

Your response

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Section 2: The quality of mobile connectivity we want to see - What are your views on the use of the Map Your Mobile good performance metric and how should the measure evolve over time? 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?	Confidential? –N <i>What are your views on the use of the Map Your Mobile good performance metric and how should the measure evolve over time?</i> Nottinghamshire County Council welcomes Ofcom's move towards measuring the quality of mobile connectivity that people actually experience, rather than relying solely on predicted coverage or signal availability. Our own mobile mapping work has demonstrated that the presence of a signal does not necessarily equate to a usable service and that users' lived experiences can differ significantly from modelled coverage data. We support the principle of a "good performance" metric because it focuses on whether people can successfully use mobile services in their daily lives. This represents an important shift away from measuring where signals exist and towards measuring whether mobile connectivity is genuinely usable for residents, businesses and public services. However, we believe the measure should continue to evolve beyond coverage and throughput alone and should increasingly incorporate: - Reliability and consistency of service. - Performance under peak demand conditions. - Latency and responsiveness. - Indoor usability. - Connectivity on road and rail transport corridors. - Geographic distribution of performance. The ability to support common activities such as video calling, digital payments, access to public services, cloud services and AI-enabled applications. Our Nottinghamshire drive surveys demonstrate the value of assessing performance through a combination of signal strength, throughput and latency rather than relying on signal measures alone. We therefore support

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	the continued development of user-experience-led metrics which measure outcomes rather than simply technical network attributes. A particular area for future development is the measurement of network resilience and capacity. From a user perspective, there is little practical difference between having no signal and having a signal that is unable to support a usable service because demand has exceeded available network capacity. This issue can be particularly evident around locations that experience predictable surges in demand, including football stadia, major sporting events, festivals, transport hubs, tourist attractions and large public gatherings. In such locations, devices may display strong signal strength while users experience failed connections, degraded call quality, extremely slow speeds or an inability to access online services because the network is congested. Future measures should therefore seek to capture whether networks remain usable when demand is highest, rather than simply whether a signal is present. Indoor connectivity NCC believes indoor connectivity should be considered as a distinct component of mobile network quality rather than being treated as a direct extension of outdoor coverage. Our experience is that indoor mobile performance can vary significantly even where outdoor coverage is strong and all mobile operators provide good network availability. Indoor connectivity is heavily influenced by the characteristics of individual buildings and their surroundings. For example, the Council has experienced situations where facilities located in areas with excellent outdoor mobile coverage have nevertheless experienced poor indoor mobile performance. In one case, an office situated in an area with strong signal, download/upload and latency coverage from all major operators experienced significant indoor connectivity challenges because the building's construction materials substantially reduced

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	signal penetration. The design and materials used effectively created a "Faraday cage" effect despite excellent outdoor network availability. Similar challenges can arise within residential properties. Modern energy-efficient construction techniques, specialist glazing, metallic insulation, reinforced concrete, steel framing, RSJs installed during extensions and other building modifications can all affect signal penetration. As a result, neighbouring homes with identical outdoor coverage may experience very different levels of indoor mobile performance. This highlights an important limitation of relying solely on outdoor coverage and performance metrics. A household, business or public building may appear well served according to coverage maps and outdoor measurements yet still experience poor connectivity in the locations where people spend most of their time. The challenge may become increasingly important as more buildings are constructed or retrofitted to higher energy-efficiency standards. Whilst these improvements bring significant environmental benefits, they can also reduce the ability of mobile signals to penetrate buildings. NCC therefore encourages Ofcom to: • Continue developing dedicated indoor performance measures. • Distinguish clearly between indoor and outdoor user experience. • Consider the impact of building characteristics on connectivity outcomes. • Explore the role of in-building solutions, Wi-Fi calling and other technologies in improving user experience. • Avoid assuming that strong outdoor performance automatically translates into satisfactory indoor performance. From a user perspective, connectivity within homes, workplaces, healthcare facilities, schools, community venues and public buildings is often more important

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	than outdoor coverage. Future performance frameworks should therefore place greater emphasis on understanding and measuring indoor connectivity outcomes. <i>What are your views on the usefulness of the 90% figure as a benchmark applicable across geographies and based on crowdsourced data?</i> The 90% benchmark provides a useful and easily understood national measure that can help communicate progress and establish a common reference point for stakeholders. However, NCC has reservations regarding the application of a single benchmark across all geographies. National averages can mask substantial variation between cities, towns, villages, transport corridors and rural communities. Nottinghamshire contains a diverse mix of urban centres, market towns and rural areas. Our own mobile mapping programme identified locations where connectivity outcomes were considerably poorer than county-wide averages might suggest. Approximately 228 kilometres of surveyed roads had no good outdoor 4G or 5G coverage from any operator, with these areas disproportionately located in rural parts of the county. We are therefore concerned that a single national benchmark may unintentionally obscure the experience of communities that continue to face persistent connectivity challenges. In particular, future reporting should distinguish between: • Urban and rural performance. • Indoor and outdoor performance. • Road and rail corridor performance. • Areas of persistent not-spots and partial not-spots. • Network availability and network quality. • Average performance and performance during periods of congestion.

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	The Council considers crowdsourced data to be an important evidence source because it captures real-world user experience. However, it also has serious limitations. Results can be influenced by handset type, application usage, operating system, user behaviour and the number of samples collected in a particular area. Rural locations may generate fewer measurements despite often experiencing some of the greatest connectivity challenges. For this reason, crowdsourced data should be complemented by independent measurement programmes, transport corridor testing and local intelligence from councils, communities and businesses. It should be noted that NCC encourages Ofcom to consider how network resilience and infrastructure change are reflected within future measures of mobile network quality. Mobile performance can sometimes deteriorate not because of a lack of coverage, but because of changes to underlying network infrastructure. For example, operators may need to relocate equipment due to redevelopment, lease expirations, landlord decisions, mast upgrades, power issues or wider network rationalisation programmes. Whilst operators work to maintain continuity of service, such changes can occasionally create periods of reduced performance or temporary coverage gaps which may not be fully captured through periodic crowdsourced or drive-testing exercises. These impacts can be particularly significant in rural areas where there may be fewer alternative sites available and where a single site can serve a much larger geographic area than in urban environments. The Council recognises that mobile network operators operate different radio networks, infrastructure strategies and commercial arrangements. As a result, improvements in coverage or capacity by one operator may not necessarily be replicated by others. Users can therefore experience very different levels of service depending on their chosen provider despite being in the same location. Future reporting should continue to provide operator-level transparency wherever possible, alongside aggregate measures, to help consumers, businesses and public

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	bodies understand the quality of service available from individual networks. Is the 90% benchmark realistic and sufficiently ambitious? NCC considers the 90% benchmark to be a realistic near-term national objective and a useful minimum expectation. However, we do not believe it should be regarded as an end-state measure of success. A benchmark that allows one in ten user experiences to fall below the required standard risks masking persistent problems in locations that are already most difficult to serve. This is particularly relevant in rural areas where: • Residents often travel greater distances to access services. • Alternative connectivity options may be limited. • Mobile connectivity may be the primary means of staying connected while travelling. • Businesses increasingly depend on cloud-based services and digital technologies. • Farming and land-based businesses rely on connected equipment, sensors and digital processes. • Mobile communications play an important role in emergency response and community resilience. • Visitors increasingly rely on mobile services for navigation, bookings, transport information and digital payments. Poor rural mobile connectivity should therefore not be viewed solely as a telecommunications issue. It has direct implications for economic growth, tourism, business productivity, access to services, digital inclusion and community resilience. The Council would also highlight the importance of considering capacity as well as coverage. Areas may technically achieve good coverage levels yet continue to pro-

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	vide a poor user experience because networks lack sufficient capacity during predictable periods of high demand. Examples include: • Football stadia and major sporting venues. • Large festivals and recurring events. • Transport interchanges. • Popular visitor destinations. • Market towns experiencing seasonal tourism peaks. Congestion in such locations can affect not only event attendees but also surrounding residents, businesses, visitors and public services. A location may therefore satisfy a coverage benchmark whilst failing to deliver the level of service that users reasonably expect. NCC therefore suggests that 90% should be considered a foundation rather than a destination. Over time, Ofcom should consider: • Increasing expectations beyond 90%. • Introducing dedicated rural performance indicators. • Developing measures for transport corridors. • Reporting on reliability and consistency of service. • Assessing network performance under peak demand and congestion. • Publishing geographic measures that demonstrate whether harder-to-reach communities are seeing meaningful improvement. • Developing separate indoor performance measures. Conclusion NCC supports Ofcom's move towards measuring real-world user experience rather than predicted coverage alone. The proposed 90% benchmark is a useful starting

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	point and a realistic near-term objective. However, future measures should evolve to reflect usability, reliability, resilience, capacity and indoor performance across different places and use cases. Most importantly, national averages should not obscure the experience of rural communities, transport users, businesses, visitors or people using services indoors. A location may have a signal, but still experience poor connectivity because of congestion, building characteristics or other local factors. The true test of success should therefore not simply be whether 90% of users receive a good experience, but whether those locations currently experiencing the poorest connectivity are seeing meaningful and sustained improvement. Nottinghamshire's mobile mapping evidence demonstrates the importance of looking beyond headline coverage figures to understand lived experience and address the connectivity challenges that remain.
Section 3: Market-led improvements in mobile network quality • 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?	NCC supports the direction of travel represented by Map Your Mobile. It is a positive and important step because it brings together predicted coverage information and crowdsourced performance data, helping to move the conversation beyond simple coverage availability. Ofcom's discussion paper states that Map Your Mobile uses granular coverage information based on operator signal strength predictions and performance information based on crowdsourced data. The tool is particularly valuable because it provides an independent source of information and allows users to compare operators in a location. Ofcom's consumer research found that participants welcomed having a single independent source of information and valued postcode-level information, indoor/outdoor distinctions and clear percentage-based performance indicators. However, the same research also found that awareness of Map Your Mobile was low, that some consumers struggled to understand the distinction between coverage and performance, and that some found the map key and terminology difficult to interpret. From NCC's perspective, Map Your Mobile is a strong foundation, but it should evolve further if it is to meet

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	the needs of consumers, businesses, councils and other stakeholders. Specific improvements that would make Map Your Mobile more useful 1. Make the information more outcome-based Customers do not only want to know whether performance meets a technical threshold; they want to know what they are likely to be able to do. Map Your Mobile could become more useful if it translated performance into plain-English use cases, such as: • reliable calls; • messaging; • video calls; • digital payments; • navigation; • streaming; • working on the move; • access to public services. This would align with Ofcom's consumer research, which found that participants wanted information framed around activities they cared about, rather than technical metrics alone. 2. Improve indoor performance information Map Your Mobile should continue to develop clearer indoor performance information. This is vital because good outdoor coverage can still result in poor indoor service due to building materials, layout and local conditions. Where precise indoor measurement is not possible, it may still be useful to provide guidance, caveats and risk indicators explaining why indoor performance may differ from outdoor coverage. 3. Add clearer information about reliability and consistency Users often value consistency as much as speed. A service that works reliably may be more valuable than one that is occasionally fast but unpredictable.

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	Future versions of Map Your Mobile could provide clearer insights into: • consistency of performance; • repeated poor performance; • variation by time of day; • confidence levels in the data; • differences between average and worst-case experience. This would better reflect consumer expectations that mobile connectivity should “work when needed”. 4. Include capacity and congestion indicators Map Your Mobile would be more useful if it helped identify places where performance deteriorates during predictable periods of high demand. This could include indicators for: • busy town centres; • major event locations; • transport hubs; • visitor destinations; • recurring congestion hotspots. This would help distinguish areas with poor coverage from areas where signal exists but capacity is insufficient. 5. Improve rural and transport corridor reporting For local authorities, Map Your Mobile would be more useful if it provided clearer reporting for: • rural areas; • villages and market towns; • rural roads; • rail corridors; • areas with only one strong operator; • Visitor Attractions

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	• persistent not-spots and partial not-spots. This would help councils identify where national averages may be masking local connectivity problems. 6. Provide local authority and stakeholder views NCC would welcome local authority-level reporting views or dashboards. These could help councils understand: • operator-level performance; • rural versus urban outcomes; • changes over time; • transport corridor performance; • indoor/outdoor differences; • capacity constraints; • persistent problem areas. This would support evidence-led conversations with Ofcom, operators, districts, EMCCA, Government and local partners. 7. Provide downloadable and historic data Stakeholders would benefit from access to downloadable data and historic trends. Local authorities need to monitor whether connectivity is improving over time and whether persistent gaps remain. This would support: • digital connectivity/inclusion strategies; • planning and regeneration work; • rural economic development; • transport planning; • public service resilience; • engagement with operators; • reporting to elected members and senior leaders. 8. Add context on planned works, outages and infrastructure changes

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	Map Your Mobile and associated Ofcom information would be more useful if users could understand whether poor performance may be linked to temporary or planned network changes. NCC recognises that there will be commercial and operational sensitivities, but even high-level visibility of significant planned works, major outages or mast changes would help local authorities and communities interpret performance data more accurately. 9. Clarify what technology labels mean Map Your Mobile should help consumers understand that 4G, 5G, 5G+ and satellite-to-device labels are not guarantees of service quality. The tool could provide plain-English explanations of: • 5G versus 5G standalone; • why 5G does not always mean faster performance; • why indoor and rural performance may vary; • what satellite-to-device services may realistically support; • why performance depends on capacity, back-haul, spectrum and device capability. This would help manage expectations and reduce the gap between marketing language and lived experience. Clarity around satellite direct-to-device services NCC would also encourage Ofcom to provide clear, independent information on the realistic role of satellite direct-to-device connectivity. We recognise the potential value of these services, particularly for resilience, emergency communications and very hard-to-reach rural areas. However, there is a risk that public messaging and commercial advertising around satellite-to-device connectivity could create expectations that are ahead of what the technology can currently deliver in everyday use. Satellite direct-to-device service augmentation of standard mobile services should not be presented, or interpreted by consumers, as providing the same type, quality

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	or consistency of service as terrestrial mobile networks. At this stage, they are more likely to act as a complementary layer of connectivity rather than a like-for-like substitute for investment in terrestrial mobile coverage, capacity, backhaul and resilience. Ofcom's own discussion paper recognises satellite technologies as potentially helpful in harder-to-serve rural areas, but also states that they will not be enough on their own. NCC understands the commercial desire for operators and technology providers to publicise new services and develop new revenue opportunities. However, we are concerned that excessive hype around satellite-to-device connectivity could be potentially misleading if consumers, businesses or public bodies are led to believe it will solve rural mobile connectivity challenges in the short term. For many rural communities, the practical need remains reliable everyday terrestrial connectivity for calls, data, digital payments, navigation, business use, access to services and public service resilience. Ofcom should therefore help manage expectations by ensuring that consumer-facing information clearly explains: • what satellite direct-to-device services can realistically support; • how they differ from terrestrial 4G and 5G services; • whether they support voice, messaging, data or emergency-only functions; • what devices and tariffs are required; • whether the service works indoors, in vehicles or under tree cover; • what performance levels users should realistically expect; • how the service may be affected by weather, line of sight, device position or network availability; • how satellite-to-device fits alongside terrestrial coverage, rather than replacing it.

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	The key message should be that satellite-to-device may become a valuable additional tool, especially for resilience and the hardest-to-reach areas, but it should not distract from the need for continued investment in terrestrial mobile infrastructure. This includes rural mast deployment, site resilience, power backup, backhaul, spectrum use, capacity improvements and better transparency around outages and planned network changes. NCC conclusion NCC supports Map Your Mobile and considers it a valuable step towards more transparent, real-world information about mobile network quality. However, customers and stakeholders need information that goes beyond predicted coverage and technology labels. The key need is for clear, independent, accessible information about whether mobile connectivity is genuinely usable in the places and circumstances that matter to people. This should include indoor performance, rural outcomes, transport corridors, operator-level differences, capacity constraints, planned network changes, outages, reliability, and practical use cases. Map Your Mobile should continue to evolve from a coverage and performance checker into a wider decision-support tool for consumers, businesses, local authorities and public service partners. This would support better consumer choice, stronger market incentives for operators, more effective local authority engagement and a better shared understanding of where mobile connectivity still needs to improve.
Section 4: Connectivity in busy areas • 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?	Confidential? –N What do you think are the biggest barriers to achieving better mobile performance in town and city centres and why? Nottinghamshire County Council considers that the biggest barriers to improving mobile performance in town and city centres are increasingly related to capacity, network densification, infrastructure availability, commercial viability and planning/delivery complexity, rather than basic network coverage alone.

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What information would stakeholders, especially local authorities / planning authorities find useful for Ofcom to provide further insights on and why?	Many urban areas already have widespread 4G and 5G availability. However, the challenge is ensuring that networks continue to perform reliably when large numbers of users attempt to access services simultaneously. From a consumer perspective, there is little difference between a location with no signal and a location where a signal is present but the network is unable to provide a usable service because available capacity has been exhausted. This issue is particularly evident around: - Football stadia and sporting venues. - Major events and festivals. - Retail centres. - Transport hubs. - Visitor attractions. - Night-time economy locations. - Areas with high concentrations of workers, students or tourists. Such locations can experience predictable and recurring spikes in demand. While operators often invest to manage these peaks, users can still experience reduced performance, slower speeds, failed connections and service degradation during busy periods. A further challenge is the increasing need for network densification. Delivering high-quality mobile services in busy urban environments often requires additional infrastructure, including small cells, rooftop equipment, street furniture installations and upgraded backhaul connections. Deployment can be constrained by: - Availability of suitable sites. - Access to publicly owned assets. - Power and fibre connectivity. - Commercial negotiations with landlords. - Street works requirements. - Visual amenity considerations. - The cost of deploying infrastructure relative to anticipated returns.

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	We would also highlight that mobile operators typically utilise different infrastructure, equipment strategies and commercial models. A location that performs well on one network may experience markedly different performance on another. This can result in an uneven customer experience despite apparent overall coverage. Finally, network resilience should not be overlooked. Service quality can be affected by site outages, power failures, equipment faults, landlord issues, mast relocations and planned network upgrades. In some cases, notice to quit on mast sites can result in the loss of infrastructure or temporary service degradation whilst replacement arrangements are made. These issues can affect mobile performance even where coverage maps and historic performance data suggest a location should be well served.
	What do you think should be Ofcom's main priorities for our future work in this area? NCC believes Ofcom's future work should focus on moving beyond coverage and towards a broader assessment of performance, reliability, resilience and user experience. Key priorities should include: 1. Measuring capacity and congestion Ofcom should develop approaches that better reflect network performance during periods of peak demand. A location should not be considered successful solely because coverage is available if users experience poor performance when networks are under pressure. Understanding congestion and capacity constraints will become increasingly important as mobile data demand continues to grow. 2. Supporting network densification Ofcom should continue working with industry, local government and other stakeholders to identify barriers to deploying additional infrastructure in busy locations. This could include exploring best practice relating to: • Small cell deployment.

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	• Access to public assets. • Street furniture utilisation. • Fibre backhaul availability. • Infrastructure sharing. 3. Improving transparency around resilience and outages Network quality should reflect reliability over time, not simply average performance. Ofcom should consider how information relating to: • Major infrastructure changes. • Service-affecting outages. • Planned maintenance. • Mast relocations. • Significant upgrade programmes. can be incorporated into wider understanding of mobile performance. Crowdsourced and drive-testing approaches provide valuable evidence but may not fully capture temporary disruptions that can nevertheless have significant impacts on communities and businesses. 4. Strengthening indoor connectivity evidence A significant proportion of mobile usage now occurs indoors. Future work should continue to improve understanding of indoor performance and the impact of modern building construction, energy-efficient materials and changing patterns of occupancy on mobile connectivity outcomes. 5. Maintaining a focus on place-based outcomes Ofcom should ensure that improvements are experienced across all locations, including town centres, rural communities, transport corridors and visitor destinations, rather than focusing solely on national averages. The key measure of success should be whether users experience meaningful improvements in everyday connectivity.

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	<i>What information would stakeholders, especially local authorities/planning authorities, find useful for Ofcom to provide further insights on and why?</i> Local authorities increasingly view mobile connectivity as essential economic and social infrastructure rather than solely a telecommunications issue. As a result, stakeholders require information that supports planning, economic development, transport, regeneration, public service delivery and digital inclusion objectives. NCC believes the following information would be particularly valuable. Capacity and congestion insights Information identifying: • Persistent congestion hotspots. • Capacity-constrained areas. • Locations experiencing recurring demand pressures. • Performance during major events and peak periods. would help councils better understand where infrastructure investment may be required and where engagement with operators could support improvement. Urban performance intelligence Local authorities would benefit from place-based reporting covering: • Town centres. • High streets. • Employment zones. • Transport hubs. • Regeneration areas. This would support evidence-led planning and investment decisions. Network resilience information Greater visibility of: • Planned maintenance.

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	• Major outages. • Mast decommissioning. • Site relocations. • Network upgrade programmes. would help local authorities understand whether service issues reflect temporary circumstances or more persistent infrastructure challenges. There may also be merit in exploring a national mechanism allowing stakeholders to understand planned infrastructure changes that are likely to have significant local impacts. Infrastructure and coverage gaps Information relating to: • Areas where only a single operator performs well. • Persistent not-spots. • Indoor performance issues. • Transport corridor performance. • Rural and urban comparisons. would support both planning and economic development activities. Historic and trend data Local authorities frequently need to demonstrate whether connectivity is improving over time. Access to historic datasets and trend analysis at local authority level would provide valuable evidence when: • Engaging operators. • Supporting planning decisions. • Developing digital strategies. • Assessing economic impacts. • Prioritising interventions. Local authority dashboards NCC would welcome the development of local authority reporting views that allow councils to understand:

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	• Coverage. • Capacity. • Reliability. • Congestion. • Indoor performance. • Transport corridor performance. • Trends over time. Such tools would support more effective collaboration between Ofcom, local authorities, combined authorities and mobile network operators. Conclusion NCC believes the principal challenge in busy areas is no longer simply signal availability but ensuring that networks have sufficient capacity, resilience and infrastructure density to support growing demand. Ofcom's future work should therefore place greater emphasis on congestion, service reliability, indoor performance and network resilience. For local authorities, the most valuable information would be place-based insights that help distinguish between coverage, capacity, resilience and real-world user experience, enabling more effective planning, investment and engagement with network operators.
Section 5: Connectivity in indoor, shared public places • 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?	Confidential? –N Nottinghamshire County Council (NCC) considers indoor connectivity to be one of the most complex and least well-understood aspects of mobile network quality. The main barrier is that indoor performance is not determined by mobile network coverage alone. It is shaped by a combination of outdoor signal strength, building design, construction materials, internal layout, user density, ownership arrangements, commercial incentives, availability of Wi-Fi, and whether dedicated in-building infrastructure has been installed. In one sense one could argue that one answer would be to exclude indoor signal coverage and simply explain that there are too many variables and recommend signal testing in some way especially for businesses and organisations

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	Ofcom's discussion paper rightly recognises that indoor mobile connectivity is typically weaker than outdoor connectivity, and that in shared public spaces such as shopping centres, train stations and event venues, dedicated indoor infrastructure may often be needed rather than relying on outdoor networks to penetrate buildings. The Greater Manchester study also found that indoor performance varied sharply between buildings and operators, and that buildings designed or upgraded with indoor connectivity in mind performed much better, including during busy periods. From NCC's perspective, the biggest barriers are as follows. 1. Building materials and construction can significantly reduce signal Good outdoor coverage does not guarantee good indoor connectivity. Modern buildings can unintentionally block mobile signals through materials such as specialist glazing, metallic insulation, reinforced concrete, steel framing, dense internal walls and energy-efficient construction methods. NCC has experienced this directly. For example, a Council office located in an area with excellent outdoor coverage across all major operators has nevertheless experienced poor indoor mobile performance. The building's construction appears to substantially reduce signal penetration and has effectively created a "Faraday cage" effect. This illustrates the important distinction between network availability outside a building and the lived experience of staff, service users and visitors inside it. Similar issues can occur in homes and smaller premises. For example, RSJs installed as part of extensions, foil-backed insulation, specialist glazing, steelwork, dense walls or other local building features can significantly alter indoor signal performance. This means two neighbouring properties with the same predicted outdoor coverage may have very different indoor mobile experiences. 2. Indoor environments are highly variable Indoor connectivity is difficult to measure or predict because each building is different. Performance can vary between rooms, floors, entrances, corridors, basements,

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	lifts, deep internal spaces and public-facing areas. This is particularly important in large shared buildings such as libraries, hospitals, schools, leisure centres, civic buildings, shopping centres and transport interchanges. Ofcom's consumer research found that poor mobile network quality was often experienced in busy public buildings, large office and education buildings, shopping centres, hospitals and similar settings. This reinforces the need to treat indoor connectivity as a distinct issue, not simply as an extension of outdoor coverage. 3. High footfall creates capacity as well as coverage challenges In shared public places, the challenge is often not just whether a signal can enter the building, but whether the network has enough capacity to support many users at the same time. A device may show 4G, 5G or 5G+ but still provide a poor service if network capacity is constrained. This is particularly relevant in: • shopping centres; • libraries and civic buildings; • hospitals and health settings; • transport interchanges; • leisure centres; • schools and colleges; • event venues; • large public service buildings. Poor indoor connectivity can affect digital payments, ticketing, access to health apps, communication with family members, translation tools, appointment management, staff productivity and access to online public services. It is also a key consideration when considering digital exclusion if for instance devices are being targeted to help say school children poor indoor and overall network coverage may very well act against the very means and opportunities to reduce digital exclusion! 4. Responsibilities and incentives are fragmented

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	Improving indoor connectivity usually requires cooperation between several parties, including mobile network operators, landlords, building owners, developers, tenants, public bodies, neutral host providers and Wi-Fi providers. The organisation best placed to enable a solution is not always the organisation that receives the direct commercial benefit. For example, a building owner may control access, power and internal infrastructure, while the mobile operator controls the network equipment and service. In some locations, the business case for dedicated indoor mobile infrastructure may be unclear unless there is sufficient footfall, commercial value or public service need. 5. Connectivity is often not designed in from the start Mobile connectivity is still too often considered after a building has been designed, built or refurbished. Retrofitting indoor solutions can be more expensive and disruptive than considering connectivity at the design stage. This issue is likely to become more important as buildings are upgraded to meet higher environmental and energy-efficiency standards. These improvements are important, but they can unintentionally make mobile signal penetration harder unless connectivity is considered as part of design, refurbishment and estate management. What do you think should be Ofcom's main priorities for future work in this area? NCC suggests that Ofcom's main priority should be to help shift indoor connectivity from being treated as a technical afterthought to being recognised as part of how modern shared public places function. 1. Distinguish clearly between indoor and outdoor performance Ofcom should continue to make clear that outdoor coverage is not a reliable proxy for indoor experience. Consumers, landlords, developers, public bodies and planning authorities need better information explaining why a location can appear well served externally but still perform poorly indoors.

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	This distinction is particularly important because mobile connectivity is increasingly relied upon inside the places where people live, work, access services and spend time. 2. Develop practical evidence on building types and materials Ofcom should provide clearer evidence on the types of buildings and materials most likely to affect mobile signal penetration. This would help building owners, developers, councils and public service providers understand when in-building connectivity should be considered early. This could include guidance on: • modern energy-efficient glazing; • metallic insulation; • reinforced concrete; • steel framing; • RSJs and structural steelwork; • basements and deep internal spaces; • dense internal walls; • large multi-use public buildings. 3. Promote “connectivity by design” Ofcom should work with Government, local authorities, developers, landlords and industry to encourage mobile connectivity to be considered during the design, planning, refurbishment and management of shared public buildings. This should not mean placing unrealistic expectations on planning authorities, but it should encourage earlier consideration of whether large shared buildings may need: • dedicated indoor mobile infrastructure; • distributed antenna systems; • small cells; • neutral host infrastructure; • improved public Wi-Fi; • Wi-Fi Calling support; • appropriate fibre and power provision.

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	4. Support better coordination between stakeholders Indoor connectivity solutions often require collaboration across multiple parties. Ofcom could play a useful convening and evidence role by helping clarify the respective roles of mobile operators, landlords, developers, local authorities, neutral host providers and public bodies. NCC would particularly welcome practical case studies showing how indoor connectivity has been improved in different types of buildings, including public sector buildings, civic spaces, shopping centres, transport interchanges, healthcare settings, education buildings and event venues. 5. Recognise the public service implications Indoor connectivity is not simply a consumer convenience issue. It can affect frontline public services, safeguarding, staff communications, lone-working arrangements, visitor experience and operational resilience. For councils and other public bodies, poor indoor mobile performance can affect staff who rely on mobile devices for communication, case management, access to digital systems, navigation or emergency contact. It can also affect residents and service users who need to access appointments, travel information, translation tools, health information, online forms or family contact while inside public buildings. This should be reflected in Ofcom's future work. What information would you find useful for Ofcom to provide further insights on in relation to connectivity indoors and why? NCC would welcome practical, place-based information that helps local authorities, planning authorities, landlords, developers and public service providers understand and improve indoor connectivity. 1. Indoor versus outdoor performance indicators It would be useful for Ofcom to provide clearer information showing where good outdoor performance does not translate into good indoor experience. This would help manage consumer expectations and support more

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	informed conversations with operators, landlords and building managers. 2. Building risk guidance Ofcom could provide plain-English guidance on the building characteristics most likely to reduce mobile signal penetration. This would be valuable for councils, developers, landlords and public estate teams when considering new developments, refurbishments and estate rationalisation. 3. Practical guidance for shared public buildings Local authorities would benefit from non-prescriptive guidance setting out the options available to improve indoor connectivity. This should recognise that different buildings will need different solutions. Useful areas would include: • Wi-Fi Calling; • public Wi-Fi; • small cells; • distributed antenna systems; • neutral host models; • private networks where appropriate; • fibre and power requirements; • building design considerations. 4. Case studies and comparable evidence More case study evidence would be valuable. Ofcom's Greater Manchester work is helpful because it demonstrates that indoor performance can vary significantly between buildings and that better outcomes are possible where indoor connectivity has been designed or upgraded effectively. Further examples from different building types would help councils and building owners understand what practical action looks like. 5. Information for planning, regeneration and public estate teams

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	Planning and regeneration colleagues would benefit from concise guidance explaining when indoor connectivity should be considered as part of major developments, town centre regeneration, public buildings and high-footfall shared spaces. This would help local authorities have constructive conversations with developers and landlords without implying that planning alone can resolve all indoor mobile connectivity issues. 6. Local authority-level reporting NCC would welcome local authority-level insights or dashboards showing where indoor connectivity issues may be material, particularly in town centres, transport hubs, public buildings, high-footfall areas and key public service locations. This would support evidence-led engagement with operators, landlords, developers, health partners, education providers and public estate teams. NCC conclusion NCC considers indoor connectivity to be a distinct and increasingly important component of mobile network quality. Good outdoor coverage should not be assumed to mean good indoor performance. Building design, construction materials, user density, available capacity, ownership arrangements and the presence or absence of dedicated in-building solutions can all significantly affect the mobile experience. Future work by Ofcom should improve transparency, support practical guidance, and encourage indoor connectivity to be considered earlier in building design, refurbishment, public estate management and place-based regeneration. This is particularly important because mobile connectivity is now part of the basic infrastructure people rely on to access services, support business activity, maintain personal safety, enable digital inclusion and participate in everyday life.

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Section 6: Connectivity on trains • 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?	Nottinghamshire County Council considers connectivity on trains to be one of the most challenging areas of mobile network performance because it combines several difficult factors at once: weak external mobile coverage along rail corridors, signal loss through train carriages, rapid movement between cells, high passenger demand, limited onboard Wi-Fi capability, and complex commercial responsibilities between mobile operators, train operating companies, infrastructure owners and government. From a user perspective, the issue is straightforward: passengers increasingly expect to be able to work, communicate, access tickets, use maps, make payments and stay in contact while travelling. However, the current experience often falls well below that expectation. Ofcom's commissioned rail measurement study found that the best-performing mobile network met the Good Performance threshold across only 42% of the measurement campaign, with the other mobile networks achieving between 17% and 21%. Onboard Wi-Fi met the threshold across only 1% of the survey. The most significant barriers are set out below. 1. Weak external signal along rail corridors The most fundamental technical barrier is weak mobile signal reaching the railway corridor and then reaching passengers inside the train. The rail study found that most mobile performance failures were caused by weak signal along rail corridors, with this further affected by the characteristics of particular train carriages. This is particularly relevant for rural and inter-city routes, where rail lines often pass through lower-density areas with fewer nearby mobile sites. Ofcom's study found that rural and intercity passengers experienced materially worse service than urban passengers, with Good Performance pass rates ranging from 82% on short London routes to 4% on cross-country lines. There may be opportunities to consider that improving signal that addresses not only passing trains but the surrounding rural areas could be worthwhile considering as we understand antennas on masts typically directed to where population densities are best served or the most revenue hence

Question	Your response
	masts along motorways tend to point along the traffic direction and not necessarily into the hinterland away from the main transport corridors For Nottinghamshire, this reinforces the need to treat rail corridors as part of the county's wider digital infrastructure, not simply as a transport issue. Poor rail connectivity can affect productivity, business travel, access to digital tickets and journey information, visitor experience and the attractiveness of sustainable travel. 2. Train carriage signal attenuation Even where mobile signal is present outside the train, passengers may still experience poor service inside the carriage. The rail study highlights vehicle penetration loss as a material constraint, noting that modern sealed-body rolling stock, metallic window coatings and other construction features can attenuate mobile signals. This is similar to the indoor connectivity issue raised elsewhere in the response: a location may appear well served externally but perform poorly for the user because the signal cannot effectively reach the device. On trains, this problem is intensified because passengers are inside a moving metal structure, often travelling at speed and often through areas where the external signal is already marginal. This means that improving rail connectivity cannot be addressed through mobile network investment alone. It also requires consideration of rolling stock design, window materials, onboard antenna systems, repeaters, distributed antenna systems and future procurement standards. 3. Mobility, handover and latency Train connectivity is difficult because devices move quickly between mobile sites. The rail study found that mobile devices on trains frequently change serving cells, with a median rate of four cell changes per minute, and peak handover rates of up to 18 changes per minute on some segments. This matters because handovers can introduce brief interruptions, affect throughput and increase latency. The study also found that latency was often the main reason tests failed to meet the Good Performance threshold.

Question	Your response
	For passengers, this may present as applications freezing, video calls dropping, messages being delayed, payments failing, tickets not loading or online work becoming unreliable. 4. Capacity and peak demand Capacity is also a major barrier. Trains concentrate a large number of users into a small physical space, many of whom may be trying to access data at the same time. The rail study's Bedford to London St Pancras case study found that performance worsened at peak times for commuters, with reduced performance across metrics for all operators. This is important because passengers are most likely to need connectivity during peak commuting periods, when they are working, accessing journey information, using digital tickets or coordinating onward travel. 5. Onboard Wi-Fi limitations Onboard Wi-Fi cannot currently be relied upon as a general solution. Ofcom's commissioned study found onboard Wi-Fi met the Good Performance threshold across only 1% of the measurement survey, with Wi-Fi on most routes returning no tests that met the threshold. The study also found that Wi-Fi performance was affected by issues such as throttling, data caps, limited backhaul and older Wi-Fi standards. It noted that no trains observed in the study were using Wi-Fi 6 or Wi-Fi 7, with observed networks using older Wi-Fi standards. This means onboard Wi-Fi is often constrained by the same underlying cellular coverage problem, especially where trains use bonded cellular backhaul. If the train cannot obtain sufficient backhaul from the terrestrial mobile network, it has limited capacity to distribute to passengers. 6. Fragmented commercial responsibility The commercial and delivery barriers are also significant. Improving train connectivity requires coordination between mobile network operators, train operating companies, rolling stock owners, Network Rail, government, infrastructure providers and possibly satellite or track-side backhaul providers.

Question	Your response
	The challenge is that the customer benefit is shared, but the cost, ownership and delivery responsibilities are fragmented. A mobile operator may not have sufficient commercial incentive to improve coverage along a rural rail corridor if the direct customer return is limited. A train operator may want better onboard Wi-Fi but be dependent on mobile backhaul or third-party infrastructure. Rolling stock changes may be costly and long-term. Trackside infrastructure may require significant coordination, permissions and investment. This is why market-led improvement alone is unlikely to be sufficient in all areas. Do you agree with Ofcom's proposal to work with government to support improvements in train connectivity? Yes. NCC supports Ofcom's proposal to work with government to support improvements in train connectivity. Train connectivity is a cross-sector issue and cannot be solved by Ofcom, mobile operators or train operating companies acting independently. It involves spectrum, mobile network investment, rail infrastructure, rolling stock, passenger expectations, public policy, economic productivity and transport decarbonisation. Ofcom's discussion paper recognises that government is considering options to improve connectivity on trains and that Ofcom will support this work, including work on how train connectivity should be reported on an ongoing basis. NCC considers this joint working essential for three reasons. 1. Rail connectivity supports productivity and economic growth Poor connectivity on trains reduces the ability of passengers to work productively while travelling. This matters for business users, public sector workers, students, commuters and visitors. Ofcom's consumer research found that mobile connectivity was considered mission-critical by some business users, including those needing to work effectively on the move. For Nottinghamshire and the wider East Midlands, rail connectivity should be viewed as part of the region's

Question	Your response
	productivity infrastructure. It supports business travel, inward investment, visitor economy activity, access to employment and the attractiveness of public transport. 2. Digital ticketing and passenger information now depend on connectivity Passengers increasingly rely on mobile connectivity for journey planning, digital tickets, disruption information, payments, onward travel, taxi apps and communication. Poor connectivity can therefore create practical difficulties, not simply inconvenience. Ofcom's consumer research included examples of passengers being unable to download train tickets because of poor network quality. 3. Rail connectivity needs coordinated investment Many of the solutions require coordination beyond normal commercial mobile network deployment. These may include improved trackside coverage, dedicated rail corridor infrastructure, better onboard systems, upgraded Wi-Fi equipment, improved backhaul, rolling stock design changes and potentially satellite or trackside millimetre-wave solutions where appropriate. The rail study found that technologies capable of improving passenger experience already exist, but that the opportunity lies in aligning commercial investment, planning and deployment across the industry. NCC therefore supports Ofcom working with government, industry and rail stakeholders to establish a clearer route to delivery. What information would you find useful for Ofcom to provide further insights on in relation to connectivity on trains and why? NCC would welcome practical, route-based and place-based information that helps local authorities, transport bodies, rail partners and economic development teams understand rail connectivity as part of wider digital infrastructure. 1. Route-level performance data Ofcom's rail measurement study is very helpful because it provides line-by-line and operator-level evidence. NCC

Question	Your response
	would welcome ongoing reporting of mobile and Wi-Fi performance by route, including key regional corridors. For Nottinghamshire and the wider East Midlands, this would help understand performance on routes used by residents, commuters, students, visitors and businesses. 2. Operator-level comparison Information should continue to show performance by mobile network operator. The rail study demonstrates significant variation between operators, with different Good Performance pass rates across the measurement campaign. This is important because passengers may experience very different levels of service depending on their provider, even on the same route. 3. Peak versus off-peak performance Ofcom should provide insight into how train connectivity varies by time of day and passenger loading. The Bedford to London St Pancras case study showed performance degradation during peak times. This information would help identify whether the issue is primarily coverage, capacity, congestion or all three. 4. Rural and intercity corridor analysis NCC would welcome specific reporting on rural and intercity rail corridors, where the study found materially poorer outcomes than short urban routes. This would help ensure rail connectivity improvement is not concentrated only on already better-served urban commuter routes. 5. Explanation of failure causes It would be useful for Ofcom to continue publishing information on why performance fails, including whether failures are due to weak signal, no signal, poor signal quality, latency, congestion, handover issues, rolling stock attenuation or Wi-Fi backhaul limitations. The rail study's root-cause analysis is helpful because it shows that weak signal was the dominant classification across the four mobile operators, with other factors including no signal, poor signal quality and legacy technology also present.

Question	Your response
	6. Rolling stock and onboard system impacts Ofcom should provide further evidence on how rolling stock type, carriage construction, window materials and onboard systems affect connectivity. The rail study notes that vehicle penetration loss varies by train construction and can materially affect the passenger experience. This would be useful for future rail procurement, rolling stock refurbishment and onboard connectivity strategies. 7. Onboard Wi-Fi capability and backhaul NCC would welcome clearer information on onboard Wi-Fi performance, including Wi-Fi standards, backhaul type, throttling, data caps and whether services are capable of meeting modern passenger expectations. The rail study found that onboard Wi-Fi was significantly below the Good Performance threshold in most cases and identified issues including throttling, legacy Wi-Fi standards and backhaul constraints. 8. Planned improvement pipeline Where possible, Ofcom and government could provide clearer information on planned improvement programmes, including trackside infrastructure, mobile network upgrades, rail corridor coverage projects, rolling stock interventions and trials of alternative technologies. This would help local authorities and transport partners understand whether poor connectivity on a given corridor is likely to improve, and whether there are opportunities to coordinate local, regional or national interventions. NCC conclusion NCC supports Ofcom's proposal to work with government to improve train connectivity. The evidence shows that current mobile and Wi-Fi performance on trains is not yet consistent with modern passenger expectations. The barriers are both technical and commercial: weak rail corridor signal, carriage attenuation, handover, latency, peak-time congestion, limited onboard Wi-Fi capability and fragmented delivery responsibilities all contribute to poor outcomes.

Question	Your response
	The priority should be a coordinated national approach that treats train connectivity as part of essential digital, transport and economic infrastructure. The desired outcome should be that passengers can reliably access calls, messaging, digital tickets, journey information, payments, work applications and public services while travelling. For Nottinghamshire and the wider East Midlands, this matters for productivity, inclusion, sustainable transport, visitor experience and regional economic growth.
Section 7: Connectivity in rural areas • 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?	Nottinghamshire County Council considers that the biggest barriers to improving rural mobile performance are a combination of commercial viability, geography, infrastructure availability, planning and delivery constraints, resilience issues, and the fact that national coverage measures can mask local lived experience. Rural mobile connectivity is often weaker because the commercial return on investment is lower where there are fewer users spread across larger geographic areas. Ofcom's discussion paper recognises that rural areas often face weaker mobile connectivity because of lower commercial returns, and that the market alone may not deliver the optimal level of investment where wider economic and social benefits are not fully reflected in operators' commercial decisions. From a Nottinghamshire perspective, rural connectivity challenges are not only about whether a signal exists. They are about whether connectivity is usable, reliable and consistent in the places where residents, businesses, visitors and public services need it. Our mobile mapping work demonstrates that localised gaps can remain even where overall coverage appears positive. Approximately 228 km of surveyed roads had no "good outdoor" 4G/5G coverage from any operator, with these gaps disproportionately concentrated in rural parts of the county. Key barriers include: • Lower commercial returns: fewer customers across wider areas can make rural investment harder to justify commercially, especially where new masts, backhaul, power and access arrangements are required.

Question	Your response
	• Topography and geography: trees, terrain, distance from masts and dispersed settlements can all weaken signal quality and reduce usable performance. • Backhaul and power availability: rural sites may be more difficult or costly to connect with fibre backhaul and resilient power. • Planning, land and site acquisition challenges: suitable mast locations may be limited and can involve complex negotiations with landowners. • Notice to quit and site loss risks: existing mast locations can be affected by redevelopment, lease expiry, landlord decisions or commercial renegotiation. This can create temporary or longer-term not-spots, particularly where there are few alternative sites. • Operator-level variation: different operators use different infrastructure, equipment, spectrum and commercial arrangements. A location may perform well on one network but poorly on another. • Capacity constraints: rural visitor destinations, market towns, seasonal attractions and events can experience temporary surges in demand. A signal may be present, but the network may not have sufficient capacity to remain usable. • Measurement limitations: crowdsourced data and drive surveys are valuable, but they are snapshots. They may not capture planned maintenance, mast outages, temporary faults, network upgrades or short-term service degradation. Rural connectivity also has a wider impact than telecommunications alone. Poor performance can affect farming and land-based businesses, tourism, digital payments, remote working, access to public services, social inclusion, emergency communications and community resilience. Ofcom's consumer research found that poor mobile network quality is commonly experienced in rural and remote not-spots, and that those who rely heavily

Question	Your response
	on mobile connectivity can experience more significant impacts. What do you think should be Ofcom's main priorities for future work in rural locations and what outcomes should we aim to achieve? NCC suggests that Ofcom's priority should be to ensure that rural mobile connectivity is measured and improved as a matter of economic growth, inclusion, resilience and public service access, not simply as a coverage issue. The desired outcome should be that rural residents, businesses and visitors can rely on mobile connectivity for everyday tasks in the places and circumstances where they need it most. This should include not only outdoor coverage, but also usability on rural roads, in villages, in visitor destinations, at business premises and during periods of higher demand. Priority 1: Move beyond aggregate coverage measures Ofcom should ensure rural outcomes are not hidden within national or county-wide averages. A national benchmark may present an overall positive picture while still leaving persistent rural not-spots and partial not-spots unresolved. NCC would support dedicated rural reporting that distinguishes between: • rural and urban performance; • individual operator performance; • road corridor performance; • market town and village performance; • seasonal and event-related capacity issues; • persistent not-spots and partial not-spots. This would help ensure the areas with the poorest connectivity are visible and that improvement is measured where it matters most. Priority 2: Focus on reliability and service continuity Rural users need connectivity that is dependable over time. Ofcom should consider how to capture not only

Question	Your response
	whether a connection is available, but whether it is resilient and consistent. This should include better understanding of: • recurring outages; • planned maintenance impacts; • mast relocations; • notice to quit risks; • temporary not-spots caused by network changes; • restoration times where known. This is particularly important in rural areas where a single mast can serve a wide area and where the loss of one site can have a disproportionate local impact. Priority 3: Improve transparency around rural network changes NCC would welcome greater transparency regarding planned maintenance, significant upgrades and mast changes. Users and local authorities often cannot tell whether poor performance reflects a long-term coverage limitation, a temporary outage, planned engineering work, a lost site or an upgrade programme. A link or mechanism for accessing planned maintenance and major site-change information would help councils, businesses and communities understand local issues more accurately. This would also help contextualise crowdsourced data and drive-testing evidence. Priority 4: Support rural economic and social outcomes Ofcom should frame rural mobile improvement around the outcomes it enables, including: • farm and rural business productivity; • tourism and visitor economy growth; • access to digital public services; • remote and hybrid working; • transport safety and navigation; • community resilience during severe weather or disruption;

Question	Your response
	digital inclusion for residents with limited alternatives. Ofcom's discussion paper recognises that wider economic and social benefits may not be fully captured in mobile operators' commercial investment decisions.
	What solutions could improve rural mobile performance? NCC considers that no single solution will resolve rural mobile connectivity challenges. A mix of technical, commercial, policy and delivery interventions will be needed. Technical solutions Potential technical solutions include: - targeted new mast deployment in persistent not-spots; - upgrading existing rural sites with additional spectrum and modern radio equipment; - improved fibre backhaul to rural mast sites; - use of low-band spectrum to improve reach; - small cells or neutral host solutions in villages, visitor destinations and market towns; - satellite direct-to-device or satellite backhaul where terrestrial solutions are not viable; - improved resilience through power backup and diversified backhaul; - better use of public assets where appropriate. Ofcom's discussion paper notes that spectrum sharing and satellite technologies may form part of the longer-term response to rural challenges, while also recognising that these will not be sufficient on their own. Commercial and delivery solutions Commercially, there may be a need for stronger collaboration between operators, infrastructure providers, landowners, local authorities and government. In harder-to-serve places, commercial incentives may not be sufficient to deliver optimal outcomes for communities. Potential approaches include:

Question	Your response
	• infrastructure sharing where commercially and technically appropriate; • neutral host models for rural communities and visitor destinations; • public-sector facilitation of suitable sites; • clearer engagement routes between local authorities and operators; • using public assets where this is practical, safe and commercially viable; • coordinated approaches through combined authorities, Government and local digital connectivity programmes. NCC recognises that mobile operators do not all use common equipment or identical infrastructure models. This can complicate delivery and means improvements by one operator may not automatically benefit all consumers. Ofcom should continue to publish operator-level information so that these differences remain transparent. Policy and planning solutions From a local authority perspective, planning and asset access can support improvement, but they are only part of the picture. Councils can help by being constructive convenors, evidence providers and enablers, but they cannot resolve the commercial economics of rural deployment alone. Useful policy improvements could include: • clearer guidance on rural mobile infrastructure need; • improved evidence to support planning considerations; • better alignment between mobile connectivity, rural economic growth and public service resilience; • stronger coordination between Ofcom, Government, local authorities, EMCCA, operators and infrastructure providers;

Question	Your response
	clearer processes for managing mast relocations or site losses where communities may be affected.
	What information would you find useful for Ofcom to provide further insights on in relation to rural connectivity and why? NCC would welcome more practical, place-based information that helps local authorities understand rural performance and engage constructively with operators and partners. 1. Rural performance dashboards Local authority-level dashboards showing rural mobile performance by operator would be extremely useful. These should distinguish between outdoor performance, transport corridors, villages, market towns and persistent not-spots. This would support evidence-led engagement with operators and help councils prioritise areas where intervention may be needed. 2. Operator-level rural performance Consumers and stakeholders need to understand differences between operators. Aggregate data can hide the fact that only one operator may provide a usable service in a particular rural location. Operator-level information would support consumer choice, business planning and local authority engagement. 3. Road and transport corridor data Rural residents often travel further to access employment, education, healthcare and services. Mobile performance on rural roads is therefore important for safety, navigation, productivity and resilience. Ofcom could usefully provide more insight into performance on key rural roads, strategic corridors and public transport routes. 4. Planned maintenance, outages and mast changes NCC would find it valuable for Ofcom to explore whether information on significant planned maintenance, mast

Question	Your response
	outages, site relocations, notice to quit impacts and major upgrade programmes could be made more transparent. This information would help distinguish between long-term coverage gaps and temporary disruption. It would also support communications with communities and businesses where service degradation is being experienced. 5. Capacity and seasonal demand data Ofcom should consider providing insight into rural capacity constraints, particularly in visitor destinations, event locations, market towns and areas with seasonal population changes. This would help reflect the real-world experience of rural places where demand can fluctuate significantly. 6. Historic trend data Historic data would help councils understand whether rural connectivity is improving over time or whether persistent gaps remain. This would be useful for local digital strategies, economic development work, planning engagement and reporting to elected members. 7. Guidance on rural delivery models NCC would welcome practical guidance and case studies on delivery models that have improved rural mobile performance, including infrastructure sharing, neutral host approaches, use of public assets, satellite backhaul and community-focused deployment models. NCC conclusion NCC considers rural mobile connectivity to be a critical economic, social and resilience issue. The main challenge is not simply whether a signal is present, but whether rural residents, businesses, visitors and public services can rely on mobile connectivity when and where they need it. Ofcom's future work should ensure rural areas are not masked by national averages and should focus on usability, reliability, resilience, operator-level transparency and long-term improvement in persistent not-spots. Solutions will require a combination of market investment,

Question	Your response
	infrastructure sharing, targeted public policy support, local authority collaboration and better transparency around network changes, outages and planned maintenance. The outcome should be clear: rural communities should not be left with a second-tier mobile experience simply because they are harder to serve. Mobile connectivity is now essential infrastructure for rural economic growth, digital inclusion, tourism, farming, public services and community resilience.

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