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26 January 2018

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Per email: rmakgotlho@icasa.org.za

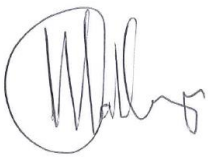
Dear Mr Makgotlho

RE: TELKOM'S WRITTEN SUBMISSION ON THE DRAFT RADIO FREQUENCY SPECTRUM ASSIGNMENT PLANS

Telkom SA SOC LTD ("**Telkom")** welcomes the opportunity to provide comments to the Authority on the draft Radio Frequency Spectrum Assignment Plan's in accordance with Government Gazette No. 41358 published 22 December 2017 (Notice No. 980 of 2017).

Please find herewith Telkom's written comments.

Yours Sincerely



Siyabonga Mahlangu
Group Executive: Regulatory Affairs and Government Relations

Submission to the Independent Communications Authority of South Africa

Draft Radio Frequency Spectrum Assignment Plans Government Gazette No. 41358 dated 22 December 2017

Telkom SA SOC Ltd
Submission date: 26 January 2018

1 Introduction

The Independent Communication Authority of South Africa (the **"**Authority" or "ICASA") published several draft Radio Frequency Spectrum Assignment Plans ("draft RFSAPs") for public consultation. Various closing dates applied to these draft RFSAPs. On 22 December 2017, in Government Gazette No. 41358, the Authority invited further comments on all these RFSAPs. The closing date for further comments to these draft RFSAPs is 26 January 2018.

On 20 October 2017, Telkom provided comprehensive inputs on the IMT850 RFSAP, published in Government Gazette No. 41082 (Notice No. 648 of 2017). Telkom will not make any further comments to this draft RFSAP in this submission.

Telkom will respond to the other nine draft RFSAPs in this written submission. Although not all these draft RFSAPs are directly relevant to Telkom and its current operations, we have nevertheless endeavoured to provide comments to all draft RFSAPs, to the extent possible, to assist the Authority in finalising these draft RFSAPs.

Telkom's submission is constructed as follows. Telkom's response to each draft RFSAP is provided as a separate Addendum numbered in accordance with the list in Government Gazette No. 41358. For each draft RFSAP, Telkom will provide general matters pertaining to that draft RFSAP followed by specific comments on same. In addition, general comments, which are applicable to most or all RFSAPs, are provided in the main part of the submission (section 3).

2 Executive Summary

Below is a short summary of Telkom's position on each draft RFSAP. These are in the order as listed in Government Gazette No. 41358.

1. RFSAP for the frequency band 75.2 to 87.5 MHz

Telkom supports the proposed change to introduce Single Frequency ("SF") and Dual Frequency ("DF") alarms and other links into part of this frequency band. Telkom made specific proposals to the draft RFSAP in an endeavour to clarify certain issues and to improve the text of the RFSAP.

2. RFSAP for the frequency band 138 to 143.6 MHz

Telkom supports the proposed change to introduce SF alarms into part of this frequency band. Telkom made specific proposals to the draft RFSAP in an endeavour to clarify certain issues and to improve the text of the RFSAP.

3. RFSAP for the frequency band 150.5 to 153 MHz

Telkom supports the proposed change to introduce SF alarms into part of this frequency band. Telkom made specific proposals to the draft RFSAP in an endeavour to clarify certain issues and to improve the text of the RFSAP.

4. RFSAP for the frequency band 156.4785 to 156.5625 MHz

Telkom is concerned that the maritime safety of life services operating in this band will not be afforded the necessary protection. Also, Telkom does not support the use of the sub-band 156.5125-156.5375 MHz for land mobile services as it has been allocated on an exclusive basis for maritime services, to protect the safety of life services. Telkom also recommends that the 50km separation distance to protect maritime services be revaluated.

5. RFSAP for the frequency band 380 to 400 MHz

Telkom supports the use of the band 380-400 MHz exclusively for Public Protection and Disaster Relief ("PPDR") and Private Mobile Radio ("PMR") for safety and security services. This use is in line with the National Table of Frequency Allocations.

6. RFSAP for the frequency band 1518 to 1525 MHz

Telkom does not support the introduction of Studio Transmitter Links (“STLs”) into this frequency band. The use of the band should be exclusively allocated for Mobile Satellite Services (“MSS”) (including International Mobile Telecommunications (“IMT”) satellite services) as frequency coordination between MSS and Fixed Services (“FS”) in the same area is not possible or feasible. Avoidance of harmful interference to MSS earth stations cannot be guaranteed if fixed links are deployed. Telkom also recommends that the current single frequency links, if any, should be migrated out of this band to make it available for long term MSS use.

7. RFSAP for the frequency band 2025 to 2110 MHz paired with 2200 to 2285 MHz

Telkom supports the Authority’s proposals to use the frequency band 2025 to 2110 MHz paired with 2200 to 2285 MHz for Point-to-point (“PTP”) links and to not allow the use of this band for high-density mobile services. The use of this band for Broadband Fixed Wireless Access (“BFWA”) is not supported at this stage. Before this band can be used for BFWA, detailed frequency coordination procedures must be prepared to ensure the continued use of the band for both PTP links and BFWA systems. This is the only band below 3 GHz available for PTP links and links from other bands must migrate into this band.

8. RFSAP for the frequency band 2285 to 2300 MHz

Telkom does not support the use of the band 2285 – 2300 MHz for IMT, Broadband Wireless Access (“BWA”) or BFWA due to the harmful interference that will be caused to the space science services operating below 2290 MHz band. Further, if this band is used for IMT, BWA or BFWA, a suitable guard band must be implemented in the band below 2300 MHz to ensure protection of Telkom’s Long Term Evolution (“LTE”) network operating in the band 2300 – 2360 MHz.

9. RFSAP for the frequency band 440 to 441 MHz

Telkom supports the use of the band 440-441 MHz for burglar alarms and security related telemetry systems. The applicability of the referenced standards in this frequency band for Low Power Wireless Access Networks (“LPWAN”) should be verified.

3 General comments applicable to all draft RFSAPs

3.1 Section dealing with "Co-ordination requirements"

Telkom is of the view that a few issues are addressed interchangeably in the section dealing with coordination, and this should be clarified.

It is indicated that "*Co-ordination is performed by the Authority during the process of assignment*". Telkom agrees with this statement but recommends that the sentence be changed to reflect the need for both national and cross-border coordination as follows:

> "*National and cross-border co-ordination is performed by the Authority during the process of assignment"*.

In the second paragraph of the section on co-ordination requirements, resolution of interference is addressed. Interference resolution could be a national or international matter. This paragraph speaks only to the national situation where two or more licensees will address interference, with the assistance of the Authority. Telkom therefore recommends the following amendment to the first sentence:

> *"In the event of any interference between licensees, the Authority will require…*"

The paragraph ends with the following statement: "*The Authority will be guided by the interference resolution process as shown in Appendix B*". The Authority prescribed procedures for the resolution of interference between licensees in shared use of spectrum in Regulation 20 ("*Spectrum Dispute Resolution in the Use of Shared Frequencies"*) of the Radio Frequency Spectrum Regulations ("RFSR"), 2015 as amended (Government Gazette No. 38641, Notice 279 of 2015). Telkom recommends that this prescribed procedure be used for resolution of interference between licensees. It is also noted that the process proposed in the draft RFSAPs and the RFSR may be in conflict. Whereas the RFSR requires the use of Alternative Dispute Resolution ("ADR") before approaching the Authority, the draft RFSAP indicates that the interference can be referred to the Authority after 24 hours. This must be addressed to ensure alignment between these processes.

The list of parameters provided in Appendix B may also be used in addition to the Regulation 20 procedure to coordinate frequencies nationally. Telkom therefore recommends that the last sentence of the second paragraph be amended as follows:

> *The Authority will be guided by the interference resolution process as prescribed in the Radio Frequency Spectrum Regulations 2015. The characteristics as shown in Appendix B must also be provided to the Authority when requesting assistance in the resolution of harmful interference".*

Telkom is of the view that Appendix B deals with international (or cross-border) frequency coordination and not resolution of interference, as indicated in its title. Telkom recommends that a new sentence be added at the end of the section dealing with co-ordination to refer the Appendix B as follows:

> *"For international or cross-border frequency coordination, the Authority will be guided by the ~~interference resolution~~ process as shown in Appendix B*".

Alternatively, the section on co-ordination could address both national and international coordination as two sub-sections. In this case the content of Appendix B should be merged with the section dealing with coordination.

Noting the above the title of this section should be amended as it addresses both frequency coordination and interference resolution:

> "*Frequency Co-ordination ~~Requirements~~ and interference resolution*"

3.2 Appendix B "Interference Resolution Process"

The title of Appendix B seems inaccurate as the appendix deals with the request for frequency coordination (before a station is deployed) and not interference resolution (which happens after the station has been deployed). Telkom recommends that the title be changed to:

> "*Appendix B – ~~Interference Resolution Process~~ Request for international or cross-border frequency coordination*"

The content of Appendix B is the same as that used for the prescribed IMT RFSAPs. References to, for example, "base station", "code" and "PCI Group" should be used with caution as they may not be relevant to all the RFSAPs. For example, "base

station" will not apply to coordination involving fixed stations and "PCI Group" is applicable only to IMT stations but not to Public Access Mobile Radio ("PAMR") and fixed stations. Having these references in Appendix B may therefore create confusion. Further, Telkom is of the view that this kind of information will be communicated to the neighbouring administration by the Authority and not by the licensee.

Telkom therefore recommends that the introductory paragraph of Appendix B be amended as follows:

> "*When requesting coordination with another administration, the relevant characteristics of the ~~base station and the code or PCI group number~~ system to be coordinated should be forwarded to the Authority, who shall coordinate the system with the Administration affected. All of the following characteristics should be included:*"

The item listed under *l*) (code group number) is applicable only to IMT stations. Telkom recommends that this item be changed as followed:

> "*l) code group number used (if applicable)*".

The issue of no reply by the other administration is addressed in the second last paragraph of Appendix B. In the last sentence, specific reference is made to "*code coordination*", which is specific to IMT stations. Many of the draft RFSAPs deals with systems other than those of IMT and Telkom therefore recommends that the last sentence be amended as follows:

> "*…deemed to have given its consent and the ~~code coordination~~ system may be put into use…*".

It is not clear to Telkom if the stipulated process proposed in Appendix B has been agreed to with our neighbouring countries. Telkom will nevertheless recommend that the process be coordinated with the neighbouring countries and, if needed, updated as required.

3.3 Use of "links" with private and communal radio repeaters

In several draft RFSAPs, the Authority indicates that SF and/or DF links are typical used in private and communal radio repeaters, to boost and retransmit weak signal across a wider area.

The Radio Frequency Spectrum Regulations, 2015 ("RFSR") defines "*Communal radio repeater station service*" as: "…*means a land mobile service installed, maintained and operated via repeater stations that are available for communal use*". The communal radio repeater service is therefore a land mobile service, which typically provides an access service throughout the base station coverage area. Per the RFSR, "*same area*" for communal repeater station means a radius of 20km around the repeater station". Therefore, SF and DF links operate under the Fixed Services ("FS") as per the NRFP and not under the land mobile service. This is important as it will impact on the coordination between the affected services noting that the coordination of mobile services is substantially different and more complex compared to that of fixed services such as PTP links. The spectrum fees calculation between these two services is also substantially different.

This potential confusion is possibly due to the interpretation of the word "link". Telkom understands the use of "link" as a point-to-point system between two specified fixed points (see many examples of the use of the word "link" in section 1.1 (Terms and definitions) in the NRFP). It seems that the word "link" is used in the draft RFSAP in the context of mobile systems to refer to the radio link between Base Station (BTX) and Mobile Station (MTX) stations. Therefore, SF and DF links are not the same as mobile MTX and BTX, which is clearly a mobile service consisting of a base station (BTX) and mobile stations (MTX). This needs to be clarified to ensure that there is no ambiguity in the use of these RFSAP. Telkom proposes that the word "link" be removed in the context of communal repeaters.

3.4 Amendments to the National Radio Frequency Plan

The process for the amendment of the National Radio Frequency Plan ("NRFP") is stipulated in section 34 of the Electronic Communication Act, Act No. 36 of 2005 ("ECA"). Section 34(16) of the ECA deals with the frequency migration of users, which migration must be in accordance with the NRFP. To this extent the definition of "radio frequency

plan" includes both the table of frequency allocations and a migration plan. The NRFP, and by implication also the migration plan, must be approved by the Minister.

In several draft RFSAPs, amendments to the currently prescribed NRFP are proposed. An extract of the current NRFP relevant to the frequency band in question is reflected in Appendix A of the relevant draft RFSAP.

An update to the NRFP was recently proposed in Government Gazette No. 40480 dated 9 Dec 2016. The updated NRFP has not yet been approved by the Minister. Also, the proposed changes, as reflected in the draft RFSAPs, were not part of the proposed changes contained in Government Gazette No. 40480, which is awaiting approval by the Minister. It is therefore not clear how and when these proposed changes will be implemented in the NRFP. In terms of section 30(2) of the ECA, the Authority must comply with, amongst others, the NRFP when licensing and assigning the use of the radio frequency spectrum. Also, in terms of section 34(3) of the ECA, "*The Authority must assign radio frequencies consistent with the national radio frequency plan for the use of radio frequency spectrum by licence holders and other services that may be provided pursuant to a licence exemption.*" (Own emphasis).

Telkom is of the view that changes, as proposed by some draft RFSAPs, must first be reflected in a new updated and approved NRFP, before the changes can be given effect. This also applies to proposals to migrate frequency users.

Telkom therefore recommends that, where the draft RFSAP necessitates changes to the current NRFP, the following change be added to the section dealing with the allocations in the NRFP:

> "*The allocation of spectrum and shared services within these bands are found in the National Radio Frequency Plan (NRFP) and an extract of the current NRFP is shown in Appendix A. Therefore, changes proposed through the RFSAP will be introduced into the NRFP, prior to the implementation of the RFSAP.*".

Since the updated NRFP has not yet been approved by the Minister, Telkom recommends that the changes, as proposed through these draft RFSAPs, be introduced in the next version of the NRFP (in accordance with the procedures contained in section 34 of the ECA).

Appendix 1 – Frequency band 75.2 to 87.5 MHz

1.1 General comments

Telkom does not make use of this frequency band has no general comments regarding the draft RFSAP.

1.2 Specific Comments

1.2.1 Section 1 "Glossary"

Some acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the RFSAP, Telkom recommends that these be deleted. These are:

"**DM RS**" means Demodulation Reference Signal

"**PPDR**" means Public Protection and Disaster Relief

1.2.3 Section 2 "Purpose"

It is indicated that DF and SF links are used in private and communal radio repeaters. See Telkom's comments in section 3.3 above regarding the use of FS links with communal repeaters.

The draft RFSAP indicates that the "*…requirements for the utilization of the frequency band 75.2 to 87.2 MHz for dual frequency alarms, and other single frequency and dual frequency links.*" It is noted that the band is currently used only for mobile services including both DF and SF systems (refer to the NRFP). It seems that the intention is to open the band for fixed links as well, which is allowable in terms of the ITU Radio Regulations as the band is allocated to both fixed and mobile services. However, using this band for fixed services is not in line with the current version of the NRFP and these changes will therefore have to be implemented in the NRFP. See Telkom's comments in section 3.4 above.

Based on Telkom's understanding of the word "links", and considering the NRFP, the following statement is problematic:

"*The intention of this RFSAP is to:*
Keep the DF/SF links as is (BTX)" (own emphasis)

As indicated, "links" are fixed systems whereas "BTX" is a base transceiver in the mobile service. The word "links" should therefore be removed or replaced with "*base stations*". Further, SF should not be associated with BTX as one frequency is used for both transmission and reception (see NRFP allocations, "Typical applications"). Also, there are four BTX blocks in this frequency band (BTX 5, 6, 7 and 8) so it is assumed that these are all retained. It is not clear why no mention is made of "MTX", which also has allocations in this band.

It seems that the only amendment to this frequency band proposed through this draft RFSAP is in the next sentence namely: "*Allocate the 81 – 81.625 MHz (BTX) band paired with 86.375 – 87 MHz (MTX) for dual frequency (DF) alarms. DF alarms operating in other bands may be migrated in.*" However, on further reading of section 4 (Channelling plan), the band 80.5-81 MHz is now allocated to SF alarms, which is not reflected in section 2. This must be added to be consistent and to avoid confusion. It is also clear from section 4 that these two frequency bands will in future be used exclusively for SF/DF alarms (fixed); the allocation to mobile will therefore be removed. As indicated above, this will require a change to the NRFP before same can be implemented (see section 3.4 above).

There is also no mention of "other" SF/DF links as discussed elsewhere. Why is the allocation to alarms if "other" SF/DF links can also use this band? This must also be clarified.

1.2.4 Section 4 "Channelling Plan"

In line with the discussion above, Telkom recommends that the first sentence of this section be amended as follows:

"*The frequency band 75.2 – 87.5 MHz provides a total bandwidth of ~~12.3~~10.55 MHz for single and dual frequency mobile systems whereas the sub-bands 80.5-81 MHz and 81-81.625 MHz paired with 86.375-87 MHz will be used for SF and DF alarms and other single and dual frequency links respectively.*"

It is indicated that: "*12.5 kHz channel spacing is used for the dual frequency assignments*". Although this is true, it is Telkom's understanding that the 12.5 kHz

channel assignment applies also to the SF assignments. Therefore, Telkom recommends the following amendment:

> *"12.5 kHz channel spacing is used for ~~the~~ all single and dual frequency assignments"*

Telkom notes that there are several discrepancies in the diagram when compared to the current NRFP allocations. This is with the understanding that the only change to the band allocations was in the sub-bands 81 – 81.625 MHz (BTX) paired with 86.375 – 87 MHz (MTX) and 80.5-81 MHz for SF alarms. These discrepancies should be verified and corrected, where necessary. Some of these discrepancies are indicated below:

- Mobile 1 in diagram should be 76.175 – 76.925 MHz
- Mobile 3 in the diagram should be 76.925 – 77.975 MHz
- Mobile 5 in the diagram should be 77.975 – 78.625 MHz; in the legend, it should be indicated that this band is paired with 82.975 - 83.625 MHz
- Mobile 4 in the diagram should be 78.625 – 80 MHz
- The band 81 – 81.625 MHz is proposed to be allocated to DF alarms; the return band should also be indicated namely 86.375 – 87 MHz
- Return frequencies for Mobile 5, 6 and 8 should be added

Telkom also recommends that the diagram should indicate that the DF and SF alarm allocations can also be used for "other" SF and DF links.

1.2.5 Section 5 "Requirements for the usage of radio frequency spectrum"

The reference to "chapter" should be replaced with "section".

The statement: "*The use of the band is limited for dual frequency alarms, and other single frequency and dual frequency links*" is factually incorrect as the band (i.e. 75.2-87.5 MHz) is currently also used for SF and DF mobile systems. Telkom recommends that this be corrected.

The maximum radiated powers for base and mobile stations are indicated. It is however not clear if these powers will now also apply to the SF and DF links including alarms. This

must be corrected and expanded to reflect the relevant radiated powers for the SF and DF links.

Reference is made to the allocations in the NRFP as specified in Appendix A. The changes proposed through the draft RFSAP will change the use of the bands 80.5-81 MHz and 81-81.625 paired with 86.375-87 MHz from mobile to fixed and an amendment to the NRFP will be required to give effect to this change. These changes can therefore be implemented only after the NRFP has been updated. See Telkom's comments in section 3.4 above.

1.2.6 Section 6 "Implementation"

As indicated in section 3.4 above, the proposed amendments to the table of frequency allocations can be implemented only after the NRFP has been updated. Telkom therefore proposes that this be reflected in this section for avoidance of doubt.

1.2.7 Section 7 "Co-ordination requirements"

Please refer to Telkom's comments in section 3.1 above.

1.2.8 Section 9 "Revocation"

This draft RFSAP proposes a change in use of the frequency bands 80.5-81 MHz and 81-81.625 paired with 86.375-87 MHz from mobile to fixed. If these bands are currently being used for mobile systems, these must migrate from these bands and their licences be revoked. This relevant migration progress leading up to the revocation of the licenses must be addressed in this section.

1.2.8 Section 10 "Radio Frequency Migration"

Regarding no out-migration for this band – see Telkom's comments in section 1.2.8 above.

It is indicated that DF alarms may migrate into the new frequency band. Telkom recommends that the migration of SF alarms into the new band (80.5-81 MHz) also be added. The use of these two bands for "other" SF and DF links should also be added.

1.2.9 Appendix A "National Radio Frequency Plan"

The entry "*Single frequency mobile (80-81 MHz)*" in column 3 should be amended as follows:

"*Single frequency mobile (80.5-81 MHz*".

The entry "*Mobile 7 MTX (81-81.625 MHz*" in column 3 should be amended as follows:

"*Mobile 7 ~~MTX~~ BTX (81-81.625 MHz)"*

1.2.10 Appendix B "Interference Resolution Process"

See Telkom's comments in section 3.2 above.

Appendix 2 - Frequency band 138 to 143.6 MHz

2.1 General comments

2.1.1 RFSAP frequency band range

This draft RFSAP deals with the frequency band 138-143.6 MHz. However, Mobile 1 uses the frequency bands 138-140.5 MHz paired with 141.5-144 MHz. Telkom therefore recommends that the RFSAP be amended to cover the frequency range 138-144 MHz.

2.2 Specific Comments

2.2.1 Section 1 "Glossary"

Some acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to this RFSAP, Telkom recommends that these be deleted. These are:

> "**DF**" means Dual Frequency (although the term is used in the draft RFSAP the acronym is not)
>
> "**DM RS**" means Demodulation Reference Signal
>
> "**PPDR**" means Public Protection and Disaster Relief as defined in ITU-R
>
> Report M.2033
>
> "**ITU-R**" means the International Telecommunication Union Radiocommunication Sector (used only in acronym of PPDR)

Definitions of "ITU-T", "IEC", "ISM" and "EIRP" could be added to section 1.

2.2.2 Section 2 "Purpose"

Telkom notes that not all services operating in this band have been accurately reflected in the second paragraph of this section. The reference to dual frequency links seems incorrect as such allocation is not provided for in this band or the draft RFSAP. Telkom therefore recommends that this paragraph be changed as follows:

> "*This Radio Frequency Spectrum Assignment Plan stipulates the requirements for the utilization of the frequency band 138 to ~~143.6~~144 MHz for dual frequency mobile*

systems, single frequency alarms, and other single frequency ~~and dual frequency~~ links as well as remote control industrial apparatus".

The fourth paragraph states that SF and DF links are typically used with communal repeaters. See Telkom's comments in section 3.3 regarding this matter. Telkom recommends that this paragraph be amended as follows:

"*~~The~~ Single frequency and dual frequency ~~links~~ mobile systems are typically used in private and communal radio repeaters which boost and retransmits weak radio signals across a wider area*".

As indicated in section 3.4 above, these changes (from mobile to fixed) and the proposed migration of users must be introduced in the NRFP before same can be implemented through a RFSAP.

2.2.3 Section 3 "General"

The reference to dual frequency alarms seems incorrect since there is no allocation for DF alarms in this band (or proposed in this draft RFSAP). Telkom therefore recommends that the paragraph be changed as follows:

"*Use of this band will be for dual frequency mobile systems and single frequency alarms and other single frequency ~~and dual frequency~~ links as well as remote control industrial apparatus*".

2.2.4 Section 4 "Channelling Plan"

As indicated in section 2.1.1, Telkom recommends that the draft RFSAP frequency range be extended to include the Mobile 1 allocation in full. The first paragraph should therefore be amended as follows:

"*The frequency band 138 – ~~143.6~~144 MHz provides a total bandwidth of ~~5.6~~ 6 MHz of which 5 MHz can be used for dual frequency mobile systems and 1 MHz for alarms and other single ~~and dual~~ frequency links*".

Consequential changes should be made to the diagram.

2.2.5 Section 5 "Requirements for the usage of radio frequency spectrum"

To reiterate, the second paragraph should be amended as follows:

> "*The use of the band is limited for dual frequency mobile systems and single frequency alarms, and other single frequency ~~and dual frequency~~ links as well as remote control industrial apparatus*".

The maximum radiated powers for base and mobile stations are indicated. It is however not clear if these powers will now also apply to the SF and DF links including alarms. This must be corrected and expanded to reflect the relevant radiated powers for the SF and DF links.

Reference is made to these allocations in the NRFP as indicated in Appendix A. See Telkom's comments in this regard in section 3.4 above.

2.2.6 Section 6 "Implementation"

As indicated in section 3.4 above, the proposed amendments to the table of frequency allocations can only be implemented after the NRFP has been updated.

As highlighted above, this band is neither currently use for nor planned for use by dual frequency alarms. This section should therefore be amended to reflect this. Telkom recommends the following:

> "*No new assignment for dual frequency mobile systems and single frequency alarms and other single frequency ~~and dual frequency~~ links shall be approved in this band unless they comply with this RFSAP*".

It is also recommended that suitable text be added to this section encouraging remote control industrial applications to move to suitable Industrial Scientific and Medical ("ISM") frequency bands.

2.2.7 Section 7 "Coordination requirements"

See Telkom's comments in section 3.1 above.

2.2.8 Section 9 "Revocation"

Telkom is of the view that the revocation of the relevant licences by 31 March 2018 is not realistic noting that the submissions for public comments are due only on 26 January 2018. Sufficient notice should be given to licensees to obtain new spectrum licences and

to implement the necessary technical changes to their radios to allow them to operate in another frequency band. If the equipment is frequency agile, changing to another frequency should be relatively easy to implement. If any event, migration can only be executed following the update of the NRFP and migration plan.

2.2.9 Section 10 "Radio Frequency Migration"

As indicated above, the migration of SF mobile systems from this band by 31 March 2018 seems to be unrealistic. Further, as indicated in section 3.4, changes to the NRFP must be made before these changes can be implemented. The Radio Frequency Migration Plan will also have to be updated to reflect the proposed migrations.

2.2.10 Appendix A "National Radio Frequency Plan"

The return frequency for the Mobile 1 BTX (141.5-144 MHz) should be amended as follows:

"*PAIRED with ~~130~~138-140.5 MHz"*

The entry "Single Frequency Mobile (141 - 141.5 MHz)" has been omitted from column 3. Telkom recommends that this be added to this column as it is a valid entry on the NRFP.

2.2.11 Appendix B "Interference resolution process"

See Telkom's comments on this matter in section 3.2 above.

Appendix 3 - Frequency band 150.5 to 153 MHz

3.1 General comments

Telkom does not make use of this frequency band and has no general comments pertaining to its use.

3.2 Specific Comments

3.2.1 Section 1 "Glossary"

Some acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the this RFSAP, Telkom recommends that these be deleted. These are:

"**DF**" means Dual Frequency

"**DM RS**" means Demodulation Reference Signal

"**PPDR**" means Public Protection and Disaster Relief as defined in ITU-R

Report M.2033

"**ITU-R**" means the International Telecommunication Union Radiocommunication Sector (used only in acronym of PPDR)

"**MTX**" means Mobile Transceiver

Definition for "EIRP" could be added to section 1.

2.2.2 Section 2 "Purpose"

The intention of this draft RFSAP is, amongst others, to: "*Allocate the 152.05-152.55 band to SF alarms on an exclusive basis and migrate other users out*". Our reading of the current NRFP indicates that there are no "other" uses allocated in the sub-band 152.05-152.55 MHz, except for "*Government services*", which is not defined. Telkom notes from section 10 that single frequency mobile users shall migrate out of this band. Therefore, although the band is already available exclusively for SF alarms, it seems that SF mobile systems are also operating in the band. These SF mobile systems must migrate from the band. Telkom recommends that this information be added to this section to avoid any doubt.

2.2.3 Section 4 "Channelling Plan"

There are discrepancies between the diagram and the information in the NRFP; Telkom recommends that this be checked and corrected as required. According to the NRFP, the band 148-153.05 MHz is used as follows:

- 148-152 MHz: Wildlife telemetry tracking; within this sub-band, the band 148.950-151 MHz is used for alarms, single frequency mobiles and load shedding
- 152.05-152.55 MHz: Single Frequency mobile
- 152.55-153.05: Single frequency mobile
- "Government Services" is assumed to use the entire band 150.5-153 MHz.

2.2.4 Section 5 "Requirements for the usage of radio frequency spectrum"

Telkom recommends that the word "chapter" be replaced with "section".

Reference is made to the allocations in the NRFP as given in Appendix A. See Telkom's comments in this regard in section 3.4 above.

The maximum radiated powers for base and mobile stations are indicated. It is however not clear if these powers also apply to SF alarms. This must be clarified and amended accordingly.

2.2.5 Section 6 "Implementation"

As indicated in section 3.4 above, the proposed amendments to the table of frequency allocations can be implemented only after the NRFP has been updated.

2.2.6 Section 7 "Coordination requirements"

See Telkom's comments in section 3.1 above.

2.2.7 Section 8 "Revocation"

The revocation of the relevant licences by 31 March 2018 is not realistic noting that the submissions for public comments are due only 26 January 2018. Sufficient notice should be given to licensees to obtain new spectrum licences and to implement the necessary technical changes to their radios to operate in another frequency band. If the equipment is frequency agile, changing to another frequency should be easy to implement. If any

event, migration can only be executed following the update of the NRFP and migration plan.

2.2.8 Section 9 “Radio Frequency Migration”

As indicated above, the migration by 31 March 2018 is unrealistic. See also Telkom’s comments in section 3.4 above.

2.2.9 Appendix B “Interference resolution process”

See Telkom’s comments on this matter in section 3.2 above.

Appendix 4 - Frequency band 156.4785 to 156.5625 MHz

4.1 General comments

4.1.1 Safety of Life services

Telkom is concerned that the proposed amendments, i.e. the introduction of land mobile services in this band, will cause harmful interference into a critical safety of life service. The frequency 156.525 MHz is a safety of life service and interference to this frequency during a safety event may cause loss of life and that of essential property. Telkom recommends that the band 156.4875-156.5625 MHz be reserved exclusively for maritime mobile services i.e. distress and calling via Digital S Selective Calling ("DSC").

The use of the frequency 156.525 MHz is part of the services provided by Telkom to the South African Department of Transport under the South African International Maritime Organisation obligations. This frequency has been a critical element of the maritime services for many years as part of the protection of Life and Safety at sea.

Although Telkom acknowledges the Authority's need to identify more radio frequency spectrum for public use, Telkom recommends that Authority undertakes the necessary measures to ensure that the Safety of Life Service are not compromised.

4.1.2 ITU Radio Regulations pertaining to the use of this band

The frequency band 156.4875-156.5625 MHz is allocated exclusively to the maritime mobile service and specifically for distress and calling via DSC. It is important therefore to note that the band cannot be used, according to the ITU Radio Regulations, for land mobile or aeronautical mobile services.

The importance of the use of this band for distress calling as captured in the ITU Radio Regulations in footnote 5.226. Per 5.226, the frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles 31 and 52, and in Appendix 18. It is further stated in 5.226 that, in the bands 156-156.4875 MHz, 156.5625-156.7625 MHz each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles 31 and 52, and Appendix 18). Any use of frequencies in these

bands by stations of services other than that of maritime should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service. The frequency 156.525 MHz may also be used on inland waterways subject to agreement between affected administrations.

Apart from the exclusive maritime mobile allocation in the band 156.4875-156.5625 MHz an additional allocation to fixed and land mobile services is allowed per 5.227. The two sub-bands (or two channels of 25 kHz each) are 156.4875-156.5125 MHz and 156.5375-156.5625 MHz. These two bands are also addressed in section 2 below. The use of these two sub-bands by the fixed and land mobile services shall not cause harmful interference to nor claim protection from the maritime mobile VHF radiocommunication service. It is important to note that the middle portion of the maritime mobile band, i.e. 156.5125-156.5375 MHz remains exclusively allocated to the maritime mobile service. Land mobile use in this portion is therefore not allowed per the ITU Radio Regulations and as its also captured in the NRFP.

4.1.3 Potential use of this band for land mobile services

To ensure ongoing maximum protection for safety of life services Telkom urges the Authority to keep the use of the band 156.4875-156.5625 MHz exclusively for maritime mobile services. This band is only 75 kHz and frequencies for land mobile use should be accommodated elsewhere. If the Authority must use part of this band for land mobile services, only the two channels as provided for in 5.227 (i.e. 2 channels of 25 kHz each) should be considered and then only in inland areas where the Authority is sure that there will be no interference to the maritime mobile service.

Telkom acknowledges that the current NRFP indicates that single frequency mobile can operate in the band 156.375-156.7625 MHz. Nevertheless, based on our assessment of the Radio Regulations, Telkom is of the view that the band 156.5125-156.5375 MHz, as a minimum, should be excluded as it is allocated exclusively to the maritime mobile service. Ideally, Telkom recommends that the entire band 156.4875-156.5625 MHz be used exclusively for maritime services.

4.2 Specific Comments

4.2.1 Section 1 "Glossary"

Some acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the this RFSAP, Telkom recommends that these be deleted. These are:

"**BTX**" means Base Transceiver

"**DF**" means Dual Frequency

"**DM RS**" means Demodulation Reference Signal

"**PPDR**" means Public Protection and Disaster Relief as defined in ITU-R

Report M.2033

"**MTX**" means Mobile Transceiver

4.2.2 Section 2 "Purpose"

It is indicated that the band is used for shore-to-ship, ship-to-ship and ship-to-shore communications under the maritime mobile services. Telkom is very concerned that the critical importance of the use of this band for safety of life services is not mentioned in this draft RFSAP. The maritime services use and the single frequency mobile use cannot be treated as equals in this frequency band. The RFSAP must be amended to reflect the critical nature of the use of this band for safety of life services.

In line with Telkom's comments in section 4.1 above, Telkom recommends that the second paragraph be amended to reflect the shared use between maritime and land mobile services as follows:

"*This Radio Frequency Spectrum Assignment Plan states the requirements for the utilization of the frequency band 156.4875 to 156.5625 MHz for Maritime Mobile service as a safety of life service. ~~and~~ The use of Single Frequency Mobile under the land mobile services on inland areas may also be deployed within the frequency bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz* ".

The term "water bodies" or "water shoreline" used in the draft RFSAP must be clearly defined or further clarified. Although this band is allocated to the maritime mobile

service, use of this band on inland waterways is also possible in accordance with 5.226. Telkom understands that channel 70 (i.e. 156.525 MHz) can be used on large dams and rivers and such use should be protected.

It is not clear to Telkom how the protection distance of 50km has been determined. Nevertheless, considering the excellent propagation in this frequency band, and the fact that 50km is generally the operational diameter of a land mobile service, Telkom is of the view that 50km is not sufficient to protect the maritime mobile service. It is noted that the current NRFP only states "limited to inland area". Also, some of Telkom's coastal stations used for, amongst others, Ch70, are located further inland and the 50km protection area will not be sufficient to protect this station. Special measures to protect, for example, the Millerton maritime station must be considered. Telkom requests the Authority to provide details pertaining to its technical and operational assessment leading to the conclusion that 50km is sufficient to protect the maritime mobile safety of life services.

The intention of the draft RFSAP is stated at the end of section 2. Telkom recommends that these two statements be changed as follow:

> "*Ensure that all SF mobile users within [50Km] of water bodies vacate the band 156.4875-156.5625 MHz*".
>
> "*Permit a SF Land Mobile user operating beyond [50km] from the water shoreline in the 156.4875-156.5125 MHz and 156.5375-156.5625 MHz bands. ~~to migrate into the said~~ The use of these bands are subject to the conditions stated above (e.g. NINP with regards to the maritime mobile service)*.

4.2.3 Section 3 "General"

The use of the band is indicated in this section. To avoid any possible confusion, Telkom recommends the following amendments:

> "*Use of this band will be for:*
>
> - *Maritime Mobile Services for safety of life in the band 156.4875-156.5625 MHz*
> - *Single Frequency land Mobile – in the frequency bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz but not within 50km of the coast or water*

bodies ~~where Maritime Mobile Services are in use~~. The 50km distances must be confirmed.

4.2.3 Section 4 "Channelling Plan"

The statement regarding the use of this band in this section is incorrect and must be amended. Telkom recommends the following:

"*The frequency band 156.4875-156.5625 MHz provides a total bandwidth of 0.075 MHz for Maritime Mobile Services. The frequency bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz provides 2x0.025 kHz for ~~and~~ Single Frequency Land Mobile, limited to inland areas as defined*".

Telkom further recommends that the diagram be amended to reflect the two sub-bands that may be used for land mobile services. Also, as indicated above, the sub-band 156.5125-156.5375 MHz is NOT available for land mobile services and this should be reflected in the diagram.

It is also noted that the band's "end frequency" is incorrect i.e. 156.5675 MHz should be changed to 156.5625 MHz.

4.2.4 Section 5 "Requirements for the usage of radio frequency spectrum"

Telkom recommends that the word "chapter" be replaced with "section".

4.2.5 Section 6 "Implementation"

Telkom recommends that this RFSAP not be implemented, at least not until the separation distance of 50km has been confirmed, amongst the other issues raised.

4.2.6 Section 7 "Coordination requirements"

See Telkom's comments in section 3.1 above.

4.2.7 Section 9 "Revocation"

Telkom recommends that the separation distance (to be confirmed) applies to the entire coast line to ensure that maritime mobile services can operate now and in future without

harmful interference. Telkom therefore recommends the following amendment to this paragraph:

> "*Existing radio frequency spectrum licences for SF Mobile within 50km of a water body ~~where the use of the Maritime Mobile can be envisaged~~ will be revoked*".

As indicated above, the 50km separation distance and the definition of the term "water body" must be clarified.

4.2.7 Section 9 "Radio Frequency Migration"

Based on the inputs above, Telkom recommends that this section be amended as follows:

> "*SF Mobile may continue to operate within 156~~.375~~ – 156.7625 MHz on a non-interference basis and non-protection basis to Maritime mobile services in inland areas. The sub-band 156.5125-156.5375 MHz is however excluded from such use*".

4.2.8 Appendix B "Interference resolution process"

See Telkom's comments on this matter in section 3.2 above.

Appendix 5 - Frequency band 380 to 400 MHz

5.1 General comments

5.1.1 Use of the frequency band 380 to 400 MHz

Telkom supports the use of the band 380-400 MHz exclusively for PPDR and public safety services as this is in line with the NRFP.

5.2 Specific Comments

5.2.1 Section 1 "Glossary"

Some acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the this RFSAP, Telkom recommends that these be deleted. These are:

"**DF**" means Dual Frequency

"**BTX**" means Base Transceiver

"**MTX**" means Mobile Transceiver

"**SF**" means Single Frequency

"**PPDR**" means Public Protection and Disaster Relief as defined in ITU-R Report M.2033

"**WRC-12**" means World Radiocommunication Conference 2012 held in Geneva

"**WRC-15**" means the World Radiocommunication Conference ~~planned to be~~ held in 2015

The definition of "PMR" is indicated as "Public Mobile Radio", which is incorrect. This should be amended to "Private Mobile Radio" in line with the definition in the NRFP. The intention is that the band 380-400 MHz be used for government type safety services and not public mobile services. In the case of public mobile, the acronym generally used is PAMR or Public Access Mobile Radio.

Definitions for "**EIRP**" and "**ERP**" should be added to section 1.

5.2.2 Section 2 "Purpose"

As indicated in section 1 above, the definition of PMR should be changed to "Private Mobile Radio".

In the second paragraph Telkom recommends the follow amendment:

> "*This Radio Frequency Spectrum Assignment Plan states the requirements for the utilization of the frequency band 380 to 400 MHz for Public protection and disaster relief (PPDR) and ~~public~~ private mobile radio (PMR)*".

Telkom recommends that the definition of PMR in section 2 be amended as follows:

> "***Private mobile radio (PMR)*** *~~Public~~ Private Mobile Radio is radio apparatus used for short-range two-way voice communications*".

The intention of this draft RFSAP is threefold as indicated in section 2. Telkom recommend that the second bullet be corrected as follows:

> *"Assign the band ~~380~~ 387 – 390 MHz ~~band~~ paired with 397 – 399.9 MHz for digital systems to be used for PMR*".

It is indicated that the band 387-390 MHz paired with 397-399.9 MHz is to be used for PMR. However, in section 4 it is indicated that this sub-band is available for both PPDR and PMR. Telkom recommends that these two sections be aligned.

5.2.3 Section 3 "General"

References are made to ITU-R recommendations relevant to PPDR services. Telkom recommends that the relevant ETSI standards, such as those applicable to TETRA, also be listed in this section.

5.2.4 Section 4 "Channelling Plan"

It is indicated that the band 380-387 MHz paired with 390-397 MHz is used by the South African Police Services ("SAPS") for the TETRA system. The use of this band is elsewhere indicated as available for PPDR, which application is not limited to SAPS but includes the South African National Defence Force ("SANDF"), army, etc. Telkom recommends that these sections be aligned.

The diagram indicates that the band 387-390 MHz paired with 397-400 MHz is available for PPDR and PMR. However, elsewhere in the document it is indicated that this sub-band is available only for PMR. Telkom recommends that these sections be aligned.

Channels for TETRA are indicated as 6.25 kHz; however, the channels for the PMR band are not indicated. Telkom recommends that these should also be added.

5.2.5 Section 5 "Requirements for the usage of radio frequency spectrum"

Telkom recommends that the word "chapter" be replaced with "section".

Telkom's view is that this RFSAP can be implemented now as it is in line with the NRFP.

The word "major interference" is not defined or used in spectrum management discipline and Telkom therefore recommends that the appropriate term "harmful interference be used instead. Telkom therefore recommends the following amendment:

> *"In some cases, a radio system conforming to the requirements of this RFSAP may require modifications if ~~major~~ harmful interference is caused to other radio stations or systems*".

5.2.6 Section 7 "Coordination requirements"

See Telkom's comments in section 3.1 above.

5.2.7 Section 9 "Revocation"

It is stated that existing licenses operating in this band will be revoked. However, it is not indicated who these licensees are; these must be indicated in the RFSAP. Also, the due date of 31 March 2018 seems unrealistic considering that the consultation process is still ongoing. Migration of existing users from this band should be in line with the NRFP and the Radio Frequency Migration Plan.

5.2.8 Section 10 "Radio Frequency Migration"

As indicated above, the migration of existing users by 31 March 2018 may be unrealistic.

5.2.9 Appendix B "Interference resolution process"

See Telkom's comments on this matter in section 3.2 above.

Appendix 6 - Frequency band 1518 to 1525 MHz

6.1 General comments

6.1.1 Use of the frequency band 1518 to 1525 MHz for STLs and MSS

A critical question being asked in the draft RFSAP is whether the frequency band 1518 – 1525 MHz can be used for Studio-to-Transmitter ("STL") links in view of the activation of Alphasat, a satellite operated by Inmarsat. Telkom recommends that this question be broadened to include consideration of existing single frequency links operating in this band as per the NRFP.

The above question cannot be answered in the absence of detailed technical and deployment information pertaining to the two uses of the band namely STLs (or single frequency links) and Mobile Satellite Services ("MSS") receiving earth stations. If the two services are deployed on the same frequency and in the same area, harmful interference will likely be experienced by the MSS earth station receiver (this is a satellite-to-Earth link). STL links (receivers) are protected from MSS satellite transmissions through the appropriate pfd (power flux density) levels applicable to the MSS satellite, as per ITU Radio Regulations.

The volume of use of this band for single frequency links is not known to Telkom. However, considering that this allocation has been in existance for many years (see also Government Gazette No. 20037 dated 30 April 1999 "*Notice in respect of requirements and policy for operations in the 1.4/1.5GHz band and 2.0GHz band*"), it can be assumed that some single frequency links have been deployed. The deployment of STLs in this band (a specific application of single frequency links) has been considered in the Frequency Migration Plan 2013 (see paragraph 3.1.20).

The probability of interference occurring between STLs and MSS earth stations should however be considered and analysed in detail before one can answer the question with more certainty and detail. Apart from the technical parameters (e.g. transmit power and emission characteristics, antenna gain and bandwidth) of the interfering transmitter and the victim receiver (MSS), factors to be considered include, number of STL links already deployed and to be deployed, density of MSS earth stations to be deployed, type of MSS services to be deployed, location of deployment of both services, flexibility in frequency channel usage of MSS earth station, etc.

What makes the coordination exercise complex is the fact that the MSS earth stations are in some cases nomadic and their locations are therefore unknown. Frequency coordination on a case-by-case basis is therefore not practical or not possible. It is suggested that a Monte-Carlo analysis be performed to determine the probability of interference between these two services.

If the density of deployment of both services is low, shared use of the band may be possible although it will be appropriate to first assess the required separation distances needed between the two services before making a final decision in this regard. Interference will however not be eliminated as the MSS deployments are ubiquitous and their locations are not known. On the other hand, since the MSS earth stations will receive the interference, it may be possible, in some cases, to relocate or use natural or man-made obstacles to reduce the level of interference to acceptable levels, especially for MSS nomadic use.

It is also important to note that MSS operating in this band cannot claim protection from the FS (see ITU Radio Regulations footnote 5.348). This is however a national decision regarding national use of the band. Interference into MSS earth stations operating in South Africa, from FS stations operating in neighbouring countries, will however have to be accepted.

To further deliberate the question, it is prudent to consider the need for this spectrum between the two services namely STLs (and single frequency links) and MSS.

Alphasat (MSS) was launched in 2013 to supplement the Inmarsat-4 satellites and is located at 25º East and provides services over Europe, Middle East and Africa. The service links of Alphasat use both the standard L-Band (1525-1559 MHz paired with 1626.5-1660.5 MHz) and extended L-Band (1518-1525 MHz paired with 1668-1675 MHz). As indicated in the draft RFSAP, this band has been earmarked for IMT satellite services in accordance with ITU Resolution 225 (REV.WRC-12). Telkom is of the view that MSS operating in both L-Band and extended L-Band will find application in the South African market. The current use of this band for MSS in South Africa is not known although it can be assumed that this service will grow in future. The MSS services cannot be moved to another frequency band as the satellite has already been launched.

Per the South African National Radio Frequency Plan (“NRFP”), the band 1518-1525 MHz is allocated on a co-primary basis to both fixed services (“FS”) and MSS (space-to-Earth). The typical use under the FS is indicated as single frequency links. It is

not clear how many single frequency links, if any, have been deployed in this band, which is a key consideration in deciding the way forward in using this frequency band.

Noting the potential economic impact in using this band for either MSS or single frequency links, Telkom recommends that the use of the band be prioritised for MSS. This is in line with the Authority's intention for this band as espoused in section 2 of this draft RFSAP. The Alphasat satellite has been launched and is available for use over Africa and South Africa. Single frequency links on the other hand could be deployed in other frequency bands, for example the 2025-2110 MHz paired with 2200-2285 MHz (based on recommendation ITU-R F.1098). No new STLs should be deployed in this band as alternatives are available. Further, as indicated above, the amount of single frequency links deployed in this band is not known to Telkom. If only a few links have been deployed in this band, shared use between these links and MSS may be feasible in the short term. Nevertheless, Telkom recommends that these links be migrated and that the band be allocated for exclusive use by MSS Once all links have been migrated, the FS allocation (and the associated Single frequency links) should be deleted.

6.2 Specific comments

6.2.1 Section 1 "Glossary"

Several acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the this RFSAP, Telkom recommends that these be deleted. These are:

"**BTX**" means Base Transceiver

"**DF**" means Dual Frequency

"**DM RS**" means Demodulation Reference Signal

"**MTX**" means Mobile Transceiver

"**PPDR**" means Public Protection and Disaster Relief as defined in ITU-R Report M.2033

"**SF**" means Single Frequency – this acronym is not current used in the draft RFSAP although the term "Single Frequency" is used

"**WRC-12**" means World Radiocommunication Conference 2012 held in Geneva

"**WRC-15**" means World Radiocommunication Conference ~~planned to be~~ held in Geneva in 2015

6.2.2 Section 2 "Purpose"

6.2.2.1 Use of single frequency links with communal radio repeaters

See Telkom's comments on this matter in section 3.3 above. The use of single frequency links in this band is in line with the NRFP. This band is however not used for communal repeaters, which is a land mobile service. Telkom therefore recommends that this paragraph be deleted as it is not relevant to this draft RFSAP:

"~~*The single frequency links are typically used in private and communal radio repeaters, which boost and retransmit weak radio signal across a wider area*~~".

6.2.2.2 Intention of the draft RFSAP

In the last paragraph of section 2, the intention of the draft RFSAP is indicated as: "…*to ensure that there is no harmful interference to IMT Satellite Systems and to assign for single frequency links where there is no harmful interference to IMT Satellite services*".

Based on the above it is clear the Authority decided to give IMT satellite systems priority over single frequency links in the frequency band 1518-1525 MHz although the deployment of single frequency links will be allowed where there is no harmful interference with IMT satellite systems. This is generally in line with Telkom's position for the band although the use of links is not supported, as elaborated above. It is important to note Telkom's comments regarding frequency sharing between these two services as highlighted in section 6.1.1.

To ensure that there is no interference to IMT satellite systems, the band should be used exclusively for MSS. MSS use of this band will be ubiquitous and locations will therefore not be recorded (nomadic use); it will be a national use. As indicated, FS services should therefore not be deployed in this band to allow the unrestricted and interference free deployment and use of MSS services. Consequential changes must therefore be made throughout the draft RFSAP, to implement the exclusive use of this band for MSS, including the migration of FS services.

Telkom also recommends that the RFSAP refers to MSS rather than IMT satellite services in line with the NRFP. Alternatively, the words “MSS, including IMT” could be used.

6.2.3 Section 3 “General”

Considering that the band should be used exclusively for MSS, the Authority should make appropriate changes to all references to single frequency links throughout the draft RFSAP. Although Telkom recommends that the band should not be used for links, comments on statements pertaining to the use of links are provided where necessary.

6.2.3.1 MSS frequency band

The Authority refers to the use of the frequency band 1518-1525 MHz for MSS, which is correct in the context of the draft RFSAP. Nevertheless, it is recommended that the Authority, for general information, also indicate that the MSS systems operating in this frequency band makes used of other frequency bands, including the uplink (Earth-to-space). The frequency bands used by MSS in the L-Band, including Inmarsat, is indicated in section 6.1.1 above.

6.2.3.2 References to ITU-R Recommendations and Reports related to IMT

References to several ITU-R and CEPT recommendations are made. These recommendations are good references for the use and operations of IMT satellite services in this frequency band but it should be noted that they are not all mandatory. It is Telkom’s understanding that these recommendations are provided for guidance only and not regulated per se. This should be clarified.

In addition, and with the above understanding, Telkom recommends that the following ITU-R Recommendations and Reports be added to the draft RFSAP:

- ITU-R Recommendation M.2014: Global circulation of IMT satellite terminals
- ITU-R Recommendation M.1850: Detailed specifications of the radio interfaces for the satellite component of International Mobile Telecommunications-2000 (IMT-2000)

- ITU-R Recommendation M.2047: Detailed specifications of the satellite radio interfaces of International Mobile Telecommunications-Advanced (IMT-Advanced)

- Report ITU-R M.2077: Traffic forecasts and estimated spectrum requirements for the satellite component of IMT-2000 and systems beyond IMT-2000 for the period 2010 to 2020

- Report ITU-R M.2077: Outcome of the evaluation, consensus building and decision of the IMT-Advanced satellite process (Steps 4 to 7), including characteristics of IMT-Advanced satellite radio interfaces

6.2.3.3 References to ITU-R and CEPT Recommendations and Reports related to FS

As indicated above, Telkom recommends that the band 1518-1525 MHz be used exclusively for MSS, including IMT satellite services. References to recommendations and reports related to FS should therefore be retained if there is a transitional requirement to migrate FS links from the band. The Radio Frequency Migration Plan, 2013 should be amended to reflect the migration of single frequency links from this band. With no new STLs allowed to enter this band, it should be possible for MSS to make use of the band while single frequency links are migrated in future.

The reference to CEPT Recommendation T/R 13-01 is not necessary and not correct and should therefore be deleted. The channel plan described in this CEPT recommendation is the same as the plan described in ITU-R Recommendation F.1242. Although the title of the recommendation covers the frequency range 1 - 2.3 GHz, the frequency plan covers only the frequency band 1350-1375 MHz paired with 1492-1517 MHz. None of the channelling plans in this recommendation include the band 1517-1525 MHz which is the subject of this RFSAP.

ITU-R Recommendation F.1242 contains a note 1 to *resolves 3*, which covers the frequency range 1427-1530 MHz. The note 1 channel arrangement is based on a 0.5 MHz frequency raster and, although it is a Frequency Division Duplexing ("FDD") arrangement, it includes the frequency band 1517-1525 MHz. Telkom assumes that the single frequency links operating in this band in South Africa are conforming to this channelling plan, which is the only plan covering this frequency

band that could be identified. This should be confirmed and the necessary changes be made to the RFSAP.

6.2.3.4 Other Recommendations and Reports dealing with frequency coordination

If the band is to be used for shared use between single frequency links and MSS, either permanently or on an interim basis while links are being migrated, Telkom recommends that relevant ITU-R Recommendations be included in the draft RFSAP:

- ITU-R Recommendation M.1141: Sharing in the 1-3 GHz frequency range between non-geostationary space stations operating in the mobile-satellite service and stations in the fixed service
- ITU-R Recommendation M.1142: Sharing in the 1-3 GHz frequency range between geostationary space stations operating in the mobile satellite service and stations in the fixed service
- ITU-R Recommendation M.1184: Technical characteristics of mobile satellite systems in the frequency bands below 3 GHz for use in developing criteria for sharing between the mobile-satellite service (MSS) and other services

6.2.4 Section 4 "Channelling Plan"

As indicated, Telkom recommends that the band be used exclusively for MSS. Reference to this channelling plan is therefore only required if there will be shared use between single frequency links and MSS on either a permanent or interim basis, (i.e. to deal with frequency migration of links). See Telkom's comments regarding the reference to ITU-R F.1242 in section 6.2.3.3 above.

If the single frequency links operating in South Africa are in line with note 1 under *resolves 3*, the FDD plan based on this note allows for 74 duplex channels of 0.5 MHz each. The frequency band limits will be 1427.25-1464.25 MHz paired with 1492.75-1529.75 MHz (2x37 MHz). Obviously, not all these channels can be used; only the upper halve of the band can be used. The appropriate channels from the upper band should be selected and reflected in the draft RFSAP.

It is also not clear if STLs will be able to conform with this channelling arrangement; i.e. the bandwidth of the STLs is not known to Telkom. It may be possible that channels larger

than 0.5 MHz are required for STLs and this must be taken into consideration when finalising this RFSAP.

In selecting the channels for single frequency links in the band 1517-1525 MHz, sharing with IMT in the band 1427-1518 MHz must also be considered. The channelling plan for this band for IMT is being discussed in Working Party 5D (WP 5D).

6.2.5 Section 5 "Requirements for usage of radio frequency spectrum"

Telkom recommends that the reference to "chapter" be changed to "section".

It is indicated that the use of the band is limited to "*single frequency links and IMT satellite*". As motivated above, Telkom recommends that the band be used for MSS exclusively.

The draft RFSAP states that "*maximum radiated power are specified through the type approval process for the equipment used*". Although it is not made clear, it is assumed that this refers to the single frequency links (RFSAP cannot specify satellite transmitter power); hence this should be clearly stated. Also, reference to the type approval process is not sufficient; Telkom recommends that the Authority includes, in the RFSAP, at least a reference to the applicable standard/s which should be used for single frequency links. It is not clear to Telkom which standard will be used for type approval for systems operating in the band 1517-1525 MHz. In Europe, for example, ETSI standard EN 302 217 applies to FS systems in the 1.4 GHz band as per CEPT REC T/R 13-01 or ITU-R Recommendation F.1242. Based on Table B.1 of EN 302 217-2 V3.1.1 (2017-05) it seems that band 1518-1525 MHz is not included in this standard and will therefore not apply. This must be investigated and confirmed.

6.2.6 Section 6 "Implementation"

As indicated above, MSS use of the band will be ubiquitous (nomadic) throughout the territory of South Africa. These systems are therefore not necessarily fixed and therefore cannot be coordinated. The authorisation of MSS earth stations in this band has not specifically been addressed in the draft RFSAP. It is possible that authorisation of MSS in this band will be the same as authorisation of other Inmarsat services in the L-Band. This should however be confirmed and clarified in the RFSAP. Telkom is of the view that the RFSAP must address all services in the relevant frequency band and not only one or some.

The assignment of links will be difficult, if not impossible, as it will not be possible to assure that no harmful interference will be / is caused to MSS.

6.2.7 Section 7 "Co-ordination Requirements"

See Telkom's comments in section 3.1 above.

6.2.8 Section 8 "Assignment"

It is assumed that the standard application procedure applies to single frequency links. It is however not clear if same will apply also to MSS of if an alternative process will apply. This should be clarified.

6.2.9 Section 9 "Revocation"

Telkom recommends that current single frequency licences be migrated over time. This change must be implemented through proper amendments to the NRFP and the Radio Frequency Migration Plan, 2013.

6.2.10 Section 10 "Migration"

Since frequency coordination is not feasible or possible, Telkom recommends that existing single frequency links be migrated out of this frequency band. STLs should not be migrated into this band; as indicated, the 2 GHz PTP band could be used for STLs.

6.2.11 Appendix B "Interference Resolution Procedure"

See Telkom's comments in section 3.2 above.

Appendix 7 - Frequency band 2025 to 2110 MHz paired with 2200 to 2285 MHz

7.1 General comments

7.1.1 Use of the 2 GHz frequency band for PTP links

Telkom supports the Authority's proposal to continue using the frequency bands 2025-2110 MHz paired with 2200-2285 MHz ("2 GHz band") for Point-to-Point ("PTP") links. Frequency sharing of PTP links between multiple operators is generally feasible and allows almost unconstrainted use of the band between multiple operators for deployment of links.

Telkom therefore also supports the Authority's view that the 2 GHz band should be used for deployment of PTP links migrating from other frequency bands. It is possible that the 2 GHz frequency band could be the only PTP frequency band below 3 GHz available in future to operators for low capacity links. It is possible that links operating in frequency bands such as 450 MHz and 1.4 GHz could be / will be migrated from these bands making the 2 GHz band potentially the only designation frequency band below 3 GHz. Its availability for PTP links should therefore be guaranteed.

7.1.2 Use of 2 GHz band for BFWA

In the Radio Frequency Migration Plan 2013, the Authority considered the possibility of making assignments for Broadband Fixed Wireless Access ("BFWA") in the 2 GHz frequency band, where this does not cause harmful interference to PTP links. The Authority requested input on this matter specifically.

Telkom's view is that the use of the 2 GHz frequency band for BFWA must be considered very carefully. BFWA systems require the assignment of blocks of spectrum over a large geographical area (coverage area around a base station). If multiple base stations are deployed, this coverage area could become very large. Coexistence between PTP links and BFWA systems in the same geographical area is therefore not possible.

Additionally, a sufficiently large coordination area must be established between the BFWA coverage area and PTP links, creating exclusion areas where the availability

of the 2 GHz band for PTP links will be severely constrained. This will reduce spectrum use efficiency.

When the 2 GHz frequency band is made available for BFWA systems, the Authority must prescribe specific rules and procedures to address frequency sharing between PTP links and BFWA systems, to ensure the continued use of the band for both applications. This applies whether the band is to be shared nationally or within specific localities. It may also be required to consider a new channelling arrangement for BFWA systems as the current channelling plan (14 MHz channels) may not be relevant for BFWA systems. A separate consultation on the introduction of BFWA in this band and the establishment of sharing rules and procedures will be required as the specific technical and operational parameters of the proposed BFWA systems should be taken into consideration.

7.2 Specific comments

7.2.1 Section 1 "Glossary"

Several acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the this RFSAP, Telkom recommends that these be deleted. These are:

"**DM RS**" means Demodulation Reference Signal

"**BTX**" means Base Transceiver

"**MTX**" means Mobile Transceiver

"**PPDR**" means Public Protection and Disaster Relief as defined in ITU-R Report M.2033

"**SF**" means Single Frequency

"**STL**" means Studio Transmitter Link

7.2.2 Section 1 "Purpose"

This section should be renumbered "2".

Per the draft RFSAP, the intention of the draft RFSAP is twofold, namely: retention of existing assignments and the potential use of the band for BFWA.

Regarding the first objective, the draft RFSAP seeks to retain the existing assignments and migrate "in" links from other frequency bands. To ensure that there is no doubt that the band can continue to be used for the deployment of new links (i.e. other than those related to migrations), Telkom recommends that this sentence be changed as follows:

> "*Retain ~~the~~ existing assignments for fixed links, allow assignments of new fixed links and migrate in fixed links from other bands where appropriate*"

Regarding the second objective of potentially using the 2 GHz band for BFWA, it is understood that the Authority will determine such use at a future date yet to be determined, once the conditions for sharing are in place ("*subject to conditions in place to allow co-existence between broadband fixed wireless access and point-to-point (PtP) links*" and "*if the band continues to be under-utilized*". Telkom supports this view as it is important to establish the necessary sharing conditions before the band can be used for BFWA and not to compromise the continued use of the band by PTP links Also see also Telkom's comments in section 7.1.2.

7.2.2 Section 2 "General"

In line with Telkom's comments above, Telkom recommends an amendment to the last paragraph in section 2 as follows:

> "*In the event of continued under-utilization of this band, consideration will be given to assignments for broadband fixed wireless access in localities where there is no danger of harmful interference to point-to-point links. The Authority will consider this in future and through a separate process.*".

7.2.3 Section 4 "Requirements for usage of radio frequency spectrum"

7.2.3.1 Use of the band for mobile systems

Telkom agrees with the Authority that the frequency bands 2025-2110 MHz and 2200-2285 MHz shall not be used for high-density mobile systems as per Recommendation ITU-R SA.1154. However, this should not be limited to high-density mobile systems, but should also include conventional type mobile systems, as indicated in *recommends 3* of Recommendation ITU-R SA.1154. Such systems will cause harmful interference to Space Research, Space Operations and Earth Exploration Satellite services operating in these frequency bands.

It is also important to reflect in the draft RFSAP that Recommendation ITU-R SA.1154 is incorporated by Reference into the ITU Radio Regulations and is therefore part of the ITU Radio Regulations; compliance to this recommendation is therefore mandatory. Telkom therefore recommends that the draft RFSAP be amended to indicate that compliance with this recommendation is mandatory in South Africa.

7.2.3.2 Maximum radiated power

It is indicated in the draft RFSAP that Base station transmissions should not exceed "*dBm/5 MHz EIRP*". It is noted however that no value has been provided (i.e. **x**dBm/5MHz). The preceding sentence in the draft RFSAP indicates that the "*maximum radiated power is determined in the type approval process for equipment in this band*". As no standard has been specified (e.g. ETSI EN 302 217) in the draft RFSAP nor in the Official List of Regulated Standards, as prescribed in Government Gazette No. 32885 dated 22 January 2010). The latter is used to specify type approval standards used by the Authority.

If the maximum power is determined through the type approval process, Telkom recommends that the reference to a maximum radiated power for PTP Links in this band be deleted. Also, the application of mitigation as specified in Recommendation ITU-R F.1247 will ensure that harmful interference is avoided.

Lastly, reference to “base station” could be misleading as it will be perceived in the context of mobile or BFWA systems. Telkom recommends that the RFSAP refers to “Fixed Stations”.

7.2.3.3 Recommendation ITU-R F.1247-3

Recommendation ITU-R F.1247-3 was superseded by ITU-R F.1247-4 in September 2015, therefore, Telkom recommends that the RFSAP refers to the version currently in force.

Telkom supports the reference to Recommendation ITU-R F.1247-4 in this RFSAP as it is necessary to be considered by licensees deploying PTP links, to facilitate sharing with the space science services.

The Authority refers to interference mitigation techniques that might be used by licensees in the 2 GHz frequency band to facilitate protection of the science satellite services. What is not clear from the draft RFSAP is to what extent these will be considered or enforced by the Authority when making assignments in this frequency band. Telkom recommends that the Authority also makes specific reference to the “*recommends”* part of Recommendation F.1247-4, which specifies the specific measures that could be applied to facilitate sharing with the space science services. These recommendations should be applied by licensees where practical, as indicated in *recommends 1*.

7.2.3.4 Editorial change

The sentence: “*In some cases, a radio system conforming to the requirements of this RFSAP may require modifications if major interference is caused to other radio stations or systems*” has been duplicated on pages 124 and 125. Telkom recommends that this duplication be corrected.

7.2.4 Section 6 “Co-ordination requirements”

See Telkom’s comments in section 3.1 above.

7.2.5 Appendix A "National Radio Frequency Plan"

Reference to Appendix A should be added to the title as follows:

"***Appendix A:*** *National Radio Frequency Plan*"

The band 2025-2110 MHz has been allocated to, amongst others, the mobile service on a primary basis in Region 1. This has correctly been reflected in column one of the table. However, the reference to footnote **5.391** has been omitted. Telkom requests the Authority to add this reference as Column 1 is an exact reflection of the ITU allocations in Region 1.

The band 2200-2290 MHz is also allocated to Mobile service on a primary basis in Region 1. However, in line with the Authority's decision that this band should not be used for mobile services (to protect space science services), Telkom recommends that reference to "MOBILE 5.391" in column 2 be deleted from the table when the NRFP is amended.

7.2.6 Appendix B "Interference Resolution Procedure"

Reference to Appendix B should be added to the title.

See also Telkom's comments in section 3.2 above.

Appendix 8 - Frequency band 2285 to 2300 MHz

8.1 General comments

8.1.1 Frequency band

The draft RFSAP sometimes refers to the band 2285-2300 MHz and in other cases to the band 2290-2300 MHz. Since Section 4 ("*Channelling Plan*") of the draft RFSAP and Section 2 ("*Purpose*") both refer to the band 2290-2300 MHz, Telkom recommends that the band 2290-2300 MHz be use throughout the document.

8.1.2 Use of the band for BFWA, BWA or IMT

Per the draft RFSAP, the band 2290-2300 MHz is considered for BFWA. An alternative application being considered is Broadband Wireless Access ("BWA") or IMT as a future extension of the IMT2300 band. Stakeholders are invited to comment on this specifically.

Telkom does not support the use of the band 2290 – 2300 MHz for IMT (or BWA, which includes mobile or fixed) for various reasons.

- Firstly, and most importantly, the band 2290-2300 MHz acts as a guard band for the protection of space science services operating in the bands below 2290 MHz and IMT systems operating in the band 2300-2400 MHz. Comprehensive studies have been done within Europe and this is reflected in ECC Report 172 (March 2012). By deploying IMT in the band 2290-2300 MHz, there will be no guard band, so the studies done in Europe will be invalid and the Authority will be required to perform new studies to ensure that the science services will be protected. Even without the Authority's studies, considering the results of the studies in ECC Report 172, it is safe to say that harmful interference will likely occur to the space science services operating below 2290 MHz, as well as those operating in the band 2290-2300 MHz. Protection of the space science services in the 2 GHz band was also addressed in the draft RFSAP.

- Secondly, using the band 2290-2300 MHz for IMT (or BWA), will necessitate a guard band for the protection of Telkom's Time Division Duplexing ("TDD") systems operating above 2300 MHz. This matter is also addressed in ECC Report 172. If different networks must coexist without a guardband, the use of mitigation techniques is required such as synchronisation of networks (which is not practical

as operators use different uplink/downlink configurations), extra filtering, site engineering main lobe planning between licensees and site coordination between licensees. These mitigation techniques are not practical and will restrict Telkom's use of the 2.3 GHz band. If the band is to be used for IMT or BWA, a guardband of at least 5 MHz will be required (i.e. in the band 2295-2300 MHz). That will leave only 5 MHz to be used for IMT (i.e. 2290-2295 MHz), which is not economically viable.

Other reasons why this band should not be used for IMT (or BWA) include:

- This band is not part of 3GPP Band 40, which is limited to the band 2300 – 2400 MHz.
- The band 2290 – 2300 MHz is not a standard harmonised IMT band within the work of the ITU (Recommendation M.1036) and is also not being considered within the work of 3GPP.
- Based on our information, there is no interest globally to support IMT in this band and as such there is no supporting technology ecosystem for this band.
- During WRC-15, where additional IMT spectrum were considered, this band was not considered as there was no interest in this band.
- Adopting this band for IMT will be a national identification only; there will be no economy of scale, international roaming will not be possible in this band and equipment will not be available, in particularly end user devices.

With regards to the use of the band 2290-2300 MHz for BFWA, Telkom recommends that the Authority also assesses the protection of space science services in the band below 2290 MHz in detail prior to making a final decision to use this band for BFWA. Also, to ensure protection of Telkom's 2.3 GHZ LTE services operating in the band above 2300 MHz, a suitable guardband will be required. The use of this band for BFWA must therefore be assessed in detail to ensure that no harmful interference between BFWA and Telkom's LTE systems in caused. Detailed frequency coordination procedures, based on the technical parameters of the actual systems to be deployed, must be developed prior to the use of this band for BFWA.

Based on the above, Telkom recommends that the band 2290 – 2300 MHz should not be considered for IMT, BWA or BFWA. Not only will there be harmful interference with

existing services, the amount of bandwidth available for use is very limited. Equipment available for operating in this band is also unknown.

8.2 Specific comments

8.2.1 Section 1 "Glossary"

Several acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the this RFSAP, Telkom recommends that these be deleted. These are:

"**BTX**" means Base Transceiver

"**CEPT**" means European Conference of Postal and Telecommunications Administrations

"**DF**" means Dual Frequency

"**DM RS**" means Demodulation Reference Signal

"**MTX**" means Mobile Transceiver

"**SF**" means Single Frequency

"**STL**" means Studio Transmitter Link

8.2.2 Section 3 "General"

In the first sentence, the Authority refers to both BFWA and BWA. In section 2.1, as well as in section 3, the Authority indicates that the band 2290-2300 MHz will be used for BFWA. Telkom therefore recommends that reference to BWA in the opening sentence of section 3 be deleted to avoid confusion.

The Authority lists various ITU-R Recommendations as appropriate for this band. Telkom is of the view that some of these recommendations provide for analogue PTP or FWA systems. In section 5 the Authority indicates that only digital technologies that promote spectral efficiency will be issued with a spectrum assignment. Telkom recommends that the relevance of the listed ITU-R Recommendations to this frequency band be further assessed and confirmed. It seems that Recommendation

ITU-R F.757 is not relevant to the band 2290-2300 MHz and this must also be confirmed.

8.2.3 Section 5 "Requirements for usage of radio frequency spectrum"

As indicated, Telkom does not support the use of this band for IMT, BWA or BFWA.

If the band is to be used for BFWA as indicated in section 5, reference to "mobile stations" should be changed to "fixed subscriber stations". All out-stations or remote stations should be fixed.

The Authority recommends that the use of the band be limited to "BFWA". Per the current NRFP, typical use in this band is for fixed links. As indicated in section 3.4 above, suitable amendments must be made to the NRFP before the proposed RFSAP can be implemented.

8.2.4 Section 6 "Implementation"

As motivated above, Telkom does not support the use of this band for BFWA systems, at least not until the issues raised have been resolved.

8.2.5 Section 7 "Coordination Requirements"

Please refer to Telkom's comments in section 3.1 above.

8.2.6 Section 8 "Assignment"

The Authority indicates that both the Standard and the Extended application processes will be followed for assignments in this band. It is not clear to Telkom why both are listed. Since the band will be used for BFWA, Telkom recommends that the Extended application process be used. This implies that reference to Standard Approach should be removed.

At the end of section 8 the words "*Further details are in the Appendix*" appears. It is however not clear to which Appendix the Authority is referring. Since these are only Appendices in the draft RFSAP, and none of the two refers to the application process, Telkom recommends that these words be deleted. Alternatively, this must be clarified.

8.2.7 Section 9 "Revocation"

The following statement appears in section 9: "*This band is currently unused Existing licences for the use of the band will be revoked*". This statement seems contradictory and incomplete. If the band is unused, there should be no licences to be revoked. Telkom recommends that this be clarified and corrected as required.

8.2.8 Section 10 "Frequency Migration"

The Authority indicates that: "*The band is to be used for BFWA (or alternatively) BWA (in line with SADC proposed common sub-allocation)*".

This statement is contradictory to section 5, which indicates that "*the use of the band is limited to BFWA*". Further, there is no reference, in the 2016 SADC Frequency Band Plan, to the use of this band for BWA, which must therefore be verified.

Based on the above, Telkom recommends that reference to BWA therefore be deleted. In any event, Telkom does not support the use of this band for IMT, BFWA or BWA. See Telkom's comments above.

The issue of frequency migration is not specifically addressed in section 10 so the Authority may consider deleting this section. Also, it is indicated that the band is currently unused so it is assumed that there are no systems to be migrated.

8.2.9 Appendix B "Interference Resolution Procedure"

See Telkom's comments in section 3.2 above.

Appendix 9 - Frequency band 440 to 441 MHz

9.1 General comments

9.1.1 Use of the frequency band 440 to 441 MHz

Telkom supports the use of the band 440-441 MHz for burglar alarms and security related telemetry systems.

9.2 Specific Comments

9.2.1 Section 1 "Glossary"

Some acronyms listed in section 1 are not used in the draft RFSAP. Since these acronyms are not relevant to the this RFSAP, Telkom recommends that these be deleted. These are:

"**DF**" means Dual Frequency

"**SF**" means Single Frequency

"Technical sub-committee" is defined in section 1 as: "*A group of people appointed by ICASA to oversee and advise ICASA with respect to the use of this frequency band*". However, no further reference is made to this committee explaining how this committee will function and what role they will fulfil regarding the use of this frequency band. Telkom recommends that further guidance be provided in the draft RFSAP.

Definitions for "ETSI", "SANS", "IEC", "EMC", "IOT" and "EIRP" could also be added to section 1.

9.2.2 Section 3 "Technical standards"

The Authority listed ETSI EN 300 220-1 as a relevant standard for LPWAN operating in the band 440-441 MHz. This standard (Part 1) provides the technical characteristics and methods of measurements but no specific frequency band information. Part 2 of this standard (i.e. EN 300 220-2) provides the "*Harmonised Standard for access to radio spectrum for non-specific radio equipment*". The applicable frequency bands are listed in Table 1 of Part 2 of this standard. The frequency band 440-441 MHz is not included in this list and the applicability of this standard to LPWAN equipment operating in the band 440-441 MHz must be confirmed.

It is noted that a later version is available on the ETSI website, which should be considered by the Authority (EN 300 220-1 V3.1.1 (2017-02)).

Regarding safety standard (i.e. 60950) it is recommended that the South African standard (i.e. SANS) will suffice as reference.

9.2.3 Section 9 "Radio Frequency Migration"

Per the NRFP, the band 440-441 MHz is currently used for Telemetry/data (BTX) systems, paired with 445-446 MHz (MTX). Some channels within this band (i.e. 445.0125 and 445.3625 MHz) are used for Agricultural Telemetry per the NRFP. It is not clear from the draft RFSAP if these applications are retained or if they will be migrated. If these dual frequency systems are migrated, it is not clear what the return band (i.e. 445-446 MHz will be used for. Telkom recommends that this be addressed in the RFSAP.