

Your response

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Question 1: Do you think we should permit more commercial trial activity under the Demonstration and Trial licence (including with paying customers) and whether we should impose any limitations on this?	Confidential? – N Our experience primarily concerns research output demonstration rather than commercial trials under Demonstration and Trial licences. We recognise that researchers and innovators may require access to spectrum at different stages of technology development. However, for our anticipated commercial and operational trial requirements in the 3.8–4.2 GHz band, the existing Shared Access licensing framework offers a potential route, subject to spectrum availability and the applicable technical conditions. Nevertheless, we see merit in permitting limited commercial trial activity under Demonstration and Trial licences where an appropriate existing licensing route is not available, provided that such trials remain time-limited and confer no expectation of future spectrum rights.
Question 2: Do you have any other suggestions for how the transition from trial to commercial deployment could be improved?	Confidential? – N Research and development in telecommunications usually involves several stages of experimentation before a technology is mature for commercial deployment. Our experience at the University of Glasgow covers early-stage research, technology validation, use-case demonstrations, multi-vendor integration and the development of network optimisation technologies intended for eventual deployment in operational mobile networks. Access to appropriate spectrum is required throughout these activities and R&D stages. However, the requirements of individual experiments may change as research progresses. The continued availability of Shared Access licensing provides one pathway for moving towards operational deployment in the relevant bands. We, therefore, see value in maintaining a clear distinction between non-commercial experimental research and operational deployments, while ensuring that appropriate licensing arrangements are available for both. In our experience, greater certainty during the R&D stages would improve the ability of research institutions to plan experiments, maintain test infrastructure and establish

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	pathways towards deployment. Clearer guidance on the available transition routes between Innovation and Trial licensing, Shared Access licensing, bespoke licensing and established commercial licensing frameworks would also help innovators plan the progression from research to operational deployment. Earlier engagement with Ofcom as projects approach this transition could further reduce uncertainty.
Question 3: Do you think it would be beneficial to enable some longer-term licensing options for Innovation and Trial licences?	Confidential? – N We support the introduction of longer-term licensing options that reflect applicants’ requirements, particularly for established research facilities undertaking continuous experimental work. The University of Glasgow has operated a long-term cellular research testbed since 2018, initially supporting LTE experimentation before progressing to 5G non-standalone and standalone networks. The development and expansion of the 5G testbed was subsequently supported by the Scottish Government through the Scotland 5G Centre, as part of wider investment in 5G research, innovation and adoption in Scotland. Our experience highlights two closely related issues: the administrative burden of repeatedly applying for spectrum and the uncertainty surrounding continued access to sufficient bandwidth. Licence duration and continuity of research The University of Glasgow has used Innovation and Research licences for mobile research since 2018. Throughout this period, our spectrum applications have consistently explained that the testbed is intended to support long-term R&D. Despite this, the current licensing framework requires us to submit new applications at regular intervals. Ofcom acknowledges in its Call for Input that universities, manufacturers and test houses may conduct multiple experiments at the same location over several years. It also recognises that the existing 12-month Innovation and Research licensing arrangement can create administrative burdens and potential gaps in authorisation. In our case, the testbed operates as long-term research infrastructure and supports multiple overlapping research

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	projects, often with different funding periods, industrial partners and technical objectives. It has also provided the underlying infrastructure for 5G use-case demonstrations across sectors including remote healthcare, robotics, connected vehicles and Education 4.0. Repeatedly applying for spectrum introduces uncertainty into the planning and delivery of these activities. Research programmes may extend over several years, whereas the spectrum authorisations supporting them are considerably shorter. We consider that licence duration should reflect the nature and anticipated duration of the applicant's research activities rather than applying a uniform period to all applicants. Longer-term licences could be made available where applicants demonstrate an ongoing research requirement, an established test facility and appropriate arrangements for spectrum management and regulatory compliance. The duration granted could be determined on a case-by-case basis, taking account of the applicant's research programme, technical requirements and potential impact on other spectrum users. Continuity of spectrum access and bandwidth An equally important challenge concerns uncertainty in the amount of spectrum authorised between successive licensing periods. Our testbed routinely requests 100 MHz of contiguous spectrum in both n78 and the 3.8 – 4.1 GHz portion of n77 to support experimentation. However, the bandwidth granted is not always consistent with our request. On some occasions, subsequent applications have resulted in authorisations for as little as 30 MHz of contiguous spectrum. This variability can significantly constrain our experimental capabilities. For example, a reduction from 100 MHz to 30 MHz can affect achievable throughput, network capacity, scheduling behaviour, resource utilisation and the operating conditions under which network optimisation algorithms are evaluated. It can also affect the reproducibility and benchmarking of experiments conducted over successive research periods.

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	Our current research includes the development and evaluation of intelligent network optimisation solutions that are intended to operate under realistic mobile network conditions. Changes in available bandwidth between experimental campaigns can introduce additional variables that must be accounted for when comparing results. We recognise that Innovation and Trial licences operate on a non-interference, non-protection basis and that spectrum availability must be assessed against other authorised users. We are, therefore, not seeking guaranteed or exclusive access to particular frequencies. However, for established research facilities with recurring spectrum requirements, we encourage Ofcom to consider mechanisms that provide greater continuity in the bandwidth available across successive licensing periods. Proposed longer-term licensing arrangements We suggest that Ofcom consider a more flexible licensing approach for established research institutions and other organisations demonstrating enduring research requirements. This could include multi-year licences with conditions tailored to the applicant's research activities, location and technical requirements. Where a research facility continues to operate within an agreed technical framework, subsequent administrative requirements could be simplified. For example, an annual declaration confirming that the facility remains operational and that its technical parameters have not changed could replace repeated full applications, where Ofcom is satisfied that existing coordination arrangements remain valid. Substantial changes to operating conditions could trigger reassessment. Such arrangements would provide research organisations with greater certainty while allowing Ofcom to retain the flexibility required to manage spectrum efficiently and protect other authorised users. Longer-term authorisation would not need to confer permanent spectrum rights or guarantee renewal beyond the agreed period.

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Question 4: Do you think it would be beneficial to enable faster processing of low power Innovation and Trial licence applications, based on lighter-touch assessment? Are there any particular frequency bands or locations Ofcom should look to prioritise?	Confidential? – N We see potential benefits in a proportionate assessment process for applications that present a demonstrably low risk of interference. Ofcom could consider whether established research facilities with previously assessed technical configurations should be subject to a simplified process when applying for substantially unchanged authorisations. In particular, a research facility operating at a fixed location, within known technical parameters and with established operating procedures may present a predictable interference risk. We suggest that Ofcom’s assessment process should consider the technical characteristics of the proposed deployment, its operating environment and the applicant’s previous compliance record, rather than relying on geographical location alone. Rather than prioritising remote locations only, Ofcom could also consider established fixed research sites with previously coordinated technical configurations and a demonstrated compliance record as candidates for lighter-touch assessment.
Question 5: Do you have any other suggestions for improving Ofcom’s current approach to Innovation and Trial licensing?	Confidential? – N Our experience suggests that several administrative improvements could provide additional flexibility for long-term research facilities. One option would be to introduce a simplified reapplication process for existing licensees whose technical requirements remain unchanged. A second option would be to establish a mechanism through which applicants could engage with Ofcom before the expiry of an existing authorisation to understand whether continued access to the same bandwidth is likely to be available. Such early engagement would be particularly valuable where coordination constraints might lead to changes to an existing assignment. A third option would be to provide greater flexibility where researchers need to modify their experimental configurations within an existing research programme. For example, an established testbed may need to investi-

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	gate different channel bandwidths or equipment configurations without changing its geographical location or substantially increasing its interference risk. Allowing appropriately assessed modifications within an agreed technical framework could reduce the need for separate applications. We recognise that the feasibility of these changes will depend on the particular frequency band and the rights of incumbent users.
Question 6: Are there new approaches to managing coexistence for bespoke spectrum licensing requests that we should implement to speed up the process?	Confidential? – N We support a more proportionate and risk-based approach to coexistence assessment for bespoke spectrum licensing requests. In particular, where similar types of requests recur, Ofcom could develop standardised coexistence methodologies or predefined technical envelopes, allowing those applications to be assessed more quickly while maintaining appropriate protection for incumbent users. Low-risk trial zones and regulatory sandboxes could complement this approach where appropriate.
Question 7: Do you think that there should be a greater expectation for applicants to provide the coexistence analysis to support their bespoke spectrum requests?	Confidential? – N We support applicants providing a greater proportion of the technical analysis where they have the capability to do so. Applicants are often well placed to provide detailed information about their systems, including transmit powers, antenna characteristics, deployment locations, propagation assumptions and operating scenarios. However, this should not become a blanket requirement that creates an additional barrier to innovation. Applicants may not have access to the detailed information on incumbent deployments or protection criteria required to undertake a complete coexistence assessment. This issue is particularly relevant to universities, SMEs and other research organisations that may have strong technical expertise but do not have access to all of the spectrum-management information available to Ofcom. A shared approach may therefore be appropriate, with applicants providing an initial coexistence analysis based on clearly defined Ofcom methodologies and available

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	data, while Ofcom retains responsibility for verification and for assessing information relating to incumbent users that cannot reasonably be made available to applicants. Where appropriate, Ofcom could provide standard propagation assumptions, protection criteria, calculation methodologies and access to sufficiently detailed spectrum-use information to support this process.
Question 8: What do you think is the minimum security of tenure needed to support innovative uses?	Confidential? – N We do not consider that a single minimum period will be appropriate for all innovative spectrum uses. The appropriate security of tenure should reflect the nature of the activity, the level of investment required, the expected development or deployment period and the availability of alternative spectrum. For research and innovation infrastructure, our experience demonstrates the importance of multi-year certainty. Equipment, research programmes and industry collaborations frequently operate over several years, and uncertainty over continued spectrum access can limit long-term planning. For bespoke operational or commercial deployments, we consider Ofcom’s suggested period of three to five years to be a reasonable starting point, but Ofcom should retain flexibility to provide longer periods where justified by the investment and use case. Security of tenure could be combined with clearly defined notice periods where Ofcom needs to alter or withdraw an authorisation for spectrum-management reasons. The duration of the licence and the notice period should be sufficiently predictable for users to understand the regulatory risk before making investments.
Question 9: Should we consider extending the Local Access licensing regime to other bands and technologies?	Confidential? – N We support consideration of extending the principles of Local Access licensing to other bands and technologies where there is identifiable local spectrum availability and coexistence with incumbent users can be appropriately managed.

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	Localised spectrum access can enable spectrum that might otherwise be unused in particular geographical areas to support research, private networks, neutral-host deployments and other innovative wireless services. The suitability of the model will depend on incumbent use, propagation characteristics, equipment availability, the maturity of the relevant technology ecosystem and the practicality of determining whether spectrum is locally available. The existence of a viable equipment ecosystem is particularly important if additional bands are to support practical deployment rather than spectrum access in principle only.
Question 10: What do you think should be Ofcom's focus in updating how we licence spectrum to support wireless innovation? Do you have any other comments or views on the issues discussed?	Confidential? – N Overall, we consider that Ofcom's focus should be on predictability, proportionality and continuity across the wireless innovation lifecycle: providing longer-term access for established research infrastructure, proportionate coordination and reapplication processes, and clear pathways from experimentation towards operational deployment. Our experience demonstrates that research facilities may continue to evolve over many years, supporting successive generations of wireless technology and providing infrastructure for research programmes that were not anticipated when the facilities were first established. The University of Glasgow testbed illustrates this evolution. Since 2018, it has progressed from LTE experimentation to 5G NSA and SA networks and now supports research using n78 and upper n77 spectrum in areas including network automation, artificial intelligence, energy efficiency and emerging mobile technologies. The value of maintaining such long-term research infrastructure has also been recognised independently. The Scottish Government's 2026 evaluation of the Scotland 5G Centre found that the large majority of the impacts from the S5GC Wave 1 projects were attributable to the University of Glasgow 5G Testbed. The evaluation identified significant follow-on research funding, expansion of research activity and strengthened industry partnerships, and noted that the development of 5G testbed capability had enhanced Scotland's competitive position in 5G research and innovation.

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	This experience demonstrates that predictable access to spectrum can generate benefits well beyond an individual experiment. It enables research infrastructure to develop over time, attract further investment, support collaboration with industry and provide a platform for the development and demonstration of new wireless technologies. Long-term research facilities can support multiple universities, industrial partners, technology developers and emerging businesses. We, therefore, encourage Ofcom to consider the requirements of persistent research infrastructure alongside those of organisations undertaking individual, short-duration experiments. In particular, the following considerations emerge from our experience: • Licence duration should reflect the applicant's demonstrated research requirements and the anticipated period of operation. • Established facilities would benefit from greater continuity in the bandwidth and technical characteristics of spectrum authorised over successive licensing periods. • Reapplications involving substantially unchanged technical parameters could benefit from proportionate assessment and streamlined administration. • Greater transparency and early engagement where requested spectrum cannot be accommodated would assist researchers in identifying alternatives and planning their experiments. These measures would address the uncertainty encountered by long-term research facilities while preserving Ofcom's ability to coordinate spectrum use and respond to changes in demand.
Question 11: Are there any other significant non-spectrum barriers to innovation for wireless services that you encounter?	Confidential? – N Although access to appropriate spectrum is essential for experimental research, other factors can affect the development and deployment of emerging wireless technologies. Our experience of operating a cellular research testbed and undertaking collaborative industry projects highlights the importance of suitable equipment, access to different

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	vendor platforms, interoperability and the availability of realistic testing environments. The availability of equipment supporting particular frequency bands and bandwidth configurations can also influence the experiments that researchers can undertake. In addition, progressing technologies from laboratory validation to operational networks can require access to live testing environments, agreements with network operators and additional deployment funding. Our current work on Open RAN and intelligent network optimisation illustrates the need for research infrastructure that can support technology development, multi-vendor integration, performance validation and subsequent field trials. Our experience through the Scottish Government-supported Scotland 5G Centre also highlights the value of coordinated engagement between government, academia and industry in creating environments where wireless technologies can be developed, demonstrated and adopted. Continued coordination between Ofcom, government, academia, industry and other stakeholders can therefore play an important role in reducing these non-spectrum barriers and supporting the progression of wireless technologies from research to deployment.