# Response to the Information Memorandum Regarding ICASA's Intentions to Initiate the **Second Phase of the Licensing Process** and to make available Radio Frequency Spectrum to Prospective Licensees to Provide Mobile Broadband Wireless Access Services in the Low and Mid Radio Frequency Bands.

*A submission to the Independent Communications Authority of South Africa submitted by: (alphabetic)*

- **Association of Progressive Communications**
- **Mozilla Corporation**
- **University of the Western Cape**
- **Zenzeleni Networks NPC**

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**The Independent Communications Authority of South Africa**
**350 Witch-Hazel Avenue,**
**Eco Point Office Park, Eco Park,**
**Centurion, Gauteng.**
**Attention: Mr Davis Kgosimolao Moshweunyane**

**Tel: +27 (0) 12 568 3497**
**E-mail: IMTLicensing@icasa.org.za**

# Introduction

The outbreak of COVID-19 has brought to the fore the importance of access to affordable broadband to all persons, regardless of their social and economic status. However, the pandemic has revealed something even more important for policy-makers and communication regulators; it has made clear that **digital inclusion** must be a top priority if the internet is not to become an amplifier of inequality.

Communication technology is a natural amplifier of human activity. Those with affordable access to communication move forward while those without are quite literally invisible to the connected. Broadband networks are delivering ever greater utility, from education to commerce to social safety nets with the unfortunate side effect that the social and economic gap between those with affordable access and those without increases by default. The inescapable conclusion from this is that inclusiveness, making sure everyone has affordable access to broadband, must be a pre-eminent priority of policymakers.

The recent spectrum auction has proven a significant success in making spectrum available to large-scale national operators. Coverage obligations built into the spectrum awards will hopefully ensure that access infrastructure is built in unserved regions. However, the process of attaching coverage obligations to auctioned spectrum licences has not always led to optimal outcomes[1]. In fact it has even been difficult to hold licensees accountable for other types of obligations too[2]. Accordingly, it is essential to ensure that complementary mechanisms are in place to ensure that radio spectrum is affordable, available, and accessible in underserved regions in South Africa.

While the previously issued Second Information Memorandum[3] made the positive step of introducing provisions to ensure that unutilised spectrum could be made available to other ECNS licensees, we believe these provisions have not gone far enough, nor do they provide sufficient clarity to ensure that such provisions will not be contested by licensees.

An unfortunate side-effect of exclusive spectrum assignment via auction is that small network operators are effectively excluded from the use of IMT spectrum bands. As the previous spectrum auction has provided substantial amounts of spectrum to national operators, we believe that a priority in this second round of spectrum assignments should be access to spectrum in underserved regions. In particular, we believe that affordable, non-competitive, localised access to spectrum for small operators both commercial and non-for-profit.

This position is supported by the recent draft Spectrum Policy published on 8 September 2022 by the Ministry of Communications & Digital Technologies[4], which clearly states that:

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[1] Hans-Martin Ihle and Dr. Will Taylor, Improving Mobile Coverage in Mature Markets. NERA Economic Consulting, 19 June 2020,
https://www.nera.com/publications/archive/2020/improving-mobile-coverage-in-mature-markets.html
[2] See for example Universal Service Obligations in South Africa (1994 - 2014) at
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4036785
[3] Second information Memorandum on the Licensing Process for international Mobile Telecommunications in Respect of the Provision of Mobile Broadband Wireless Access Services for Urban And Rural Areas Using the Complementary Bands, IMT700, IMT800, IMT2600 And IMT3500, for Public Consultation
https://www.gov.za/sites/default/files/gcis_document/202111/45496gen668.pdf
[4] Next Generation Spectrum Policy, 8 September 2022, Ministry of Communications and Digital Technologies.
https://www.dcdt.gov.za/documents/legislations/policies/file/211-next-generation-spectrum-policy.html

> *To address challenges that can impede the development of community networks including proliferation of these networks, the Regulator must develop a licensing framework for Community Networks in a manner that allows participation of new entrants, commercial viability, geographic spread of participants.*

We believe that the following steps are critical to unlocking access to spectrum for small network operators, community networks, and municipalities and to achieving digital inclusion in South Africa:

- All new and renewed national IMT spectrum licences should be framed as a "right to protection from interference" rather than the "right to exclusivity", as implied by the construction of relevant portions of the Electronic Communications Act, 36 of 2005 and the Radio Frequency Spectrum Regulations, 2015 (as amended), through the introduction of a use-it-or-share-it provision in spectrum licences. In parallel, immediate steps should be taken to introduce a shared spectrum licence aimed at access to licensed but unused spectrum;
- Immediate steps should be taken to introduce Non-competitive Local Licencing of IMT Bands. In particular, the 40MHz of 2300MHz spectrum should be set aside for this purpose;
- Clear criteria for the organisations to be eligible to use the spectrum resulting from the recommendations above;
- Capacity building programs and the development of a toolkit to encourage uptake of these new forms of spectrum access thereby lowering the barrier to spectrum use in rural and underserved regions.

While this submission is made in support of achieving all six objectives outlined in paragraph 3 (3.1.1 -3.1.6) of ICASA's Information Memorandum regarding the second phase of the IMT licensing process, our proposal is especially focused on the achievement of the following two objectives, which in our view are the highest priority:

- increasing universal access and service by ensuring rural connectivity,
- ensuring affordability of services.

## Use It or Share It Licensing: Towards a local licence regime

As noted in our previous submission[5], we applaud the fact that ICASA intends to ensure that spectrum should be shared with ECNS licensees in areas where it is not utilised, in order to stimulate competition, promote SMMEs and ensure that the radio frequency spectrum is used efficiently. However, because the proposed licences will still assign spectrum "on a national basis exclusive to the licensees", it is likely that any attempt to claw back spectrum is likely to be contested by the licensees.

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[5] Multistakeholder Response to the Second Information Memorandum on the Licensing Process for International Mobile Telecommunications in Respect of the Provision of Mobile Broadband Wireless Access Services for Urban and Rural Areas Using the Complementary Bands,IMT700, IMT800, IMT2600 And IMT3500, for Public Consultation. November 2021.
https://policy.communitynetworks.group/_media/public-consultation/response_to_second_im_from_icasa_on_ita.pdf

The key to opening up access opportunities lies in the framing of IMT spectrum licences. Nation-wide spectrum licences have historically provided a guarantee of exclusivity of spectrum access across an entire country. As such, any decision to share spectrum is then vested in the licence holder who may not have significant incentive to share spectrum. Things began to change however in 2012 with the publication in the United States of a presidential report on *Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth*[6] which proposed that the right to exclusivity in spectrum licensing be transformed into a right to protection from interference. This subtle but profound change enables the regulator to implement spectrum sharing in a manner that preserves all the rights of the primary licensee but unlocks the potential of unused spectrum[7].

An example of this kind of clause can be found in Section 4.2 of the OFCOM 800MHz and 2600MHz licence[8] which states:

> *4.2 For the avoidance of doubt the Licences will not guarantee exclusive use of the spectrum awarded. In the future we may grant additional authorisations to allow the use of all, or part, of the spectrum, including the spectrum that is the subject of this Award Process. We would develop and consult on the conditions of use under any such additional authorisations in order to manage the risk of harmful interference.*

It can also be found in the renewal of the PCS licence[9] in Mexico:

> *"8.6. Services for secondary use. The Institute reserves the right to grant other authorisations for the use, development and exploitation of the frequency bands that are the subject of this Radio Spectrum concession, or portions thereof, for secondary use. In such case, the use of the bands subject to this Radio Spectrum concession shall be protected against harmful interference. "*

Clauses such as these extend spectrum sharing beyond generic sharing frameworks as they have in the UK with the Local Licence framework and in Mexico where the regulator has set aside spectrum for underserved regions. Clauses such as the above enable a "use-it-or-share-it" approach to spectrum licensing. This contrasts with "use-it-or-lose-it" policies which have proven challenging to implement given the significant sunk costs of the licensees[10] and often amount to little more than sabre rattling.

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[6] Report to the President on Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth. Executive Office of the President. President's Council of Advisors on Science and Technology. July 2012
https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/pcast_spectrum_report_final_july_20_2012.pdf
[7] It is worth noting that Section 12(b) on page 16 of the draft of the Next Generation Spectrum Policy published on 8 September 2022 proposes this very shift to Use It or Share It spectrum licensing.
[8] OFCOM: The award of 800 MHz and 2.6 GHz spectrum Information Memorandum. July 2012
https://www.ofcom.org.uk/__data/assets/pdf_file/0022/32872/im.pdf
[9] https://rpc.ift.org.mx/vrpc//pdfs/68531_190715125729_364.pdf Original text in Spanish.
"8.6. Servicios para uso secundarlo. El Instituto se reserva el derecho de otorgar otras autorizaciones para el uso, aprovechamiento y explotación de las bandas de frecuencias objeto de la presente concesión de Espectro Radioeléctrico, o porciones de las mismas, para uso secundarlo. En tal caso, el uso de las bandas materia de esta concesión de Espectro Radioeléctrico contarán con protección contra Interferencias perjudiciales."
[10] Use It or What?, TPRC 2022, Gregory Taylor, Associate Professor, University of Calgary. 7 Sept 2022
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4178641

Use-it-or-share-it provisions are only half of the solution however. To be able to make use of these provisions, ICASA must introduce a new type of spectrum licence that makes unused IMT spectrum accessible to local operators. OFCOM are a pioneer in this space with the introduction of a license in 2019 intended specifically for this purpose[11]. It is submitted that ICASA is enabled to launch an inquiry into the feasibility of a materially similar licensing framework for implementation within South Africa.

## Non-competitive Local Licence

It is increasingly evident that national-scale spectrum licences are not enough on their own to ensure equitable and affordable access to communication for all. Until fairly recently, even if IMT spectrum were available to small operators, the requirements for operating an IMT network were beyond their reach due a combination of the high cost of network equipment and the complexities of negotiating voice interconnection arrangements with incumbent operators. However, the emergence of data-only LTE operators both in access networks and Fixed Wireless Access (FWA) networks have dramatically reduced the complexity of operating an LTE or even 5G network. Interconnection can now be handled in the same manner as any Internet Service Provider (ISP) through peering and transit agreements.

Furthermore, the cost of LTE / 5G radio technologies has plummeted bringing base station costs within the same orders of magnitude as licence-exempt wireless equipment. A highly competitive manufacturing market[12] has brought prices down to where they are within reach of small ISPs and community networks. In recognising this shift, regulators around the world[13] have been introducing new non-competitive local spectrum licence frameworks in order to unlock this potential.

Within the range of spectrum frequencies on offer in the second phase licensing process, the 40MHz on offer in the 2300MHz band holds particular promise for a local licence framework for the following reasons:

- There are a number manufacturers, such as Cambium, already producing low-cost LTE equipment for 2300MHz both for FWA and access network use. Cambium equipment is already well-known in the South African Wireless ISP marketplace.
- Thanks to Telkom's licence in 2300MHz, there is already a rich ecosystem of devices that are type-approved for the South Africa market, ranging from data dongles to CPEs to smartphones.
- 2300MHz is an excellent frequency for wireless ISPs offering a reasonable blend of capacity and range.
- 40MHz represents a modest but reasonable bet on local access licensing which will not affect the fortunes of any of the major operators in terms of excluding them from IMT spectrum frequencies. As such, this proposal is potentially uncontroversial, and should have a smooth pathway towards implementation.

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[11] Ofcom, Shared Access licence: Guidance document, 25 July 2019, https://www.ofcom.org.uk/__data/assets/pdf_file/0035/157886/shared-access-licence-guidance.pdf
[12] See Appendix A for a partial list of low-cost LTE / 5G manufacturers
[13] See Appendix B for a list of countries around the world that have implemented Non-Competitive Local Licensing of IMT spectrum

We encourage ICASA to remove the 40MHz of 2300MHz spectrum from availability to auction and immediately initiate a national consultation on a Non-Competitive Local Licence for spectrum in this frequency. We also encourage ICASA to consider the Non-Competitive Local Licence as open-ended in terms of the possible inclusion of additional frequencies that may be covered by the licence in the future.

## Eligibility

Given the recognized exclusion of SMMEs from the sector, any ECNS licence holder in this category, should be permitted to make use of the IMT spectrum referred to in the two recommendations above.

We submit that such use should be contingent upon ECNS licensees adhering to the obligations framed by the Regulations in respect of the limitations of control and equity ownership by Historically Disadvantaged Groups (HDGs) and the application of the ICT Sector Code regarding ownership by historically disadvantaged individuals.

In addition, it is recommended that special attention is given to Community Networks[14]. Whilst we would be happy to expand upon this point during the course of the public consultation process, we recommend that Community Networks be prioritised by ICASA when assigning spectrum for use by Non Competitive Local Licensees.

Community Networks are not yet defined within the broader regulatory framework and until such time as they are we would suggest that the following empowering criteria be applied when assessing the eligibility of aspirant operators in this category:

- they must either be a registered non profit company or a duly incorporated community-based organisation/NPOand should be working within a public-good operational framework i.e. profit making for shareholders should not be the organisational mission, such that their main focus is on affordability[15] and the empowerment of local communities;
- they must hold either a national or class ECS and/or ECNS licence or suitable licence exemption; and,
- they must have achieved a Broad-Based Black Economic Empowerment contributor status of Level One or Level Two.

## Capacity Building

The introduction of spectrum sharing and local spectrum licensing should be intended to empower SMMEs and community networks as well as to spur innovation. It should be noted that SMMEs play a critical role in reducing unemployment in a country. It is important to

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[14] It is worth noting that Annexure B of the draft of the Next Generation Spectrum Policy published on 8 September 2022 proposes the Licensing of Community Networks and remainder of IMT spectrum designated for SMMEs by 31 July 2023.
[15] There is emerging evidence at hand, from the Zenzeleni Network experience for example, that the model to provide internet access to poor rural persons, whose affordability is largely limited to grant income, requires the least possible set of input costs. High spectrum fees for Zenzeleni, will imply that their aim of providing monthly internet access at less than R30 per month, will be struck a blow.

recognise that the complexity of new spectrum licensing and rules may itself be a barrier to the adoption of such licences.

ICASA should consider the development of an awareness programme and an associated toolkit, to support local operators in the adoption of these licences.

# Contact Details

Please forward all correspondence in relation to this submission to:

## *Organisations*

(in alphabetic order by organisation)

- **Association of Progressive Communications (APC)** : Dr Carlos Rey-Moreno, Co-lead Local Networks: Policy and Strategy, Association for Progressive Communications. Email: carlos@apc.org ; Mobile: +27 (0) 76 986 3633
- **Mozilla Corporation**: Alice Munyua, Director, Africa Mradi. Email: amunyua@mozilla.com Mobile: +1 (503) 706-5249
- **University of the Western Cape**: Shaun Pather, Professor and Chair, Department of Information Systems, Faculty of Economic and Management Sciences, Email: spather@uwc.ac.za ; Mobile: +27 (0) 84 66 5555 6
- **Zenzeleni Networks (Non Profit Company & Public Benefit Organisation)**: Noxolo Mbokoma, General Manager. Email: noxolo@zenzeleni.net Mobile:+27 68 282 363

# Appendix A: Partial list of manufacturers of low-cost LTE / 5G radio base station technologies

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| Acceleran | https://accelleran.com/ |
| Airspan | https://www.airspan.com/ |
| Baicells | https://www.baicells.com/ |
| Blinq | https://blinqnetworks.com/ |
| Cambium | https://www.cambiumnetworks.com/ |
| CableFree | https://www.cablefree.net/ |
| CellXica | https://www.cellxica.net/ |
| CIG | https://www.cigtech.com/ |
| Eion wireless | https://www.eionwireless.com/ |
| Ericsson | https://www.ericsson.com/ |
| Fairwaves | https://fairwaves.co/ |
| General Dynamics | https://www.gd.com/ |
| Huawei | https://huawei.com |
| ip.access | https://ipaccess.com |
| Klas Telecom | https://www.klasgroup.com/ |
| Lime microsystems | https://limemicro.com/ |
| Mavenir | https://www.mavenir.com/ |
| Mikrotik | https://mikrotik.com/ |
| Motorola | https://www.motorola.ca/ |
| Nokia | https://www.nokia.com/ |
| NuRAN | https://nuranwireless.com/ |
| Octasic | https://octasic.com |
| Parallel Wireless | https://www.parallelwireless.com/ |
| Redline | https://rdlcom.com/ |
| Star Solutions | https://www.starsolutions.com/ |
| Tecore | https://www.tecore.com/ |
| Telrad | https://telrad.com/ |
| Vanu | https://www.vanu.com/ |
| VNL | http://www.vnl.in/ |

# Appendix B: List of Non-Competitive Local Access Spectrum Licensing Regulation Around the World

**United States**: Local spectrum licensing has been implemented in the 3.5GHz band with the Citizens Band Radio Service (CBRS) which contains three tiers of access licensing ranging from license-exempt to exclusive use.
https://docs.fcc.gov/public/attachments/FCC-18-149A1.pdf

**United Kingdom:** the regulator (OFCOM) introduced a Shared Access License in 2019 which offers access to spectrum available for the 1800 MHz, 2.3 GHz, 3.8-4.2 GHz, and 24.25-26.5 GHz bands.
https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/shared-access

**Germany:** In 2019, the German regulator announced spectrum sharing in 3.7GHz and 3.8GHz.
https://techblog.comsoc.org/2020/09/25/german-telecom-regulator-awards-5g-private-network-licenses-in-the-3-7ghz-to-3-8ghz-band/

**France:** In September 2019, ARCEP announced that it would be offering frequencies in 2600MHz to metropolitan businesses on a regional basis in order to improve broadband coverage for enterprises. The spectrum is to be assigned on a first come first serve basis, in the case of no competition for the spectrum.
https://enterpriseiotinsights.com/20220317/5g/france-launches-new-measures-boost-industrial-5g-adoption

**Canada:** In August 2022, the Canadian regulator began a consultation on a Non-Competitive Local Licensing Framework for radio spectrum.
https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11793.html

**New Zealand**: Radio Spectrum Management New Zealand established a Managed Spectrum Park (MSP) licence intended for local and regional services. It was designed to encourage a flexible, cooperative, low cost and self-managed approach to spectrum allocation and use.
https://www.rsm.govt.nz/licensing/licences-you-must-pay-for/managed-spectrum-park-licences