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The Independent Communications Authority of South Africa (ICASA)
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Attention:
Mr Manyaapelo Richard Makgotlho
Email: rmakgotlho@icasa.org.za

04 March 2022

Re: Response to ICASA´s Inquiry into the Long-Term Spectrum Outlook

Dear Mr. Makgotlho,

Huawei would like to thank ICASA for the opportunity provided to the company to comment on the **Long Term Spectrum Outlook**, published in the Government Gazette Number 45690 dated 24/12/2021.

Huawei is the leading supplier of infrastructure equipment for the telecommunications industry globally and in South Africa and is a major manufacturer of mobile handsets and other electronic consumer goods.

Huawei welcomes the opportunity to submit the following comments for your consideration and requests the opportunity to make an oral presentation. Please feel free to contact us if you have any questions or require any further clarification.

Yours sincerely,

Mr. Musa Ngobeni — Date: 04/03/2022

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Comments from Huawei on ICASA's Consultation on the Long Term Spectrum Outlook

Huawei fully supports ICASA efforts in facilitating the inquiry into the Long Term Spectrum Outlook. We provide comments on the Long Term Spectrum Outlook Questions herewith.

Consultation Questions

Q1: Please comment on whether the above captures the relevant regulatory and policy aspects of long-term spectrum planning.

Comment:

Section 2 of the notice captures very relevant policy aspects for spectrum planning. In particular, we highlight the SA Connect targets and the assessment of penetration of broadband connectivity.

- The guidelines from CRASA and the ATU recommendation are useful tools for ICASA to develop its spectrum policy.
- We recommend that ICASA considers the ITU process, in particular, we urge ICASA to take note of the additional bands that are on the WRC-23 agenda for possible IMT identification or for Mobile Services:
    - These are Agenda Items 1.1, 1.2, 1.3, and 1.5 of the WRC-23 cover these potential new bands.
- We recommend that ICASA includes the bands under consideration in these Agenda Items in its long-term spectrum planning.

Q3: Please comment on the above assessment of the status quo on broadband penetration in South Africa, and what role the spectrum may play in addressing the gaps identified.

Comment:

The assessment of broadband penetration in section 3.2 is accurate. We agree that the low level of home broadband penetration outside of Gauteng and the Western Cape is a source of concern, as well as the low internet access in rural provinces.

- While there are many reasons behind this current state of affairs the lack of mobile spectrum ranks amongst the main causes of low internet availability in rural areas.
- Additional mobile spectrum in low-frequency bands such as (700 MHz and 800 MHz) would help alleviate this.
- In addition, additional spectrum in mid-frequency bands (between 2 GHz and 7 GHz) would support the deployment of fixed wireless access in urban and suburban areas without fibre coverage.

Q4: What future changes, if any, should ICASA examine about the existing licensing regime to better plan for innovative new technologies and applications and allow for benefits that new technology can offer, such as improved spectrum efficiency?

Comment:

A key element of 5G systems is the use of active antennas. These antennas have electronically steered and formed beams, which vary their pointing and gain very rapidly according to the needs of the service.

- The regulatory limits for emissions of this type of antennas should be specified in terms of Total Radiated Power (TRP) instead of the traditional Effective Isotropic Radiated Power (EIRP) limits, as EIRP limits are too restrictive and do not account for the fact that, although instantaneous power can be very high, on average the power radiated in any particular direction is low.
- The TRP is the approach followed by CEPT and other regulatory authorities. We recommend that ICASA follows that route for the technical conditions of IMT licenses in the mid and high-frequency bands.
- From the current ICASA RFSAPs, there is a maximum radiated power limit of 61dBm/5MHz EIRP. However, we see that the regulatory regime in CEPT is as follows:

  - CEPT ECC Decision (11)06[1] which contains the harmonized technical conditions for use of 3400-3800 MHz, specifies all transmitter requirements for AAS in terms of TRP. In addition, it does not include an in-block power limit.
  - ECC Report 281[2] notes that if administrations wish to introduce an in-block limit, then a value should not exceed 68dBm/5MHz EIRP per antenna for non-AAS and 47dBm/5MHz TRP for AAS may be applied.
- In the light of this, it would be prudent for ICASA to reconsider its position on the use of the EIRP metric in the AAS requirements and conduct further research into recent global developments.
- We would also suggest that the definitions of "maximum radiated power limits" be updated as above in the related Radio Frequency Spectrum Assignment Plans (RFSAPs) of IMT licenses in the mid and high-frequency bands.

Q11: How should demand for commercial mobile services and IMT in the next few years be determined? What traffic model should be used in South Africa for traffic demand expectations? What are your comments on the spectrum requirements set out in Table 2? What are your views on using the Recommendation ITU-R M.1768-1 methodology to forecast IMT spectrum demand in South Africa? Please complete the input parameters in the attached spreadsheet for the market study information needed to apply the Recommendation ITU-R M.1768-1.

Comment:
The demand for mobile services is subject to a large number of variables and is, therefore, difficult to determine. Several forecasts can be used as a reference, such as the GSMA Mobile Economy reports and ITU-R Report M.2370.

- The first wave of 5G is being deployed in SA in the C-band for FWA, however, the spectrum will not be enough to sustain capacity demand in SA between 2023 and 2030.

[1] https://docdb.cept.org/download/1531
[2] https://docdb.cept.org/download/3419

The following qualitative factors are important to understand the future IMT traffic demand in SA:

- Globally the 5G penetration is expected to grow very fast to reach 1 billion 5G connections globally in 2022 and 2 billion in 2025 (The GSMA Mobile Economy 2022[3])
- The average mobile traffic per subscriber is expected to also grow up to 257 GB/month/subscriber (ITU report M.2370[4]) supported by unlimited data plans and better 5G performance.
- Rural areas in SA would benefit from FWA connectivity to bridge the digital divide in a cost-efficient manner compared to Fiber + Wi-Fi.
- Uniform/continuous high capacity coverage cannot be delivered citywide and on motorways in a cost-efficient manner with mmWave (high capacity in hotspots) and cannot be served by low bands (large coverage but not enough capacity to serve the target obligation).
- As acknowledged by ICASA in section 3.2 of the consultation, the fixed broadband penetration is low in many locations in the country with this trend not expected to change in the short term.
    - As a result, many SA consumers are likely to rely on mobile broadband for connectivity at home. *This is what we call "Wi-Fi on-loading" as opposed to "Wi-Fi offloading" where traffic from mobile terminals is carried over Wi-Fi and fixed broadband.*
    - We expect Wi-Fi on-loading to continue to grow in SA as the capabilities of mobile networks improve.

GSMA´s report on "Estimating the mid-bands spectrum needs in the 2025-2030 time frame"[5] provides a good approach to calculating traffic and the resulting spectrum needs.

- This report takes the IMT-2020 requirements as starting point, notably the 100 Mbps user experienced data rate.
- The report then considers how the data rate can be fulfilled in several urban areas in the world, including Johannesburg.

[3] https://www.gsma.com/mobileeconomy/wp-content/uploads/2022/02/280222-The-Mobile-Economy-2022.pdf
[4] https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2370-2015-PDF-E.pdf
[5] https://www.gsma.com/spectrum/resources/5g-mid-band-spectrum-needs-vision-2030/

- The report shows that the spectrum needs in Johannesburg in the mid-bands would be between 1690 and 2010 MHz, including existing and scheduled assignments.

We think that this GSMA report provides one of the best approaches to estimating spectrum requirements for 5G alongside the ITU Recommendation and urge ICASA to reference it.

Q14: Is there a demand for more flexible frequency licensing and frequency assignment/allotments processes on a regional basis required to complement the national frequency licensing and frequency assignments/allotments in the next 10 to 20 years?

Comment:

We do not think that regional assignments are a good solution for IMT spectrum for South Africa.

Regional licenses have significant disadvantages as follows:

- Regional licenses require buffer zones at the boundaries to avoid co-channel interference between users on each side which multiplies with smaller divisions. There would be an additional burden for ICASA to define, issue, and manage licenses and for the operators to plan and run networks. Additionally, seamless coverage along transport paths (rail, roads) becomes complicated.
- Regional licenses do not have a good track record whereby past initiatives to allocate spectrum licenses on a regional or local basis have not been very successful (e.g. 3.5GHz bands around 10 years ago in some countries). Two recent C-band auctions (Austria, Ireland) proposed regional licensing across the whole band but have ended up with national licensing except a small part of the band.

Q15: Are there any other frequency bands that should be considered for release in the next 10 to 20 years for commercial mobile that is not discussed? Provide motivations for your proposal.

Comment:

The 6425-7125 MHz band is under consideration for IMT identification at WRC-23. This is a key band for the future development of 5G and future evolutions of the IMT family of technologies. It is likely the last remaining band below 26 GHz and above 1 GHz that can be made available for IMT. Once agreed at WRC-23, we believe that countries will open this band up for mobile use in the 2024-2030 timeframe.

- We recommend to ICASA to include this band in its plans for the second part of the decade.

Q16: Which vertical markets will require the most secured licensed spectrum to overcome their current interference and congestion issues?

Comment:

The digitization drive of industrial sectors will lead to increased demand for wireless broadband mission-critical services as more production systems are automated. Most of these new applications are required and deployed in areas where is it not feasible to make use of alternative fixed broadband infrastructure.

The vertical industries that might be considered to require the most secure spectrum include:

- Transport Industry (e.g. ports, rail, etc.)
- Government services and public safety (e.g. police, ambulance, fire, etc.) - this is critical as it is the core of national security.
- Mining Industry: Mining is a significant contributor to the country's GDP. Safety and security requirements are becoming more stringent serving as key automation drivers.

Q18: What are your views on reallocating the following bands for IMT over the next years? 44 Table 3: List of possible future IMT bands (please supplement or delete as your organization considers reasonable).

- 450-470 (20 MHz)
- 617-698 (70 MHz)
- 1 427-1 518 (91 MHz)

- 1 710-2 025 (315 MHz)
- 3 300-3 400 (100 MHz)
- 3 400-3 600 (200 MHz)
- 3 600-3 800 (200 MHz)
- 4 800-4 990 (190 MHz)
- 24 250-27 500 (3250 MHz)
- 37 000-43 500 (6500 MHz)
- 45 500-47 000 (1500 MHz)
- 47 200-48 200 (1000 MHz)
- 66 000-71 000 (5000 MHz)

Comment:

Our views are as follows:

- 450-470 (20MHz): We agree with the allocation of this band but we note that the ecosystem for consumers is very limited.
- 617-698 (70MHz): We agree that ICASA should consider options for this band in the long term.
- 1 427-1 518 (91MHz): This band provides additional capacity and there is a relatively good SDL ecosystem already, we suggest IC consider release with a band plan that supports SDL in the short term and TDD in the long term.
- 1 710-2 025 (315MHz): We recommend that ICASA maintains the current band plans for 3GPP Band 1 (2100 MHz) and Band 3 (1800 MHz).
- 3 300-3 400 (100MHz): ICASA has indicated that it intends to proceed with the RFSAP for this band. We support this.
- 3 400-3 600 (200MHz): This band is part of the upcoming award. We strongly support the release of 5G Technology.
- 3 600-3 800 (200MHz): This band should be considered for 5G as soon as possible. It is a key 5G band, in use in Europe, the US, and many other regions, with a very large ecosystem available.
- 4 800-4 990 (190MHz): This band is identified for IMT in South Africa. Equipment availability is limited, but we recommend ICASA to consider it for future release.

- 24 250-27 500 (3250MHz): This band is identified for IMT in South Africa. There is a good and growing ecosystem that can be used for hot spots and FWA. However, we recommend ICASA to consider the situation of existing fixed services use of the band and the considerable potential introduction of IMT.
- 37 000-43 500 (6500MHz), 45 500-47 000 (1500MHz), 47 200-48 200 (1000MHz), 66 000-71 000 (5000MHz): These mmWave bands should be considered in the long term.
- In addition to the bands listed above, we emphasize the importance of the 6425-7125 MHz block for the second phase of 5G introduction in the 2025-2030 timeframe.

Q20: Provide your support or reasons for objections on the bands being considered internationally for fixed applications. Please provide a list of such bands for potential fixed use.

Comment:

The traditional bands (7/8/11/13/15/18/23/38GHz) and E-band will remain the important frequency bands for fixed applications.

- It is suggested those bands could be continually used by the fixed applications bands such as 7/8/11GHz as they can be used for long-distance backhaul.
- Bands such as 13/15/18/23/38GHz can be used for the Access link and the 80GHz can be used by the E-band for 5G backhaul.
- Considering the continuous evolution from 5G to 6G in the future, it is not recommended that new fixed links be deployed in the band identified or considered for identification for IMT e.g., 6GHz and 26/28GHz.
- For existing fixed deployment in those bands, gradual re-farming is recommended e.g., upgrading the fixed links in urban areas to other backhaul frequency bands as a first step.

Q21: Are the spectrum allocations comprehensive enough for spectrum demand projections for fixed services in South Africa for the next 10 to 20 years?

Comment:

Now that the 5G is widely deployed in the world ETSI mWT ISG reports[6] that the capacity needs

[6] https://www.etsi.org/deliver/etsi_gr/mWT/001_099/012/01.01.01_60/gr_mwt012v010101p.pdf

of a backhaul network in the N 5G mature era will reach 10Gbps to 20Gbps.

- 5G Backhauling: Inside today's fixed spectrum allocations E-band (71-76 GHz, 81-86 GHz) could provide the highest transmission capacity. At its highest performance, the E-band system could fulfill the above-mentioned 5G backhaul capacity requirement of 10-20Gbps.
- 6G Backhauling: It is expected that 6G will be deployed increasingly across the globe from 2030 onwards. 6G will have a much higher user access speed than today's 5G, resulting in a much higher bandwidth requirement for backhaul networks than 5G. As a result, more spectrum for backhaul is required in the future to meet the 6G capacity needs which must be considered from now.

Q22: Is there a demand for more flexible frequency licensing and frequency assignment/allotments processes for fixed services on a regional basis required to complement the national frequency licensing and frequency assignments/allotments in the next 10 to 20 years?

Comment:

If frequency is allocated by block without sharing use there would be no interference between service providers. The single service provider that uses the block can optimize the planning and the frequency band reuse. At the same time, the process of frequency application from the service provider would be significantly simplified. The following must be considered:

- For low traditional bands in the 7-13GHz range the number of 28MHz channels is insufficient to give a minimum block to each operator.
  - There is only 8*28MHz in 8GHz and 10*28MHz in 7GHz preventing each operator from achieving 4*28MHz. We, therefore, suggest allocating an individual license only in 7-8GHz.
  - Moreover, these frequency bands have a narrow T/R separation, so different hardware is used for each channel; this condition implies a high percent of hardware changing in case of frequency re-allocation.
- For the mid traditional band in the 15-38GHz/80GHz range there is enough spectrum to allocate the minimum channel spacing to each operator.

Q23: Are there any other frequency bands that should be considered for release in the next 10 to 20 years for fixed services that are not discussed? Provide motivations for your proposal.

Comment:

As noted in our response to Q21, much higher bandwidth is needed for 6G backhaul networks in the coming 10 to 20 years.

- It is recommended that the W-band (92-114.5 GHz: 92-94 GHz, 94.1-100 GHz, 102-109.5 GHz, and 111.8-114.25 GHz)/D-band (130-174.8 GHz: 130-134 GHz, 141-148.5 GHz, 151.5-164 GHz and 167-174.8 GHz) is used to meet this requirement, as W/D-band possesses a total of 17.85GHz and 31.8GHz spectrum bandwidth respectively.

Q24: Will the demand for commercial mobile, license-exempt, satellite, or fixed wireless services/applications impact the demand for the backhaul spectrum? If so, how and which of these.

Comment:

Yes, we notice that the trends in other radio services will have an impact on the demand for the backhaul spectrum.

Mobile IMT was identified in multiple mmw bands at WRC-19, including 26GHz, 40GHz, and 60GHz. Many countries have started their plan in 26GHz for IMT, therefore the use of 26GHz for backhaul is decreasing.

- Similarly, the 6 GHz (6425-7125 MHz) is under the WRC-23 AI 1.2 for IMT identification.
- The mid-band for IMT mobile can provide a good balance between capacity and coverage (which cannot be provided through mmw band), thus the mid-band for IMT plays and will continue playing an important role.

We strongly encourage South Africa to support 6GHz for IMT in WRC-23 AI 1.2, while we note that the band is currently used for backhaul in South Africa.

6GHz is used in part for short links within urban areas with another portion being used for long links in rural areas.

- Considering that IMT mobile normally starts deployment in urban areas, it is suggested that

those backhaul links are upgraded in urban areas to other backhaul frequency bands.

- This is also a better way to utilize the spectrum with low-frequency bands being used to provide long-distance links and high-frequency bands being used for short-distance links.

We noticed that ICASA set up a minimum transmission distance for many backhaul frequency bands and complement ICASA for this approach. We encourage the Regulator to keep this requirement as:

- We have seen that some regions/countries are also considering allocating the 6 GHz band to license-exempt use even if backhaul is an incumbent service - care must be taken to protect the incumbent backhaul use.
- The total amount of license-exempt devices might be massive with uncontrolled use (use in outdoor environment and mobility) possibly causing interference to backhaul links. There are studies (both lab test and field test) showing such interference from license use to backhaul links.

It is suggested that a comprehensive study be carried out in order to protect backhaul use when considering allocating the 6GHz band for license-exempt use.

Q25: Are there adequate spectrum allocations for video backhaul for broadcast and Security Services in South Africa? What is the realistic demand for these services in the next 10 to 20 Years?

Comment:

Live video and security services will gradually become the main traffic of the network requiring larger transmission capacity. Currently, there are some bottlenecks in the spectrum in South Africa.

- In the next 10 years 56MHz is suggested for release in 13~38GHz, and 112 MHz should be released in 18~38 GHz while E-band needs 1000MHz channel spacing.
- In the next 10~20 years the D-band and W-band should be released to meet future requirements.

Q26: How much will transmission technology improve the volume of traffic in the next 10 to 20 years?

Comment:

There are improvements in the fixed links technology that will significantly increase capacity:

- Bigger Bandwidth: 112MHz channel spacing that supports from 18GHz to 38GHz could support 1Gbps per channel.
- XPIC: The cross-polarization interference cancellation (XPIC) technology is used together with the co-channel dual-polarization (CCDP) technology.
- The application of the two technologies doubles the transmission capacity with channel conditions unchanged with single frequency resource.
- Carrier Aggregation (CA): CA aggregates multiple dispersed channels to provide a larger logical bandwidth, catering for large-capacity microwave transmission on future 5G networks. CA that aggregates n channels is called nCA configuration. For example, the 2CA configuration means that two channels are aggregated into one channel. 2CA configuration is equivalent to 2+0 configuration.
- MIMO: MIMO uses space multiplexing to improve the transmission rate of the system. Space multiplexing is a method that divides data to be transmitted into multiple data streams and then transmits them from different antennas. The application of the MIMO technology makes space a resource for improving communication performance and can increase the coverage range of a wireless system Spectrum efficiency is also improved: within the same bandwidth, one frequency can provide two or four channels, thus doubling the spectrum utilization.

Q27: What and how will technology developments and/or usage trends aid in relieving traffic pressures and addressing spectrum demand for backhaul services, when are these technologies expected to become available?

Comment:

The Full-Duplex technology in W/D-band could relieve the traffic pressures, by using radio in the same band and with the same polarization to provide simultaneous bi-directional communication, and then it could double frequency efficiency than that of traditional FDD and TDD.

- It is suggested that ICASA considers Full-Duplex as an expansion to TDD systems, or in a brand new band without any existing deployment to avoid interference to existing FDD systems.
- As of today, there are rarely TDD systems deployed, so it is estimated that Full-Duplex technology could become available together with the W/D band system when W/D band systems are used.

Q28: How much bandwidth for backhaul will be saved due to the deployment of fibre networks in South Africa for the next 5, 10 to 20 years?

Comment:

According to the GSMA Spectrum for Wireless Backhaul report[7] the number of macro/micro base stations that use a microwave for backhaul will exceed 60% by 2027. Microwave will still be the main backhaul technology for mobile broadband in the future through the rate of fibre to the site will increase slowly in the future. However, the traffic of future 5G/5.5G/6G networks are expected to see significant growth, much higher than seen with current networks.

- Higher traffic per microwave link requires more frequency resources to backhaul transmission.

Q36: What will impact the demand for these services/applications in the coming 10-20 years? What is the realistic demand for these services in the next 10 to 20 years? Are there adequate spectrum allocations for PPDR services in South Africa?

Comment:

Safety and security issues are becoming more complex as criminality remains a prevalent threat, along with the increased frequency of natural disasters, outbreak of diseases, isolated occurrences of human-induced disasters, and terrorism. To enable the agencies to navigate these increasing complexities through mitigation and/or timely response, the use of advanced technology becomes invaluable. Application systems such as AI-based surveillance and facial recognition have become more prevalent and these require mobile broadband platforms as an

[7] https://www.gsma.com/spectrum/wp-content/uploads/2021/02/wireless-backhaul-spectrum.pdf

enabler for effective collaboration. PPDR mobile broadband spectrum has a significant socio-economic value ranging from crime prevention and response to disaster management. These include:

- ***Crime reduction***: Severe crime impacts the GDP of cities and ultimately the country. Considering public expenditure on policing, justice and prison services is already high, repair costs for asset damage following criminal activities and unrest add to this cost burden. There is also the element of lost productivity caused by crime with its actual economic costs that must be considered when criminal activities cannot be stopped in time or prevented.
- ***Efficiency increase***: Mobile broadband service enables full situational awareness for the commander and first responders, to improve the productivity of police forces, reduce emergency response time or avoid human intervention on incidents.
- ***Saving lives and assets in disasters and accidents***: A national-wide dedicated PPDR broadband wireless network is a core requirement for national security. A multi-agency approach is recommended to allocate the PPDR spectrum and deploy the network for several important government departments. This renders PPDR spectrum all the more important to support a more effective and economic approach to public protection and disaster management.

Normally 2x10MHz spectrum is needed for PPDR service. If dedicated spectrum is not available in adequate quantities, a hybrid network may be considered. This will require that the essential or top priority service be kept on 2x5MHz dedicated spectrum and network while other regular and bandwidth costly services are carried by the public network as a supplement.

The needs in the handling of events related to PPDR more efficiently and more effectively have boosted the development of broadband applications. The broadband services at its initial stages focused more on the convergence of services enabling real-time mobile video, voice, and data applications greatly improving the effectiveness and efficiency of response and reaction actions. However, the development towards intelligent cognitive systems is inevitable, which entails the creation of an integrated system capable of autonomously acquiring sensor and social interaction data and applying the cognitive processes of thinking, recognizing, remembering, judging, and problem-solving to constantly improve its performance in every domain which will encompass

the effectiveness and efficiency on prediction and prevention. This entails the use of an intelligent edge as well as shared data and virtual resources, hence the need for broadband mobile last mile connectivity is expected to continue to increase.

Q37: Can mobile broadband currently be used for PPDR purposes? If not, will this be possible in the future with better quality of service and lower prices?

Comment:

Mobile broadband is increasingly essential to PPDR. In the public safety area, command systems are undergoing revolutionary changes driven by technologies, such as big data, cloud computing, and artificial intelligence. Command systems that focus on voice dispatching services cannot cope with increasingly severe security threats. On the other hand, the narrowband system is coming to the end of its lifecycle so it is no longer worthwhile investing too much in legacy technologies.

Currently, the mobile broadband technology for PPDR is very mature with mission-critical services having been standardized in 3GPP from R14 in 2017. There are many countries deploying national-wide public safety networks with dedicated spectrum including the USA, Korea, Egypt, Pakistan, Thailand, etc.

Public Protection and Disaster Relief (PPDR) includes police, defense, fire, medical rescue, and ambulance service. The segment key driver for safety and security in civil society. Their services require high availability, elevated QoS (Quality of Service), and prioritized access as well as special call setups such as group communications and push to talk, high security, and performance. Comprehensive coverage is critical as the PPDR services are intended to be universal.

Public safety threats are multidimensional encompassing crime, natural disaster, terrorism, health outbreaks, and public disorders. These cut across all physical and virtual boundaries (i.e. across infrastructure, departmental, jurisdictions or services, and more). The coverage needs to, thus, be pervasive while mobile network coverage rollout is based on business factor dimensions.

Therefore, mobile networks currently would not be suitable for PPDR services mainly because of a lack of guarantee of service which is a critical requirement. In addition, resilience required to ensure the PPDR communication system is operational, even in the event of a catastrophe, is not currently inbuilt in the public mobile broadband operator networks.

In the event the QOS is improved, the consideration for the exclusive use of PPDR services on mobile networks would not be recommended as there may be sensitivity issues regarding the security of information/data and control of the network. Also, the use of the mobile networks limits the agility in the deployment of new, as well as customized services, required in agencies' operations. However, their operations will continue to leverage the mobile network operators but will not eliminate the need for dedicated networks.

Q38: Are there any reasons to consider further spectrum from broadcasting in the band 470MHz to 694MHz to public protection and disaster relief (PPDR) services in the next 10 to 20 years?

Comment:

There is the diversity of the PPDR agencies and have at times different operations requirements to date generally they have deployed different networks which is the case e.g. defense (army, navy, and air force) and police (metro, national). This requirement might still exist which entails more spectrum being needed for government services.

Currently, since the sub 1GHz PPDR spectrum is too busy to allocate 2x10MHz for a nation-wide PPDR network we would encourage ICASA to allow more PPDR spectrum for PPDR users:

- ***The band 470 to 694MHz has the opportunity to be an international PPDR spectrum.***
- TCCA and some European countries are pushing this in WRC-23 with the hope that this spectrum can be allocated for PPDR in Region 1 before 2030. If this materializes, PPDR users in South Africa will be able to share the industry ecosystem with Europe in the future.