61 Oak Avenue, Highveld,
Techno Park, Centurion, 0157
Private Bag X808, Pretoria, 0001

C: +27 65 966 4485
Email: mngomenp@telkom.co.za

12 November 2024

Mr Mandla Mchunu
350 Witch-Hazel Avenue
Eco Point Office Park
CENTURION

Per email: satlicensing@icasa.org.za
CC: mmchunu@icasa.org.za

Dear Mr Mchunu

RE: TELKOM SUBMISSION PERTAINING TO THE PROPOSED NEW LICENSING FRAMEWORK FOR SATELLITE SERVICES

Telkom SA SOC Limited ("Telkom") thanks the Independent Communications Authority of South Africa ("ICASA" or "the Authority") for the opportunity to provide comments on the proposed inquiry into the licensing framework for satellite services, as published on 14 August 2024 in Government Gazette 51044, under Notice No. 2678 of 2024 ("Draft Satellite Licensing Framework"). Interested parties have been invited to submit written representations on the Draft Satellite Licensing Framework by no later than 16h00 on Tuesday, 12 November 2024.

Telkom requests an opportunity to make oral representations should the Authority elect to hold public hearings.

Yours Sincerely

Nozipho Mngomezulu
Group Executive: Regulatory and Legal Services

Telkom Submission:

Draft Satellite Licensing Framework

Telkom SA SOC Ltd
Submission date: 12 November 2024

1 CONTENTS

2 INTRODUCTION

On 14 August 2024, the Independent Communications Authority of South Africa ("ICASA" or "the Authority") published a notice in Government Gazette 51044, under Notice No. 2678 of 2024 stating its intention to conduct an inquiry ("Inquiry") into the Licensing Framework for Satellite Services ("Draft Satellite Licensing Framework") in terms of section 4B of the ICASA Act, 2000 (Act No.13 of 2000). Telkom welcomes the opportunity to comment on the Draft Satellite Licensing Framework.

Telkom welcomes and supports the Inquiry and is hopeful that the Inquiry will, amongst other things, address (i) the need to amend the satellite spectrum fees, (ii) frequency coordination between satellite and other terrestrial radiocommunication services operating in shared frequency bands, and (iii) frequency licensing and sharing of new satellite applications such as Earth Stations in Motion ("ESIM"), including those entering the country on board vessels and aircraft.

Telkom's submission comprises of:

a) general comments on the Draft Satellite Licensing Framework. These comments are contained in Section 3 of this submission; and
b) comments on specific issues relating to the Draft Satellite Licensing Framework, including comments on the questions posed by the Authority. These comments are contained in Section 4 of this submission.

3 GENERAL COMMENTS

3.1 Legal and Regulatory Framework

Section 4 of the Draft Satellite Licensing Framework ("*Applicable Legislation and Regulations*") sets out a list of laws and regulations, which the Authority deems relevant to the Inquiry. This list includes the Electronic Communications Act, 2005 ("ECA"), the Radio Frequency Spectrum Regulations, 2005 ("RFSR"), the Spectrum Licensing Fees Regulations,2010, the Regulations on the Protection of the Karoo Astronomy Advantage Areas, 2017, and the ITU Radio Regulations and related ITU Resolutions. Save for a few references to some relevant sections of the ECA and the ITU Radio Regulations Article 18.1 and Resolution 22 (Rev. WRC-23), there is no detailed discussion or interrogation of the listed laws and regulations in the context of the Draft Satellite Licensing Framework. In Telkom's view, the inclusion of discussion points relating to the interplay between the Draft Satellite Licensing Framework and the listed laws and regulations is essential to inform the basis of the Inquiry, especially in light of the fact that satellite services are currently licensed within the existing regulatory and licensing framework. The complexity of the ITU Radio Regulations and its provisions pertaining to satellite services also necessitates a more thorough discussion of the relevant provisions and its applicability to South Africa.

In addition to the inclusion of Resolution 22 (Rev.WRC-23) in the Draft Satellite Licencing Framework, other ITU Resolutions including, amongst others, Resolutions 121 (WRC-23), 123 (WRC-23); 156 (Rev. WRC-23) and 169 (WRC-23), dealing with ESIMs, must also be included as part of the Inquiry. In addition, Telkom also recommends that the Authority includes a discussion of Earth stations located on board vessels ("ESVs") in the Draft Satellite Licensing Framework (see ITU Resolution 902 (Rev.WRC-23)) as it is another satellite application impacting on spectrum use in South Africa's which must be regulated and managed. The above ITU Resolutions stipulate provisions for ESIMs and ESVs operating in frequency bands shared with terrestrial radiocommunication services and is therefore relevant to the Inquiry.

The Astronomy Advantage Act, 2007 ("AGA") and the Regulations for the protection of the Karoo Central Astronomy Advantage Areas ("KCAAA") are relevant to all uses of radiocommunication services in South Africa, including satellite services. The application of the AGA and its Regulations in the national context is therefore clear. However, the relevance of the AGA and its Regulations in an international context, especially its applicability to international satellite operators, is unclear and its inclusion in this context must be further interrogated. This may be addressed in Section 8 dealing with National and International coordination. This is also important noting the ongoing discussions within the ITU, including the preparation discussions for the 2027 World Radiocommunication Conference ("WRC-27"), regarding the impact of non-geostationary orbit ("NGSO") satellite systems on the SKA operations in South Africa. Regulatory certainty in this regard is essential as a lack of certainty may deter satellite operators from participating in the proposed process for registering satellite systems, which may severely impact the availability and use of satellite capacity in South Africa.

While Telkom agrees that the African Telecommunication Union ("ATU") and Southern Africa Development Community ("SADC") policy frameworks must be considered, the application thereof must nevertheless always align with the applicable national policy, and the legislative and regulatory frameworks in South Africa. Discussing the ATU and SADC policies under "*Legislation and Regulations*" seems to elevate these policies to the same level as national legislation and regulation.

The above issues are elaborated further below.

3.2 Types of satellite systems

The satellite world consists of different types of systems (e.g. geostationary-orbit ("GSO") and non-geostationary orbit ("NGSO") systems) providing various radiocommunication services such as Fixed Satellite Services ("FSS"), Mobile Satellite Services ("MSS"), and Broadcasting Satellite Services ("BSS"). There are also various applications such as Very Small Aperture Terminal ("VSAT"), Satellite News Gathering ("SNG"), earth stations on board vessels ("ESV"), Internet of Things ("IoT"), fixed and mobile broadband services, earth stations in motion ("ESIM"), Point-to-Point ("PTP") links, gateways, etc. A single licensing framework may not be possible for all cases, as further elaborated below. Telkom recommends that the Authority introduce a new section in the Draft Satellite Licensing Framework describing in more detail the various types of satellite systems, applications, and services, and also highlighting the similarities and differences between each, and its relationship with the proposed legal and regulatory framework in the context of the Inquiry.

Notwithstanding the above, the regulatory framework must remain technology neutral, in line with the ECA objectives. The Authority must therefore refrain from prescribing regulations that are technology specific such as references to High Throughput Satellites ("HTS") or Very High Throughput Satellites ("VHTS"), as these terms are subjective, and may change over time. Spectrum use and management, including the need for frequency coordination pertaining to the different satellite services and applications, is key in formulating the required regulatory framework. Compliance with the relevant ITU Radio Regulations for each applicable frequency band must also be considered. Telkom suggests that the licensing framework also include a licence exemption applicable to specific services or applications based on its use of spectrum and the need for coordinating with other radiocommunication services. The Draft Satellite Licensing Framework already differentiates between "*gateways*" and "*user terminal*" licensing. Further differentiation may be required due to difference in spectrum use and coordination and the applicable ITU Radio Regulations.

Several factors impact the licensing framework. When comparing a NGSO gateway versus a single GSO earth station, a NGSO gateway typically requires multiple antennae, access to a broad range of frequencies, which can operate at very low elevation angles and over wide ranges of azimuth angles, at one location. This impacts frequency coordination areas, spectrum use, and therefore sharing arrangements with other licenced services. The geographic area serialised for use by other radiocommunication services operating in the same frequency band, are therefore much larger than for example a single GSO earth station. Similarly, the type of satellite services being licensed such as FSS, MSS and BSS may also require that different approaches be adopted with respect to spectrum management and licensing. While FSS systems are generally located at specific locations, which can therefore be coordinated with other terrestrial radiocommunication users and therefore licensed individually, ESIMs (which operates in specific bands allocated to the FSS) and mobile satellite services can operate nationally on land, in airplanes, or on vessels, which may require a different frequency coordination and licensing framework. ESIMs are also deployed on foreign vessels and aircraft, which may enter South Africa, for which a specific regulatory framework is needed. The same apply to for example ESVs.

Further, the Authority must also consider the provisioning of voice and short message services (SMS) through satellite services, which may use numbers from the South African numbering plan, in the Inquiry. This may also be relevant in terms of the Direct-to-Device debate, which is currently taking place internationally including as part of the WRC-27 preparations (agenda item 1.13). Where numbers from

the numbering plan are involved, a consideration of routing of calls, interconnection, and number portability, amongst others, may be required.

A major factor to also be considered for the licensing of satellite services is the fact that we are dependent on foreign satellite systems, deployed and managed by foreign operators located outside South Africa. The concept of providing "landing rights", as purely a registration process is therefore supported in principle. This is discussed further in Section 4 below.

3.3 Framework implementation

The Draft Satellite Licensing Framework is only the first step in the Inquiry. Once concluded, the final satellite licensing framework must be prescribed as a regulation and included in the Radio Frequency Spectrum Regulations, 2015 ("RFSR"). The requirements pertaining to "landing rights" should also be included in the RFSR. Based on the outcome of the Inquiry, existing Spectrum Fees Regulations may also need to be updated.

In addition, as requested by Telkom on many previous occasions, there is a need for suitable frequency coordination procedures to address national frequency coordination between different radiocommunication services sharing frequency bands. These procedures are necessary to avoid harmful interference between services such as, for example, satellite services and fixed services. This request goes beyond the need for coordination of satellite systems, as discussed in the Draft Satellite Licensing Framework.

Lastly, Telkom recommends that the Authority develop a separate framework or process to deal with the coordination and notification procedures as contained in Articles 9 and 11 of the ITU Radio Regulations. This must address all relevant systems, including for example fixed links, mobile systems, astronomy, satellite, etc. Not only is the notification of certain systems in specific frequency bands an ITU regulatory requirement, but it is also important that relevant networks and systems deployed in South Africa are recorded in the ITU Radiocommunication Bureau International Frequency Information System ("BR-IFIC") to ensure protection from international systems, including satellite systems.

4 SPECIFIC COMMENTS

4.1 Ad section 1 ("Interpretation")

4.1.1 General comments or proposed new definitions

Since most of the provisions of the ITU Radio Regulations will come into force as from 1 January 2025, Telkom recommends that the Authority refer to the 2024 edition of the ITU Radio Regulations in this Inquiry, which has been published following WRC-23.

Telkom recommends that the Authority add a definition of ESV within the scope of the draft Satellite Licensing Framework. ESVs are mentioned in the Draft Satellite Licensing Framework as a category of satellite systems to be addressed. ESVs are deployed on vessels and must comply with the ITU Radio Regulations when operating at specified distances from the South African coastline and could be deployed in bands such as the C-band or the Ku-band (see for example ITU Resolution 902 (Rev.WRC-23). ESVs, when operating within the ITU specified distances from the coast, must be licensed, authorised, or license exempted by the Authority, in order to comply with the ECA and the ITU Radio Regulations. A specific regulatory framework for ESVs is therefore required, which should be included in the Satellite Licensing Framework.

Telkom recommends that the Authority also include a definition of SNG in the Satellite Licensing Framework. SNGs operate on an ad-hoc and temporary basis but must be licenced or authorised, in terms of the ECA. The use of SNGs may also require frequency coordination with other terrestrial services in the bands shared with other terrestrial services and therefore needs to be included in the Satellite Licensing Framework.

4.1.2 "Coordination"

Telkom agrees with the definition of "coordination" as applied in the context of Article 9 of the ITU Radio Regulations (international coordination). Nevertheless, national coordination must also be defined/discussed since it needs to be distinguished from international coordination, as highlighted above. Although Section 8 of the Draft Satellite Licencing Framework refers to both national and international coordination, Telkom notes that the focus is on international coordination. Whereas International frequency coordination is critical, the Draft Satellite Licencing Framework must also address all relevant national frequency coordination matters pertaining to satellite services.

4.1.3 "Foreign Satellite System"

Telkom recommends that the reference to "*operators providing satellite connectivity*" be changed to "*operators providing satellite ~~connectivity~~ capacity".* Although satellite operators enable connectivity by allowing South African licensees to provide satellite connectivity in South Africa, "providing connectivity" could be interpreted as satellite operators also providing services such as gateways and user terminals to establish connectivity. This also aligns with the definition of "Satellite Capacity Provider".

As per the ECA, the definition of electronic communication network ("ECN") includes satellite systems, which could be a single satellite or a network of satellites. The provision of electronic communications services ("ECS"), electronic communications network services ("ECNS") or broadcasting services ("BS") in South Africa, including through the use of foreign satellite systems, requires a licence issued by the

Authority in terms of Chapter 3 or the ECA. A spectrum licence issued in terms of Chapter 5 of the ECA is also required, unless exempted by the Authority.

4.1.4 **"Ground Segment"**

The ground segment includes all network equipment that is installed on the ground, including gateways, user terminals, TT&C earth stations, ESVs, ESIMS, etc. The ground segment is therefore not limited to a "network of gateways" as defined in the Draft Satellite Licensing Framework.

4.1.5 **"High Throughput Satellites"**

Whereas reference can be made in the Draft Satellite Licensing Framework to specific satellite developments such as HTS, Telkom advises against the inclusion of such specific systems or technologies in the final Satellite Licensing Framework. For example, such definition should not be used in the calculation of spectrum fees due to it being subjective. Not only does this create uncertainty as to exactly when a satellite system constitutes "high throughput" or "very high throughput", it is also not future proof as satellite systems and technology will change. It is also noted that the Draft Satellite Licensing Framework refers to very high throughput satellites, although these are not defined in Section 1 (and there is no indication as to the difference between HFS and VHFS). This supports Telkom's view that inclusion of specific technologies in the licensing framework must be avoided.

4.1.6 **"Satellite Capacity"**

The term "radioelectric" is not commonly used in the English language nor in contemporary technical literature pertaining to spectrum management. Telkom recommends that the term "radio spectrum" be used instead. The term "electromagnetic spectrum" should also not be used in this context as this term refers to all electromagnetic waves, including infrared, visible light, gamma rays, etc. which are not regulated by the Authority.

The last sentence on page 7 of 33, and the first sentence on page 8 of 33, seems to be one sentence but disjointed. Telkom recommends that these be combined and rephrased.

4.1.7 **"Satellite Capacity Provide"**

Telkom recommends that the title be changed to "Satellite Capacity Provider" (not "provide").

4.1.8 **"Space Segment"**

There is a disjoint between the title ("Space Segment") and the definition provided, the latter referring to ground facilities to provide tracking, telemetry, and command ("TT&C") functions of a satellite network. Telkom assumes that the Authority is referring to ground earth station/s used for TT&C functions and therefore recommends that the title be changed to "TT&C ground station" or "TT&C earth station". Alternatively, the definition must align with the title for "space segment"; e.g. a single or constellation of space stations, which could also be interlinked through radio or optical links.

4.1.9 **"Teleport Facility"**

Whereas Telkom agrees with the concept of "Teleport", the definition provided in the Draft Satellite Licensing Framework is too specific and does not cater for all possible scenarios. For example, a Teleport

could be provided as a service for satellite operators outside the borders of South Africa; therefore, it may not necessarily have to link to the national terrestrial network. Further, a Teleport is not confined to steerable antenna only (associated with NGSO systems) but may consist of one or more fixed antenna pointing to specific satellite/s in the GSO. Telkom recommends that the definition be made more generic to cater for all possible scenarios.

4.1.10 **"Terminal"**

The definition of "*Terminal*" as set out in the Draft Satellite Licensing Framework is very similar to the definition of "subscriber equipment" as defined in the ECA. Whereas the definition of "subscriber equipment" may apply to some satellite network terminal equipment (e.g. broadband terminals used by subscribers), there is a need to define other satellite user terminals (e.g. VSATs, fixed satellite earth stations used for backhauling, SNGs, etc.). The definition of "terminal" must therefore be clearly drafted so as to ensure that it is distinctly different from the definition of "subscriber equipment" to ensure regulatory certainty.

Considering that only three categories of spectrum licences/registration are proposed by the Authority namely (1) gateway, (2) user terminals, and (3) satellites, it would seem that the term "terminal" (or "*user terminal*" as also used in the Draft Satellite Licensing Framework) is used broadly to include all satellite earth station terminals. Some of these terminals may however be provided by the licensee as part of the service and therefore classify as "satellite earth station terminal" (e.g. VSAT, SNG, etc.) whereas others may be classified as "subscriber equipment" (e.g. satellite phone, broadband terminal, IoT device, etc.). This distinction should be more clearly demarcated in the definition of "terminal". This differentiation is important as, per the ECA, subscriber equipment is excluded from the definition of radio apparatus and therefore also the need for a spectrum licence by the end user.

4.1.11 **"TT&C" or "Telemetry, Tracking, and Command"**

It is not evident why reference is made to the "*necessary staff*" for controlling a TT&C facility in the definition of TT&C. For example, why not also refer to the staff necessary to operate a gateway for example? Does this have to do with the management of interference for example a Network Control and Monitoring Centre ("NCMC") in the context of ESIMs? Teleports, gateway earth stations, and TT&C stations are provided by ECS/ECNS licensees. Any reference to "staff" is therefore unnecessary. The reason for including staff needs to be clarified, but Telkom would suggest that it be deleted from the Satellite Licensing Framework.

Telkom notes that there are two definitions for TT&C and recommends that these be combined.

Telkom recommends that the word "station" be inserted at the end of the definition of TT&C, which should then read: "*…and implementation of commands transmitted from the Earth station.*"

4.2 Ad section ("Introduction")

The word "Introduction" should be in bold as the title of this section and should be numbered accordingly.

Since the ITU Radio Regulations are part of the applicable legislation and regulatory framework applicable to South Africa, Telkom recommends that the discussion of ITU Radio Regulations provision 18.1 and Resolution 22 should be included in Section 4 (Applicable Legislation and Regulations).

The reference to section 31(1) of the ECA is correct and very important in the context of the satellite licensing framework. These points should however form part of the legislative and regulatory discussion and should therefore also move to Section 4 of the Satellite Licensing Framework. From section 31(1) of the ECA it is clear that transmit and/or receive stations must have a spectrum license issued by the Authority. The only exceptions are as provided for in section 31(5) and section 31(6) of the ECA.

- In terms of section 31(5), a spectrum licence is not required where a person makes use, as a subscriber, of an electronic communications service or an electronic communications network service, the provision of which is licensed in terms of Chapter 3 of the ECA, or as a recipient of a service subject to a licence exemption. This may also be relevant in the context of some satellite services such as those where the user terminal is classified as "subscriber equipment".

- In terms of section 31(6), the Authority may prescribe types of radio apparatus or the circumstances in which radio apparatus are used without a spectrum licence. Similarly, this is relevant in the context of the Satellite Licensing Framework. This may be applicable to, for example, ESIMs on board vessels and aircraft.

Further, the Draft Satellite Licensing Framework refers to section 31(2) of the ECA, but then quotes only section 31(2)(a). A reference to section 31(2)(b) of the ECA should also be added. Telkom recommends that this also be included in Section 4 of the Satellite Licensing Framework as part of the legislative and regulatory discussion.

- In terms of section 31(2), both a service license (as per Chapter 3 of the ECA) and a spectrum licence are required when spectrum is used. Therefore, for satellite services such as the provisioning of gateways, links, TT&C, SNGs, VSATs, etc. both a service licence and a spectrum licence will be required (unless specifically exempted by the Authority). The procedures of providing ECS and ECNS licenses have been established and are contained in Chapter 3 of the ECA. In Telkom's view this therefore falls outside the scope of this Satellite Licencing Framework.

- Telkom understands that, where the Authority refers to the different types of licences or authorisations, for example, "satellite gateway earth stations" and "satellite user terminals" in Section 6, it is referring to the necessary spectrum licences required for the operation of the gateway or satellite user terminals, and not a service licence (i.e. ECS or ECNS). This is also supported in Section 3 ("Background") of the Draft Satellite Licensing Framework.

4.3 Ad section 3 ("Objectives")

The first objective refers to "satellite operators", Telkom understands that the Authority is referring to international satellite operators such as Intelsat, Inmarsat/Viasat, Omnispace, Starlink, etc. On the other hand, in the introductory text on page 1 of the Gazette, the first bullet point refers to a framework for "satellite services". Reference to "services" is much broader than the reference to "operators" in the first objective. Telkom is of the view that the Draft Satellite Licensing Framework should apply to all satellite services and not only satellite operators, and therefore Section 3 should be amended to align with the objective on page 1 of the Gazette.

The last objective in Section 3 of the Draft Satellite Licensing Framework refers to international satellite operators who intend to provide services either directly or indirectly (through existing licensed operators) to South African consumers. Whereas both options may be valid, it must be clearly stipulated that for an

international satellite operator to provide services directly to South African customers it will need the necessary licences issued in terms of both Chapter 3 and Chapter 5 of the ECA.

4.4 Ad section 4 ("Applicable Legislation and Regulations")

See also comments in section 3 above regarding this section.

QUESTION 1

These are the policy principles from the ATU that ICASA seeks to align with.

Kindly provide comment(s) on the proposed policy principles and any further recommendations listed in the above section?

In general Telkom agrees with the satellite licensing principles.

The issue of "blanket-licencing" of "user terminals" must, however, be considered further. Telkom is of the view that there is scope for this. There are, however, factors that need to be considered and included in the Draft Satellite Licensing Framework, as indicated below:

- "user terminals" need to be defined clearly. Not all "user terminals" will necessarily receive a "blanket licence". This must be considered on a case-by-case basis also considering the specific frequency band and the need for sharing and coordination with other radiocommunication services.

- When user terminals are deployed under the "blanket-licensing" principle, it is in effect a secondary service and therefore cannot cause harmful interference and cannot claim protection from other licensed services. This will apply in all frequency bands which are shared with primary services. However, adherence to the principle of "not causing harmful interference" must be consider in all cases to see if this can be done practically in order the ensure protection of the primary licensed services operating in the specific frequency band. A light-touch licensing regime could also be considered in some case.

- Gateways, for example, must be coordinated with other radiocommunication services and must therefore receive individual spectrum licences, whether they are used for transmission, reception, or both. This also apply to individual satellite earth stations other than a gateway, for example those used to provide PTP links, broadcasting distribution services, etc.

4.5 Ad section 5 ("Scope of the Inquiry")

The Authority provides a table of "typical" frequency bands used by the services considered in Draft Satellite Licensing Framework. This raises the question as to what the purpose of this table is and if it will be captured in the final Satellite Licensing Framework and whether the listed frequency bands will be the only bands relevant to the Satellite Licencing Framework.

It is clear that several frequency bands that are currently used, or which will be used, for satellite services and therefore relevant to the Satellite Licensing Framework, are not listed in the table. These include, for example, the bands 1980-2010 MHz paired with 2170-2200 MHz, 3.6-4.2 GHz, 5925-6425 MHz, 5091-

5250 MHz, etc. The status of the listed and those not listed in the table, as well as the purpose of the table, must be clarified.

QUESTION 2

Do you agree with the exclusions of radio navigation satellite services, amateur satellite services, earth exploration, space research satellite services and radio astronomy services indicated above and others if applicable? If not, please explain your reasoning and propose an alternative to this proposal.

In principle Telkom does not object if the listed services be excluded from the current Draft Satellite Licensing Framework process mainly because the above listed services are not provided under a Chapter 3 license and are not provided to customers on a commercial basis. The Authority would however need to consider whether certain radio navigation satellite services (e.g. Global Position System ("GPS")) should be included in the current process as it may be necessary to include this under the blanket licensing regime, or be licence exempted, noting the nature and extent of the use of these services. Also, where the above listed services operate in the bands used for FSS, MSS and BSS, these may need to be included in the Inquiry due to its impact on the shared use of spectrum.

Notwithstanding the above, Telkom recommends that a regulatory framework for the listed services be undertaken (preferably in parallel with the current process) as this will be beneficial in understanding which of these satellite services allocated in the ITU Radio Regulations are being provided over South Africa. The concept of "landing rights" may also apply to these systems and this needs to be considered. This is essential to ensure proper frequency coordination in the bands shared with other services such as fixed, mobile, FSS, MSS, BSS, etc. Such an exercise will also assist with updating the National Table of Frequency Allocations and assist in the preparations for WRCs. A regulatory framework for the licensing of these satellite services will ensure better use and management of spectrum overall.

Since these services use radio frequency spectrum, the provision or use of the listed services in South Africa requires a spectrum licence in terms of section 31 of the ECA if they are used within South Africa. A different spectrum licensing fee model may also be required for the listed satellite systems. Blanket licensing, licence exempt, or a light-touch licensing regime may also be applied in some cases.

Including radio astronomy services in the list of services is inappropriate as this is not classified as a "satellite service" in terms of the ITU Radio Regulations. Radio astronomy is neither defined as a terrestrial nor a space radiocommunication service under the definition of "allocation". The inclusion of radio astronomy services in this context must be reconsidered or clarified.

4.6 Ad section 6 ("Types of licences/authorisations (where applicable) for Satellite Communications")

The Authority proposes three type or licences/authorisations. Telkom assumes, based on its reading of the Draft Satellite Licensing Framework, that the intention is to issue these licences/authorisations under section 31 of the ECA, and not Chapter 3 of the ECA. Chapter 3 provides for ECS and ECNS licences, which is a requirement in terms of section 32 of the ECA, in addition to a spectrum licence issued in terms of section 31. This is also acknowledged in the Draft Satellite Licensing Framework. Without an ECS or ECNS licence it is common cause that a spectrum licence cannot be issued for the proposed service categories.

The exception to the above is the registration of the Space Segment, which is not classified as a "licence" under Chapter 3 nor a spectrum license in terms of Chapter 5 of the ECA. This is also reflected in the Draft Satellite Licensing Framework.

QUESTION 3

Do you agree with the proposed approach of having a separate licence/authorisation (where applicable) for each segment of the Satellite Communication value chain? Please elaborate.

Telkom agrees with the separation of the proposed licence categories as these could be provided independently by different providers. As indicated above, the need for further differentiation of satellite earth station terminals may need to be considered.

4.7 Ad section 7 ("Satellite Gateway Earth Stations")

QUESTION 4

Please provide your comments on the proposals in the preceding paragraph and the duration of the Gateway Earth Station licences.

Telkom supports the proposal to review the satellite spectrum fee model as this has negatively impacted the provisioning of satellite gateways in South Africa. Telkom raised this issue several years ago. Due to the highly prescribed annual spectrum fees some satellite providers opted to relocate their gateways to neighbouring countries where the spectrum fees are more reasonable.

Telkom accepts that there may be situations where a Gateway Earth Station may be provided under the Private Electronic Communication Network ("PECN") licensing regime. This could apply in specific cases, for example, where the earth station is used for TT&C. Such licensing must, however, be considered on a case-by-case basis also considering that a spectrum licence will also be required. Further, a gateway service, including TT&C, could be provided by a holder of an ECNS licence. A Gateway earth station may also play an important role for the provision of some satellite services, for example where there is a need for interconnection between the terrestrial and satellite networks, bringing to the fore issues such as numbering, termination rates, and interconnection.

The proposed 5-year spectrum licence term is acceptable, with the understanding that this could be extended by a further 5 years (without limit on the number of extensions). It is understood that spectrum fees will be paid annually, even if the license is awarded for 5 years. This must be confirmed and included in the Satellite Licensing Framework.

4.8 Ad section 8 ("National and International Coordination")

As also highlighted above, there are several issues that need to be raised regarding Section 8. Firstly, this section is seemingly part of the Satellite Gateway Earth Station discussion, although this is not clear. (for example, Section 8.1 deals with spectrum licence fees for gateway earth stations only). The issue of national and international coordination are general principles that apply to all satellite services, not only gateway earth stations.

Coordination takes place on different levels or stages namely:

(1) international coordination through the ITU Article 9 and 11 procedures, which would then feed into the issue of registration of satellites;

(2) coordination of gateways and other fixed terminals (as discussed above); and

(3) coordination of user-terminals that could lead to either a blanket-licensing regime, a licence exempt regime, or even a need for individual coordination and licensing of terminals.

The coordination highlighted in points (2) and (3) above will both have to consider cross-border coordination. The coordination of Gateways could be supported by applying the principles outlined in Appendix 7 of the Radio Regulations, noting that Appendix 7 only confirms whether further detailed coordination with the affected neighbouring country is required.

Telkom has on numerous occasions raised its concerns regarding the lack of national frequency coordination of satellite services, including Teleports and Gateways, in bands shared with other services on an equal basis. Lack of such coordination may lead to harmful interference with substantial costs to licensees if these need to be corrected. Where sharing between services are not possible, the impact will be far reaching.

The application of Article 11 (Notification and recording of frequency assignments) to earth stations to be recorded in the Master Register of the ITU must also be addressed by the Authority. Without such registration, there will be no international recognition of systems and stations deployed in South Africa in the affected frequency bands. It is also an ITU regulatory requirement in some cases that certain systems or stations be notified to the ITU, for example in bands shared with satellite services. Telkom recommends that this issue be addressed both in the Draft Satellite Licensing Framework but also as a separate general matter (i.e. a separate regulatory framework) to collectively address all the requirements for services as required under Articles 9 and 11 of the Radio Regulations.

Another issue to be considered by the Authority is the coordination and operation of multiple satellite systems in the same frequency band, especially also where frequency bands are shared between NGSO and GSO satellite systems. First mover advantage should not unduly restrict the deployment of additional satellite systems in the same frequency band, notwithstanding the coordination priority as per Article 9 or the ITU Radio Regulations. It is important that the Authority facilitates the use of as many as possible satellite services in South Africa to ensure competition between the use and availability of different NGSO satellite systems. The location of Gateways may have to be carefully considered to facilitate shared use.

4.9 Ad section 8.1 (“Radio Frequency Spectrum Licence Fees for Gateway Earth Stations”)

QUESTION 5

Please comment on the above-mentioned alternative proposals to levy the spectrum fees for Gateway Earth Stations and indicate your preferred option. The Authority understands that there are other spectrum fee calculation methodologies used elsewhere in the world. Please give details of the methodologies which you believe would be most suitable for South Africa.

Telkom agrees that the current spectrum fee formula for gateways restrict the provision of these services in South Africa.

The main problem with the Gateway station spectrum fee is that it is a flat rate considering only bandwidth (in addition to the unit price of spectrum). As indicated in the Draft Satellite Licensing Framework, there is a need for large quantities of bandwidth to be provided at a Gateway. This is, however, not only relevant to HTS systems; this was a concern many years ago when Telkom deployed Gateways for the ICO and Globalstar satellite systems, which operated in the 2 GHz and 5 GHz frequency ranges.

Telkom is of the view that some or all factors used in the formula for area-based spectrum licences could be incorporated in the Gateway spectrum fee formula to reduce the spectrum fee payable for Gateways, while also improving efficiency in the use of spectrum, which is a key objective of the Administrative Incentive Pricing ("AIP") spectrum pricing fee regime. Some factors which are currently not included in the satellite formula, and which could be included (some or all factors to be included), are:

- Application of the GEO factor will support the deployment of gateways in areas outside the main metropolitan areas, which will allow the applicable frequency bands to be used for other services in metropolitan areas.

- Application of the SHR factor will allow a reduction of the spectrum fee, where the frequency band is shared with other services while a "penalty" is paid for exclusive use of spectrum.

- The ASTER factor, which provides an indication of the area sterilised around the Gateway where the spectrum used by the Gateway is not available for other services, could be applied. This will ensure that the Gateway pays for the use of the spectrum only within the area around the earth station, and not "nationally", which is in effect what happens in the current formula without the inclusion of the ASTER factor.

- The FREQ factor will apply to all frequency bands with a substantial reduction in spectrum fees the higher the frequency band being used. This is better than only applying a special discount to satellite systems above 17.3 GHz, which means that Gateways operating in the lower frequency bands as mentioned above, will not benefit from the proposed spectrum fee changes.

In addition to the factors discussed above, a new factor specifically for Gateways could be introduced in the spectrum fee formula, if the spectrum fees need to be further reduced. Telkom also recommends that the location of Gateways (or Teleports) outside the main urban areas (or high-density areas) could receive a special discount seeing that this will allow for improved spectrum utilisation in urban areas or high density areas, in the bands shared between satellite and other radiocommunication services. This new proposed area based factor could be used instead of the GEO factor, which could apply to more areas that the currently defined high density areas, to ensure that Gateways or Teleports are located outside all metropolitan areas or big cities.

The proposal to only add the proposed "HTSF" factor to the existing formula will not necessarily result in a sufficient reduction in spectrum fees for Gateways. For example, if a Gateway is deployed in the 18 GHz band and intends to access the full 2 GHz of spectrum, the spectrum fee based on the current formula will be R6.2mil per year. If the HTSF = 0.1 is applied, this will amount to R625,000 per year, which is huge decrease but will not benefit bands lower than 17.3 GHz. Applying the above existing factors within the

satellite Gateway formula may result in better and fairer outcomes across all frequency bands and will lead to more efficient use of spectrum as it will not incentivise the selection of Gateways, for example in urban vs rural areas. Telkom also advises against the application of any factor based on a specific technology, such as high/very high throughput satellite service. Including such a factor in the formula will create ambiguity in terms of the definition and application of services and will lead to regulatory uncertainty.

Telkom supports the application of a spectrum fee per licence and not per earth station. This will cater for instances where a cluster of earth stations using the same frequency band to access the same satellite network is co-located at the same location or Teleport. Multiple independent antennae will still need to be licensed individually since they access different bands and different satellites (meaning that the coordination areas will be different).

The examples provided in the table on page 21 of 33 of the Draft Satellite Licensing Framework, which provides for different amounts payable in different frequency bands for clusters of antennae, will not bring the necessary saving for gateways. For example, considering the example of a NGSO feeder link gateway operating in the band 5091-5250 MHz (159 MHz), the annual spectrum fee payable using the proposed values will be R200*159 MHz*R3125 (UNIT) = ~R100mil (or R10mil when also applying the HTSF factor of 0.1). These spectrum fees will not encourage the deployment of this specific type of gateway in South Africa due to the exorbitantly high spectrum fees. Additional factors, as suggested above, must also be considered. If the current factors, as applied in the area based formula, are applied to the same example, and assuming the gateway is located outside a high-density area, the fee will be R208k per year, which is a much more realistic or affordable fee for such a gateway.

Telkom recommends that the Authority explore the use of the existing spectrum fee factors for the calculation of satellite spectrum fees, which will allow for technology neutral implementation, will incentivise more efficient use of the radio frequency spectrum, and supports the use of higher frequency bands.

4.10 Ad section 9 (“Satellite User Terminals”)

QUESTION 6

Kindly comment on the section above and on the proposal for blanket licensing with a fee for a set number of terminals under a new proposed licence regime to be referred to as "Satellite User Station Network Licence". If possible, please provide a breakdown of the number of terminals with the corresponding spectrum fee values in South African Rands.

4.10.1 Blanket licensing

Whereas Telkom agrees that blanket licensing of satellite earth station terminals could be applied in some case, this must be considered on a case-by-case basis. The satellite environment is also not necessarily the same as the mobile/cellular environment when considering a blanket licensing regime. In the mobile/cellular environment, the International Mobile Telecommunication (“IMT”) frequency bands assigned for mobile services and are mostly assigned exclusively to the licensee for national deployment

of the licensee's mobile network, for which the licensee pays a substantial annual spectrum fee and, in some cases, acquired the spectrum through payment of a very substantial spectrum acquisition fee.

Contrary to the above, in the satellite environment, many frequency bands used for satellite services are shared between satellite and terrestrial services. These bands could be allocated to fixed terrestrial, mobile, or other services on a primary basis, which requires frequency coordination to avoid harmful interference to the other primary service. If a blanket licensing regime is applied to satellite user terminals, the satellite user equipment will need to operate on a secondary basis so as not to cause harmful interference to, or claim protection from, the primary services operating in the same band. The issue of ensuring protection of the primary services by the exempted satellite terminals must also be considered. In this regard, it may be necessary that measures are put in place where satellite uplinks to satellites (from user terminals to the satellite space stations) are provided to ensure that primary services are not negatively impacted. The potential for harmful interference must be considered on a case-by-case basis (for each frequency band) and will differ in each frequency band based on the allocated radiocommunication services and the type of satellite service or application been deployed. Different factors also need to be considered for aircraft, vessels, land bases, fixed and mobile user terminals. The Authority is advised to consider the conditions for sharing as contained in the ITU Radio Regulations, which differ for each band.

4.10.2 **Radio Apparatus Dealers certificate**

QUESTION 7

Kindly comment on the appropriateness of using regulation 37 of the ICASA radio regulations ("Recognition of licences issued by other countries") to recognize ESIM licences issued by other countries.

In the case of mobile networks, the handset is classified as "subscriber equipment" and therefore exempted from requiring a spectrum licence since "subscriber equipment" is excluded from the definition of "radio apparatus" (see section 31(5)(a) of the ECA). Consequently, the certification of Radio Apparatus Dealers for subscriber equipment would also not apply.

The application or relevance of Regulation 37 of the Radio Frequency Spectrum Regulations ("RFSR") in the context of satellite licensing could apply in some cases, for example, in the case of ESIMs on aircraft and vessels. However, satellite services provided within South Africa will be provided by an iECS or iECNS licensee and, in this regard, Regulation 37 cannot be used to replace the need to have a service licence issued in terms of Chapter 3 of the ECA (in addition to the need for the necessary spectrum licences). If an ESIM is licensed in another country and brought into South Africa via, for example, an aircraft or vessel, or even vehicle, the application of Regulation 37 could be considered.

Telkom agrees that all equipment must comply with the Equipment Type Approval Regulations.

With regards to Direct to Home ("DTH") receive terminals, these are considered as subscriber equipment and should therefore be exempt from requiring a spectrum licence in the same way that mobile handsets are exempt. DTH operates in a frequency band allocated to the FSS and therefore operates on a secondary basis, i.e. it cannot claim protection from the primary services operating in this band. Telkom proposes

that satellite user equipment also operate on a secondary basis in shared bands where a blanket licence has been issued or if the satellite user terminals are declared spectrum licence exempt.

The use of the term "*satellite user terminal network licence*" must be avoided. Firstly, this type of service can only be provided under an iECNS licence, as per Chapter 3 of the ECA. An additional "network licence" is therefore not required. ECNS licenses are technology neutral and can be used to provide any technology or service, including satellite services. What is required, is the necessary spectrum licence for the specific spectrum to be used. The licence should therefore be termed: "satellite user terminal spectrum licence" – to make it clear that this is a spectrum licence and not a network licence. The spectrum licence can then contain all the relevant conditions associated with the use of the particular frequency band.

Regarding spectrum fees for user terminals, Telkom supports the amendment of the VSAT formula to be technology neutral. Currently, licensees pay for either the Gateway or the VSAT terminals, but not both. With the new regime, this must continue to apply to avoid double payment where both are provided.

4.11 Ad section 10 ("Space Segment Authorisation")

QUESTION 8

Please provide your comments and details of the best practices in other jurisdictions to fulfill the intentions of the Authority as indicated in the above section. Furthermore, considering the provision set out in the Astronomy Geographic Advantage (AGA) Act of 2007, and the requirements of the Radio Quiet Zone, what measures and techniques do you propose to be employed in mitigating the possible interference that may be caused by the satellites within the Astronomy radio frequency bands in South Africa?

Telkom supports the proposal to register satellite systems, provided that the registration process is simple and does not restrict licensees' accessibility to satellite systems and does not provide any right to the satellite operator to provide services in South Africa, which is reserved for licensees licensed by the Authority in terms of the ECA and its regulations. Telkom therefore also supports the notion that this is a registration process and not an application for landing rights. Telkom also agrees that legal presence in South Africa should not be mandatory to register a satellite network, seeing that such registration doesn't give any rights to the satellite operator to provide any service within the borders of South Africa.

Telkom is concerned that several proposals contained in the Draft Satellite Licensing Framework seem to go beyond a simple registration process and are structured as an application for authorisation or landing rights. Examples include:

- The register is called "List of Authorised Space Stations". This implies that the Authority may decline a request to be included in the list. Although there may be valid reasons for such refusal (for example a conflict with the use of spectrum in South Africa), this must be considered very carefully as it may lead to the issues raised against landing rights (competition, delays, etc).

- Payment of a nominal or administrative fee: Although this may be needed to cover administrative costs, this could negatively impact the availability and access to space system capacity. A satellite

operator is also not a licensee, and it is not clear under which provision the Authority could charge a registration fee from a non-licensee.

- The commitments or requirements by satellite operators to ensure compliance with unwanted emissions to protect radioastronomy services may be perceived as moving beyond a simple registration process and must therefore be considered very carefully. Satellite operators must comply with all ITU Radio Regulations when filing their satellite systems. Therefore, it is not clear why this specific requirement is being singled out as they will comply with the protection of radio astronomy operations within the relevant allocated frequency bands.

- Requirements to comply with local regulations, such as Regulation of Interception of Communication Act ("RICA"), creates the impression that satellite operators provide national services to end-users. If this is a registration process, it is not clear why a satellite operator providing space segment should comply with RICA. Where RICA is required, it will be for the licensee to ensure compliance.

- The Authority includes an authorisation condition regarding protection of radioastronomy, which gives the Authority the ability to take enforcement action. This seems to overstep the notion of a simple registration process. Although protection of radio astronomy services in the ITU allocated frequency bands is required as per the ITU Radio Regulations, especially also from NGSO mega-constellations, extending this to the SKA frequency bands, which goes beyond radioastronomy frequency allocations, may raise concerns for NGSO satellite operators and may result in them not registering in the list of Authorised Stations resulting in their satellite capacity not being available to licensees to provide services. This is specifically relevant due to the reference to the Astronomy Geographic Advantage Act ("AGA") and the requirements of the SKA Radio Quite Zone ("RQZ"), which requires protection beyond internationally recognised radio astronomy frequency bands. This concern is also raised in the context of WRC-27 agenda item 1.16. The protection of radio astronomy beyond the ITU allocated radio astronomy bands must be clarified.

- The consideration of imposing obligations to space segment providers may create the impression that this will give some right to provide services in South Africa, which must be avoided.

4.11.1 **Ad section 10.1 ("Proposal on Space Segment Authorisation in South Africa")**

In implementing the proposed process, the Authority will have to include a process to cater for existing satellite systems, which are already used in South Africa. The relevant satellite operators must be given sufficient time to provide the requested information to be included in the list of Authorised Space Stations.

In the list of information to be provided, points b) to d) should be combined into one (editorial change).

With regard to point f), the Authority indicates that: "*For the protection of the Radio Astronomy Advantage area, Licensees shall manage interference by limiting unwanted emissions. For non-geostationary orbit systems, this includes the suppression of satellite transmissions in the channel immediately adjacent to 10.7 GHz or taking other measures.".* This raises a few questions:

- The reference to "licensees" to manage unwanted interference is not clear. This is the list of information to be provided by the satellite operator, which is not a "licensee" and must therefore be clarified. See also comments above.

- The specific reference to the protection of the "*channel immediately adjacent to 10.7 GHz*" needs to be clarified.

    - Firstly, it is not clear what frequency band needs protection. Based on the Radio Regulations, Telkom assumes this to mean that NGSO (space-to-Earth) systems operating in the band 10.7-10.95 GHz must protect radioastronomy services operating in the adjacent passive services band 10.68-10.7 GHz. This must be clarified.

    - Secondly, although the above passive band may be very critical for astronomy, specifying this specific band as part of the registration process begs the question as to why only this band, and not others. In any event, as indicated above, if this is a registration process, then technical assessments or requirements seem inappropriate.

With regards to points g) and h), the same question arises as to the relevance of technical evaluations in a registration process. In terms of the ITU Radio Regulations, satellite operators are mandated to comply with all provisions, including the limits associated with equivalent power flux-density ("epfd") and power flux-density ("pdf"). The request for such a commitment therefore seems unnecessary. If this is needed, perhaps a more general requirement to comply with all relevant Radio Regulations would suffice. Further, in paragraph h), the reference to "licensee" is incorrect as a licensee in South Africa cannot ensure compliance with the Article 21 pfd values. This requirement is for satellite operators.

4.11.2 Ad section 10.2 ("Process for inclusion of Space Station networks to Authorised List of Space Stations")

The Authority makes the following statement: "*Once included in the Authorised list of Space Stations, a foreign entity will need additional radio frequency spectrum either by itself or through an already licensed Individual Electronic Communications Network Licence holder (I-ECNS) provider*". There should be absolutely no link between the process of registration in the list of Authorised Space Stations and licensing to provide electronic communications services in South Africa. The above statement may create the impression that the foreign entity has some right to apply for spectrum licences and/or services licences in South Africa, which is not the case. Telkom recommends that the registration process focus only on the registration of the space segment; any licensing to provide service will be addressed through the prevailing legal and regulatory processes. A foreign satellite operator can apply for the necessary licences, if needed; but this should be completely separate from the registration process.

In line with the above, in the discussion on the RICA requirements, the Authority makes the following statement: "*The Authority is instead proposing undertaking/ commitment from the Space Station operator to ensure compliance with RICA. <u>This is only applicable where the Space segment operator intends to provide retail services directly to the end user (i.e., not through the already licensed I-ECNS holders)</u>*" (own emphasis). This statement is also problematic as it may create the idea that a space station operator may provide services directly to end users. This would only be possible if the space station operator is duly licensed to provide ECS and ECNS services in South Africa and would therefore be bound to all applicable South African laws and regulations. Again, Telkom recommends that the Authority ensures that there are clear lines between the registration of the satellite space segment and the provision of electronic communications networks and services within the boundaries of South Africa.

In terms of RICA requirements, this is applicable only to licensees in South Africa. A satellite operator should not be subject to domestic regulatory requirements since it does not provide ECS / ECNS services in South Africa.

4.12 Ad section 11 ("The satellite rollout obligations")

QUESTION 9

Please provide proposals on the role the Satellite operators can play in ensuring that broadband connectivity reaches the areas of the country in terms of community networks with Satellite connectivity as a backhaul.

Kindly provide a regulatory solution that can be applied by Satellite operators to address the shortcomings of terrestrial networks in providing to unserved and underserved areas of the country. This may include collaboration with government programs to reach out to those unserved and underserved areas of the country.

In principle Telkom doesn't object to the consideration of satellite roll-out obligations. However, noting that satellite operators are required to perform only a registration process, and that such registration doesn't allow granting of any rights to deploy and provide electronic communications networks or electronic communication services in the territory of South Africa, the requirement pertaining to obligations may be misdirected, inappropriate, or construed to imply some rights to operate electronic communication networks and services in South Africa. This must be avoided.

Any satellite operator could make commitments to South Africa for general application to all licensees for example to reduce costs of satellite capacity, satellite routers, user terminals, etc. This could be especially applicable to providing broadband services in rural areas, where licensed operators are authorised to provide such services.

4.13 Ad section Appendix A ("Registration of space station network to the authorised list of space stations")

Broadly Telkom agrees with the listed requirements. The following issues must however be addressed:

- The process to be followed by the Authority to assess the "application", including the maximum time needed to assess each request.

- The process to follow if the Authority decides not to include a satellite system in the register and the grounds for refusal.

- A process to ensure that existing systems are included in the register. There must be a grandfather clause, or a time stipulated, to allow current satellite operators to register.