4 March 2022

Mr. Manyaapelo Richard Makgotlho
Independent Communications Authority of South Africa
350 Witch-Hazel Ave, Eco-Park Estate
CENTURION
0144

Per Email: rmakgotlho@icasa.org.za

Dear Mr Makgotlho

RE: TRANSNET RESPONSE TO THE DRAFT IMPLEMENTATION OF THE RADIO FREQUENCY MIGRATION PLAN AND OF THE IMT ROADMAP

Transnet SOC LTD (Herein referred to as Transnet) welcomes the opportunity to respond to the draft implementation of the radio frequency migration plan and of the IMT roadmap.

Transnet will thus submit these written representations to ICASA in its capacity is a licensee of spectrum and also the holder of an I-ECS and I-ECNS licences.

Yours Sincerely
Selby Mchunu

Transnet Representative
Transnet SOC LTD.

EXECUTIVE SUMMARY

Transnet SOC is a Freight logistic company that focuses on the delivery of freight within South Africa. As the custodian of ports, rail and pipelines, Transnet's objective is to ensure a globally competitive freight system that enables sustained growth and diversification of the country's economy. Transnet wishes to give comments on the draft implementation of the radio frequency migration plan and of the IMT roadmap Government Gazette 45690. Transnet are giving the inputs as one of the users and also an impacted party for plans on spectrum allocation in the long term. Currently Transnet makes use of the 450 MHz band spectrum to run mission critical train, port and pipeline operations. Transnet also has implemented RFID technology as well as Locomotive Radio distributed power (RDP) systems. As such the impact on the spectrum allocation for the next 10-20 years has a major impact on the ability of Transnet to fulfil its given mandate. Within the questions that are in the gazette there is a sizable number that reasonably focussed on bands that are geared to commercial broadband. Transnet will thus not have a comment on the plans for usage of these bands.

Agenda 1: Please comment on whether the above captures the relevant Regulatory and Policy Aspect of Long Term Spectrum Planning?

Transnet Comment:

A. EC Act on Frequency Spectrum Matters

Transnet SOC is satisfied with Electronic Communication Act 36 of 2005 and supports Scenario Plans for Long Term Spectrum Outlook for South Africa and would like to emphasize on Section 31(4) and 34 (16) when these plans are implemented.

"*The Authority may amend a radio frequency spectrum licence-*

a) To implement a change in radio frequency plan

b) In the interest of orderly radio frequency spectrum management

c) To effect the migration of licences in accordance with a revised radio frequency plan or transition from analogue to digital broadcasting

d) If requested by the licencee concerned to the extent that the request is fair and does not prejudice other licences, or

e) With the agreement of the licencee"

"The Authority may, where the national radio frequency plan identifies radio frequency spectrum that is occupied

and requires the migration of the users of such radio frequency spectrum to other radio frequency band in accordance with national radio frequency , except where such migration involves governmental entities or organisations, in which case the Authority –

a) Must refer the matter to the Minister; and
b) May migrate the users after consultation with the Minister"

Transnet SOC would also recommend the that ICASA adopt recommendation of WRC-19 (Agenda 1.11) The Railway Radiocommunication between Train and Trackside (RSTT), and also consider, 3GPP and UIC (International Union of Railway) collaboration on the FRMCS as future of railway communication when implementing Scenario Plans.

B. National Development Plan

National Development Plan 2030 is an integrated developmental framework that give guidance to South Africa as a developmental state, and an observation was made by NDP when it comes to railway infrastructure-

"*South Africa needs reliable, economical and smooth-flowing corridors linking its various modes of transport (roads, Rail, Air, Sea Ports and Pipelines) currently, these corridors are dominated by outdated, malfunction-prone railway technology and poor intermodal linkages"* – NDP (Chapter 4, Page 160)

The NDP views the outdated technology infrastructure in the railway system as an impediment to economic growth as it causes bottlenecks in the logistics deliverables. NDP mentions Waterberg/Lephalale/Richards Bay (NorthCor), JHB/Durban (Natcor) and COEGA as areas of importance in Strategic Infrastructure Project in realizing the goals of NDP 2030.

Transnet SOC recommends to ICASA that the Scenario Plans take into cognisance the NDP 2030 goals related to railway infrastructure development, urge ICASA to allocate broadband spectrum that would lead to improved modern railway communication system.

C. SA Connect (Broadband Policy)

SA Connect main focus is to bring broadband access to under developed and deep rural areas that are underserviced. NDP 2030 envisage broadband access as tool in growing the economy and SA Connect target a broadband penetration of > 80% at speed of 100Mbps 100% at 10Mbps. Transnet SOC locates itself as a strategic partner in these initiatives as mostly its network traverses remote towns and rural areas. Transnet stands ready to ensure that its backbone can be used to ensure that the objectives of SA Connect can be achieved.

D. CRASA

NDP 2030 roadmap envisage African Union North-South Corridor that will improve intra-continental trade amongst African Countries. CRASA plays an important role in collaborative approach to regulations as trains will traverse different countries with different policy and regulation frameworks in allocation of frequency spectrum.

Transnet SOC supports CRASA as an enabler of cross-border transaction as it leads to harmonised spectrum utilisation in different countries. The harmonised allocation of spectrum will assist the organisations to benefit from the economies of scale for both network and devices in the bands identified.

E. ATU Position

Transnet supports the objectives that the ATU has developed to ensure that broadband can be extended in all the different areas. Ensuring that the spectrum allocation is transparent will go a long way in securing the timely availability of broadband for rural communities and will help the industry to enhance the spectrum usage. A clear timeline for the release of spectrum will ensure that users can plan better for migration of implementation in the identified spectrum and thus lead to reduction of project rollout to achieve harmonisation.

Agenda 2: Are there services, in addition to Broadband that ought to be considered as important for economic growth?

Transnet Comment

There are no additional comments on the services beyond Broadband. Transnet however would like to suggest that the allocation of Broadband spectrum must not only focus on commercial operators. There must be an acknowledgement that broadband can be deployed in private wireless networks as well by other licensees for purposes that are mission critical in nature (e.g. Railways , Utilities and Public safety)

Agenda 3: Please comment on the above assessment of the status quo on Broadband penetration in South Africa, and what role Spectrum may play in addressing the gaps identified.

Transnet Comment

No input from Transnet on the current status quo.

Agenda 4: What future changes, if any, should ICASA examine with regard to the existing licensing regime to better plan for innovative new technologies and applications and allow for benefits that new technologies can offer, such as improved spectrum efficiency?

Transnet comment:

Transnet would like suggest that ICASA has more active network elements that progressively checks the utilisation of assigned spectrum. This units can then feed an active database that shows the dynamic usage of the spectrum being used. The database must also include the ability for licensees to upload the current spectrum usage as and when changes are completed. This will add to the agility of the spectrum allocation process.

Agenda 5: What future emerging technologies are to be taken into consideration and which technologies will have a significant impact? When are these technologies expected to become available?

Transnet Comment: None

Agenda 6: What and how will technology developments and/or usage trends aid in relieving traffic pressures? When are these technologies expected to become available?

Transnet Comment: None

Agenda 7: Are there any IoT applications that will have a large impact on the existing licence-exempt bands?

Transnet Comment: None

Agenda 8: Please provide your views regarding the standardization of the naming of applications in the NRFP in accordance with CEPT ECC decision 1(03) approved 15 November 2001 and its subsequent revisions

Transnet Comment: None

Agenda 9: What are your forecasts for data traffic and radio frequency spectrum needed over the next 5, 10 and 20 years for each of the EFIS application layers?

Transnet Comment: None

Agenda 10: How much spectrum is allocated to each of the EFIS application layers, and what is the economic value of spectrum used in each of the above EFIS application layers?

Transnet Comment: None

Agenda 11: How should demand for commercial mobile services and IMT in the next few years be determined?

Transnet Comment: None

Agenda 12: Provide your support or reasons for objections on the bands being considered internationally for 5G commercial mobile allocations

Transnet Comment: None

Agenda 13: Are the spectrum allocations comprehensive enough for spectrum demand projections for commercial mobile services in South Africa for the next 10 to 20 years?

Transnet Comment: None

Agenda 14: 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?

Transnet Comment: None

Agenda 15: Are there any other frequency bands that should be considered for release in the next 10 to 20 years for commercial mobile that are not discussed?

Transnet Comment: None

Agenda 16: Which vertical markets will require the most secured licensed spectrum to overcome their current interference and congestion issues?

Transnet Comment:

ICASA should consider the allocation of dedicated spectrum in a coordinated manner for utilities, Railway and Public safety vertical markets. The network requirements for these solutions are more stringent as they need to provide a failsafe system due to their mission critical nature.

Agenda 17: Assuming that South Africa follows the ITU's recommendations to assign up to 1,940MHz of spectrum for IMT-2000 and IMT-advanced services, and that South Africa follows trends in Europe for potentially another 2,000 MHz of spectrum for IMT-2020, what bands would need to be freed up?

Transnet Comment: None

Agenda 18: What are your views on reallocating the following bands for IMT over the next years?

Transnet comment:

- 450-470 (20MHz)

This band can be allocated to IMT as noted from the ITU recommendation. The band offers 5 MHz band in a FDD band plan and can be used for IMT especially in rural areas. To maximise the usage of the band it would be prudent to have the sharing of the usage of the spectral.

Agenda 19: Provide your support or reasons for objections on the bands being considered internationally for 5G commercial mobile, fixed, satellite, or licence-exempt allocations

Transnet Comment: None

Agenda 20: Provide your support or reasons for objections on the bands being considered internationally for fixed applications.

Transnet Comment: None

Agenda 21: Are the spectrum allocations comprehensive enough for spectrum demand projections for fixed services in South Africa for the next 10 to 20 years?

Transnet Comment: None

Agenda 22: 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?

Transnet Comment: None

Agenda 23: 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?

Transnet Comment: None

Agenda 24: Will the demand for commercial mobile, licence-exempt, satellite, or fixed wireless services/applications impact the demand for backhaul spectrum?

Transnet Comment: None

Agenda 25: 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?

Transnet Comment: None

Agenda 26: How much will transmission technology improve the volume of traffic in the next 10 to 20 years?

Transnet Comment: None

Agenda 27: What and how will technology developments and/or usage trends aid in relieving traffic pressures and addressing spectrum demand for backhaul services?

Transnet Comment: None

Agenda 28: 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?

Transnet Comment: None

Agenda 29: What will impact on 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 Aeronautical services in South Africa?

Transnet Comment: None

Agenda 30: What will impact on 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 Broadcasting services in South Africa?

Transnet Comment: None

Agenda 31: How much spectrum should be maintained for terrestrial broadcasting in the band 470MHz to 694MHz in the next 10 to 20 years?

Transnet Comment: None

Agenda 32: What will impact on 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 Defence services in South Africa?

Transnet Comment: None

Agenda 33: What will impact on 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 Maritime services in South Africa?

Transnet Comment: None

Agenda 34: What will impact on 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 Meteorological services in South Africa?

Transnet Comment: None

Agenda 35: What will impact on 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 PMSE services in South Africa?

Transnet Comment: None

Agenda 36: What will impact on 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?

Transnet Comment: None

Agenda 37: 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?

Transnet Comment:
Current Mobile broadband is currently not geared to offer a failsafe, hardened network for PPDR purposes. Considering that PPDR does not use the service for profit, the cost of receiving such a service from MNO could potentially need to be legislated by the Authority. A better use case would be for PPDR to get its own spectrum, build networks that cover their requirements and then leverage the Mobile broadband Operators for add resiliency.

Agenda 38: 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?

Transnet Comment: None

Agenda 39: What will impact on 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 Satellite services in South Africa?

Transnet Comment: None

Agenda 40: Which applications and allocations will require the most frequency spectrum demand in the following frequency bands?

Transnet Comment: None

Agenda 41: What and how will technology developments and/or usage trends aid in relieving traffic pressures and addressing spectrum demand for satellite services? When are these technologies expected to become available?

Transnet Comment: None

Agenda 42: What will impact on 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 Astronomy services in South Africa?

Transnet Comment: None

Agenda 43: What will impact on 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 Short-range services in South Africa?

Transnet Comment:

Transnet welcomes the additional spectrum that will be used for SRDs. Transnet is also investigating new technologies that will be used on cross border interfaces.

Agenda 44: Which vertical markets will require most secured licensed spectrum to overcome their current interference and congestion issues?

Transnet Comment:

Railways and port communication requires licensed spectrum to achieve the mission critical objectives. The risk of interference with these systems can have a negative impact on the delivery of freight and that could filter to the economic growth envisioned for South Africa.

Agenda 45: How much will spectrum management and orderly frequency planning improve the interference situations in certain frequency bands?

Transnet Comment:

Spectral management will greatly assist the licensees to provide an available and reliable network for the running of mission critical services. I detailed process to sort out interference will assist the licensees if they are interfering with each other and thus enhance the usage of the spectrum

Agenda 46: Please provide input on future spectrum requirements for the different service allocations as well as the urgency for such additional frequency allocations for such a service.

Transnet Comment:

In the future there will be a need for spectrum for railways both metro and long haul based. The passenger railway market will need spectrum that can both provide the mission critical Train authorisation system and the passengers broadband needs. The freight railway system will require spectrum that is sub-1 GHz with the ability to cover rural areas for Train authorisation systems. Thus the need for broadband spectrum for logistics will be needed, a minimum of 5 MHz broadband spectrum can fulfil the use case of rural deployment.

Agenda 47: Which Service allocations require RFSAP's and for which frequency bands. Also specify the urgency for the creation of such RFSAP's.

Transnet Comment:

Service allocation: Railway freight transportation

Urgency: Immediate, since the analogue technology is obsolete

Agenda 48: Please provide your organisations strategy and suggestions on how the Authority can ensure that spectrum outlook and demand studies can contribute to stimulation of the South African economy.

Transnet Comment: None

Agenda 49: The spectrum outlook described above in Section 4, and in particular the substantial additional requirements for IMT and fixed-wireless spectrum, suggest that a number of additional bands will need to be assigned for the purposes of internet access, and incumbent users will need to be migrated out of the bands mentioned in the list on Table 3 and on any bands your organisation suggests on Table 4. What are the costs of migrating these users so that radio frequency spectrum is allocated to its highest value use?

Transnet Comment:

For vast networks the cost can exceed R800m (both network and peripherals)

Agenda 50: What would the costs of freeing up spectrum for commercial fixed and mobile use be (considering the bands mentioned above on Table 3 and Table 4)? What would the economic benefits of doing so be, in respect of increase consumer surplus, and increased producer surplus?

Transnet Comment: None

Agenda 51: Assuming that South Africa follows the ITU's recommendations to assign up to 1,940MHz of spectrum for IMT-2000 and IMT-advanced services, and that South Africa follows trends in Europe for

potentially another 2,000 MHz of spectrum for IMT-2020, what would the costs of freeing up the various spectrum bands be? In this regard, please refer to Table 3 and Table 4, as explained above.

Transnet Comment: None

Agenda 52: Due to the scarcity of high demand spectrum and the consequential fact that Spectrum Sharing in certain bands are non-negotiable, how shall you describe the best sharing conditions for the South African scenario?

Transnet Comment:

Transnet suggests that the authority implement the Licensed Shared Access (LSA) spectrum allocation process. This will require a lot more coordination on the side of the Authority but will however ensure that the spectrum is efficiently ustilised and high value is derived from it.

Agenda 53: Due to the convergence of technologies and the changes in regulatory licensing environment do you believe that certain service allocations categories will or need to change?

Transnet Comment: None

Agenda 54: What existing licence-exempt frequency bands will see the most evolution in the next five years?

Transnet Comment: None

Agenda 55: How much spectrum, and in which bands, should be made available for licence-exempt purposes (such as Wi-Fi) over the 5, 10 and 20 years? What would the costs of freeing up these bands for IMT be? What would the economic benefits of doing so be, in respect of increase consumer surplus, and increased producer surplus? Which vertical markets will require most secured licensed spectrum to overcome their current interference and congestion issues?

Transnet Comment: None

Agenda 56: How much spectrum, and in which bands, should be made available for dynamic spectrum access over the next 5, 10 and 20 years? What would the costs of freeing up these bands for IMT be? What

would the economic benefits of doing so be, in respect of increase consumer surplus, and increased producer surplus?

Transnet Comment: None

Agenda 57: What existing licence-exempt frequency bands will see the most evolution in the next five years?

Transnet Comment: None

Agenda 58: Are there any IoT applications that will have a large impact on the existing licence-exempt bands? If so, what bands will see the most impact from these applications?

Transnet Comment: None

Agenda 59: Will the trend for offering carrier-grade or managed Wi-Fi services continue to increase over the next five years? If so, will this impact congestion in Wi-Fi bands and which bands would be most affected?

Transnet Comment: None

Agenda 60: Are there specific frequency bands that will be in higher demand over the next 10 to 20 years and do you expect higher demands for spectrum in these frequency bands in South Africa? Are there any other frequency bands that should be considered for release in the next 10 to 20 years for commercial mobile, fixed, satellite, or licence-exempt that are not discussed above?

Transnet Comment: None

THE END