



CITY OF CAPE TOWN
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STAD KAAPSTAD

INFORMATION SYSTEMS & TECHNOLOGY
TELECOMMUNICATION BRANCH

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Attention:

Mr Manyapelo Richard Makgotlho
Independent Communications Authority of South Africa

E-mail: rmakgotlho@icasa.org.za

Dear Sirs

COMMENT FROM THE CITY OF CAPE TOWN ON THE "INVITATION FOR COMMENTS ON THE DRAFT RADIO FREQUENCY MIGRATION PLAN 2018"

Draft Radio Frequency Migration Plan 2018

The City of Cape Town Telecommunications Branch welcomes the opportunity to respond in writing to the above invitation in respect of the draft Radio Frequency Migration plan 2018

The City of Cape Town Telecommunications Branch believes that the Department of Telecommunications and Postal Services and ICASA have not fully focussed their mind to the allocation and issuing of sufficient radiofrequency spectrum for the non-commercial use by the law enforcement, emergency services and disaster management agencies for Public Protection and Disaster Response (PPDR). The City is increasingly concerned that either the importance of such allocation has not been brought to your attention, or it is not being addressed with sufficient urgency.

Government policy¹ has stated its intention to make such an allocation since as far back as 2010. Yet eight years later, no practical progress has been made.

The municipalities of Cape Town, Ethekwini, Ekurhuleni, Johannesburg, Tshwane, and Nelson Mandela Bay, together with the South African Police Service (SAPS) and the Department of Defence have formed a working group to cooperate on matters of mutual interest related to public protection and disaster relief (PPDR). Our collective concern is that without reserved/licenced/dedicated broadband spectrum, it is not possible for public safety and security agencies to have inter-operable, dedicated mobile broadband communications for their day-to-day lifesaving, security, emergency, and disaster-related operations. The lack of focus on allocating spectrum for this purpose means that important public security and safety priorities are being overlooked, and the public interest is being neglected.

¹ Radio Frequency Spectrum Policy for South Africa (2010)

In support of our request for the allocation of suitable spectrum for PPDR purposes, I here summarise the motivation, and our current understanding of how these issues are impacted by the draft Radio Frequency Migration Plan

Motivation for the allocation of high demand spectrum for PPDR purposes

Mobile broadband technologies have provided a way for municipalities to better address the problems of crime and compromised public safety through the better collection and use of data, and the coordinated deployment of field staff and other resources. The application of these technologies for PPDR purposes requires national, local and provincial government authorities to have access to secure wireless networks. This, in turn, requires the allocation of licensed spectrum, both appropriate radio frequency and sufficiently wide wavebands. To achieve this objective, the Public Sector require sthe following:

Access to a secure, high-availability private wireless network for public safety and disaster management. These networks can carry both voice conversations and data applications, and so greatly add to the effectiveness of PPDR agencies.

Private secure wireless communication technologies to support mobility applications such as video streaming from field officers or vehicles directly to command and control centres and/or other field officers. Such technologies are already widely used in other countries.

Wireless communications for Public safety agencies to protect property and help save lives. The existing TETRA systems deployed at various Municipalities and by SAPS were designed for voice applications and can only cater for limited data applications such as messaging, and the frequency band that it uses, can only be used for voice communications; other applications that can use low frequency "narrow band" spectrum have a limited data carrying capacity and so cannot be used for streaming video and other similar purposes.

The use of commercially available mobile broadband LTE services is not suitable for PPDR purposes, for the following reasons:

- **Availability:** PPDR networks require system availability of 99.99%. This level of availability cannot be provided by commercial networks, due to the high cost incurred for providing such services to a relatively small user group.
- **Capacity:** PPDR networks need to have dedicated capacity that is available for use during emergencies. When such events occur, commercial systems are typically overloaded, as commercial systems are designed for average acceptable use - rather than for peak use – so as to be financially viable.
- **Priority:** In an emergency, PPDR network users require the highest order network priority. Commercial networks cannot offer this, as that would mean moving all other users off their networks during emergency situations.
- **Coverage:** PPDR networks require full coverage and equivalent services over the total area of operation, including remote areas. Commercial systems are designed to scale with demand so as to maximise profitability, with the result that low density, low demand areas are only provided with a lower quality of service.

Risk: The use of commercial networks for PPDR purposes during emergency situations is a significant risk, as several international incidents have shown. For example, in the USA, during a recent emergency triggered by a bomb blast, the commercial mobile networks were shut down to prevent detonation triggered by mobile phone. Any PPDR services on these commercial networks would thus have been incapacitated. Furthermore, if municipalities become obliged to source their mobile broadband capabilities from telecommunications companies, then they will have to pay commercial rates.

This would put municipal PPDR agencies in the position of having a small number of suppliers dictate to them the price, quality, security and terms of a capability essential to their public safety functions. Furthermore, the service from a particular supplier may not be renewed after every contract period and this will result in a massive infrastructure change for PPDR agencies. The only way to avoid this is for municipalities to have dedicated spectrum. Further, a purely market-based system for spectrum management would lead to a situation where important public responsibilities which lie exclusively with local and provincial government, are priced out for their use as an essential resource for sensitive and life-saving communications.

Municipalities are experiencing densification arising from urbanisation and population growth - increasing the impact of potential disasters and social unrest². Combined with increases in crime, the ability of public protection and disaster response agencies are severely hampered without suitable technology support.

In today's urban environment, safety & security and other related PPDR agencies have a critical need for secure, dedicated wireless communications if they are to succeed in their daily operation to provide a high level of service. Radio frequency spectrum is a "public good", but whilst the unavailability of suitable spectrum persists, then the capability of municipalities to fulfil their obligation to provide effective PPDR services is severely hampered, which is far from the public interest. It is worth stating that the very use of spectrum by PPDR results in huge benefits to the public, society in general and governments, as a number of cost/benefit studies by reputable international institutions and economists have demonstrate. For example, the London School of Economics found that on a cost benefit basis at least 20 MHz of spectrum is necessary for public safety.³ This study also confirmed the significant return on investment to society from the allocation of the necessary spectrum for these "public good" purposes.

In general, public safety issues address national safety and security issues, therefore our response to the migration proposed Draft Radio Frequency Migration has to be viewed and considered in the context of the enabling national security. The focus would be mainly to the band that affect PPDR deployment and operations. That are highlighted in the sections below

1) 380 – 400 MHz (section 4.10.10)

The 380 – 400 MHz band is assigned for PPDR and PMR services. Previous publications note the use of and deployment of technologies such as TETRA are under consideration for PPDR services.

The City is concerned that ICASA intends to designate the sub 400 MHz bands for narrowband (voice) PPDR usage. The City currently has spectrum in the 420MHz range, using TETRA, and migration to the lower band is costly and potentially problematic (see below). The rationale is that this band is used by SAPS and hence may not be usable by municipalities.

1. 410-430 MHz (section 4.10.11)

ICASA plans to migrate existing government and mobile data users out, and to reserve the band for "Public Digital Trunking". ICASA should also consider technology neutrality in this band, in particular the possibility to deploy broadband mobile networks driven by the applications encompassing video data and voice. The City is concerned that ICASA intends to designate the sub 400 MHz bands for narrowband (voice) PPDR usage. The City currently has spectrum in the 420MHz range and any migration to a sub 400MHz band has two complications:

- (1) the cost of migration in the band plan affects the City's current safety and security operations; band migration will most likely involve re-planning of coverage and high site locations and changing the radio infrastructure in the City. This may be considered as fruitless and wasteful expenditure as the City has invested significantly in its current Tetra radio infrastructure;
- (2) The South African Police services currently operate in the sub 400MHz band range and have previously prevented the City from operating the same range for obvious logistical and security

² "South African Crime Quarterly", Institute for Security Studies, 2018

³ "Socioeconomic Value of Mission Critical Mobile Applications of Public Safety in the UK: 2x10MHz in 700MHz" (Dr Alexander Grous, London School of Economic and Political Science, November 2013) available from www.eprints.lse.ac.uk

issues. It therefore needs to be recognized that Municipalities need spectrum that does not overlap with SAPS in this band.

2. 694 – 790 MHz

The ongoing efforts to switch over analogue TV and to clear the 700 MHz for mobile use. We have noted that WRC 15 and NRFP 2018 makes provision for PPDR broadband spectrum in this band. The authority should consider the current diverse public safety challenges and prioritise urgent provision and allocation of PPDR broadband spectrum of 20MHz (10+10) to be used for public sector PPDR. The allocation of sufficient spectrum for public protection and disaster response requirements. The City is aware that the Communications Regulations Association of Southern Africa (CRASA) issued a "Framework for Harmonisation of Frequencies for Public Protection and Disaster Relief (PPDR) In SADC "in 2010 and has made recommendations that 5+5 MHz of radiofrequency spectrum be made available for PPDR purposes in the 694-790MHz band.

This bandwidth allocation is wholly inadequate for multi-agency PPDR and underestimates the growth in bandwidth requirements. PPDR spectrum and bandwidth must be sufficient not only for use by municipalities, but also be the SAPs, provincial disaster management, and various rail and road agencies.

The City, with the support of the PPDR Working Group, therefore recommends that a bandwidth of 20MHz (10+10MHz) should be set aside specifically for PPDR purposes.

Proposed way forward

The ability of South Africa's public sector bodies to deploy modern Public Protection and Disaster Response networks to support and better enable their obligations to the citizens of South Africa is under the control of the Department of Telecommunications and Postal Services, in terms of the policy environment and ICASA – in terms of licensing and spectrum management.

Given the growing importance and urgency of Public Protection and Disaster Response, we request that the draft Frequency Migration Plan 2018 recognise this need and deal with it accordingly.

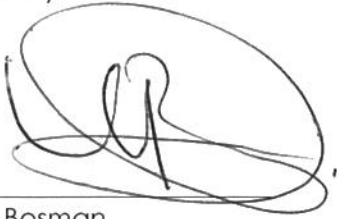
ICASA should cater for the allocation of broadband PPDR spectrum

Given the lack of a definitive allocation in the National Frequency Plan, ICASA has chosen to delay its consideration of the suitability frequency bands 600-700MHz and 700-800MHz for PPDR purposes until after the ITU decides to implement the resolutions of the World Radio Communication Conference (WRC-15). This is in spite of the fact that the 2010 policy from which this Plan is derived (the Radio Frequency Spectrum Policy for South Africa) included recognition of the needs of PPDR, by providing for the allocation of spectrum for 'safety of life' services.

Whilst it is appropriate and correct for ICASA to act in accordance with the decisions of the ITU (of which the Republic of South Africa is a member), we see no need to delay consideration of the relevant ITU recommendations, or the design of an appropriate allocation and application process. We suggest that these should instead be done now, so that once the recommendation of the ITU is approved in 2019, then the allocation and application process can begin immediately thereafter. If the necessary consideration and planning is done now, then public sector bodies in South Africa (including the municipalities) can begin to plan for their own mobile broadband networks with some confidence as to the spectrum that they are likely to be able to use. In this regard, it is also important that the allocated spectrum is assured for use by the public sector for the long term, so that we can have certainty about the investments that need to be made.

If this is not done, then it means that the public sector safety and security agencies cannot even begin to prepare to implement wireless PPDR networks until sometime after 2022. Assuming a two-year planning and implementation process, secure mobile broadband will not then be available to I PPDR agencies until 2024/25 at the earliest.

Yours sincerely

A handwritten signature in black ink, consisting of a large, loopy 'T' and 'B' intertwined, followed by a horizontal line and a small flourish.

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Information Systems & Technology
City of Cape Town