



Connectivity you can count on

BT's response to Ofcom's discussion paper issued on 3 June 2026

Issue 1.0

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Executive summary

BT supports Ofcom's objective of improving the quality, resilience and transparency of UK mobile connectivity, and welcomes the shift from coverage-only reporting towards a real understanding of customer experience. But clearer policy support is needed to move the market towards a higher-quality, higher-investment equilibrium.

Market structure and competitive dynamics do not support more investment for quality

The UK mobile market has reached a highly competitive but lower-quality, lower-investment equilibrium in which price dominates customer choice. This is not because all networks are equivalent: important differences in quality, investment and outcomes remain, with EE continuing to offer the UK's highest-quality network. But current dynamics are insufficient to meet rising expectations for reliable, higher-quality connectivity everywhere customers live, work and travel — increasingly important in an uncertain geopolitical environment where resilient, secure networks are vital.

Today's outcomes result from choices by industry and policymakers that individually made sense but combine to challenge the ability to invest more for quality. For example:

- moves to unlimited tariffs helped consumer confidence on spending, but broke the link between revenue, usage and costs;
- competition for MVNO business increased consumer choice but led to inefficiently low wholesale pricing;
- switching and information interventions increased engagement but focused consumers on price, not quality;
- promoting network competition increased commercial coverage and new technology rollout but created excessive fragmentation and sub-scale operators (five UK networks in 2010); and
- operators have absorbed substantial policy-driven costs, including the Shared Rural Network, High-Risk Vendor removal, energy impacts and a restrictive net neutrality framework.

MVNO supply and competition illustrate challenging market dynamics

MVNOs now account for approximately 20% of UK mobile subscribers, up from c 15% in 2023. They intensify price competition, keeping prices low and ARPUs flat or falling — helping price-conscious customers but weakening profitability and investment. Wholesale MVNO contracts are priced closer to incremental than fully allocated cost: we estimate BT's underlying wholesale mobile network cost (operating costs, depreciation, cost of capital) at £[8<] per customer per month,¹ whereas some MVNO retail prices are as low as £8.80 per month or lower.^{2, 3}

To support incremental investment, wholesale MVNO prices need to rise, but they are constrained by competition and by policy including the VF3 merger commitments. Those commitments risk ossifying prices by allowing renewal at existing terms, setting a market reference price, and requiring VF3 to meet MVNO demand, including non-discriminatory access that could extend to higher-value services like 5G standalone.

The result is insufficient revenues and returns to support further incremental investment

Mobile service revenues have declined 20% in real terms over five years, and industry capex has fallen 22% since 2021. BT's consumer mobile business is not earning returns sufficient to support a material step-up in investment beyond those already made.

Business-as-usual investment in new technologies improves quality over time, and the VodafoneThree merger commitment to maintain a larger site grid created a one-off quality boost. But the sector has limited headroom to fund the sustained capex increase Ofcom expects. Competition has supported substantial investment but cannot

¹ BT internal estimate. See Appendix B for cost methodology.

² In September 2025, the lowest-priced pay-monthly SIM-only tariff offering more than 10GB and up to 100GB of inclusive data was available at ID Mobile for £8.80 per month. See Ofcom (2026), [Pricing and consumer engagement report](#), p. 58.

³ Asda Mobile offers a 10GB Data pay-monthly SIM-only tariff for £8 per month. See [10GB SIM only plan – 12 month contract - Asda Mobile](#) [accessed on 5th August 2026].

alone fund universal, resilient, high-quality connectivity where the commercial case is weak or absent. The policy objective should be to move the market towards a higher-quality, higher-investment equilibrium.

Quality information is useful, but an overall UK measure and international comparison ignoring UK characteristics does not help

Ofcom's proposed quality measures usefully increase focus on network quality and give customers more granular information. However, a single international benchmark that ignores the UK's geography, population distribution, willingness to pay, planning constraints and market economics is unlikely to provide a meaningful or actionable policy guide. A better approach would track whether UK quality improves over time in response to commercial and policy actions, using customer-relevant measures supported by a hybrid framework combining crowdsourced data with independently governed field testing.

Policy actions are required across three areas

- **Reduce network costs** by reforming planning rules, addressing energy costs, ensuring security and resilience obligations are appropriately funded, and supporting rapid but careful legacy network retirement. Neutral hosts and sharing models help in specific venues, mainly where landlords fund deployment or passive infrastructure, but are not a general substitute for public funding in rural or uneconomic areas.
- **Support network capability enhancements.** Ofcom should set out a pro-investment spectrum roadmap including releases for high power mobile in 3.8–4.2 GHz, 600 MHz and lower 7 GHz. Government and Ofcom should support targeted, funded interventions where the commercial case is weak but public benefit is clear — rail connectivity being the most immediate example. BT proposes a staged rail pilot, beginning with upgrading train repeaters and followed by targeted capacity and coverage interventions. Ofcom should also support higher device power levels, minimise fragmentation from shared spectrum or dedicated wireless networks (e.g. utilities), and work with Government to enable higher masts.
- **Unlock new revenue and funding sources.** This includes modernising net neutrality so operators can develop differentiated services while maintaining safeguards; removing or redirecting Annual Licence Fees towards high-impact investment; ensuring wholesale dynamics (MVNO pricing and the VodafoneThree remedy) do not entrench unsustainably low pricing or enable disruptive entry leveraging market power in other sectors; and stimulating SME, enterprise and public sector demand for 5G.

Roles for Ofcom, Government and industry

Delivering better connectivity is a shared responsibility. Ofcom should ensure quality reporting is meaningful, customer-relevant and investment-supportive, and work with Government on spectrum, ALFs, MVNO dynamics, planning and net neutrality reform. Government should remove barriers and provide targeted funding where outcomes are non-commercial. Industry will continue to invest efficiently, compete on quality and deliver practical solutions, but cannot deliver a universal step-change alone within current market economics.

The remainder of this document is structured as follows:

- Chapter 1 addresses funding, finance and market structure;
- Chapter 2 addresses what good looks like;
- Chapter 3 sets out policy actions.

1 Market structure and dynamics

Ofcom suggests significantly more investment is feasible — in its 90% benchmark and when considering busy areas and indoor shared spaces — without assessing the sector's ability to increase investment. This section discusses key investment challenges and their root causes, including funding, market structure, returns and capex requirements.

Competitive forces or commercial incentives cannot fund incrementally more investment

Competition has driven around £10bn of MNO network investment since 2020, but market forces alone will not deliver universal, resilient, high-quality connectivity.

BT's mobile capex budget has reduced in recent years, with FY27 capex of around £[8<] leaving limited flexibility — most spend is tied to “keeping the lights on” and essential obligations (HRV and TSA), with only £[8<] for customer experience and congestion.

Some argue operators could increase spend without incremental revenue by diverting capex or raising external funding. But that would mean either stopping spending elsewhere (e.g. FTTP) where the marginal benefit of mobile is greater, or expanding the capex envelope through debt. BT faces strong constraints on debt, currently BBB with a Stable Outlook, our target floor, and raising more would risk our credit rating with Fitch and Standard & Poor's. With the current macroeconomic environment making external debt ever more expensive, hitting market guidance including cash flow and profit targets is of utmost importance.⁴

We disagree with Ofcom's claim that recent increased investment from BT was driven by the VodafoneThree merger. BT had deployed a 5G SA Core Network and launched emerging 5G SA RAN capabilities on 5 September 2024. BT has always had a mobile capex plan under which all RAN upgrades enable 5G NSA and SA — for instance, our HRV programme and RAN modernisation ensured 5G SA capability. BT will continue to improve its network, but with capex declining, Ofcom should not assume additional investment will be merger-driven.^{5, 6, 7}

MVNOs intensify short-run price competition but weaken long-run investment incentives

The UK market is highly competitive, with three MNOs and at least 20 MVNOs competing on brand, product and price. MVNOs account for approximately 20% of subscribers, up from c 15% in 2023, and are forecast to reach 25% by 2029.^{8, 9}

MVNOs keep prices low and ARPUs flat or falling, helping price-conscious customers but weakening profitability and investment. Their share is growing again after the VM exit temporarily reduced it, creating a growing drag: as the segment grows, an ever-smaller pot of direct subscribers funds network improvements and contributes to wider fixed and common costs or margin.

Achieving a 9-in-10 benchmark for an average “good” experience needs more investment and therefore sustainable (higher) wholesale charges. MVNO policy should take a quality-adjusted view of competition, recognising that:

- wholesale MVNO contracts are priced closer to incremental than fully allocated cost, making limited contribution to wider fixed and common costs or margin — this pricing model needs to change (see Appendix B);
- the CMA's VF3 wholesale remedy must not become a long-term price anchor: the wholesale reference offer and the right for existing MVNOs to renew on existing terms risk becoming a price ceiling, limiting higher charges or testing of models such as stepped pricing that could support future investment (see Appendix B). While the wholesale reference offer is limited to three years the *renewal-on-existing-terms* right and reference-price

⁴ Maintaining investment-grade credit metrics is important to preserving access to finance at reasonable cost. Increasing the capex envelope without corresponding revenue growth would put pressure on those metrics and could increase the cost of funding long-term infrastructure investment.

⁵ Ofcom, para 3.8 - 3.9.

⁶ See [Redefining connectivity: A new era for our customers, powered by 5G Standalone and WiFi 7](#).

⁷ BT's confidential response to CMA RFI6 Q7 of 22 October 2024; BT's confidential response to CMA RFI6 Q1, 25 October 2024.

⁸ In 2022 the MVNO share had reached c 20% but fell back to 15% in late 2022/early 2023 when VM moved to the O2 network. See Enders UK Mobile Escaping the value trap, 5 May 2026.

⁹ CCS Insights. Available at [UK Operators' Main Brands Face Years of Subscriber Losses - FDM CCS Insight](#).

signalling create anchoring effects that outlast the formal 3-year window. Ofcom and the CMA should review the impact of further access or pricing interventions on investment capacity; other aspects of the reference offer may lead to suboptimal outcomes, including the obligation to supply and non-discrimination;

- VF3's obligation to supply MVNOs will likely become the industry standard. It risks distorting competition by encouraging entry by those with an incentive and ability to deeply discount mobile to earn higher returns on their home products. Low-cost retail-brand MVNOs (e.g. supermarkets) with low-margin core businesses do not cover true network costs; Big Tech firms with highly lucrative core businesses could price connectivity even lower, potentially at a loss, to build stickiness — further entrenching low wholesale pricing and enabling bundled offers MNO competitors may struggle to replicate; and
- while VF3 does not currently offer 5G SA to MVNOs, the non-discriminatory access requirement could, under certain interpretations, limit MNOs' ability to reserve these services for retail customers, further driving down margins on value-added services.

Current market conditions cannot support the investment needed for world-class, resilient networks

The UK mobile market is structurally unprofitable given a combination of high investment requirements, low prices, and low barriers to MVNO entry. Easy switching and strong competition drive prices towards incremental cost, especially in customer acquisition. This supports low short-term prices but not significant, long-term, sunk-cost investment. Independent analysis of 20 European markets ranked the UK 18th for overall sector health.¹⁰

Mobile service revenues are down around 20% in real terms over five years, and pay-monthly ARPU around 30% since 2018, weighing on returns.¹¹ UK mobile capex is down 22% since 2021.¹² This is unsurprising: with returns remaining stubbornly below the cost of capital, capex has tended not to be rewarded with revenue growth but has been necessary to maintain current (and declining) revenues. Enhancing coverage or quality is not leading to revenue growth, so investors will show little support for risky investment ahead of demand unless the risk can be mitigated. Since incremental capex does not create value, operators are unlikely to pursue it unless incentives change.

BT Group is earning below its cost of capital, disincentivising investment. We assess mobile as driving most of our losses on an economic profit basis. Table 1.1 shows 2025/26 BT mobile accounting ROCE (including goodwill) was below BT Group's pre-tax nominal WACC of [8<]%, meaning the business is not generating an economic profit.

Table 1.1: BT Consumer Mobile profitability (2025/26)

ROCE vs WACC	(%)
Accounting ROCE (including goodwill)	[8<]
BT internal WACC (pre-tax nominal)	[8<]

Source: BT

Ofcom favours economic ROCE, excluding goodwill recognised after BT's 2016 acquisition of EE; on that basis, EE's mobile ROCE is [8<]%. On the other hand, BT considers accounting ROCE, including goodwill, the more relevant measure because it reflects total capital committed to mobile and investor returns. Ofcom's approach is incomplete and overstates BT's mobile profitability because:¹³

- Ofcom accepts investors may consider goodwill, but gives greater weight to economic ROCE;

¹⁰ Kearney: [European telecoms 2026: in need of a health boost | Kearney](#)

¹¹ [Mobile Market Review: call for evidence - GOV.UK](#), Figure 1: Real mobile service revenues, 2024 prices (2019-2024) and Figure 2: Real mobile Average Revenue Per User (ARPU) UK, 2024 prices (2018-2024)

¹² Ofcom (2025), [Connected Nations UK Report 2025](#), Figure 3.18.

¹³ For BT's full reasoning and evidence in support of accounting ROCE see BT's response to Ofcom's future approach to mobile markets (2022) here: <https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-3-4-weeks/232279-ofcoms-future-approach-to-mobile-markets/responses/bt?v=200777>, section 2.2.

- BT disagrees that this justifies excluding goodwill, which can reflect genuine revenue-generating investment, including EE's expected synergies and future subscriber base;
- Ofcom's concern about capitalising excess profits sits uneasily with its view that mobile markets are competitive, the CMA's BT/EE merger findings of no competition concerns, and the view that the price reflected EE's fair standalone value; and
- any later reduction in goodwill is already captured through impairment reviews and depreciation.

This environment does not enable incremental investment

It is crucial for policymakers to quantify what it would cost to deliver desired improvements to network quality. Material investment to materially improve mobile quality appears unrealistic if weak profitability persists. To put this into context, during the CMA's VodafoneThree review, we advised that to maintain parity in network leadership with VodafoneThree, BT would be required to build around [8<] additional points of presence (PoPs), i.e. c. [8<] PoP's in total, costing £[8<]. This would mean at least £[8<] additional capex per year over 10 years (see Appendix A), almost doubling current mobile capex (£[8<] in FY2027).¹⁴ Defining what investment is required in order to deliver desired quality for service is crucial in assessing how and whether it can be delivered.

Given current and expected returns, BT shareholders and investors would not support such an unprecedented increase, especially given higher risks and declining real-terms revenues. Further, spending £[8<] pa more would likely push mobile ROCE lower still, since the additional investment would at best be linked to declining incremental revenue and at worst generate none.

If historic profitability trends continue, it is unclear how a step change in investment in new, value-added network services can be delivered. Investors will not commit significant funding unless returns fairly reflect the risks; without material change, investment incentives will keep weakening. The Government's Mobile Market Review recognises the recent investment environment has been challenging, with declining real revenues and high 5G rollout costs.¹⁵

While the VF3 merger helps its legacy businesses gain scale, it does not fundamentally change these dynamics. VF3's incremental investment incentives appear materially supported by the network commitment, accepted in the context of expected merger synergies rather than current market returns.

2 What does good look like?

We support moving beyond coverage reporting to quality reporting

We support Ofcom's ambition to develop better information so customers can make informed choices, and agree customers and policymakers need reliable information on whether operators meet their needs. We support Ofcom's and the Government's intent to move beyond coverage to quality reporting.

We have ambitious plans to keep investing, including 99% 5G+ population coverage and 85% 5G+ geographic coverage by 2030, and are using new-generation antennas (including FDD Massive MIMO) and small cells for additional capacity. This is activity we would have undertaken regardless of the Vodafone-Three merger or Ofcom's strategic work.

We have concerns about Ofcom's proposed benchmark

We have concerns about Ofcom's proposal that 90% of crowdsourced samples achieve ≥5 Mbps download, ≥1.5 Mbps upload and ≤50 ms latency, for several reasons.

First, Ofcom has shared no robust analysis on whether 90% is achievable, and should do this work to understand what drives differences between markets. Although Ofcom notes other countries achieve 90%, those countries have either:

¹⁴ In its VodafoneThree merger review Final Report (Summary), the CMA stated: "We consider that overall, the changes resulting from the Network Commitment would likely elicit a competitive response from BTEE and VMO2 compared to the counterfactual, for example by way of further network investment, lower pricing or improved customer service." CMA, [Summary of final report](#).

¹⁵ Department for Science, Innovation and Technology (2026), [Mobile Market Review call for evidence](#), Ministerial forward and Section 2.

- a population more concentrated in city centres (based on first estimating how population density varies with distance from city centre for the top 10 cities in each of the countries Opensignal scores above 90%, and then summing the 10 city densities at each distance — see Figure 2.1);
- significantly higher willingness to pay, proxied by ARPU — Analysys Mason estimates Finland and Norway at \$21.56 and \$20.20 respectively, versus \$14.11 in the UK, and Ofcom's Pricing and Consumer Engagement report shows relatively low UK prices (Figure 2.2);^{16, 17}
- shorter handset refresh cycles affecting 5G SA adoption and ARPU — Sweden reportedly 1–2 years versus the UK's 3–4;^{18, 19}
- greater use of indoor DAS in mobile-first countries (e.g. the Nordics); or
- a less complex or contentious planning environment — for example, in the UK, up to 7% of London mast sites are offline due to Notices to Quit; around half of MBNL's planning applications decided between February 2020 and July 2025 were rejected (rejection rates by local authority ranging 2% to 100%); and VodafoneThree stated more than half its planned upgrades require permission, despite 96% being upgrades to existing sites.^{20, 21}

Figure 2.1: Population distribution of countries scoring above 90%, for top 10 cities by country

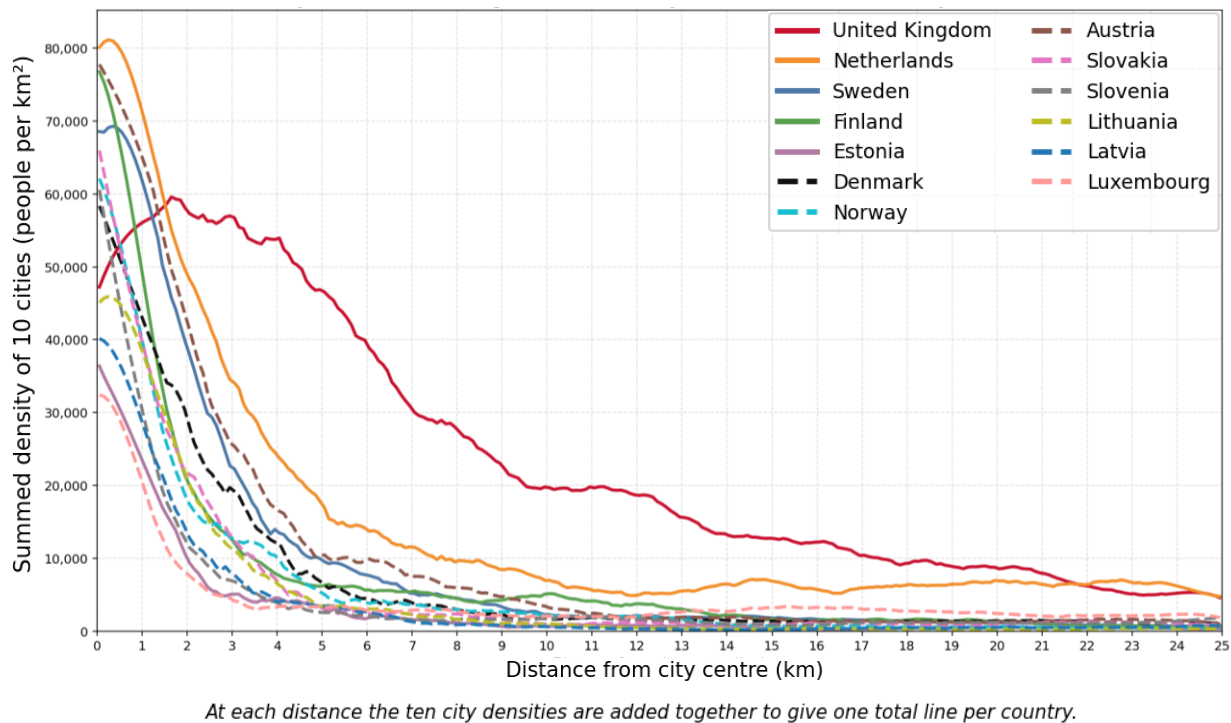


Figure 2.2: Ofcom comparison of mobile phone service prices (ranked; 1 is cheapest)

		GBR	FRA	DEU	ITA	ESP	USA
Standalone mobile phone	Overall rank	2	1	3	4	5	6
	Weighted average price rank	3	1	2	4	5	6
	Lowest available price rank	2	1	3	4	5	6

Second, a single 90% pass/fail figure says nothing about whether networks support what customers actually do; Ofcom appears to have chosen its thresholds without considering specific use-case requirements. To help customers

¹⁶ [Analysys Mason DataHub](#), total mobile ARPU, 2026 estimates
¹⁷ Ofcom (2026), [Pricing and consumer engagement report](#), 26 February 2026
¹⁸ [Sweden's Top Smartphones and Tablets - ScientiaMobile](#)
¹⁹ [Rethinking-Mobile-Phones Web.pdf](#), Figure 6
²⁰ Data shared with Ofcom in a meeting on 8 September 2025
²¹ Which?, ["Why is mobile data so bad in the UK?"](#), July 2026

weigh quality, differences must be meaningful to individual customers, which a single definition does not achieve. Reporting quality by specific use case would be more relatable.

Third, a single 90% benchmark risks driving the wrong behaviours — for example, incentivising a focus on urban quality (where most samples are collected) over rural. Ofcom should consider carefully whether a single metric could encourage urban over rural improvements, and the impact of pushing an unrealistic target on balanced deployment.

Fourth, a compound download/upload/latency measure is operationally challenging, because some parts — especially latency — are limited by technology and application-dependent. It cannot be mapped to specific interventions and so is not a practical ambition.

Considering these four areas, we recommend Ofcom assess whether a 90% benchmark is feasible for the UK, and provide Government its views on the biggest challenges and how to fix them.

We propose a hybrid approach combining crowdsourcing with independent field tests to track whether UK quality improves over time and show relative UK MNO performance

A better approach would track whether UK quality improves over time in response to commercial and policy actions and show relative UK MNO performance. We propose doing this using a hybrid approach combining crowdsourcing with independent field tests (Umlaut/RootMetrics style), ideally from a single provider but with governance safeguards (independent expert design, all-operator input, published methodology). Combining structured testing with crowdsourcing allows testing under identical conditions (controlling for device, activity and location) while collecting enough data for a localised view.

To be credible, tests must:

- include measurements across urban, suburban and rural areas;
- reflect scenarios capturing how customers value always-on, worry-free connectivity; and
- use 5G Standalone test devices, focusing on network quality rather than device choice.

Test design should be led by an independent expert working with Ofcom and all operators. Tests should be repeated regularly and cover three observable components:

- **Availability:** whether a user can connect to the network and complete basic voice and data tasks;
- **Consistency:** how often a user experiences support for real use cases, particularly during peak hours or high-demand areas; and
- **Resilience and recoverability:** how networks respond during incidents (storms, power outages, backhaul failures) and how quickly services are restored — aligning with Ofcom's resilience and security priorities. Coverage maps could indicate whether a network can maintain service during power outages or storms.

Different metrics may distinguish what residential and business consumers value most and would pay for. This could integrate service-quality measures into coverage maps so customers can see whether MVNOs offer the same quality as MNOs. Ofcom would need to reassess quality reporting to control for the impact of MVNO prices on quality perceptions (consumers sometimes report MVNOs have better network quality than the underpinning MNO). This framework would more accurately reflect how customers perceive quality and align with the shift from speed-based to experience-based claims.

If Ofcom uses only crowdsource data, it should be wary of using a single definition of 'good'

If Ofcom is nonetheless minded to use only crowdsource data, it should be wary of using a single definition of 'good' i.e. 5 Mbps download speed, 1.5 Mbps upload speed and 50 ms latency. Table 2.1 shows how technical requirements vary by application category, based on services' stated minimum recommended requirements. This shows that there's a large amount of variation between the requirements of different use cases, making it potentially unhelpful to both consumers and policymakers to use a single definition. We note that both Ofcom's and operators' existing coverage checkers currently have multiple thresholds corresponding to different degrees of connectivity.

Table 2.1: minimum recommended technical requirements by application group

Application group	Examples	Minimum recommended requirements
Social media	Facebook, TikTok, X, LinkedIn	5 Mbps down / 5 Mbps up
Messaging/chat	WhatsApp, Slack	0.5 Mbps down / 0.5 Mbps up
Video calling	Microsoft Teams, Zoom	5 Mbps down / 5 Mbps up
Maps, mobility and local services	Google Maps, Uber, Bolt	2 Mbps down / 0.5 Mbps up
Streaming and entertainment	Spotify, Netflix, BBC iPlayer	5 Mbps down for Full HD
Productivity, finance and commerce	Gmail, Amazon, mobile banking	1 Mbps down / 0.5 Mbps up
Cloud storage and backup	OneDrive, iCloud, Google Drive	5 Mbps down / 5 Mbps up
For comparison: Ofcom's criteria	[Not use case specific]	5 Mbps down / 1.5 Mbps up / 50 ms latency

In the table below, we show the results of using Opensignal's data to estimate the percentage of samples meeting each criterion above. This shows both (i) the wide variation in scores for different use cases and (ii) how the differences between operators are particularly significant for the more demanding use cases. This further highlights the risks of both consumers and policymakers being potentially misled by Ofcom using a single definition of 'good' to cover all use cases.

Table 2.2: Percentage of samples estimated to meet minimum recommended requirements for each use case

Application group	BT/EE	Vodafone	Three	VMO2
Social media	74%	69%	70%	59%
Messaging/chat	97%	95%	96%	95%
Video calling	74%	69%	70%	59%
Maps, mobility and local services	96%	94%	94%	93%
Streaming and entertainment	92%	89%	91%	87%
Productivity, finance and commerce	96%	95%	95%	95%
Cloud storage and backup	74%	69%	70%	59%
For comparison: Ofcom's criteria	82%	79%	79%	74%

3 How can policy best support better quality?

Chapters 1 and 2 set out why current market dynamics cannot, by themselves, deliver the higher-quality, higher-investment equilibrium that customers increasingly expect and what a more meaningful, customer-relevant measure of quality would look like. This chapter draws those threads together into a practical set of policy actions for Ofcom, Government and industry. It considers how the right regulatory enablers can reduce network costs, enhance capabilities and raise revenue to support a step-up in investment.

3.1 Reduce network costs

In this section, we focus on the role, and limitations, of neutral hosts in reducing network costs, given Ofcom's area of interest. Other regulatory enablers can also reduce networks costs, and we briefly touch on those at the end of the section, as we have set out our view in more detail in previous submissions to Government and Ofcom.

Neutral hosts can improve connectivity in specific venues, but effectiveness depends on the funding model

The role of neutral hosts in improving mobile performance is limited: they help in specific indoor venues where individual operator deployment would be impractical or too costly but are slower to deploy²² and do not generate sufficient cost savings to materially scale up connectivity in uneconomic areas.

The effectiveness of neutral host arrangements in specific cases depends on the funding model. There are three main funding models:

- landlord-funded, where the building owner or business pays for the solution;
- free-to-connect, where the landlord funds passive infrastructure (e.g. DAS or antennas) while MNOs pay for base stations and backhaul; and
- neutral host-funded, where MNOs cover all costs incurred by the neutral host.

Landlord-funded models have proven more successful because the party benefiting directly bears the cost. Landlord-funded sites have been implemented across offices, hospitals and shopping centres, with [8<] sites delivered between FY 2023/24 and FY 2025/26 and [8<] more planned for FY 2026/27. Free-to-connect arrangements have been used at [8<].

Models where MNOs fund deployment are ineffective, as MNOs end up funding not only the infrastructure but also the neutral host's profit margin, diverting capital from wider upgrades. For example, risks of ransom rates can arise where neutral hosts control key sites and current regulation does not protect MNOs. In a strategically important location (airport, stadium), MNOs may have little choice but to participate; as sole provider, the neutral host can extract excessive rent at renewal.

Or, upfront and ongoing costs of some neutral host deployments can be so high to make participation unviable. For example, BT declined proposed deployments at both [8<] and [8<]. In the [8<] case, total costs were estimated at c. £[8<], around two to three times higher than comparable [8<] deployments, such as [8<] (around £[8<]), and [8<] (around £[8<]).

Government should consider mandating that new public buildings include pre-installed neutral-host infrastructure, available to operators free of charge or at a regulated fee, improving connectivity while limiting excessive charges.

²² Network builders typically undertake post-integration testing (PIT) to confirm operation; while BT would normally conduct PIT shortly after go-live, neutral-host arrangements may require coordination across multiple MNOs and the host, delaying testing by as long as six months.

Other ideas set out to Government or in previous Ofcom engagements

- **Planning reform** - Government should accelerate planning reforms by implementing Permitted Development Rights (PDR) changes, addressing exploitative site aggregator behaviour, and improving access to public assets to reduce deployment delays and costs.
- **Energy costs** - Government should recognise telecoms as critical national infrastructure and reduce non-commodity energy costs through exemptions and reforms to energy cost recovery mechanisms.
- **Security and resilience funding** - New resilience and security obligations should be accompanied by dedicated public funding, as these investments deliver broader public benefit but cannot be sustained through commercial investment alone.
- **Legacy network retirement** - Government and Ofcom should support and accelerate the retirement of legacy platforms through clear and coordinated national timelines.

For further detailed information, see BT's response to the Government's Mobile Market Review.²³

3.2 Support network capability enhancements

In this section, we focus on how improving mobile connectivity on trains will require public funding and a coordinated mobile-led solution and whether public funding of shared passive network infrastructure can improve mobile connectivity in rural areas. Other regulatory enablers can also support network capability enhancements, and we outline these at the end of the section.

Rail connectivity requires public funding and a coordinated mobile-led solution

Rail coverage remains a significant UK challenge. A key issue is that consumers have little willingness to pay for better on-train connectivity: they are unlikely to know why connectivity is poor (weak mobile signal, onboard Wi-Fi, or other factors), and even if they do, they may lack sufficient incentive to switch mobile or train provider — though some evidence suggests passengers may switch train provider on certain routes with poor Wi-Fi. Competition alone is therefore unlikely to resolve the issue.

There are also technical and practical challenges, including access to rail environments such as cuttings and tunnels, that make costs prohibitive. Our inability to capture incremental revenue, combined with costly technical and practical challenges, severely limits our ability to prioritise rail improvements over other investments.

This market failure requires public funding for non-commercial investments with wider productivity benefits, and requires Ofcom and Government to determine whether to support mobile-led or TOC-led solutions (such as window etching) or satellite. While satellite can play a role, especially on less busy trains, a mobile-led solution is the only viable way we can materially improve connectivity on busier lines for the foreseeable future. If public funding is available, BT proposes starting with a pilot to upgrade train repeaters for some busy rail lines with up to (or over) one thousand km of track and up to tens of millions of passenger journeys a year.²⁴ The proposal aims to deliver the largest incremental improvement at the lowest possible cost.

For further details on our proposed pilot see Appendix C of this response.

²³ BT Group confidential submission - Mobile Market Review, 5 May 2026, pages 42 - 46.

²⁴ We would cover a subset of all track kms and passenger journeys on CrossCountry and Avanti routes, ie, on premier lines operated by both TOCs. Cross Country operates across a network of 2,710 km of track in the UK and Avanti West Coast operates on 1,310 km of route, primarily along the West Coast Main Line. In 2024/25, Cross Country delivered almost 40 million passenger journeys and Avanti West Coast delivered almost 35 million passenger journeys. See [Train Operating Company Key Statistics, April 2024 to March 2025, CrossCountry](#); [Train Operating Company key statistics 2024-25 Avanti West Coast](#)

Sharing solutions can support rural connectivity improvements but cost and complexity remain significant barriers

Similarly to rail connectivity, one of the main barriers to improving rural connectivity is cost. MNOs cannot alone support the investment required to address coverage gaps or deliver enhanced resilience where needed. While sharing solutions might reduce the level of subsidy required, they are not a substitute for public funding, as explained below. Any interventions should be tailored to specific, discrete challenges only, and designed to ensure investment incentives and customer choice are not undermined.

Spectrum-sharing solutions still require the network builder to build and maintain the underlying infrastructure and to agree technical and commercial interworking with existing networks.

Deeper forms of active network sharing can be technically, operationally and commercially complex. The Shared Rural Network model took many months to agree in principle, despite building on existing arrangements and only involving limited infrastructure sharing; complexity would increase further if sharing extended beyond passive infrastructure into transmission or core elements (see also BT's response to the MMR where we raise similar issues including challenges with network sharing under SRN²⁵).

On the other hand, there may be a stronger case for targeted public funding to support greater passive infrastructure sharing such as masts, power and backhaul where this can reduce deployment costs in uneconomic areas.

We welcome Ofcom's further insights into rural connectivity. It would be helpful for Ofcom to provide greater clarity on the scale of improvements it considers necessary in rural areas and to quantify the associated wider consumer benefits, so these can be assessed against the costs of intervention.

Other ideas set out to Government or in other Ofcom engagements

- **Publish a pro-investment spectrum roadmap** - Publishing a pro-investment spectrum roadmap could support a doubling²⁶ of mobile bandwidth, generating cost savings and improving coverage and capacity. Ofcom should provide clear, predictable timelines for releasing large, contiguous blocks to support efficient 5G+/6G planning and avoid artificial price inflation, including opportunities at WRC-27 in 7 GHz, release of 600 MHz, and a review of 3.8–4.2 GHz. For further detailed information on our recommendation for a pro-investment spectrum roadmap, see BT's response to the MMR.²⁷
- **Align more closely with European spectrum policy** - Ofcom must align more closely with Europe, including making indefinite licences the default. While UK licences were historically issued in perpetuity, Ofcom recently issued a much shorter fixed-term 15-year licence, whereas EU regulators are moving towards longer durations.
- **Support higher mobile device power levels** - Ofcom should update licence-exemption regulations to cover operation of terminals at higher power levels, recently added within 3GPP specifications and corresponding ETSI standards, improving coverage and quality of experience. For more information, please see our separate submission on this topic which we plan to submit shortly.
- **Minimise fragmentation and enable higher masts** - Ofcom should minimise fragmentation from shared spectrum or dedicated wireless networks (e.g. utilities), and work with Government to enable higher masts.

²⁵ BT Group confidential submission - Mobile Market Review, 5 May 2026, page 38.

²⁶ Consisting of up to 80 MHz of spectrum at 614 – 694 MHz, at least 300 MHz of spectrum at 3.8 – 4.1 GHz and at least 600 MHz of spectrum between 6425 MHz and 7250 MHz.

²⁷ BT Group confidential submission - Mobile Market Review, 5 May 2026, pages 33-34.

3.3 Unlock new revenue and funding sources

In this section, we focus on (i) better information on non-price benefits of MNO offers and (ii) defence against leveraging market power from other sectors, as solutions to unlock new revenue and funding sources. Other regulatory enablers can also support increased revenues, and we outline these at the end of the section.

Better information on non-price benefits would help consumers and support MNO investment

As Chapter 1 explained, growing MVNO supply intensifies price competition and erodes the returns available to fund network quality. Ofcom can help rebalance this by improving the information available to consumers on what they may forgo when choosing an MVNO, and by keeping a close watch on new forms of entry that could entrench unsustainably low wholesale pricing.

To address the issues in Chapter 1, Ofcom should consider publishing benchmarks capturing MNO value-added services to inform consumers of the non-price benefits (such as retail store support, 5G SA and converged offerings) they may forgo when choosing an MVNO and help them make better-informed choices. This could potentially make certain customers, to which non-price benefits are valuable, more likely to choose an MNO, supporting MNO investment.

Defence against disruptive entry leveraging market power in other sectors

As Chapter 1 explained, we must ensure that wholesale dynamics do not enable disruptive entry leveraging market power in other sectors. To address the issues in Chapter 1, we support the DMU to continue monitoring potential consumer harm from large digital firms leveraging market power in digital products into bundled mobile services (including as MVNOs) under the Digital Markets, Competition and Consumers Act.

Ofcom could play a proactive role by considering whether telcos (including MVNOs) should register with Ofcom, to check they have plans to comply with the General Conditions and/or meet a public interest test, including for Big Tech entrants; and by monitoring whether the reference offer could unintentionally facilitate hard-to-replicate bundled entry. This would help regulators monitor new entry by Big Tech or fintech firms and identify adverse effects on market dynamics and sustainable pricing arising from the reference offer at an early stage.

Other ideas set out to Government or in other Ofcom engagements

Reform net neutrality to generate up to £[8<] in new revenue opportunities.

We recommend four key areas for net neutrality reform as set out below.

- **Enable more differentiated services:** relax traffic-management rules to enable more differentiated services while maintaining core consumer protections; allowing ISPs to prioritise traffic could create offerings with optimised user experience;
- **Introduce targeted flexibility:** allow greater use of specialised services and improved congestion management, including the ability to restrict which end-user devices customers put SIMs in;
- **Support latency-sensitive and innovative services:** enable network optimisation for collaboration tools, cloud services, gaming and enterprise use cases; and
- **Maintain strong safeguards:** ensure transparency, user choice and protections against blocking or anticompetitive behaviour so flexibility delivers clear consumer and economic benefits

For further detailed information on BTs recommendations to reform net neutrality see BT's response to the MMR.²⁸

²⁸ BT Group confidential submission - Mobile Market Review, 5 May 2026, pages 11, 40, 55, 58-60, 68.

Remove or reinvest Annual Licence Fees (ALFs)

Ofcom should recommend Government abolish ALFs, given mobile licences are tradeable and already incentivise efficient use, with competition expected to drive investment; failing that, formally redirect ALFs into high-impact commercial mobile projects.

Returning ALF payments to a competitive MNO market should support incremental investment, aligning with Ofcom's view that competition drives investment (including incentives to maintain performance parity after the VodafoneThree merger). On that basis, ALFs could be abolished without conditions, with competition expected to direct funds towards investment.

Enders has observed that across the EU, regulators increasingly favour licence renewals and extensions over auctions, sometimes imposing no conditions, to promote investment.²⁹

While Ofcom's recent ALF cuts were welcomed, we agree with Enders that they fall short of broader European measures. Removing ALFs, equivalent to c. £265m pa for the industry,³⁰ would represent a c. 15% uplift in industry-wide mobile capex, and we would support a framework allowing us to use that money to improve connectivity most efficiently.^{31,32}

See also BT's response to the MMR where we made a similar recommendation.³³

²⁹ Poland (2022) renewed spectrum licences with no charge, no auction and for minimal additional coverage obligations. [Attempts to Arrest ARPU pressure - European mobile in Q1 2026 2026-054 0 \(1\) Enders.pdf](#), page 17.

³⁰ Following Ofcom's July 2025 ALF review, total 900/1800/2100 MHz ALFs were cut £60m per year from ~£325m to ~£265m per year. See [Statement: Review of Annual Licence Fees](#).

³¹ Ofcom, [Connected Nations UK Report 2025](#), Figure 3.18. Industry mobile capex estimated by Ofcom at £1.8bn in 2024.

³² We agree with Enders further comment that "Another possibility could be to guarantee future ALF reprieve on existing licences when they expire, far enough in the future to not necessarily be included in government budgets. If this were applied to 4G spectrum, subject to ALFs from 2033, it would equate to 3-7% of capex and could materially improve networks" *ibid*

³³ BT Group confidential submission - Mobile Market Review, 5 May 2026, pages 10 and 32.

Appendix A

Estimated BT incremental investment to maintain parity on network leadership with VodafoneThree

[§<]

Source: BT confidential submission to CMA VF3 merger investigation prepared by Analysys Mason.

Appendix B

EE mobile profitability and MVNO wholesale pricing

The mobile profitability waterfall splits EE into network-level costs (left) and retail-level costs (right) to show profitability across the vertical supply chain and explains how low MVNO wholesale pricing is unsustainable and weakens MNOs' ability to reinvest.

Figure B.1: Consumer Mobile Full Chain Economic Profit FY 2025 (£/customer/month)

[§<]

Source: BT

Assuming EE is vertically separated into network and retail:

- EE's network-level wholesale full-cost benchmark is estimated at £[8<]/customer/month: Network Opex £[8<], Depreciation & Amortisation £[8<], Cost of Capital £[8<];
- we assume Economic Profit = £0, i.e. wholesale revenues equal the full-cost benchmark;
- EE's retail-level price is £[8<]/customer/month, with the gap to wholesale largely explained by retail/operating costs, not excess profit; and
- full-chain retail economic profit is thin, at about £[8<]/customer/month.

This compares with more favourable MVNO wholesale economics:

- the weighted-average MVNO wholesale charge is based on an incremental cost stack, not recovery of EE Network Opex, though it sits slightly above that Opex cost;
- MVNOs make no contribution to fully allocated costs at the EE network level; and
- MVNOs can therefore set retail prices at, or below, EE's £[8<]/customer/month full-cost benchmark while retaining a retail margin.

The VF3 wholesale reference offer is likely to sit between current low MVNO wholesale prices of c £[8<]/customer/month and the MNO wholesale cost benchmark of £[8<]/customer/month. Accordingly:

- the current wholesale model is unsustainable, especially if policymakers want greater investment;
- we increasingly see distortion in the build-buy decision, favouring MVNO commercial models; and
- the VF3 reference offer risks entrenching current pricing and constraining a return to sustainable pricing of up to £[8<]/customer/month.

Appendix C BT's rail pilot study proposal

BT's pilot study proposal (summary)

Any investment is likely non-commercial and will require public funding. If available, BT proposes a three-stage publicly funded rail connectivity pilot:

- **Stage 1** — BT replaces train repeaters on major lines;
- **Stage 2** — BT upgrades nearby mobile cell sites for further capacity; and
- **Stage 3** — if material coverage gaps remain, BT seeks new cell sites to fill them, potentially in parallel with required upgrades to Network Rail/TOC infrastructure to maximise efficiency.

BT's pilot study proposal (in detail)

Stage 1 — BT replaces train repeaters on major lines. At a minimum, BT would replace repeaters on all Cross-Country Voyager and Avanti West Coast Pendolino fleets. BT would retain technical control, with funding from TOCs or public subsidy where a TOC's incentive to pay is weak; maintenance would be outsourced to the TOC. Repeater upgrades are low-cost and give an immediate boost by offsetting carriage signal loss.

The pilot would focus on existing trains, which would likely need to return to depot for installation. Window etching may be feasible for existing and new trains; TOCs are best placed to advise on requirements and costs. Improved SLAs could reduce repair times. Multi-tenant contracts currently allow BT/EE repeaters to transmit on other MNOs' bands, with reciprocal arrangements across all MNOs, so no JV would be required. BT would likely upgrade repeaters to 2600 MHz and, where needed, support other MNOs' frequencies (e.g. VMO2's 2300 MHz), and would participate in any working group to agree a multiband approach.

Once upgraded, we would test in-carriage improvement, potentially including market research before and after. Where significant improvements are found, no further solution is needed. Little or no improvement on particular sections likely indicates insufficient capacity or coverage from nearby cell sites, requiring Stages 2 and 3.

Stage 2 — BT adds capacity on existing nearby cell sites. Where there is no improvement from upgraded repeaters, BT would upgrade capacity on nearby cell sites, including at 2600 MHz.

Stage 3 — if material coverage gaps remain, seek partial infrastructure access to third-party cell sites. EE proposes to seek partial infrastructure access to third-party neutral-host sites where repeater and/or capacity upgrades do not improve connectivity, for example because nearby macrocell coverage is insufficient. For context, EE has not agreed terms with Cellnex for its neutral-host solution on the London–Brighton line because of high access charges and an “all or nothing” model: Cellnex offers access only to the entire line at significant cost, even though EE already has good coverage across much of it (61%³⁴ — Ofcom Figure 6.2), so the incremental benefit is much smaller than for other MNOs. Under the pilot, EE would seek partial access only to the sites needed to strengthen the relevant section — significantly cheaper than building new macrocells and requiring a much smaller subsidy. Alternatively, if partial access were unavailable, BT would build new sites. This stage could run in parallel with required upgrades to Network Rail/TOC infrastructure.

Key advantages of BT's staged pilot

- Stage 1 would assess major routes, coverage gaps and repeater needs, focusing on two leading TOCs. If successful, expansion could improve maintenance terms, lower unit costs for Stages 2–3 (scale benefits), and help target capacity upgrades and new sites;
- Stage 1 would deliver standalone consumer benefits through a 20–30 dB in-carriage signal gain even if later stages did not proceed — a “no regrets” investment;
- Stage 1 would build industry confidence and could be extended to other major routes, including by other MNOs with existing repeaters; and
- We could explore other technologies, such as LEO satellites, when upgrading repeaters.

BT's views on other options in Ofcom's discussion paper

Other proposals	Description	BT view
FRMCS 5G upgrade	Network Rail rebuild plans and commercial coverage opportunities	An opportunity to transform rail coverage; BT is well placed to participate, though delivery would require significant resources. Future trains will need 5G across Europe for signalling, operational and safety purposes, using 10 MHz of 1.9 GHz spectrum, a dedicated core and shared masts with operators. If managed by Network Rail, this could evolve into an ESN-style network, separate from MNO networks but with shared investment where commercially sensible. Our repeater pilot would run in parallel and coexist; as current repeaters must not interfere with GSM-R, any future antennas must also avoid blocking FRMCS 5G.
Project Reach	Potential MNO partnership for stations and tunnels	Limited customer benefit: not scalable to 6G, covers only a few stations and tunnels, and does not address poor coverage on open routes. As BT would fund stations where service is already strong, the package looks costly and poorly targeted; this budget would be better spent on priority rail sites and repeaters.
Wi-Fi train-to-track backhaul	e.g. South Western Railway / Blu Wireless	Wider feasibility is uncertain. The standard UK approach uses 4G/5G networks aggregating multiple SIM connections for backhaul. Blu Wireless is testing mmWave and other technologies as alternatives; while claimed to offer higher throughput, their performance and economics still need assessment.

³⁴ Figure 6.2 of Ofcom (2026), [Connectivity you can count on](#)

Neutral host concession models	e.g. used by TfL	We do not believe concession models should be encouraged. They usually grant one operator exclusivity, then use competitive pressure for other MNOs to use the service, taking value and cash out of the sector as each MNO pays without creating new revenue.
Window etching	TOC-led deployment	TOCs could invest, possibly with public subsidy. The process could be an alternative to repeaters to reduce signal loss, but this is not our area of expertise.

BT's view on order-of-magnitude costs

There are two cost types — repeaters on trains, and mobile cell sites (existing and new).

Costs	BT
Repeaters	c. £[8<]
Cells	c. £[8<]*
Total	c. £[8<]*

*Illustrative only (see below).

Repeaters. Based on BT's experience, the table below sets out rough order-of-magnitude costs for the CrossCountry Voyager and Avanti West Coast Pendolino fleets, both of which already have repeaters.

TOC	Train Type	Train Fleet	Repeaters per train	Like for like (900/1800/2100)	Like for like + additional bands (700/1800/2100/2600)
Cross Country	Voyager	[8<]	[8<]	£[8<]	£[8<]
Avanti	Pendolino	[8<]	[8<]	£[8<]	£[8<]

Each new fleet type requires a tailored solution — development or modification, type approvals, assurance and a fleet pilot. After a roughly six-month pilot, the design could be approved for fleet-wide deployment, with the full process taking up to two years. The indicative costs below cover a new install from scratch, assuming one repeater for a 4/5-car train and two for a 9/11-car train, subject to installation assumptions.

Repeaters per train	Bands 900/1800/2100	Bands 700/1800/2100/2600
1	£[8<]	£[8<]
2	£[8<]	£[8<]

We do not yet have a view on how many UK fleets are suitable for repeaters, so would need Network Rail input to estimate industry-wide costs if all MNOs upgraded. As an illustrative estimate, if each of the 14 additional TOCs deployed repeaters on their main line with a £5m budget, the total for the rest of the industry would be around £70m. The solution could depend on developing a broader equipment ecosystem; industry agreement could improve cost-effectiveness through scale, including lower unit costs for bulk orders.

Upgrading existing cells and building new cells. While we can provide robust estimates for replacing repeaters, cell upgrades or new sites require further analysis. As an illustration, upgrading a further 100–200 existing sites could cost around £[8<], while building 50–100 new sites could cost around £[8<] (£[8<] in total), based on:

- Stage 2: £[8<] **capex per site** for greater capacity (deploying 2600 MHz antennas for improved data speeds); and
- Stage 3: £[8<] **capex per site** to build new coverage sites (assuming BT does not gain partial access to neutral-host masts).

Illustrative benchmark costs — upper-bound estimates for comparison. BT internal analysis shows £[8<] just for BT to address coverage gaps >500 metres on major lines, scaling up if all MNOs also seek to address gaps. This was based

on Ofcom's 4G -105dBm (outdoor) coverage threshold used in Connected Nations.³⁵ These costs likely significantly understate the cost of meeting the new 5 Mbps/1.5 Mbps/50 ms benchmarks.

[§<]

Comparing against BT's proposal. Closing gaps with new sites alone would be very costly — around £[§<] for BT. While not directly comparable, BT's proposal would deliver a sizeable improvement at a fraction of the cost, prioritising repeaters with significant 20–30 dB gain, deploying 2600 MHz on existing nearby sites, and targeted new sites. Window etching could also overcome signal loss as an alternative to repeaters, but this is not our area of expertise.

³⁵ We used an outdoor threshold (rather than Ofcom's in-car -95dBm) as we assumed trains would be equipped with in-train repeaters to boost the outdoor signal in-carriage. In reality, a train carriage typically sees higher losses than in-car, so we would need to model at -85dBm (assuming 20dB losses in-train versus 10dB in-car) if no repeater were installed. Remodelling at -85dBm (or higher signal levels if Ofcom wanted a higher service probability) would significantly increase the number of sites and hence cost