

Regulatory Affairs and Government Relations

61 Oak Avenue, Highveld,
Techno Park, Centurion 0157,
Private Bag X148, Centurion 0046
T: +27 12 311 3598
F: +27 12 311 3314
C: +27 81 799 6836
E: Siyabonga@telkom.co.za

12 September 2018

Mr. Manyapelo Richard Makgotlho
Independent Communication Authority of South Africa
Pinmill Farm, Block A
164 Katherine Street
SANDTON
2196

Via email: rmakgotlho@icasa.org.za

Dear Mr Makgotlho

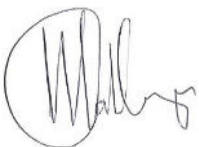
RE: TELKOM'S WRITTEN SUBMISSION ON THE DRAFT RADIO FREQUENCY MIGRATION PLAN, 2018

Telkom SA SOC Ltd ("Telkom") welcomes the opportunity to provide written comments pertaining to the draft Radio Frequency Migration Plan, 2018 as published in Government Gazette No. 41854 on 24 August 2018. Telkom hereby requests an opportunity to make an oral representation at the scheduled public hearings, which is planned for 25 to 26 October 2018.

Please find herewith Telkom's written comments on the draft Radio Frequency Migration Plan, 2018.

Telkom reserves its right to provide supplementary comments on the draft Radio Frequency Migration Plan due to its size and complexity. Telkom hereby requests the Authority to allow industry an opportunity to provide supplementary comments following the planned public hearings.

Yours Sincerely



Siyabonga Mahlangu
Group Executive: Regulatory Affairs and Government Relations

Submission to the Independent Communications Authority of South Africa

Draft Radio Frequency Migration Plan, 2018

Government Gazette No. 41854 (Notice 494 of 2018) dated 24 August 2018

1 Introduction

The Authority published the draft Radio Frequency Migration Plan, 2018 on 24 August 2018 in Government Gazette No. 41854 (Notice 494 of 2018) and invited written representations from interested parties on their views by no later than 16h00 on Friday, 12 October 2018. The Authority further indicated that public hearings will be held from 25 to 26 October 2018.

Telkom's submission is provided under general and specific comments contained in sections 3 and 4 respectively. Section 5 contains comments considered to be of an editorial nature. An executive summary highlighting key points is provided in section 2.

2 Executive summary

Telkom wishes to highlight only a few of the main points raised in sections 3 and 4.

1. Telkom recommends that the Radio Frequency Migration Regulations contained in Part 1 of the draft Radio Frequency Migration Plan, 2018 be moved to the Radio Frequency Spectrum Regulations, which contains all spectrum related regulations. The Radio Frequency Migration Plan can then be published separately.
2. In addition to moving the Frequency Migration Regulations as indicated above, Telkom also recommends that the structure of the Radio Frequency Migration Plan be reworked completely. The Authority should create two sections; first section should deal with all the background and general information pertaining to migration whereas the second section should contain the proposed migration plan. In addition, topics and frequency bands must preferably be grouped to ensure a logical flow of information and ensuring that all information pertaining to a frequency band or topic is contained in one section/sub-section.
3. The Radio Frequency Migration Plan must fully align with the National Radio Frequency Plan, 2018. Amendments to the table of frequency allocations must be done through an amendment of the National Radio Frequency Plan (process as per section 34 of the ECA) and not through the Radio Frequency Migration Plan. In several instances, the Authority purports to change the allocation and/or applications as contained in the approved National Radio Frequency Plan, 2018.
4. Telkom is of the view that the Authority is mixing the concepts of migration and re-farming. Telkom recommends that the Authority remove the concept of re-farming from the Radio Frequency Migration Plan or, as a minimum, amend the proposed definition to capture the reality that licensees are already re-farming existing spectrum assignments (example replacing 2G with 3G and 4G).
5. Telkom recommends that the Authority performs a revision of the existing IMT450 Radio Frequency Spectrum Assignment Plan based on the outcome of the WP5D

revision of ITU-R Recommendation M.1036. Further, the Authority must conduct a feasibility study as proposed in the 2013 Radio Frequency Migration Regulations and Plan before concluding on the migration of current users from this band.

6. Telkom is concerned that the proposals pertaining to the 850 MHz frequency band is unclear and will lead to confusion. Telkom recommends a total re-work of the proposed migration plan for the band 862 – 890 MHz.
7. Telkom made several comments on other frequency bands as contained in sections 3 and 4 below.
8. Due to the size and complexity of the draft Radio Frequency Migration Plan, 2018, Telkom did not review the content within Appendixes A to G. Telkom may consider a supplementary submission to address these Appendixes, amongst other matters.
9. Telkom requests the Authority to rework the Frequency Migration Plan, 2018 and then publish a second version for public consultation, considering the substantial changes we believe is necessary before the Radio Frequency Migration Plan can be finalised.

3 General comments

3.1.1 Amendment of the Radio Frequency Migration Regulations and Radio Frequency Migration Plan, 2013

The Authority invited comments on the draft Radio Frequency Migration Plan, 2018. Although this plan was specifically termed a Radio Frequency Migration Plan, it consists of both the Radio Frequency Migration Regulations (Part 1) (“draft migration regulations”) and content purporting to be a Radio Frequency Migration Plan (Part 2) (“draft migration plan”). It is stated that the draft Radio Frequency Migration Plan will be prescribed as regulation in terms of section 4, read with sections 31(4), 34(7)(c)(iii), 34(8) and 34(16) of the Electronic Communication Act (Act No. 36 of 2005) (“ECA”). The draft migration plan proposes to amend the Radio Frequency Migration Regulations and Radio Frequency Migration Plan of 2013, which was published in GG No. 36334 (Notice 352 of 2013).

Part 1 of the Radio Frequency Migration Plan, 2018 is the draft migration regulations. The draft migration regulations outline the process for frequency migrations including the preparation of a Radio Frequency Spectrum Assignment Plan and the ensuing amendment of a Radio Frequency Spectrum Licence. The Authority prescribed the Radio Frequency Spectrum Regulations, 2015 (GG No.38641, Notice 279 of 2015), which contains all spectrum-related regulations. Telkom recommends that Part 1 of the draft Radio Frequency Migration Plan, i.e. the Radio Frequency Migration Regulations, be incorporated into the Radio Frequency Spectrum Regulations, 2015. The remainder of the document can then be published as the Radio Frequency Migration Plan.

Part 2, which is titled “*draft Radio Frequency Migration Plan*”, contains text mostly of a general nature (e.g. the review of legislation and regulations, principles governing frequency migration, background to the development of the draft migration regulations, and a summary of WRC-15 resolutions and geographical maps of current frequency deployments, amongst others). Part 2 therefore contains a substantial amount of background text of a non-binding nature, which is not a regulation per se. Further, section 6, which is also titled “Frequency Migration Plan”, is of a non-binding nature (Table 6 is titled “Proposed migration plan”) (own emphasis).

Although the draft migration plan is of a non-binding nature, Telkom endeavoured to provide comments to the extent possible.

3.1.2 Alignment between Radio Frequency Migration Plan and the National Radio Frequency Plan, 2018

In accordance with the ECA definition for “radio frequency plan”, the National Radio Frequency Plan consists of, but is not limited to, (a) the table of frequency allocations and (b) the plan for the migration of systems and equipment of existing users to different frequency bands. The radio frequency migration plan is therefore an integral part of the National Radio Frequency Plan and should be consistent with the National Radio Frequency Plan. Both are prepared in terms of section 34 of the ECA. The latest version of the table of frequency allocations was prescribed as the National Radio Frequency Plan, 2018 (GG No. 41650, Notice 266 of 2018).

In several instances, however, it appears that the draft migration plan purports to change the table of frequency allocations as contained in the National Radio Frequency Plan, 2018. Telkom is of the firm view that the approved National Radio Frequency Plan, 2018 cannot be amended through the Radio Frequency Migration Plan. In the interests of legal certainty, any change to the table of frequency allocations, as contained in the National Radio Frequency Plan, 2018, must be implemented through an amendment of the National Radio Frequency Plan, 2018, in terms of section 34 of the ECA.

3.1.3 Structure of Radio Frequency Migration Plan

In this section Telkom assumes that the frequency migration regulations are moved into the Radio Frequency Spectrum Regulations, 2015, as proposed in section 3.1.1 above.

The frequency bands, which are considered for migration, are addressed in different sections of the draft migration plan. For example, the frequency bands where migration are considered are contained in section 4.10 (*“Commentary on bands with respect to Frequency Migration Plan 2013”*) and section 6.1 (*“Progress update to Frequency Migration Plan 2013”*). Section 4.11 (*“Summary of the Authority’s decision”*) provides additional notes on migration/usage of only some of the frequency bands discussed in the other sections whereas section 5.1 (*“Bands planned for IMT”*), section 5.2

(“*Frequency Migration Resolutions resulting from WRC-15*”) and section 5.3 (“*Other Migration issues*”) provide even further information on the migration of systems and applications from the various frequency bands. In many cases, the same frequency bands are discussed in different sections and in some cases, there seems to be contradictions between sections. It is also not always evident what the purpose of the different sections are and creates uncertainty.

Telkom recommends that the structure of the draft migration plan be amended. It is recommended that all information relevant to a specific frequency band be grouped into one section/sub-section. This will ease the reading and use of the draft radio frequency migration plan and ensure that there are no discrepancies between different sections.

Topics of a general nature are also discussed in different sections of the draft migration plan. For example, section 4.12 deals with spectrum re-farming including its definition (section 4.12.1) whereas re-farming is also addressed in sections 1.2.2 (“*Defining Spectrum Migration*”) and 1.2.3 (“*Spectrum re-farming*”). Telkom recommends that the same topics be addressed in one section to avoid duplication, misinterpretation and uncertainty.

Duplication is also evident between the general sections and some of the appendixes. For example, Appendix B deals with “ECA – Article 34” whereas this is also addressed in section 2.1.1 of the draft migration plan. Again, Telkom recommends that the same information be grouped in the same section/sub-section.

Telkom also recommends that the Authority separates matter of a general nature or information from the section/s dealing specifically with proposed frequency band migration. For example, Part A could deal with the general matters such as background, process for developments, applicable regulations, etc. while Part B could deal specifically with the different frequency bands being considered for migration.

3.1.4 Reference to SADC Frequency Allocation Plan

In several instances, the Authority states that the specific allocation is in line with the SADC Frequency Allocation Plan (FAP). Telkom recommends that, where the National Radio Frequency Plan, 2018 is aligned with the SADC FAP, reference should be made

to the national document namely the National Radio Frequency Plan, 2018. The National Radio Frequency Plan is binding in South Africa whereas the SADC FAP is not. Telkom further recommends that reference to the SADC FAP only be done when the specific migration being considered is to align South Africa with the SADC FAP. See also Telkom's comments in section 4.1.3 below.

3.1.5 Referencing services and applications contained in the National Radio Frequency Plan, 2018

In many of the frequency bands being discussed in the draft migration plan, the Authority lists the various allocations and applications contained in the National Radio Frequency Plan, 2018. In many cases, however, the list is not complete whereby only some services/applications are listed. In some cases, errors have also been introduced.

To avoid uncertainty and unnecessary repetition, and to ensure full alignment with the National Radio Frequency Plan, 2018, Telkom recommends that the allocations and applications not be replicated in the draft migration plan. A reference to the specific frequency band in the National Radio Frequency Plan, 2018 will suffice. Repetition should only occur where it is necessary, for example listing or identifying those systems or services which are considered for migration.

4 Specific comments

4.1 Radio Frequency Migration Regulations

As indicated in section 3.1.1, Telkom recommends that the Radio Frequency Migration Regulations (i.e. Part 1) be incorporated into the Radio Frequency Spectrum Regulations, 2015.

4.1.1 Ad Part 1 - Title

Part 1 on Page 5/198 of the draft migration plan is titled “*Frequency Migration Regulations Overview*” (own emphasis). Telkom suggests that the word “overview” be deleted as Part 1 contains the complete frequency migration regulations and is not a summary or impression of the migration regulations. The title on Page 6/198 should also be amended accordingly.

4.1.2 Ad Regulation 1 – Definitions

See section 5 regarding suggested editorial amendments. Not only must these be amended in Regulation 1 but also corrected throughout the draft migration plan.

4.1.3 Ad Regulation 4(3)

Regulation 4(3) states that:

“The National Radio Frequency Plan itself must be consistent with the International Telecommunications Union (ITU) Radio-regulations as updated by WRC, and with the SADC FAP”.

Telkom agrees that the National Radio Frequency Plan must be consistent with the ITU Radio Regulations as these are an international treaty, which has been ratified by South Africa.

The SADC Frequency Allocation Plan (FAP) on the other hand is not mandatory and remains a recommendation. Although Telkom agrees that alignment with the SADC FAP is beneficial, such alignment will not always be possible as the use of the radio frequency spectrum in South Africa is different in some instances compared to that of other SADC

countries. One example is the use of spectrum for Radioastronomy, where South Africa has unique spectrum uses for the implementation of the Square Kilometre Array for astronomy purposes.

Telkom recommends that Regulation 4(3) be amended as follows:

“The National Radio Frequency Plan itself must be consistent with the International Telecommunications Union (ITU) Radio-regulations as updated by WRC, and with the SADC FAP, to the extent possible”.

4.1.4 Ad Regulation 4(4)

Regulation 4(4) states that:

“Allocations and assignments of radio frequency spectrum that are no longer in line and [in] accordance with the National Radio Frequency Plan will be migrated”.

Telkom is of the view that “allocations” are not migrated; in fact, allocations cannot be migrated. Changes in allocation are implemented through an amendment of the National Radio Frequency Plan, in accordance with section 34 of the ECA, usually following a WRC. Also, assignments must always be in line with the National Radio Frequency Plan, as per section 34(3) of the ECA (“...the Authority must assign radio frequencies consistent with the national radio frequency plan...”). It is therefore not clear when assignments “are no longer in line and accordance with the National Radio Frequency Plan”.

In accordance with the ECA definition of “radio frequency plan”, “...systems and equipment of existing users within a frequency band...” are migrated to a different frequency band. Based on this definition, Telkom recommends that regulation 4(4) be amended as follows:

“~~Allocations and assignments of~~ Systems and equipment of existing users within a radio frequency spectrum band, which have been identified for migration, that are no longer in line and accordance with the National Radio Frequency Plan will be migrated to the same or a different frequency band”.

4.1.5 Ad Regulation 4(5)

Regulation 4(5) states that:

“The users to be migrated shall not be entitled to be compensated by the Authority for the costs of the migration”.

Telkom continues to hold the view that non-entitlement to compensation could be construed to be an arbitrary deprivation of property on the basis that compensation is out-right excluded from being considered in the migration process and that the constitutionally enshrined prescripts of due process are further not considered in this process. Telkom recommends that compensation for migration be considered on a case-by-case basis, where it may be constitutionally warranted. Moreover, Telkom encourages the Authority to explore alternate forms of compensation that may be used to offset migration costs (e.g. spectrum fee holidays). Telkom’s detailed comments in this regard are contained in its submission to the draft Radio Frequency Migration Regulations and Radio Frequency Migration Plan, 2013 submitted to the Authority on 18 February 2013, which comments remains valid.

4.1.6 Ad Regulation 4(7)

Telkom recommends that this regulation be amended as follows:

“Frequency Migration ~~is~~ may be required in the core and central astronomy advantage areas...”.

Not all radiocommunication systems located within the Karoo central astronomy advantage area will necessarily be migrated. These systems are investigated and, only if such systems exceed the prescribed protection values, it must migrate. Some frequency bands will also be exempted and systems operating within such frequency bands will be able to remain in the Karoo central astronomy advantage area.

4.1.7 Ad Regulation 8 – Short title and commencement

Regulation 8 still refers to the 2013 Radio Frequency Migration Regulations and Plan, which came into effect on 3 April 2013. Telkom recommends that Regulation 8 be

amended to reflect the 2018 frequency migration regulations, when the new migration regulations are published (noting Telkom's suggestion that the migration regulations be moved into the Radio Frequency Spectrum Regulations, 2015).

Further, it is important to state in the 2018 frequency migration plan that the 2013 frequency migration plan is repealed as it is replaced in its entirety by the 2018 frequency migration plan. This is currently not indicated in the draft migration plan. It is further also noted that many references are made to the 2013 Radio Frequency Migration Regulations and Plan, which create further uncertainty as to the status of the 2013 Radio Frequency Migration Regulations and Plan following the publication of the 2018 Radio Frequency Migration Plan.

4.2 Radio Frequency Migration Plan

4.2.1 Ad section 1.1: Purpose

The plan provides for, amongst others, "*The impact of the Frequency Migration Plan (where possible)*". The reference to "*where possible*" is not clear and must be further elaborated on. The impact of the frequency migration plan (on users and operators) must always be defined or quantified.

4.2.2 Ad section 1.2.1: ITU Definitions

At the end of section 1.2.1, the following statement appears: "*The key element here is the clear distinction between allocation and assignment which is not always followed in certain benchmark examples*" (own emphasis). The reference to "*certain benchmark examples*" is not clear and needs further elaboration.

4.2.3 Ad section 1.2.2: Defining Spectrum Migration

The Authority suggested to expand the definition of migration, as defined in the ECA, to include not only users but also uses and proposes the following definition:

"Radio Frequency Spectrum Migration" means the movement of users or uses of radio frequency spectrum from their existing radio frequency spectrum location to another".

Telkom does not agree with the proposed adding of “uses” in the definition of migration. Firstly, this changes the definition of migration as defined in the ECA. Secondly, a change in use of spectrum implies a change in the table of frequency allocations (either the allocation or the application). These changes must be implemented through an amendment of the National Radio Frequency Plan in terms of section 34 of the ECA.

The Authority also provides the following footnote at the end of the third sentence:

“This allows spectrum migration to encompass re-farming of spectrum within assigned bands to other technologies and in-band migration such as the digitalisation of TV broadcast”.

Telkom agrees that migration encompasses in-band migration. However, Telkom does not agree with the inclusion of re-farming as part of migration, if this is then considered as the exclusive purview of the Authority. The issue of re-farming is further addressed in the next section.

4.2.4 Ad section 1.2.3: Spectrum Re-farming

Telkom considers migration and re-farming to be two distinctly different processes. Whereas the Authority is responsible for migration, including in-band migration, re-farming of existing licensed spectrum could be driven by licensees without intervention from the Authority. Spectrum licences are generally assigned on a technology neutral basis, which gives licensees broad rights in terms of deploying radio equipment in the assigned spectrum. Licensees should be allowed to re-farm spectrum within the parameters of the licence. If not allowed, it could curtail, or as a minimum, delay the efforts of the operators to introduce, for example, faster broadband services (e.g. moving from 4G to 5G technology) and thus reducing investments, or as a minimum, delaying such efforts.

In Telkom’s view, the main difference between re-farming and migration is that the latter generally requires an amendment of the licence (usually a change in assigned frequency), even for in-band migration. The Authority therefore also included the amendment of radio frequency spectrum licences in the process of migration as per the Radio Frequency Migration Regulations. In the case of re-farming, the same spectrum

(assigned to a licensee) is used for a different technology that does not necessarily require an amendment of the spectrum licence or the intervention of the Authority.

The Authority's proposed definition of spectrum re-farming does not include the case of licensees changing the use of their frequency assignments to, for example, changing from 2G to 3G to 4G (which are being done). Furthermore, the definition assumes that there is a change in allocation, which is not the case; a change in allocation may lead to migration of users, not re-farming of spectrum. Lastly, when a user "vacate the frequency" it denotes frequency migration, not re-farming.

Telkom recommends the following amendment to the Authority's proposed definition:

"Radio Frequency Spectrum Re-farming" means the process by which the use of a Radio Frequency Spectrum ~~band~~ assignment is changed within the confines of the radio frequency licence. ~~following a change in allocation, this may include change in the specified technology and does not necessarily mean that the licensed user has to vacate the frequency.~~

Alternatively, Telkom recommends that the concept of "re-farming" be removed from the migration plan as it is not part of migration.

4.2.5 Ad section 2.1.1: Section 34 – Radio Frequency Plan

The Authority concludes the section with the following statement:

"It is clear that ICASA has the obligation and authority to plan and implement the migration of users, subject to the approval of the Minister with respect to government entities" (own emphasis).

Although this is true, it is not the full extent of the Minister's responsibility pertaining the frequency migration. Per definition in the ECA, the frequency migration plan is part of the National Radio Frequency Plan contemplated in section 34 that includes, but is not limited to (a) the table of frequency allocations and (b) the frequency migration plan. The radio frequency migration plan is therefore integral to the National Radio Frequency Plan. In

accordance with section 34, the Minister must approve the National Radio Frequency Plan. Telkom is therefore of the view that the Minister must also approve the frequency migration plan.

4.2.6 Ad section 2.1.4: Spectrum Licence Duration

The Authority made only one statement in this section namely:

“The process of migrating users will not have an impact on the duration of their radio frequency spectrum licences”.

Telkom reads this section to mean that, migration will not be implemented until after the end of the spectrum licence period. Telkom agrees with this. See also comments in section 4.2.8.

4.2.7 Ad section 2.3: Overview of rights and responsibilities

In line with Telkom’s recommendation to restructure the Radio Frequency Migration Plan (see section 3.1.3), Telkom recommends that section 2.3 be merged with section 3, which deals with *“Principles Governing Frequency Migration”*.

4.2.8 Ad section 2.3.1: Radio frequency spectrum rights

Whilst Telkom could agree that a spectrum licensee does not have continued tenure (indefinite use) of a spectrum assignment, Telkom is concerned regarding the statements made in section 2.3.1 of the Radio Frequency Migration Plan namely (1) that the user has no right to retain the spectrum and (2) that spectrum can be revoked at any time. Although the Authority has the right to migrate users as per section 34(16) of the ECA, this does not mean that the licensee has no rights to retain the spectrum and/or that the licence can be revoked at any time.

Telkom is of the view that, although there is no absolute right to retain spectrum, a spectrum licensee, while providing services and operating within its licence conditions, does have a right to retain such spectrum. The right to use the spectrum is provided

through a Radio Frequency Spectrum Licence. Most of Telkom's spectrum licences are coupled to the duration of its service licences, which will expire in 2029.

Regarding the rollout of national networks such as mobile cellular networks specifically, there is an expectation regarding the continued use of the assigned spectrum for an extended period, for example 10 – 15 years' minimum. This certainty is necessary to raise the required capital and to be able to plan and build a national network through a sustainable business case spanning many years to provide communication networks and services. This is also supported by the main objective of the ECA namely to support public interest (ECA, section 2, Object of Act). Moreover, an uncertainty in licence duration contradicts sections 2(d) and 2(z) of the ECA, which speaks to encouraging investment in infrastructure and promoting stability in the ICT sector, respectively. It is purported that the international benchmark supports the Authority's position in this regard. However, there are ample international examples of spectrum licences being awarded for periods of 10 or 15 or 20 years.

Telkom supports the process stipulated in this section and that the Authority will consider, amongst others, the licence duration, economic life of equipment, alternative frequencies to be used, etc. Nevertheless, although Telkom agrees that the Authority has a right to change the use of spectrum as part of proper spectrum management, and that migration may be implemented where needed, this must be done in a responsible manner considering many pertinent issues, as also highlighted in the Radio Frequency Migration Plan. Telkom requests the Authority to amend the above highlighted statements in the draft Radio Frequency Migration Plan to accurately reflect these realities and to provide certainty to licensees.

4.2.9 Ad section 3.3.2: Time Frame to migrate existing users

As indicated above, spectrum licences are mostly linked to the service licence. Telkom's service licences will expire in 2029. Although there is a mandatory annual payment of radio frequency spectrum licence fee, it is a given that the licence will continue to be valid following payment of the prescribed spectrum fee. See also Telkom's comments in section 4.2.7 above.

The Authority mentions the switch over from 3G/HSPA to LTE, which will require a time frame of 3 to 5 years to accommodate the life cycle of the end-terminal equipment. Telkom would argue that this change (or re-farming) will be implemented by the mobile operator in accordance with its commercial and technical requirements. The Authority should generally not be concerned regarding this re-farming exercise. See also Telkom's comments in section 4.2.4.

In the second bullet, the Authority refers to "*spectrum migration strategy*"; Telkom assumes that this should be "*spectrum migration plan*".

4.2.10 Ad section 3.3.3: Economic life of the equipment installed

Telkom recommends that the economic lifetime of equipment be considered on a case-by-case basis as there is no general rule that applies to all equipment types (for example PTP links and mobile equipment).

4.2.11 Ad section 3.3.5: Conclusions regarding time frame

Telkom recommends that the last sentence be amended as follows:

"Where there is a spectrum migration planned for a particular frequency band, there is nothing to stop a licence being issued for the period up to the date at which transmission should cease if the licensee ~~is able to 'live with'~~ agrees with this".

4.2.12 Ad section 4.2: International context

The reference to "*the Resolutions of the World Radio[communication] Conferences*" (own emphasis) may be misinterpreted and not necessarily reflect the full picture of decisions taken at a WRC. Whereas Resolutions are prepared and adopted by a WRC, these does not reflect all decisions of the conference. For example, changes to Article 5 (Table of Frequency Allocations) are not always reflected through a WRC Resolution per se but rather as amendments to the Table of Frequency Allocations. Telkom therefore recommends that "*Resolutions*" be changed to "*resolutions*" to reflect decisions in general or the sentence could be amended as follows: "

“...which are established by treaty and modified by treaty in the form of the Resolutions and decisions of the World Radiocommunication Conferences in which South Africa has participated...”.

4.2.13 Ad section 4.3: Approach to development of FMP

As part of the first step, reference is made to SABRE. The footnote refers to the 1997 SABRE-1 exercise. Telkom recommends that, for completeness, reference to SABRE-2 (2001) also be added in the footnote.

4.2.14 Ad section 4.4.3: Analysis of SABRE

At the end of this section, following Table 1, the following sentence appears in the draft radio Frequency Migration Plan: *“WRC 15 Resolutions of which some are considered in the Draft Migration Plan 2018.”* This sentence seems incomplete or misplaced and must either be amended, elaborated or deleted.

4.2.15 Ad section 4.7.1: Mobile broadband communications

The second sentence in section 4.7.1 reads as follows: *“WRC-15 achieved agreement on some additional portions in other bands that were also allocated to mobile broadband services in order to be used in regions where there was no interference with other services.”* Telkom recommends that this sentence be further elaborated as its meaning is not clear. For example, the meaning of *“some additional portions in other bands”* is not clear and must be explained. The Authority could refer to the relevant ITU Radio Regulation footnote/s to address this matter.

With regards to the last sentence, although the reference to the protection of aeronautical radionavigation systems is correct, it must be clarified that it relates to the use of this service in the countries listed in RR No.5.312 (i.e. it is not relevant to South Africa).

4.2.16 Ad section 4.8: ITU World Radio Conference resolutions

The first sentence states: *“The following resolutions for the World Radio[communication] Conferences have been taken into consideration”*. It is not clear to which resolutions are

being referred to as none has been listed in this section. It may be possible that this section refers to Table 4 (WRC Resolutions) although this must be clarified.

4.2.17 Ad section 4.10: Commentary on bands with respect to Frequency Migration Plan 2013

The intention of section 4.10 is not clear. Whereas it purports to provide comments on the 2013 radio frequency migration plan, the Authority also provides new positions/proposals in this section. This is supported by section 4.11, which provides a “Summary of the Authority’s decisions”. Telkom requests the Authority to clarify these issues noting also Telkom’s comments in section 3.1.3.

4.2.18 Ad section 4.10.2: 138 – 144 MHz

The reference to GG No. 31290, Notice No. 926 of 2008 (footnote 15) must be amended. This Notice was repealed by the Radio Frequency Spectrum Regulations, 2011 (GG No. 34172, Notice 184 dated 31 March 2011).

Further, the final Radio Frequency Spectrum Assignment Plan for this band was published in GG No. 41512, Notice 146 of 2018 dated 23 March 2018. Telkom recommends that a reference to this Gazette be added.

4.2.19 Ad section 4.10.3: 150.05 – 153 MHz

The final Radio Frequency Spectrum Assignment Plan for this band was published in GG No. 41512, Notice 149 of 2018 dated 23 March 2018. Telkom recommends that a reference to this Gazette be added.

4.2.20 Ad section 4.10.4: 156.4875 – 156.5625 MHz

Telkom’s comments on the draft Radio Frequency Spectrum Assignment Plan published in GG No. 41350 dated 22 December 2017 is relevant to the use of this frequency band.

The last sentence in the first paragraph reads as follows: “*This is as per ITU RR Article 31 and Appendix 18*”. It is not clear what “*this*” refers to and to avoid possible confusion, Telkom recommends that this sentence be changed in line with ITU RR 5.226 to the

following: “*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 should also be noted that reference to Article 52 should be added in this sentence, in line with ITU RR 5.226.

Further, the draft Radio Frequency Spectrum Assignment Plan was published in GG No. 41350 (not GG No. 41164).

4.2.21 Ad section 4.10.6: 174 – 223 MHz

The reference to the 2013 Frequency Migration Plan may be inappropriate as it is assumed that the 2013 frequency migration plan will be replaced by the 2018 plan. It is suggested that the relevant text from the 2013 plan be reproduced in the 2018 radio frequency migration plan.

4.2.22 Ad section 4.10.7: 223 – 230 MHz & 230 – 238 MHz

Noting that the band 214 – 230 MHz will be used for T-DAB, and the reference to section 4.10.6, Telkom recommends that the two sections be merged into one for the frequency range 174 – 238 MHz. On the other hand, noting that section 4.10.8 deals with the frequency range 230 – 267 MHz, Telkom recommends that sections 4.10.6 and 4.10.7 be limited to the 214 – 230 MHz frequency range (i.e. dealing with T-DAB).

4.2.23 Ad section 4.10.8: 238 – 267 MHz

The first bullet in this section deals with the frequency band 230 – 238 MHz; therefore, the title of section 4.10.8 should include this range. See also Telkom’s comments made in section 4.2.22 above.

The reference to “*as per submission*” in the first bullet is not clear and should be clarified (who submitted what, where and when).

4.2.24 Ad section 4.10.9: 335.4 – 387 MHz

In the second bullet, it is indicated that the sub-band 346 – 356 MHz can be used for PMR and/or PAMR. However, this is not in line with the 2018 National Frequency Plan and should therefore be revised or deleted.

It is also noted that new uses within this frequency range have been added in the 2018 National Radio Frequency Plan, for example, UAVs in the band 336 – 346 MHz paired with 356 – 366 MHz operating on a shared basis with FWA. This should also be reflected in the Radio Frequency Migration Plan, 2018.

The Authority proposes to conduct a feasibility study (as per the SADC FAP proposed sub-allocation / utilization) and then lists certain sub-bands. It is however not clear what the purpose of the feasibility study will be. Is the feasibility study about the potential use of the band for BFWA? What services are earmarked for migration and therefore involved in the proposed feasibility study (also noting that the 2018 National Frequency Allocation Plan is silent on the issue of services to be migrated)? What about the new services such as UAVs?

Telkom recommends that the Authority elaborates on the proposed feasibility study and the potential use of this band for BFWA.

4.2.25 Ad section 4.10.10: 335 – 387 & 387 – 390 & 390 – 399.9MHz

The frequency ranges within this title seems wrong. Not only is the 335 – 387 MHz frequency band addressed in section 4.10.09 of the draft Frequency Migration Plan 2018, section 4.10.10 also deals with the 410 – 430 MHz frequency band, which falls outside the frequency ranges listed in the title. Telkom recommends that this be corrected.

The first sentence states that: “This band is currently used for public trunking services” (own emphasis). The use of the term “this band” should be refined as the frequency bands listed in the title are not used only for public trunking services. Telkom recommends that this be corrected by referring to the specific band used for public trunking.

The second sentence states that: “*In addition there is a Mobile Data Service (WBS) operating in this band as well the SADC proposed sub-allocation/ utilization indicates use for PMR and/ or PAMR as well as PPDR*”. It is not clear what is meant by “Mobile Data Service (WBS)”. The term “Mobile Data Service” does not appear in the 2018 National Radio Frequency Plan. It is also not clear why reference is made to “WBS”, which is not

defined but could be understood to refer to “Wireless Business Solutions”. Telkom recommends that this sentence be amended to clarify these issues.

The third sentence reads as follows: *“Given the utilization for Digital Trunked Mobile in the National Radio Frequency Plan there is the possibility of other services (including those using FDMA) and other TDMA systems, including DMR, may be introduced in this band”*. Telkom recommends that the specific frequency bands considered for the introduction of the new services be specified, which must be in line with the 2018 National Radio Frequency Plan.

Although the term “DMR” could be understood to mean Digital Mobile Radio”, it has not been defined in Appendix A. The term “DMR” is also not used in the 2018 National Radio Frequency Plan. Telkom recommends that the term be defined (not only stating what the acronym stands for to avoid possible confusion).

In the second paragraph, it is stated that:

“ICASA planned a feasibility study to consider:

410 – 430 MHz reserved for digital public trunking only.

All other services apart from public trunking to be migrated out of the band.

This exercise has also to be synchronized with the migration into the PPDR band (380 – 400 MHz)

The planned time period would be determined after the 380 – 400 MHz migration plan (above) is finalized”.

Telkom recommends that the word “*planned*” be changed to “*plans to conduct*”, as the feasibility study has not yet been done.

In the second item listed, it is stated that: “*All other services*” must be migrated out of this band. Telkom assumes that this refers to the band 410 – 430 MHz only but recommends that this be clarified. Telkom recommends that the introduction sentence therefore be amended as follows:

“ICASA planned plans to conduct a feasibility study in the 410 – 430 MHz frequency band to consider.”

The first sentence in the third paragraph also refers to “*this band*”, which must be clarified to avoid possible confusion.

Reference is made to the draft Radio Frequency Spectrum Assignment Plan published in GG No. 41164 (Notice 787 of 2017). Telkom recommends that reference also be made to the final Radio Frequency Spectrum Assignment Plan published in GG No. 41512 (Notice 418 of 2018). Further, this Notice deals only with the band 380 – 400 MHz. Telkom therefore also recommends that the Authority includes in the “summary” its decision to perform a feasibility study within the 410 – 430 MHz frequency band.

4.2.26 Ad section 4.10.11: 410 – 420 & 420 – 430 MHz

Telkom recommends that section 4.10.11 be merged with section 4.10.10 as it deals with the same frequency bands.

4.2.27 Ad section 4.10.12: 440 – 450 MHz

The first paragraph reads as follows:

“This band is allocated for Short Range Business Radio (441 – 441.1 MHz) while the remaining portion is allocated for PMR (both UHF repeaters and DMR). The Short Range Business Radio has wide application in South Africa and is type approved (unlicensed). It is important to ensure that this sub-band is maintained for Short Range Business Radio purposes. There is no migration planned in the PMR sub-band.”

Telkom wishes to make the following comments on this paragraph:

- In accordance with the 2018 National Radio Frequency Plan, the 441 – 441.1 MHz frequency band is allocated to “*Single Frequency Mobile*, not to “*Short Range Business Radio*” as per the draft Migration Plan 2018.
- It is further stated that “*Short Range Business Radio*” has wide application in South Africa and is “*type approved (unlicensed)*”. The 441 – 441.1 MHz frequency band

is however not included in Annexure B of the Radio Frequency Spectrum Regulations (RFSR), which specifies apparatus which do not require a radio frequency licences (or unlicensed). In fact, within the 440 – 450 MHz frequency band, it is only PMR446 (446 – 446.1 MHz) listed in Annexure B of the RFSR.

- The paragraph ends with a reference to PMR, which is not planned for migration.
- Based on the above, it seems that the paragraph intends to refer to PMR446 operating in the 446 – 446.1 MHz frequency band and not the band 441 – 441.1 MHz. This must be clarified and corrected as needed.

The Authority resolves that: *“441 – 441.1 MHz (paired with 446 to 446.1 MHz be allocated to Short-range Business radio”*. Noting also Telkom’s comments above, this resolution is not clear. As indicated, the band 441 – 441.1 MHz is allocated to Single Frequency Mobile as per the 2018 National Radio Frequency Plan and therefore is not “paired” with any other band. Also, the band 446 – 446.1 MHz is allocated to PMR, which is licence exempted and is also not paired with another band. Telkom requests that this matter be clarified and corrected as needed.

The second bullet resolves that: *“440 – 441 MHz (paired with 445 – 446 MHz) be used for temporary assignments within PMR band”*. Although this paired is correct according the 2018 National Radio Frequency Plan, it is allocated to “Telemetry/Data”. It is also indicated that some channels are used for “agricultural Telemetry”. It is therefore not clear why the Authority resolves that this band be used for “temporary assignments” within the PMR band as it seems to be no in line with the 2018 National Radio Frequency Plan. Telkom recommends that this be clarified.

The last two bullets state the following: “

- “• *All other users migrate out of the band.*
- *The rest of the users in this band can stay as-is”*.

It is not clear what is meant by “*all other users*” and “*rest of the users*”, which statement is also seemingly contradicting. Telkom recommends that these two statements be clarified to ensure that there is no doubt as to its interpretation.

It is noted that the 2018 National Radio Frequency Plan refers to the possible use of this band (presume as 440 – 450 MHz) be studied for use by PPDR. There is however no mention of this study in the draft Migration Plan. Telkom recommends that this be included in the Radio Frequency Migration Plan, 2018.

It is Telkom's view that the Radio Frequency Migration Plan, 2018 must be aligned with the National Radio Frequency Plan, 2018. The Radio Frequency Migration Plan, 2018 cannot amend the allocations as it appears in the National Radio Frequency Plan, 2018 (see Telkom's comments in section 3.1.2).

4.2.28 Ad section 4.10.13: 450 – 470 MHz

Per the first sentence, "*This band is currently used for Trunked Mobile with several users including the Railways (Transnet) and mines (Figure 5)*". Since this band is used not only for Trunked Mobile, Telkom recommends that the sentence be changed to:

"This band is currently used, amongst others, for Trunked Mobile with several users including the Railways (Transnet) and mines (Figure 5)".

The first bullet states: "*To migrate the current users out of this band into the radio frequency 3 GHz and above*". However, the services operating in this band cannot necessarily be migrated to frequency bands above 3 GHz. For example, the PTP links operating in this band are single channel links in rural and remote areas operating over large distances. Moving these links to bands above 3 GHz is not possible due to:

- There is no equipment that can provide low capacity/single channel links in the bands above 3 GHz;
- A link operating at 450 MHz cannot be replaced with a link above 3 GHz due propagation limitations;
- All PTP link frequency bands above 3 GHz (e.g. 4 GHz, 6 GHz, 7 GHz, etc.) are used for high capacity microwave systems, which is not a suitable replacement for 450 MHz low capacity links (from a costs and application perspective);
- Other technologies such as satellite, although suitable, is very expensive;

- It is not clear how the services other than links (e.g. Single Frequency Mobile, Trunking, etc.) should migrate to above 3 GHz as it is not possible (similar reasons as for links);

Telkom therefore recommends that suitable frequency bands, preferable below 1 GHz, be identified for serving customers in rural remote areas.

The Authority decided that the 450 – 470 MHz frequency band be allocated for IMT per the second and third bullet. Whereas Telkom could agree that the 450 – 470 MHz frequency band be used for IMT in future, the specific channelling plan to be used for IMT is not clear. Whereas the Authority prescribed the IMT450 Radio Frequency Spectrum Assignment Plan (GG No. 38640), this Radio Frequency Spectrum Assignment Plan must be updated to reflect the latest WP5D changes and to adopt a specific (i.e. single) channelling plan for this band for South Africa.

- Per the current IMT450 Radio Frequency Spectrum Assignment Plan, either D2, D3, D4 or D5 (options from ITU-R Recommendation M.1036) will be used in South Africa. The IMT450 Radio Frequency Spectrum Assignment Plan does not determine which of these options will be implemented; the Radio Frequency Spectrum Assignment Plan is therefore not final as only one channelling plan can be implemented.
- WP5D is in the process of updating ITU-R Recommendation M.1036-4 and part of the suggested changes being considered is to delete all the above-mentioned options. See 5D/TEMP/529 for current version of the proposed amendments to M.1036-4.
- The selection of a specific IMT channelling plan will impact the migration of existing services from the band. For example, if option D5 is selected, it may be possible for most of the links (if not all) to remain in this band.

The current Radio Frequency Migration Regulations and Plan, 2013 calls for a feasibility study to be conducted for the 450 – 470 MHz frequency band. The purpose of the feasibility study was, amongst others, to:

- Evaluate the M.1036 recommendations considering current usage

- Determine the current levels of use (especially Transnet and Telkom)

Noting Telkom's comments above, it is not clear why the intended feasibility study was seemingly removed from the Radio Frequency Migration Plan, 2018. Telkom requests the Authority to continue with the planned feasibility study to resolve the complexities associated with the IMT450 band. Although the potential use of this band for IMT may have huge benefits for South Africa, the Authority cannot disregard the extensive use of this band by many private and government institutions.

Based on the above, Telkom recommends the following action plan:

- WP5D to conclude on the updating of the 450 – 470 MHz frequency band (planned for their February 2019 meeting);
- The Authority then conducts a feasibility study including all current users of the band to evaluate the M.1036 options and determine the levels of utilisation by existing services;
- The Authority updates the IMT450 Radio Frequency Spectrum Assignment Plan in line with the updated M.1036 and the feasibility study;
- The Authority updates the radio frequency migration plan for the 450 – 470 MHz frequency band.

4.2.29 Ad section 4.10.14: 694 – 790 MHz

The Authority makes the following statement: *"Migration in this band is to be implemented in accordance with...the ongoing efforts within the 700 MHz Band as defined in Government Gazette Number 40145 (Notice Number 438 of 2016)".* GG No. 40145 refers to the ITA published in July 2016 to licence spectrum in the 700 MHz, 800 MHz and 2600 MHz frequency bands. It is not clear what this statement means in the context of migration of systems from the 700 MHz band. Telkom recommends that the Authority refers to the implementation of the IMT700 Radio Frequency Spectrum Assignment Plan rather than referring to the 2016 ITA. Alternatively, the Authority should state categorically what is relevant pertaining to the migration of systems from the 700 MHz band, rather than merely referring to the 2016 ITA Gazette. It should however also be noted that,

following the publication of the draft Radio Frequency Migration Plan, 2018, the Authority withdrew the 2016 ITA on 8 October 2018 (GG No. 41965, Notice 624 of 2018).

It is also noted that there is no background/introductory text for the 700 MHz band, or any reference to the migration of STL's and self-help broadcasting stations in this section, when compared to the 800 MHz band addressed in section 4.10.15. It is not clear why the 700 MHz band is treated different from the 800 MHz band when considering migration.

Telkom recommends that the above be clarified and the text be amended as necessary.

4.2.30 Ad section 4.10.15: 694 – 790 MHz

Regarding the first bullet, see Telkom's comments above re reference to the 2016 ITA.

The reference to "692 MHz" should be changed to "694 MHz", which is the upper edge of Channel 48 in the UHF broadcasting frequency band. 694 MHz will be the upper limit for broadcasting following the completion of television migration.

4.2.31 Ad section 4.10.16: 862 – 890 MHz

Per the draft Radio Frequency Migration Plan, 2018 the band has several users including:

- Wireless audio (863-865 MHz).
- Fixed links (868.1–876 MHz).
- RFID (865 – 868 MHz), RFID (869.4- 869.65 MHz).
- Alarms (868.6 – 868.7 MHz, 860.25 – 869.3 MHz, 869.65 – 869.7 MHz).
- Wireless Access Services (824-849 MHz paired with 869-894 MHz).
- Mobile (880-890 MHz paired with 925-935 MHz) – currently assigned to Liquid Telecom (Neotel).

Telkom's comments on the above are:

- Per the National Radio Frequency Plan, 2018, fixed links are allocated in the band 856 – 864.1 MHz paired with 868.1 – 876 MHz (not in the 868.1–876 MHz frequency band as indicated in the Radio Frequency Migration Plan, 2018).
- Alarms operate, amongst others, in the 869.25 – 869.3 MHz frequency band (not in the band 860.25 – 869.3 MHz).
- Per the 2018 National Radio Frequency Plan, Wireless Access Services operate in the frequency band 872.775 – 877.695 MHz paired with 827.775 – 832.695 MHz (i.e. 2 x 4.92 MHz). However, in the draft Radio Frequency Migration Plan it is indicated that Wireless Access Service operate in the band 824 – 849 MHz paired with 869 – 894 MHz (i.e. 2 x 25 MHz). The 2x25 MHz frequency band is the 850 MHz frequency band used mostly in ITU Radio Region 3 and is not applicable in South Africa as it overlaps parts of the 800 MHz and 900 MHz frequency bands. Telkom recommends that the Radio Frequency Migration Plan, 2018 be aligned with the 2018 National Radio Frequency Plan in relation to the Fixed Wireless Access allocation.
- In the second paragraph, the Authority also expresses that there is a “*level of confusion with regards to Fixed Wireless Access*”; it is not sure what confusion the Authority is referring to and recommends that this statement be clarified in order to avoid further uncertainty.
- It is indicated in the Radio Frequency Migration Plan, 2018 that the 880 – 890 MHz frequency band paired with 925 – 935 MHz is currently assigned to Liquid Telecom (Neotel). These frequencies are part of the 900 MHz frequency band, which is not assigned to Liquid (only Cell-C, MTN and Vodacom have assignments in the 900 MHz frequency band). In fact, the bottom 10 MHz of the 900 MHz band is assigned mostly to Cell-C whereas a small portion is assigned to Vodacom. The Authority can also refer to the IMT Roadmap for the assignments in the 900 MHz radio frequency band.

- The use of the band 864.1 – 868.1 MHz by Telkom for FWA has not been listed and it is not clear why. Telkom recommends that this be added.
- The use of the band by non-specific SRDs, GSM-R and CT2 cordless telephones have not been listed and should be added for completeness (in accordance with the 2018 National Radio Frequency Plan).

The Authority then makes four proposals namely:

- Align re-planning efforts within the 800 MHz band as defined in Government Gazette Number 40145 (Notice Number 438 of 2016).
- Remove the assignment for Wireless Access Services in this band.
- Re-plan the entire band to accommodate IMT (terrestrial) as per SADC FAP proposed common sub-allocation/ utilization.
- Migrate existing users out of this band.

Telkom is unsure how to interpret these proposals due to several ambiguities. However, to interpret the proposals, it is noted that the section deals with the frequency range 862 – 890 MHz. Telkom therefore assumes that the section deals with the ongoing re-planning exercise addressed through the public consultation pertaining to the use of the 850 MHz frequency band.

- Regarding the first bullet:
 - The ongoing re-planning in the 800 MHz band (i.e. 862 – 890 MHz) has not been defined in the 2016 ITA. It is therefore not clear why the Authority refer to the 2016 ITA when addressing the 800 MHz re-planning. Does this relate to the fact that the ITA allowed for only 2x25 MHz in the IMT800 frequency band or that the Authority wish to make the full IMT800 band available (i.e. 2x30 MHz)? Alternatively, will the Authority allow 2x30 MHz in the IMT800 frequency band and 2x5 MHz in IMT850?

- Regarding the second bullet:
 - This proposal seems to purport that the Authority will migrate Fixed Wireless Access (i.e. CDMA-2000 systems operating in the 850 MHz radio frequency band assigned to Liquid). With CDMA-2000 systems migrated, the Authority will then re-plan the entire band to accommodate the full IMT800, i.e. 2x30 MHz. Existing users such as Telkom's FWA, licence exempt, LoRa, etc. will then continue to operate without potential for harmful interference.
- Regarding the third bullet:
 - The Authority will re-plan the entire band to accommodate IMT as per the SADC FAP. However, the SADC FAP specifies the use of IMT in this band as 862 – 876 MHz paired with 824 – 849 MHz. This frequency pairing is aligned with the CDMA-2000 frequency band although not exactly. Clarification in this regard is required. This bullet also seems to contradict the second bullet.
- Regarding the fourth bullet:
 - The Authority will migrate existing users out of this band. It is not clear what "existing users" are being referred to? Are these all the applications listed in the beginning of section 4.10.16? If this is the case, Telkom will oppose such move as it has no merit and is not practical. Alternatively, does this refer to the CDMA-2000 users operating in the 850 MHz frequency band?
- The proposals made by the Authority is not clear and create serious concerns for Telkom. These must be clarified to ensure that there is no uncertainty as to the Authority's intention regarding these proposals.

The Authority added a "Note" at the end of the section referring to several Notices related to the 850 MHz frequency band. With regards to the Notice in paragraph a), i.e. the Radio Frequency Spectrum Assignment Plan for the Band 825 – 830 MHz paired with 870 – 875 MHz, it should be reflected in the radio frequency migration plan, 2018 that this notice merely referred the draft Radio Frequency Spectrum Assignment Plan for this band until further Notice. The Authority then published a draft Radio Frequency Spectrum

Assignment Plan for this band in GG No. 41082 as indicated, and recently conducted public hearings on the matter.

Considering these references and based on the proposals made by the Authority, it seemingly purports that the Authority decided to abolish the IMT850 Radio Frequency Spectrum Assignment Plan in favour of the IMT800 Radio Frequency Spectrum Assignment Plan. However, the specific intent of these proposals is not clear. Telkom recommends that the Authority clearly state its intention regarding the IMT850 Radio Frequency Spectrum Assignment Plan to ensure that there is no ambiguity. Also, the Authority must publish its finding on the IMT850 consultation process and not conclude on that process through the radio frequency migration plan.

4.2.32 Ad section 4.10.17: 890 – 942 MHz

This section deals with the IMT900 Radio Frequency Spectrum Assignment Plan, which relates to the 880 – 915 MHz frequency band paired with 925 – 960 MHz. Telkom recommends that the title be amended to reflect this. Also, Telkom recommends that this section be merged with section 4.10.18 as it also relates to the 900 MHz frequency band.

4.2.33 Ad section 4.10.18: 942 – 960 MHz

As indicated above, Telkom recommends that this section be merged with section 4.10.17 as they both relate to the 900 MHz frequency band (or IMT900).

In the first sentence, the Authority states that the band is allocated to “GSM900”. Per the 2018 National Radio Frequency Plan, the band is allocated Mobile except aeronautical mobile services. The “*Typical application*” is indicated as “IMT900”; i.e. it is not referred to as “GSM900”. Telkom understands that the band is already used for technologies other than GSM such as UMTS and LTE.

In addition, the Authority indicates that the band is used by Vodacom and MTN; however, this band is also assigned to Cell-C. This should be reflected in the radio frequency migration plan.

The second bullet states that: “*Spectrum re-farming, when deemed necessary is carried out based upon the principles and policies defined in section 4.12*”. Telkom does not

agree with this statement as the assignments in the IMT bands were made on a technology neutral basis, which allows operators freedom to introduce new technologies based on commercial requirements and the availability of technology and within the parameters of their spectrum licence. In the band under discussion (i.e. IMT900), the incumbent operators have already re-farmed their assignments to introduce UMTS and LTE services, while keeping portions of their assignments for GSM to support their customer base. This freedom to refarm spectrum based on commercial requirements and technological developments must be retained.

The Authority states in the last bullet that: “*Radio Frequency Spectrum Assignment Plan to be developed*”. However, this has already been done (see GG No. 38640, Notice 275 of 275). This GG was references in section 4.10.17. Per this Radio Frequency Spectrum Assignment Plan, in-band refarming must be done to optimise the use of the band. This in-band migration must be achieved by 31 March 2020 and will produce 2x5 MHz, which will be re-assigned.

4.2.34 Ad section 4.10.19: 1350 - 1375 (1492- 1517) / 1375 – 1400 (1427 – 1452) MHz

The Authority planned a feasibility study for these bands to be conducted following the outcome of WRC-15. Whereas the Authority refers to this, it is not clear from the draft Frequency Migration Plan if this will still be done and if so, when such a study will be done. Telkom recommends that this be clarified in the draft migration plan. Also, the feasibility should include the frequency band 1452 – 1492 MHz as addressed in section 4.10.20 as it is part of the L-band.

The Authority indicates that it “*Plan to developed the Radio Frequency Assignment Plan in line with the studies within ITU-R WP 5D in respect of L-Band*”. Whereas Telkom supports the development of a Radio Frequency Spectrum Assignment Plan, this must be done only after the conclusion of the feasibility study.

Telkom recommends that the L-band be defined in the Migration Plan as the band 1427 – 1518 MHz as identified for IMT at WRC-15.

The Authority proposes to allocate these bands to rural broadband (BFWA); however, this is not in line with the approved National Radio Frequency Plan, 2018 and can therefore not be implemented in the Radio Frequency Migration Plan. As indicated in section 3.1.2, amendments to the table of frequency allocations must be made as per section 34 of the ECA.

4.2.35 Ad section 4.10.20: 1452 – 1492 MHz

ICASA proposes to modify the allocation in this band and align it with the ITU Region 1 to include FIXED, MOBILE except aeronautical mobile, BROADCASTING and BROADCASTING-SATELLITE services. However, per the 2018 National Radio Frequency Plan, these services are already listed in the second column (i.e. South African Allocations). It is therefore not clear why this statement is added and must be clarified.

The Authority also proposes that the band be allocated to PTP/PTMP/BFWA depending on the availability of equipment in the band. Further, it is stated that the band could also be used for communal repeaters. Because the band has been identified for IMT at WRC-15, which was supported by South Africa, it is recommended that the band 1427 – 1518 MHz be used for IMT in South Africa. Telkom recommends that the second bullet referring to the use of the band for PTP/PTMP/BFWA be deleted as it is not in line with the National Radio Frequency Plan. If needed this could be added following the planned feasibility study and through an amendment of the National radio Frequency Plan.

Telkom supports the proposed feasibility study for this band. Nevertheless, as indicated above for section 4.10.19, this feasibility should include the entire frequency range 1350 1518 MHz. In any event, as indicated above, Telkom recommends that this band be used for IMT in South Africa in line with the developments at WP5D (i.e. sharing and compatibility studies and the development of a channelling plan).

4.2.36 Ad section 4.10.21: 1518 – 1525 MHz

This band will be used for future generations of Inmarsat satellite services and these services must be considered before the Authority decides to allocate the band for links, as proposed in the draft Migration Plan. Telkom made comments regarding this in its

submission to the draft Radio Frequency Spectrum Assignment Plan published in GG No. 41164 (Notice 784 of 2017).

4.2.37 Ad section 4.10.22: 1525 – 1530 & 1530 – 1535 & 1535 – 1559 MHz

Telkom supports the development of a Radio Frequency Spectrum Assignment Plan for these frequency bands.

4.2.38 Ad section 4.10.23: 1668 – 1675/ 2483.5 – 2500 MHz

The Authority proposes to make changes to the 2018 National Radio Frequency Plan in the bands 1668 – 1668.4 MHz and 1668.4 – 1670 MHz. No change is proposed to the band 1670 – 1675 MHz, although the band/allocations are listed.

Telkom does not support the use of the bands 1668 – 1668.4 MHz and 1668.4 – 1670 MHz for fixed links for the following reasons:

- The fixed allocation in the band 1668 – 1668.4 MHz is on a secondary basis only and therefore does not provide certainty in the use of the band for links.
- The availability of equipment for links in these bands are unproven.
- The bands are allocated to Radio Astronomy, which is also used in South Africa and may therefore restrict the use of the band for links. The band 1668 – 1668.4 MHz is also allocated to the Space research service (passive); protection of this service from links must be studied.
- Telkom supports reserving this band for IMT satellite until it is proven that the bands are not required for IMT satellite.
- Whereas the Authority states (in the second bullet) that the proposed change opens new possibilities to introduce fixed links, it is also proposed to add mobile services in the band 1668 – 1668.4 MHz; it is not clear why mobile is added to this band. Further, the band 1670 – 1675 MHz does not have a fixed allocation so it is not clear why it was listed (also noting the NOC).
- There is currently no channelling plan for links covering the band 1668 – 1670 MHz.

- The band 1668 – 1670 MHz is only 2 MHz; this is not sufficient to be used for PTP and PTMP links.
- As also mentioned in the last bullet, the proposed allocation changes are not contained in the 2018 National Radio Frequency Plan and can therefore not be implemented until the next update for the National Radio Frequency Plan.
- Since no migrations are planned for these bands, the relevance to the Migration Plan is not clear.

Based on the above reasons, Telkom recommends that section 4.10.23 be deleted from the Migration Plan.

4.2.39 Ad section 4.10.24: 1880 – 1900 MHz

The Authority decided to allocate the band for BFWA (the band is allocated for FWA in terms of the National Radio Frequency Plan) while no migration is planned for the band. Telkom recommends that the Authority study the sharing between DECT cordless telephones and FWA systems, especially those based on standards other than DECT, to determine the feasibility of sharing the band.

4.2.40 Ad section 4.10.25: 1980 – 2010 / 2170 - 2200 MHz

The Authority proposes to use the band for fixed links and BFWA (depending on the availability of equipment). Telkom recommends that the use of this band continue to be reserved for IMT satellite services. Several satellite systems are being developed in this band and may need to use of this band in the foreseeable future. This is in line with the 2018 National Radio Frequency Plan which states that: “*The development of satellites for MT services to be monitored*”. Also, whereas other bands could be used for fixed links (such as F.1098 addressed in section 4.10.26 of the draft Migration Plan), there are very few internationally harmonised IMT satellite frequency bands.

Allocating the band for BFWA is also not in line with 2018 National Radio Frequency Plan and could only be considered at the next updating of the National Radio Frequency Plan.

Lastly, it should also be noted that the implementation of IMT in the frequency bands 1885 – 2025 MHz and 2110 – 2200 MHz will be addressed at WRC-19 under agenda item 9.1.1. decisions regarding the use of the bands 1980 – 2010 MHz and 2170 – 2200 MHz should therefore be delayed until after WRC-19.

4.2.41 Ad section 4.10.26: 2025 – 2110 paired with 2200 – 2285 MHz

Telkom supports the continued use of this band for PTP links.

4.2.42 Ad section 4.10.27: 2290 – 2300 MHz

Whereas the Authority refers to the draft Radio Frequency Spectrum Assignment Plan for this band, it should also be indicated that the final Radio Frequency Spectrum Assignment Plan was published in GG No. 41512 (Notice 145 of 2018).

Telkom's comments regarding the need for coordination with Telkom's IMT systems operating above 2300 MHz, which comments were made during the consultation on the Radio Frequency Spectrum Assignment Plan for the band 2290 – 2300 MHz, remains valid. As indicated, a suitable guardband will be required within the band 2290 – 2300 MHz to protect Telkom's IMT systems above 2300 MHz. Telkom must be consulted regarding this before the band 2290 – 2300 MHz is assigned for BFWA.

4.2.43 Ad section 4.10.28: 2300 – 2450 MHz

Telkom recommends that the frequency band in the title be amended to include the entire frequency range under discussion namely 2300 – 2483.5 MHz.

The Authority proposes that existing fixed links could be migrated above 3 GHz. However, this is generally not feasible for the following reasons:

- There is no equipment that can provide low capacity links like that used in the 2.4 GHz band in frequency bands above 3 GHz;
- All PTP link frequency bands above 3 GHz (e.g. 4 GHz, 6 GHz, 7 GHz, etc.) are used for high capacity microwave systems, which is not a suitable replacement for 2.4 GHz low capacity PTP and PTMP links;

- Other technologies such as satellite is very expensive and is currently unsuitable as replacement for the replacement of links operating in this band;

Because of the remoteness of the PTMP TDMA systems operating in this band, an allocation below 1 GHz is needed to replace many of these links.

The Authority proposes that outside broadcasting links be migrated to the band 1518 – 1559 MHz; Telkom recommends that the F.1098 band be used for such links.

Telkom supports the proposed feasibility study to be conducted for this band.

4.2.44 Ad section 4.10.29: 2500 – 2690 MHz

This section deals with the frequency range 2500 – 2690 MHz, which includes both the 2600 MHz FDD and TDD bands. The Authority refers to the IMT2600 Radio Frequency Spectrum Assignment Plan, which was prescribed in GG No. 38640 (Notice 277 of 2015). This Radio Frequency Spectrum Assignment Plan deals only with the IMT2600 FDD Radio Frequency Spectrum Assignment Plan.

As per section 2.3 of the Radio Frequency Spectrum Assignment Plan, the centre gap (i.e. 2570 – 2620 MHz) is included with respect to migration only and this centre gap will be subject to a separate Radio Frequency Spectrum Assignment Plan by 31st March 2017. This Radio Frequency Spectrum Assignment Plan was never prescribed, which must be done before the licensing of the 2600 MHz TDD band commences.

4.2.45 Ad section 4.10.30: 3400 – 3600 MHz

As indicated, the Radio Frequency Spectrum Assignment Plan for this band was prescribed. The in-band migration of existing FDD assignments to TDD assignments are still not concluded. Telkom appeals to the Authority to address this matter with urgency.

4.2.46 Ad section 4.10.31: 3600 – 4200 MHz

The Authority decide that VSAT systems should be migrated to the Ku-Band. However, as also indicated in the draft migration plan, the band 3600 – 3800 MHz, BFWA, FS PTP links and FSS applications must operate on a coordinated basis. To decide now, in the

draft migration plan, that VSAT systems must migrate to Ku-band, goes against the approved 2018 National Radio Frequency Plan.

Telkom supports the development of a Radio Frequency Spectrum Assignment Plan for the band 3600 – 3800 MHz, which Radio Frequency Spectrum Assignment Plan must be approved before any BFWA assignments in the band 3600 – 3800 MHz is made. Sharing criteria and procedures between satellite systems, BFWA and FS links are required before the band can be used for BFWA systems, in line with the approved National radio Frequency Plan, 2018.

In addition, the move of VSAT systems should not be restricted to the Ku-band but also include the Ka-band. Also, Telkom recommends that VSAT be defined (usually any antenna smaller than 3.8m diameter).

4.2.47 Ad section 4.10.32: 5470 – 5725 MHz

It should be noted that the band 5470 – 5725 MHz is being used for more applications than just WS/RLAN (see 2018 National Radio Frequency Plan).

4.2.48 Ad section 4.10.33: 5725 – 5850 MHz

In the first paragraph, the following statements are made: “As per ITU footnote 5.453 the band can also be allocated for fixed and mobile services on a primary basis. SADC FAP footnote SADC18 allocates this band for similar services in Swaziland and Tanzania”.

These statements are not correct and should be deleted. Firstly, footnote 5.453 is not relevant to South Africa (only applies to Swaziland and Tanzania within the SADC region). Secondly, SADC18 only reflects what is contained in 5.453 regarding the fixed and mobile allocation in the band 5650 – 5850 MHz in these two countries; it does not apply to South Africa.

Considering the above, and the fact that the band is used for WAS/RLAN under the existing primary mobile services allocation, Telkom does not support a fixed allocation in this frequency band. Telkom therefore recommends that these two sentences be deleted from section 4.10.33.

4.2.49 Ad section 4.10.34: 5850 – 5925 MHz

Whereas Telkom agree that the FS allocation in the band can be used for temporary outside broadcasting links, this must be done on a strictly coordinated basis with existing licensees in the band and only in the bands and area not assigned on an exclusive basis.

4.2.50 Ad section 4.10.35: 5925 – 6700 MHz

No comments

4.2.51 Ad section 4.10.36: 10700 – 11700 MHz

No comment

4.2.52 Ad section 4.10.37: 12390, 16420 and 154 - 15700 MHz

The frequencies indicated in the title is incomplete and must be corrected.

4.2.53 Ad section 4.10.38: 40000 MHz and above

For sake of completeness, Telkom recommends that the last bullet be changed as follows:

“It is planned to carry out feasibility studies regarding the use of the high frequency bands in accordance with the outcome of WRC-19 Agenda Item 1.13 (i.e. frequency bands for IMT-2020)”.

4.2.54 Ad section 4.11: Summary of the Authority’s decision

The purpose of this summary paragraph is not clear. For example, important frequency bands such 462 – 890 MHz is not included in the summary section. What does that mean? How should industry interpret the summary section if only some bands are included and others not? These issues must be clarified.

The first paragraph reads as follows:

“The following table summarises the Authority’s decision is making regarding frequency migration as extracted from the previous section. These decisions are

additional to those proposals made by SABRE and migrations stemming from the WRC and the SADC FAP (own emphasis).

Telkom recommends that the Authority indicates where to locate the proposals made by SABRE and migrations stemming from WRC and the SADC FAC. Having such cross references will avoid uncertainty when the final draft migration regulations is published. See also Telkom's comments in section 3.1.3.

Table 2 is titled "*Consolidated list of new ICASA proposals*". Telkom proposes that the Authority produces one consolidated table of all migration proposals. Having different proposals in different sections is not easy to follow and will lead to uncertainty.

4.2.55 Ad Table 2: Consolidated list of New ICASA proposals for migration

Please also refer to Telkom's comments above as pertaining to the below frequency bands. Telkom wishes to make the following additional comments to some frequency bands listed in Table 2:

- **410 – 430 MHz:** In accordance with section 4.10.10, the Authority is planning a feasibility study to consider reserving the band 410 – 430 MHz for digital public trunking. In terms of Table 2, the band is allocated to Digital Public Trunking. Telkom recommends that these two sections be aligned. See also Telkom's comments to section 4.10.10. Also, as indicated, a change in allocation must be effected through an amendment of the National Radio Frequency Plan.
- **440 – 440.1 MHz paired with 445 – 445.1 MHz:** Per Table 2, these bands are allocated to Short range business radio and all other users must migrate out of the band. However, in section 4.10.12, it is resolved that the frequency band 441-441.1 MHz paired with 446 – 446.1 MHz be allocated to short range business radios. This discrepancy must be corrected. See also Telkom's comments to section 4.10.12.
- **921 – 925 MHz paired with 876 – 880 MHz:** Although Table 2 is a summary of the Authority's decisions from the previous section, the GSM-R band is not addressed in section 4.10; this must be clarified.
- **1350 – 1375 MHz paired with 1492 – 1517 MHz and 1375 – 1400 MHz paired with 1427 – 1452 MHz:** Table 2 indicates that these bands are allocated for rural

BFWA and that existing fixed duplex links must migrate out of the band. This is not in line with section 4.10.19 where the Authority proposes that existing links could be maintained where required (to expensive to migrate, etc.). Telkom recommend that Table 2 be amended to align with section 4.10.19.

- **1452 – 1492 MHz:** See Telkom's comments to section 4.10.20.
- **1518 – 1559 MHz:** See Telkom's comments to section 4.10.21
- **1668 – 1675 MHz:** See Telkom's comments to section 4.10.23
- **1980 – 2010 MHz paired with 2200 – 2285 MHz:** See Telkom's comments to section 4.10.25
- **2025 – 2110 MHz paired with 2200 – 2285 MHz:** The Authority indicates that the band should be considered for BFWA. The use of this band for BFWA is not in line with the National Radio Frequency Plan, 2018 and can therefore not be implemented.

4.2.56 Ad Section 4.12: Commentary of Spectrum Re-farming

Telkom recommends that this section be merged with section 1.2.3, which also deals with re-farming. See also Telkom's comments regarding re-farming above.

4.2.57 Ad Section 4.12.2: Need for Re-farming in GSM / Mobile bands

In the third paragraph, the Authority makes the followings statement:

"This trend also leads to the phenomenon that as a larger number of users migrate to smart-phones the incumbent 'voice only' bands i.e. GSM 900 and 1800 MHz in this case will have spectrum which is being inefficiently utilized (due to fewer users). However, as these bands have been allocated for a particular application the incumbent licensees are not able to use the same band for other purposes (e.g. mobile broadband)".

Telkom does not agree with this statement. These frequency bands (i.e. 900 MHz and 1800 MHz) have been allocated to IMT in the National Radio Frequency Plan, 2018, which allows licensees to refarm the spectrum for different technologies including mobile broadband. This change of technology is also in line with the IMT900 and IMT1800 Radio

Frequency Spectrum Assignment Plans. Telkom recommends that this statement be corrected to reflect this.

4.2.58 Ad Table 3: Bands planned for IMT

Telkom wishes to make the following comments on this table:

- **862 – 876 MHz:** This band falls within the gap between the 800 MHz and 900 MHz frequency plans. This band is therefore not a recognised IMT frequency band (apart from the down link of the 850 MHz band, which falls within this range). See also Telkom's comments regarding the use of the IMT850 band in section 4.2.31.

4.2.59 Ad Section 5.2: Frequency Migration Resolutions resulting from WRC-15

The purpose of Table 4 is not entirely clear. The Authority only indicates that: "*The following Resolutions were considered to be included in the Frequency Migration Plan 2018*". Is this list provided for information only indicating that these have all been assessed for possible frequency migration issues? If this is the case, Telkom recommends that the Authority indicates which resolutions are relevant to this draft frequency migration plan. Telkom considers that this list was provided for information only. Due to limited time, the list has not been assessed in detail.

4.2.60 Ad Section 5.3: Other Migration issues

As indicated previously, Telkom recommends that these different tables and sections dealing with migration matters be merged into one section. For example, the band 380-400 MHz is addressed in both Table 5 and Table 2 and to some extent also in section 4.10.10. Table 5 is a "summary of migration issues" whereas Table 2 contains a "consolidated list of new proposals". Some frequency bands are discussed in both; others not. Telkom respectfully request that these tables be merged into one table to avoid the duplication and resulting confusion, which is leading to uncertainty as how to interpret the frequency migration plan, 2018.

Telkom requests the Authority to refer to its comments pertaining to these frequency bands in other sections and to update the text in Table 5 as required.

The third column in Table 5 is labelled “Proposed Allocation”; as indicated in section 3.1.2, new allocations cannot be introduced in the Radio Frequency Migration Plan if not in line with the National Radio Frequency Plan, 2018. Telkom requests the Authority to verify all frequency bands to ensure that this principle is upheld.

Telkom wishes to make the following additional comments:

- **694 – 790 MHz:** This frequency band has been excluded from this table and should be added.
- **790 – 862 MHz:** Self Help stations must migrate to below 694 MHz (not 692 MHz as indicated).
- Several frequency bands are not included in this table although included in Table 2, amongst others, 1452-1492 MHz, 1518-1559 MHz, 1668-1675 MHz, 1980-2010 MHz//2170-2200 MHz, etc.
- **3600 – 4200 MHz:** The Authority proposes that VSATs must be migrated from C-band to Ku-band. However, this proposal is in contradiction with the National Radio Frequency Plan, 2018, which clearly states that BFWA can be used “*where sharing with FS PTP and/or FSS is feasible*”. Telkom recommends that the necessary sharing procedures be developed to allow the shared use between BFWA and FSS (VSAT’s).

4.2.61 Ad Section 6: Frequency Migration Plan

Following all the tables and sections discussing the various frequency bands, it seems that the actual draft migration plan is limited to what is contained in section 6 and more specifically Table 6 (Proposed Migration Plan). Therefore, the preceding information can be considered as background information to the development of Table 6, which contains the actual radio frequency migration plan. This must be clarified noting Telkom’s comments in section 3.1.3.

Telkom wishes to make the following additional general comments to section 6.1:

- In the second paragraph, “National Radio Frequency Plan 2013” should be changed to “National Radio Frequency Plan 2018” in line with Table 6.

- It is indicated that column 3 contains the source of the proposal (e.g. SABRE, WRC, SADC FAP or new ICASA proposal); however, it seems that this information has not been added to the table. This must be corrected as needed.
- To improve the reading of the document, Telkom proposes that the Authority also add a reference to the section or table where the specific frequency band is being discussed.
- In column 3 (Proposed Allocation / (Utilisation), the Authority in some cases refers to the Radio Frequency Migration Plan 2013. Telkom recommends that the Authority rather copy the relevant text from the 2013 Plan and add this to Table 6. Not only will the Frequency Migration Plan 2018 replace the 2013 Plan, but having to refer to the old Plan may create uncertainty and lead to discrepancies.

Telkom wishes to make the following additional comments to Table 6. Comments made to the different frequency bands in other sections must also be considered when reviewing Table 6.

- **138 – 143.6 MHz:** The Radio Frequency Spectrum Assignment Plan was concluded and should be referenced (GG No. 41512, Notice 146 of 2018)
- **150.05 – 153 MHz:** The Radio Frequency Spectrum Assignment Plan was concluded and should be referenced (GG No. 41512, Notice 149 of 2018)
- **162.0375 – 174 MHz:** The reference to Mobile Satellite services (Earth-to-space) in column 2 is incorrect as it this service does not appear in the National Radio Frequency Plan, 2018. Also, the applications must be added to column 2.
- **238 – 246 MHz and 246 – 254 MHz:** The reference to Terrestrial broadcasting frequency plan has been added twice.
- **335.4 – 387 MHz:** Please refer to Telkom's comments regarding the migration of fixed links above 3 GHz made to section 4.10.9. Telkom recommends that this only be considered after the completion of the proposed feasibility study.
- **450 – 470 MHz:** Refer to Telkom's comments regarding the use of this band for IMT.
- **862 – 890 MHz:** The bands listed in column 2 for Wireless Access Services (i.e. 824 – 849 MHz paired with 869 – 894 MHz is not in line with the National Radio Frequency Plan, 2018 and must be corrected.

- **1350-1375 MHz paired with 1492-1517 MHz and 1375-1400 MHz paired with 1427-1452 MHz:** The proposed allocation to BFWA is not in line with the National Radio Frequency Plan, 2018 and should therefore be removed.
- **1710-1785 MHz paired with 1805-1880 MHz:** See Telkom's comments to section 4.12 re re-farming of the 1800 MHz frequency band.
- **1920-1980 MHz paired with 2110-2170 MHz:** See Telkom's comments to section 4.12 re re-farming.
- **1980-2010 MHz paired with 2170-2200 MHz:** The proposed new allocation to BFWA is not in line with the National Radio Frequency Plan, 2018 and should therefore not be added. The National Radio Frequency Plan must be amended to introduce this change to the table of frequency allocations.
- **2025-2110 MHz paired with 2200-2285 MHz:** The proposed new allocation to BFWA is not in line with the National Radio Frequency Plan, 2018 and should therefore not be added. The National Radio Frequency Plan must be amended to introduce this change to the table of frequency allocations.
- **1970-2200 MHz:** This entry is a duplication and should be deleted (captured with 1920-1980 MHz).
- **2300-2450 MHz:** As per section 4.10.28, a feasibility study must be conducted for this frequency band. Telkom recommends that the reference to the proposed feasibility study be added to Table 6 to align with section 4.10.28.
- **3600-4200 MHz:** See Telkom's comments regarding the proposed migration of VSAT services.
- **5925-6700 MHz:** As indicated in section 4.10.35, no migration is foreseen for this frequency band. There is also no mention of a feasibility study for the band 5925-6425 MHz. It is therefore not clear why the Authority mentioned in Table 6 that a feasibility study to be performed. Telkom recommends that this be deleted and indicated that no migration is foreseen.
- **10.7-11.7 GHz:** The purpose of the feasibility study for this band is not clear and must be further elaborated as all allocations remain as is.
- **12290, 16420 kHz:** These two frequencies are kHz and not MHz; this should be indicated in the table.

- **40000 – above:** Following WRC-19 some of the bands above 40 GHz may also be used for mobile (i.e. IMT); these bands are therefore not reserved for high capacity links only.

4.2.62 Ad Appendixes A, B, C, D, E, F and G

Due to limited time and considering the size and complexity of the draft frequency migration plan, 2018, Telkom did not review the Appendixes contained in the draft frequency migration plan. As indicated, Telkom may provide additional comments on these sections following the proposed public hearings.

5 Editorial comments

Telkom recommends that the following definitions be corrected:

- “**ITU**” means International Telecommunications Union
- “**WRC**” means World Radiocommunication Conference

It is also recommended that the above definitions be used correctly throughout the Frequency Migration Regulations, 2018.

Telkom recommends the following editorial changes to the draft migration regulations:

- Para 1.2: Telkom recommends the following amendment: “Full definitions are given in ~~the glossary~~ Appendix A”.
- Para 1.1: Radio Frequency Spectrum ~~Allocation~~ Assignment Plan
- Para 1.2.1: Add reference to ITU Radio Regulation Article 1.17 at the end of the definition for “allotment”.
- Para 2.2.2: “Resolution 224-4” should read “Resolution 224”.
- Para 3.3.2: First bullet, the reference to “IMT2020KG” should be changed to “IMT2020”
- Para 4.1: The reference to “table” in the first sentence should be changed to “figure”.
- Para 4.3: Telkom proposes the second sentence to be changed as follows: “The first steps, ~~was on a~~ to check progress made concerning the frequency migrations proposed in...”.
- Para 4.3: Telkom recommends that the sentence referring to the third step be amended as follows: “The third step involves looking at the resolutions adopted at the World Radiocommunication Conference (WRC) in 2007, 2012 and 2015 applicable to Region 1...”. Alternatively, the sentence could be amended as follows: “The third step involves looking at the resolutions adopted at ~~the World Radiocommunication~~”

~~Conference (WRC) 7, 12 and 15~~ WRC-07, WRC-12 and WRC-15 applicable to Region 1...".

- Figure 2: The block containing the text "*Validate against ITU WRC3/7/10/13/15 proposals for Region 1*" could be amended to "Validate against ITU RR Edition 2016". See comments on paragraph 4.2.13 above.
- Para 4.4.2: Telkom recommends the follow change to the last sentence: "*Extracts from SABRE 2 are given in the ~~appendix (6.1~~Appendix C)*".
- Para 4.5.1: Telkom recommends the follow change to the last sentence: "This plan is discussed in ~~the appendix (6.1~~Appendix D) with respect to frequency migration." Also, GG no. 26584 should be added to footnote 9.
- Para 4.5.2: Telkom recommends the follow change to the last sentence: "This plan is discussed in ~~the appendix (1.3~~Appendix E) with respect to frequency migration." Also, GG no. 33409 should be added to footnote 10.
- Para 4.5.3: Telkom recommends the following change to the first sentence: "The National Radio Frequency Plan 2013¹² updated National Radio Frequency Plan 2010, 2004¹³ ~~and extended the frequency range covered (now 9 kHz – 3000 GHz).~~" Reasons: There is no footnote 12 in the draft frequency migration plan 2018, the 2013 plan updated only the 2010 plan and the frequency range was already 9 kHz to 3000 GHz.
- Para 4.5.3: Telkom recommends the follow change to the last sentence: "This plan is discussed in ~~the appendix (6.1~~Appendix E) with respect to frequency migration."
- Para 4.10.13: In Figure 5, the Authority should add "MHz" to the bandwidth figures appearing in the Figure. For example, "3.000 Links" should be changed to "3 MHz / Links". Also, the return leg for Links should be 460 – 463 MHz (not 463 – 463 MHz).
- Para 4.10.17: The word "Planned" should be changed to "plan" or "band".

- Para 4.11: Amend the first sentence as follows: “The following table summarises the Authority’s decision ~~is making~~ regarding frequency migration as extracted from the previous section”.
-