PDRs):** PDRs remain too restrictive for 5G deployment. Current limits on mast height, rooftop infrastructure and temporary relocation can force routine upgrades or replacement solutions into the full planning system, increasing cost, delay and delivery risk. 5G deployment and upgrades require taller, wider structures, additional equipment and more flexible replacement arrangements. In practice, local decision-making remains hugely inconsistent, with approval rates for the exact same mast ranging from 100% in some Local Authorities to 0% in others
 - **National Planning Policy Framework (NPPF):** we welcome government's recent publication of the new NPPF. The new NPPF makes clear that digital connectivity is essential infrastructure and instructs planning officers to give "substantial weight" to the benefits of maintaining or improving network coverage, capacity, reliability and resilience when making planning decisions.

- **Notices to Quit (NTQs):** The increase in landlord's NTQs is starting to cause significant problems, particularly in dense urban areas like London. VodafoneThree currently has [CONFIDENTIAL 8<] sites due to come off air in London. The current framework does not provide enough time or policy support for MNOs to secure replacement sites. Key changes would materially reduce avoidable network disruption by easing the impact of NTQs, such as extending temporary relocation rights, strengthening planning policy expectations around the protection of existing connectivity, and creating validation requirements for developers around connectivity.
87. While Local Authorities play a critical role in improving mobile connectivity through their responsibility for determining planning applications, we believe Ofcom also has an important role to play. VodafoneThree welcomes Ofcom's decision to commission research in Greater Manchester to better understand the causes of poor mobile connectivity and identify areas where network performance falls short.
 88. Ofcom should consider undertaking **similar studies in other parts of the UK** and use the findings to engage with local authorities, demonstrating the economic and social benefits of mobile connectivity and highlighting the impact that planning decisions can have on coverage and network performance.
 89. In addition, Ofcom could improve transparency and accountability by **publishing comparative data on local authorities through its Connected Nations report**. This could include a league table that combines mobile connectivity outcomes with planning metrics, such as approval and rejection rates for mobile infrastructure applications. Publishing this information would help identify local authorities that are either enabling or hindering network investment.

Connectivity in indoor, shared public places

Question 5: what do you think are the biggest barriers to achieving better mobile performance indoors and why? What do you think should be Ofcom's main priorities for our future work in this area? What information would you find useful for Ofcom to provide further insights on in relation to connectivity indoors and why?

90. VodafoneThree agrees that indoor connectivity remains a significant challenge for UK consumers and businesses but considers this to be a shared ecosystem issue rather than a failure of mobile network competition.
91. Mobile network operators continue to compete strongly on network quality, investment and service innovation. However, outdoor mobile networks alone cannot always deliver the indoor performance customers increasingly expect, particularly in large, complex or high-footfall buildings. Improving indoor connectivity will therefore require coordinated action from a wider ecosystem, including building owners, developers, venue operators, public sector bodies and specialist infrastructure providers.
92. We broadly agree with Ofcom's assessment of the principal barriers. Indoor coverage is inherently more difficult to deliver by public network than outdoor coverage. Mobile signals struggle to penetrate modern construction materials, particularly energy-efficient buildings that use dense insulation, coated glass and reinforced concrete. While advances in network technology can help, building design increasingly limits the effectiveness of outdoor networks in serving indoor users. In many cases, the challenge is not the availability of technical solutions, but a lack of understanding among venue owners and building operators of the business, operational and customer benefits that improved indoor mobile infrastructure can deliver, and the best solutions for delivering it.

93. In high-footfall locations such as transport hubs, stadiums and event venues, large spikes in demand can quickly overwhelm outdoor networks. Dedicated indoor solutions are often needed to provide sufficient capacity and maintain service quality. Ofcom notes that some building owners are already choosing dedicated neutral host solutions, such as a Distributed Antenna System (DAS). We believe that this is the most effective solution for such environments from both a technical and commercial point of view.
94. Technically, it delivers smooth connectivity as both signal and capacity are targeted specifically at indoor users, and the neutral host aspect means that customers of all providers have good mobile performance. Commercially, it guarantees demand and thus a financial return for investing in indoor coverage. The MNO business case for installing indoor solutions as part of broader public network deployment is hard to square, so landlord-led demand is crucial.
95. Ofcom could play an important role in **developing guidance** for landlords, developers and public sector estate managers on how to incorporate mobile connectivity into building design, refurbishment and operation. We note Ofcom's reference to similar work undertaken by the Norwegian regulator and believe there is merit in developing equivalent UK-focused guidance. This can include evidence on indoor performance across different building types, comparisons across transport hubs, shopping centres, hospitals, universities, public buildings and entertainment venues - helping to build understanding of the challenges and options for improved connectivity.
96. Greater transparency regarding successful deployment models would also be valuable. Case studies demonstrating how venue owners, MNOs and neutral hosts have collaborated successfully could help build awareness and encourage replication of best practice. This is particularly important to fill the knowledge gap for landlords who want to invest in better mobile connectivity, but don't know the best way to deliver it. While neutral host DAS solutions are the most effective option, they can be expensive.
97. This can lead building owners to find cheap alternatives, and some enterprise customers rely on repeater solutions which are not only less reliable, they are also severely constrained by the proximity and capacity of the outdoor macro network. [X]. Switching would simply overload the new network, suddenly making the old provider's signal appear stronger. Building managers are not network experts and shouldn't have to be. Ofcom should **make clear the limitations of repeaters** for busy spaces when it engages with these parties.
98. Ofcom notes that improving connectivity in busy public spaces can require active planning. We also believe there is a strong role for planning and building design in improving indoor connectivity outcomes, as outlined in our response to government's consultation on the National Planning Policy Framework. **Mobile connectivity should be treated as a core requirement**, alongside power, water and fixed broadband, and embedded within the design, planning and refurbishment of buildings from the outset.
99. Early engagement between developers, landlords, venue owners and mobile operators can help ensure coverage, capacity and backhaul requirements are incorporated into developments, reducing the need for costly retrofitting at a later stage. New developments should also avoid degrading existing connectivity, with appropriate mitigation secured where existing infrastructure or network performance may be impacted. This would help address many of the structural barriers identified by Ofcom and support the delivery of better indoor connectivity over the long term.
100. **Government procurement reform** could also help improve indoor connectivity and accelerate digital adoption within public sector buildings, such as hospitals or job centres. Current public sector procurement often prioritises lowest-cost solutions over resilience, innovation and long-term value, limiting investment in enhanced connectivity. We therefore reiterate our Mobile Market Review

recommendation that government adopts technology-neutral, outcome-based procurement models that reward performance, resilience and whole-life value. As one of the UK's largest technology buyers, government can use its purchasing power to stimulate demand for advanced connectivity solutions, including improved indoor infrastructure in public buildings and shared spaces. We would appreciate Ofcom's support in backing up this point with government in its capacity as building owner.

Connectivity on trains

Question 6: what do you think are the biggest barriers, technical and commercial, to achieving better mobile performance on trains? Which are most significant and why? Do you agree with our proposal to work with government to support improvements in train connectivity? What information would you find useful for Ofcom to provide further insights on in relation to connectivity on trains and why?

101. VodafoneThree welcomes Ofcom's recognition of the challenges associated with delivering reliable mobile connectivity on the rail network. Connectivity on trains remains one of the most difficult mobile environments to serve and, as Ofcom's research demonstrates, no operator is currently delivering consistently good performance across the rail network.
102. We agree with Ofcom's assessment that improving rail connectivity is not solely a mobile network operator/market problem. It reflects a combination of technical constraints, fragmented ownership structures, coordination challenges and weak commercial incentives. Unlike most other mobile environments, responsibility for delivering improved connectivity is shared across multiple parties, including mobile operators, train operating companies, Network Rail, infrastructure providers and government.
103. From a technical perspective, rail corridors present several unique challenges. Trains travel at high speeds through a wide variety of environments, including rural areas, cuttings, tunnels and heavily screened sections of track. Signal penetration into modern train carriages can be poor due to energy-efficient window coatings and carriage construction materials. In addition, rail routes often pass through areas where there is limited existing mobile infrastructure, power availability or fibre backhaul.
104. These factors make it significantly more difficult and expensive to deliver a consistently high-quality mobile experience than in typical urban environments. Ofcom notes that performance in general is influenced by coverage constraints, capacity limitations and environmental factors, all of which can be particularly pronounced on rail routes.
105. In addition to these challenges, there are also **deployment barriers on railway land**. The planning process for sites located on Network Rail property typically requires both standard local authority planning approval and compliance with Network Rail's Basic Asset Protection Agreement (BAPA) process. While these processes can run in parallel, BAPA approvals can add between six and twelve months to deployment timelines. We believe there is scope to **streamline and accelerate these approval processes** without compromising operational safety and would appreciate Ofcom's support. Reducing deployment times would lower costs, improve investment certainty and support faster delivery of connectivity improvements across the rail network.
106. However, the most significant barrier is economic rather than technical. While mobile operators can invest in trackside infrastructure or onboard solutions, the commercial returns are often insufficient to justify the scale of investment required. Rail passengers represent a transient user base, and the benefits of improved connectivity are distributed across several stakeholders rather than being captured by any single party.

This creates a classic coordination and investment challenge, where the overall societal benefits may exceed the private returns available to those expected to fund the solution.

107. We therefore agree with Ofcom's proposal to work with government to support improvements in train connectivity. Given the structural challenges involved, achieving materially better outcomes will require collaboration across industry and the public sector. In our view, solutions broadly fall into two categories: commercial interventions and non-commercial interventions.

Commercial interventions for rail

108. The **VodafoneThree merger** will deliver investment in network coverage and capacity across the UK. While this investment is not specifically targeted at rail corridors, it will deliver incidental improvements along many rail routes, helping to improve customer experience and bring network performance closer to Ofcom's definition of good connectivity. This deployment, and the competitive response it stimulates, should lay strong trackside foundations for onboard solutions to interact with or magnify.
109. The most immediate opportunity for genuine improvements in train connectivity may lie in onboard connectivity solutions supported by train operating companies. Improving connectivity inside train carriages is fundamentally more effective than relying exclusively on outdoor-to-indoor mobile coverage, and a step-change in performance from below 50% will require dedicated solutions. Ofcom should **encourage train operators to consider options for onboard connectivity solutions**.
110. **Greater access to existing publicly funded infrastructure** could materially improve the economics of mobile deployment along rail corridors and in other hard-to-reach locations, without new funding requirements. A key example is the **Emergency Services Network (ESN)**. Public funding has already supported the construction and upgrade of hundreds of mobile sites across the UK, with wholesale access obligations intended to enable broader industry use under State Aid rules. However, VodafoneThree's experience to date is that practical access to ESN-funded infrastructure has been extremely limited.
111. We believe greater transparency is needed regarding the operation of the ESN programme, including which sites have benefited from public funding, the scope of upgrades delivered, the access arrangements available to other operators, and the commercial terms on which access is provided. Without visibility of where public investment has been deployed, it is difficult for industry to assess how those assets could support wider connectivity objectives or how operators can complement, rather than duplicate, existing infrastructure investment.
112. There is also a question of competitive neutrality. Where public funding has funded all or a substantial proportion of a site's deployment costs, the host operator may receive a significant infrastructure advantage if competing operators are unable to access that asset on equivalent terms. If taxpayers have funded the infrastructure, it is not only fair that all operators should have a clear and practical route to benefit from that investment. We therefore encourage Ofcom and Government to work with stakeholders to **improve transparency around ESN investment, clarify access arrangements and ensure that publicly funded assets can be leveraged effectively** to support wider mobile connectivity objectives, including improved connectivity on the rail network.
113. Similarly, the future rollout of the **Future Railway Mobile Communication System (FRMCS)** presents an opportunity to explore infrastructure sharing opportunities where technically feasible. While FRMCS is primarily intended for mission-critical rail operations, policymakers should consider whether infrastructure assets or supporting facilities could contribute to broader connectivity improvements, subject to

operational and security requirements.

Non-commercial interventions for rail

114. Despite the scope for some commercial deployment outlined above, the economic challenges of rail mean that significant improvements across many rail routes are unlikely to be delivered by the market alone. Therefore, government intervention is likely to play an important role in achieving wider improvements across the rail network. We would appreciate Ofcom's support in providing evidence to government on this.
115. The case for dedicated trackside mobile infrastructure remains challenging, particularly on rural rail corridors where deployment costs are high and there are substantial constraints around power, backhaul and site access. As Ofcom notes, the business case for TOC-funded solutions can also be difficult in many circumstances. While passengers, train operators, government and the wider economy all benefit from improved connectivity, the costs of delivering those improvements often fall on a much narrower group of stakeholders.
116. For these reasons, actually delivering rail connectivity that is comparable in reliability to other locations is likely to require targeted public programmes. We welcome the Government's support for Project Reach, which is modernising telecoms infrastructure across the rail network and establishing a high-capacity digital backbone. Extending **the scope of Project Reach** beyond its current footprint could offer a cost-effective mechanism for improving connectivity on additional routes. Building on an existing programme should generate economies of scale and avoid unnecessary duplication of infrastructure investment.
117. Where government wishes to secure connectivity outcomes that are unlikely to be commercially viable, however, a UK CNI levy could deliver the funding required. As noted in the introduction, introducing a **targeted CNI levy**, would provide a mechanism for funding specific public-interest connectivity objectives like rail connectivity and other hard-to-reach locations (like rural below) on a long-term basis. Such an approach would help ensure that the costs of delivering wider societal benefits are shared more equitably across all mobile service providers who should be delivering good quality mobile to their customers - not just those directly responsible for rolling out trackside infrastructure.
118. Finally, Ofcom should consider whether **Annual Licence Fees (ALFs)** could be used more creatively to support connectivity outcomes. As set out in the introduction, encouraging efficient use of spectrum through specific obligations rather than fees that simply exit the mobile market is frequently deployed. Rather than acting solely as a cash extraction mechanism, ALF payments could be redirected towards defined public-interest objectives, including rail connectivity, rural coverage or - beyond the scope of this discussion paper - network resilience improvements.

Connectivity in rural areas

Question 7: what do you think are the biggest barriers to achieving better mobile performance in rural locations and why? What do you think should be Ofcom's main priorities for our future work in rural locations and what outcomes should we aim to achieve? What solutions (technical, commercial, policy or delivery) could improve rural mobile performance? What information would you find useful for Ofcom to provide further insights on in relation to rural connectivity and why?

119. Achieving seamless, high-quality coverage in such locations remains significantly more challenging than

in urban areas. Rural areas are characterised by significantly higher network deployment costs and lower population densities than urban areas, resulting in a materially weaker investment case. A rural mobile site typically serves far fewer premises and users than an urban site, generating lower revenue per site, while costing exponentially more.

120. Mobile sites require high capacity backhaul connectivity to the core network, yet fibre infrastructure is often unavailable in remote locations. Extending fibre across challenging terrain, environmentally protected areas or private land can be expensive, when it can be done at all. Where fibre deployment is not commercially feasible, microwave links provide an alternative but typically offer lower capacity and can be more susceptible to performance degradation over long distances or during adverse weather conditions. Similarly, many rural sites are located considerable distances from the electricity network, requiring costly grid extensions or reliance on off-grid power solutions, such as diesel generators or renewable energy sources.
121. This is particularly difficult in the UK, where low mast heights increase the number of sites that need to be found, all with the consequent rent negotiated, planning permission granted, and electricity/backhaul-connected.
122. Despite these challenges, industry continues to invest in improving rural connectivity:
 - The VodafoneThree merger will deliver over 95% 4G geographic coverage by 2027, upgrading to over 95% 5G Standalone geographic coverage by 2030.²¹
 - MNOs have established D2D satellite partnerships to close the remaining gap. For example, Vodafone Group and AST SpaceMobile have signed an agreement to create a jointly owned European satellite service business, serving MNOs across European markets with the aim of achieving 100% of geographic coverage.²²
123. The remaining 5% of geography – the most remote and hardest to reach areas – will continue to be uneconomic for terrestrial deployment for the reasons set out above and practically can only be served by D2D. As set out in Section 2, we consider that Ofcom’s MYM framework should apply a separate performance metric to areas served only by D2D, and that the definitions of ‘good’ and ‘excellent’ coverage should be restricted to the terrestrial network. This reflects both the physical limitations of the technology and the fact that D2D-only areas will be almost entirely unpopulated and uneconomic for terrestrial build. A more lenient standard for these areas is proportionate and will still deliver a good consumer outcome.
124. The Government itself has recognised the diminishing returns of funding in hard-to-reach remote areas. While the original government-funded TNS element of the SRN programme envisaged the deployment of 260 new masts to address these areas, the Government has since scaled back the programme as evidence of strong planning opposition with little population gain came through. Instead, it has adopted a more targeted approach, delivering a smaller number of publicly funded sites and prioritising locations where improved coverage will most effectively benefit users.
125. Any intervention in the market should take this into account when considering its proportionality. Given the risk of regulatory failure and market distortion with every new obligation or regulation, the benefits need to outweigh that risk. If even the government cannot readily make the public policy case for pre-committed funding to be used to deliver coverage in deep rural areas, and local residents have opposed terrestrial rollout from MNOs and Neutral Hosts alike, Ofcom should exercise extreme caution before

²¹ [Innovation is key to support rural customers and rural growth](#)

²² [Vodafone and AST SpaceMobile Sign Agreement to Create European Direct-To-Device Satellite Service Provider – Vodafone](#)

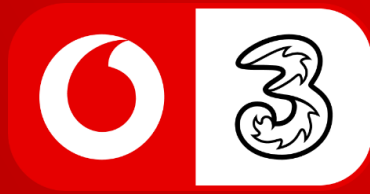
making assumptions on the trade-offs.

126. Ofcom's proposed solutions, such as Neutral Host models and spectrum or site sharing, are unlikely to change the underlying economics of providing coverage in the most remote areas and, on their own, will not address not-spots. There is already a market for site sharing, with the majority of mobile sites owned by independent tower companies, such as Cornerstone (CTIL) and Cellnex rather than the MNOs themselves. This means MNOs are generally able to access existing sites through commercial agreements where there is a viable business case to do so.
127. Where it is not used, it is because the commercial terms for expanding the coverage are not economically viable. On the other hand, if Ofcom were to go beyond recommendations to mandating site or spectrum sharing, this carries significant risks of market distortion and unintended consequences. Providing mandatory spectrum or site access to competitors could weaken incentives for MNOs to invest in new rural areas, or to expand commercial coverage in partial not-spots. If operators can get access to competitors' sites, the commercial case for deploying new sites themselves is reduced, potentially slowing further investment. This not only stifles the market and increases the area of the UK that may need government intervention, it also decreases the resilience of the network as less duplication means less redundancy in the case of an outage.
128. We consider there is a material risk of regulatory failure if intervention proceeds without regard to the points above.
129. The VodafoneThree merger has itself changed the economics of what is commercially deployable in rural areas, and regulatory intervention before the market has had the opportunity to respond to this shift risks distorting investment decisions and crowding out commercial rollout. [§]. This illustrates how difficult it is to draw the line between commercial and non-commercial areas, particularly when the market is adjusting to new economic conditions that have not yet fully bedded in.
130. If, after allowing sufficient time for the market to respond, further measures are still required to close the remaining rural connectivity gap, any intervention should be carefully targeted, and the impact assessment meticulously designed against clear Critical Success Factors. Consistent with Section 6, any intervention to stimulate rollout in rural areas beyond what the market will deliver should be focused on **improved access to existing publicly funded infrastructure**, including assets funded through programme such as ESN; and **additional, long-term funding mechanisms**, such as the UK CNI levy or reinvestment of ALFs, extending the approach we propose for rail connectivity to rural not-spots.

Appendix A | Summary of recommendations

Theme	Recommendation
Competition on quality	Principles-based net neutrality reform: Ofcom should advise government on legislative change to enable commercial innovation.
	New licensing regime for telecoms: Work with government to design a regime that raises accountability and resilience from the point of entry.
	Better impact assessments: Apply Magenta Book principles to regulatory intervention and prioritise quality improvement alongside retail price outcomes.
	A new CNI levy: For improvements beyond what the market can deliver, Ofcom should work with government to design a UK CNI levy.
	Planning and energy reform: Use Ofcom's evidence base and advisory role to support reform of planning rules and energy cost structures.
	Annual Licence Fee reform: Convert ALFs from cash payments into specific deployment commitments aligned with public-policy ambitions.
Map Your Mobile improvements	Introduce an excellent speed metric alongside good: Retain 5 Mbps as a baseline, while also showing whether providers deliver high-speed, seamless connectivity.
	A pragmatic D2D latency metric: Restrict the 50 ms threshold to terrestrial networks and use [∞] ms for D2D services.
	League tables: Publish regular network-quality league tables, building on Ofcom's performance maps and complaints reporting.
	Differentiate MVNOs from host MNOs: Apply performance measurement to MVNOs as well as MNOs where commercial or technical differences affect experience.
	Include quality on price comparison websites: Require Ofcom's performance metrics to appear alongside mobile tariffs during the purchasing journey.
Urban connectivity	Planning reform: Advocate changes to rules that slow or prevent mobile deployment.
	Comparative local-authority data: Publish connectivity outcomes alongside planning approval and rejection rates in Connected Nations.
Indoor connectivity	Guidance for landlords, developers and estate managers: Share best practice for building design, refurbishment and operation, including the limits of repeaters.
	Mobile as a core building requirement: Support the treatment of mobile connectivity as essential infrastructure alongside fixed broadband.
	Public-sector procurement reform: Back outcome-based, technology-neutral procurement for public buildings.
Rail and rural connectivity	Streamline rail access barriers: Reduce avoidable delay in Network Rail's BAPA process.
	Onboard connectivity: Encourage train operators to consider neutral-host DAS solutions.
	Project Reach: Support extension to additional rail routes.

	CNI funding for uncommercial deployment: Use mechanisms such as a CNI levy and ALF reform.
	Access to publicly funded infrastructure: Make commercial access to ESN and, increasingly, FRMCS assets transparent and practical.



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