

Document Name: *Spectrum Management Framework (June 2022)*

Appendix I. Decisions on Recommendations (DORs) Matrix for First Round of Public Consultation

The following summarises the comments and recommendations received from the first round of public consultation on the *Spectrum Management Framework* (the Framework). The decisions made by the Telecommunications Authority of Trinidad and Tobago (the Authority) have been incorporated in the revised version (ver. 1.2) of the Framework, where applicable. The Authority wishes to express its thanks for all comments and recommendations received from the following stakeholders:

1. Digicel (Trinidad and Tobago) Limited
2. Telecommunications Services of Trinidad and Tobago (TSTT) Limited
3. 5G Americas

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT’s Decision
1	1		Digicel	<p>Digicel (Trinidad & Tobago) Limited (“Digicel”) wishes to thank the Authority for the opportunity to comment on this policy. It should be noted that the comments set out herein by Digicel on this document, in no way constrains Digicel from making further comments on same in the future.</p> <p>Digicel wishes to once again suggest that when a revised document is issued for consultation, a table of changes made to the previous versions should also be published by the Authority, so</p>		<p>The Authority acknowledges Digicel’s appreciation for the opportunity to comment on the <i>Spectrum Management Framework</i> (the Framework) and its suggestion for a table of changes to be published by the Authority, to facilitate maximum transparency in the consultation process.</p> <p>Digicel is advised that changes made to technical documents following public consultations are captured under the heading “Consultation Process”. In the interest of transparency, the Authority agrees to publish the tracked changes as well as a clean</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				as to facilitate maximum transparency in the consultation process.		version of the Framework following each round of public consultation.
2	1.2	Purpose	Digicel	Figure 1: The national spectrum planning structure. There is no reference to PMTS frequencies being planned to in order to cover mobile 5G.	Digicel recommends that the Authority expand the frequency range to include those used for ITU region 2 for mobile 5G.	Digicel is advised that the <i>Public Mobile Telecommunications Services (PMTS) Spectrum Plan</i> in Figure 1 will be updated to include the 5G mobile frequency ranges, following the completion of the consultation process and the publication of the <i>Framework for Fifth Generation (5G) Public Mobile Telecommunications Networks (5G Framework)</i> and the revised <i>Broadband Wireless Access (BWA) Spectrum Plan</i> .
3	2.3.2	Comparative Evaluations or Beauty Contests	Digicel	Historically speaking, one of the challenges with this method is the length of time it takes the Authority to produce an outcome.	The Authority should establish a clear time frame within which results of a comparative evaluation/beauty content should be released, failing which the process should be deemed aborted.	<p>Spectrum assignments using comparative evaluations are used for the provision of a public telecommunications service or broadcasting service, which requires a concession.</p> <p>In keeping with its statutory requirement specified in section 21 of the Telecommunications Act, Chap. 47:31 (the Act), the Authority currently observed the following:</p> <ol style="list-style-type: none"> 1. Where spectrum is required in respect of a concession that has been applied for, the Authority forwards its recommendations to the Minister within 90 days of receiving the application.

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
						2. The Minister indicates his approval, modification or rejection of the recommendation within 60 days of receipt of the Authority's recommendation.
4	5.1	Allocate Spectrum to the Highest Value Use	Digicel	<p>Spectrum Management Framework Policy Statement:</p> <p>1. Spectrum will be allocated to the highest value use, to ensure that maximum benefits to society are realised.</p> <p>There is no mention of the criteria on which "highest value use" will be determined.</p>	Digicel recommends that a section be added by the Authority that details how "highest value use" is determined, provides examples on the technology for which it will be used as well as provide the benefit to the public of such technology.	<p>The Authority accepts Digicel's recommendation and has revised section 5.1 to include additional information on how the highest value use is determined.</p> <p>In assessing the highest value use of the radio spectrum, the Authority considers, inter alia:</p> <ol style="list-style-type: none"> 1. the objectives of the Act and all relevant legislative requirements. 2. the community benefits derived from the use of the spectrum. 3. the demand for the particular radio spectrum. <p>Additionally, spectrum plans revised and developed as a result of the Framework will include details on the highest value use of the spectrum.</p>
5	5.5	Balance the Cost of Interference Against the Benefits of Greater	Digicel	<p>Spectrum Management Framework Policy Statement:</p> <p>5. The risk and cost of interference will be balanced against the benefits gained from greater spectrum utilization.</p>	Digicel asks that the Authority provide detailed guidelines in order for us to get a better understanding of how this balancing will be done and how priority will be given to benefit the country and population.	The Authority accepts Digicel's recommendation and has revised section 5.5 to include additional information for clarification.

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
		Spectrum Utilisation		There are no details on how this balancing exercise will be conducted.	<p>What kind of factors will be considered?</p> <p>What level of stakeholder/operator involvement will there be in this process?</p>	<p>Factors considered by the Authority are included in the revised section 5.5 for clarification.</p> <p>Digicel is assured that stakeholders will continue to be engaged in the finalisation of the Framework and all subsidiary documents developed as a direct result of the Framework.</p>
6	5.2	Enable and Encourage Spectrum to Move to its Highest Value Use	Digicel	<p>Spectrum Management Framework Policy Statement:</p> <p>2. Mechanisms will be put in place to enable and encourage spectrum to move to its highest value use</p>	<p>Digicel asked that the Authority provide a detailed breakdown of the mechanisms to be used here.</p> <p>Digicel recommends that the Authority adds details on the criteria that will be used to determine what constitutes high value use.</p>	<p>The Authority has revised section 5.2 to include additional information on some of the mechanisms considered, to encourage the spectrum to move to its highest value use.</p> <p>The Authority accepts Digicel's recommendation and has revised section 5.2 to include additional information on what constitutes the highest value use.</p> <p>Additionally, spectrum plans developed as a result of the Framework will include details on the highest value use.</p>
7	6.1.2	Spectrum for National Security, Law Enforcement and	Digicel	<p>Spectrum Management Framework Policy Statement:</p> <p>8. Radio frequency spectrum shall be provided for radiocommunications services for national security, law enforcement, public health and safety,</p>	<p>Digicel recommends that a clear capacity dimensioning and reuse plan be developed and shared with the industry.</p>	<p>The Authority's acknowledges Digicel's concern on whether the spectrum is being used efficiently. While it would not be prudent from a national security perspective to publish capacity dimensioning and reuse plans for spectrum allocated for National Security and law enforcement, the Authority will</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
		Emergency Services:		<p>and emergency services, on a priority basis, and such spectrum shall be used efficiently and effectively.</p> <p>Digicel commends the Authority for taking this step forward as a country aiming for its targets for Vision 2030.</p> <p>The allocation should be adequate for and not exceed the expected level of usage so that the spectrum for this purpose is not underutilized.</p>		<p>engage the relevant agencies to ensure the efficient use of the spectrum.</p> <p>Digicel is also informed that any revision to spectrum plans will be consulted upon, in accordance with the <i>Procedures for Consultation in the Telecommunications Sectors of Trinidad and Tobago (version 7.0, 2021)</i> (Consultation Procedures). Section 6.1.2 has been amended for clarification.</p> <p>The Authority thanks Digicel for its compliments and for recognising the importance of the country achieving its Vision 2030 targets.</p> <p>Digicel is assured that the spectrum is allocated adequately and that steps are taken (e.g., monitoring) to ensure its efficient and effective use.</p>
8	6.1.4	Spectrum for Universal Service	Digicel	<p>It is impossible to comment meaningfully on this section and its accompanying policy statements as there is no supporting detail provided by the Authority as to how such spectrum allocations will work as well as the proposed “fee formulae”.</p>	<p>Digicel requests that the Authority issue an addendum to this document with details on matters such as how USF Spectrum allocations will be accommodated and reconciled with existing band plans, how compatibility with operator equipment will be treated</p>	<p>Digicel is advised that the Framework captures the policy positions on spectrum management in Trinidad and Tobago. Subsidiary documents such as the PMTS Spectrum Plan and the Fees Methodology will be revised as a result of the Framework and will provide details on the allocation of spectrum for universal service and the related fees.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
					with, how will spectrum fees be computed, The Authority should provide an opportunity for operators to comment on same.	<p>The Authority will consult with stakeholders, in accordance with its Consultation Procedures, with regard to the revision and development of subsidiary documents, in support of the allocation of spectrum for universal service.</p> <p>The Authority has revised section 6.1.4 to include additional information for clarification.</p>
9		General	TSTT	Telecommunications Services of Trinidad and Tobago Limited (“TSTT”) appreciates that the Telecommunications Authority of Trinidad and Tobago (“the Authority”) has given operators the opportunity to comment on these matters. It should be noted that TSTT's comments on this document do not preclude TSTT from making further comments in the future.		The Authority acknowledges the appreciation expressed by Telecommunications Services of Trinidad and Tobago Limited (TSTT) for the opportunity to comment on the Framework, and its position relating to future comments.
10	1.2	Purpose	TSTT	<p>The diagram to be amended to reflect the following:</p> <ol style="list-style-type: none"> 1. Spectrum Plan for BWA Services is 410 MHz – 28.35 GHz and not “700 MHz – 6 GHz” 2. Spectrum Plan for Land Mobile Systems is 138 MHz - 869 MHz and not “137 – 869 MHz” 	The Authority to amend the diagram accordingly.	<p>The Authority thanks TSTT for its recommendations.</p> <p>Spectrum plans are revised from time to time; however, the Framework may remain unchanged. Therefore, the Authority has opted to include the names of the spectrum plans in Figure 1 and not the frequency ranges.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
						The diagram (Figure 1) has been amended to include only the names of the relevant spectrum plans.
11	1.6	Review Cycle	TSTT	<p>Due to the nature of the document, it will be prudent for Licensees and Concessionaires to have an opportunity to make recommendations for the periodic review of the document.</p> <p>Notwithstanding the periodic review, this document should include a review timeframe of every three (3) to five (5) years.</p>	<p>Licensees and Concessionaires to have an opportunity to make recommendations for the periodic review of the document.</p> <p>A review timeframe of every three (3) to five (5) years should be included in this document.</p>	<p>TSTT is informed that licensees and concessionaires have an opportunity to make recommendations for the periodic review of any documents. As stated in the Consultation Procedures, section 8.1, “Any stakeholder or member of the public may submit proposals for consultation on a significant issue affecting the industry and the Authority will give due consideration to such proposals.”</p> <p>The Authority accepts TSTT’s recommendation and has revised section 1.6 (page 5) to include a time frame of three to five years.</p>
12	1.7	Consultation Process	TSTT	<p>The Authority referred to the “<i>Procedures for Consultation in the Telecommunications Sector of Trinidad and Tobago (version 2.0, 2010)</i>” rather than the most recent version available on its website dated January 2021. Could the Authority clarify why this version was used?</p> <p>“<i>The revised consultative document (version 2.0) will be made available for the first round of public consultation on</i></p>	<p>TSTT assumes that the 2010 version is the correct version and will be guided by this version in the context of this and future consultations</p> <p>The Authority to confirm the statement, as well as correct the name of the Ministry.</p>	<p>The Consultation Process, section 1.7 (page 6) of the Framework, has been amended to reference the relevant document.</p> <p>In keeping with the Consultation Procedures, section 5.1.8, the Framework was made available for the first round of public consultation for a period of six weeks and extended for an additional three weeks based on stakeholders’ requests. For clarification, section 1.7 (page 6) was amended.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p><i>October 8, 2021, for a period of four weeks.” This statement should be corrected as the consultation was issued on October 11, 2021, for a period of five weeks.</i></p> <p>The Authority to confirm if its reference to “<i>the then Ministry of Public Administration and Digital Transformation</i>” is accurate.</p>		<p>The statement has been amended for accuracy and now reads: “.. submitted to the Authority’s line Ministry – the Ministry of Public Administration and Information”.</p>
13	2.2.1	Individual Licences	TSTT	<p>The last sentence states that spectrum licences are “...<i>intended to correspond with the expected life of a mobile network.</i>” Given the evolution of technologies, it may not be accurate to assume that a particular network lasts for 20 years. This statement is even more problematic in the context of a technology-neutral regime where the operator can and may change the technology used in a particular spectrum assignment once the operational parameters to mitigate noise generation are maintained.</p> <p>On review of the Authorisation Framework, TSTT posits that it is more appropriate to say that the licence is intended to correspond with the</p>	<p>The last sentence should be modified to read:</p> <p><i>“They are intended to correspond with the term of the Concession for the operation of the Fixed or Mobile Network for which the licence is issued.”</i></p>	<p>The Authority agrees with TSTT’s recommendation. The last sentence in section 2.2.1 has been amended to reflect the same and now reads, “They are intended to correspond with the term of the concession for the operation of the fixed or mobile network for which the licence is issued.”</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>duration of a Concession for a Fixed or Mobile Network that utilizes the spectrum. This is more consistent with the statements in the Authority's Authorisation Framework and is not prejudicial to certain types of technologies or business models being deployed.</p>		
14	2.2.2	Class Licences	TSTT	<p>The first sentence makes a statement that is otiose.</p> <p><i>“Class licences allow the use of specific radiocommunication devices, as long as they operate within specific technical and operational parameters”</i></p> <p>This statement is true of ALL licences, whether station, spectrum or class.</p> <p>The sentence should be modified to clarify that it allows the “free use” of identified devices or classes of devices without the issuance of a specific licence for the device used.</p> <p>It is also an error to identify cellular mobile handsets as an example of a class licensed device, as the spectrum for both uplink and downlink legs of cellular communications (between the</p>	<p>The first sentence should be amended to read:</p> <p><i>“Class licences allow the free use of specific radiocommunications devices without the grant of a specific licence for that device or user...”</i></p> <p>The Authority should remove the reference of cellular mobile handsets from the examples of class licensed devices.</p>	<p>Section 2.2.2 has been amended and now reads, “Class licences allow specific radiocommunications devices to operate in designated spectrum band(s) on a shared basis, subject to specific terms and conditions, and specific technical operating parameters.” Additional information has been included in section 2.2.2 for clarity.</p> <p>TSTT is advised that cellular mobile handsets are class licensed to allow the use of these devices to communicate with a licensed public telecommunications service (PTS) base station. It also allows mobile devices that communicate with a licensed aircraft station to be used on an aircraft.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>mobile handsets and network base station) are subject to the individual spectrum licences granted to the Concessionaires. Accordingly, cellular mobile handsets should not operate at the risk of interference from other users of that band (i.e. not users of public mobile telecoms services), because the applicable spectrum is actually individually licensed.</p>		<p>The user of a class licensed radiocommunications device must adhere to the terms and conditions of the Class Licence and the technical operating parameters specified for that device in the <i>Schedule of Devices Eligible for Use Under a Class Licence</i>.</p>
15	2.4	Spectrum Monitoring and Enforcement	TSTT	<p>TSTT notes that the Authority cites a Technical Coordination Manual, however no such document is referred to in its bibliography or can be readily found on its website.</p> <p>TSTT raises this matter given the lengthy time that it has taken the Authority to adequately treat with and resolve matters of spurious interfering transmitters in various high value commercial bands such as the public mobile bands. Sight of this Manual would provide insight into the procedures that lead to such lengthy delays in interference resolution.</p> <p>Indeed, TSTT would have expected excerpts of this Manual to be presented</p>	<p>The Authority to provide further information on the <i>Technical Coordination Manual</i>.</p>	<p>The <i>Technical Coordination Manual</i> (the Manual), also known as the <i>Spectrum Monitoring, Notification and Coordination Guidelines</i>, is an internal TATT document. First drafted in 2009, the Manual highlights the process used by the Authority when conducting spectrum monitoring exercises and investigating cross border issues. Section 2.4 has been amended and now reads, “Interference complaints are treated in accordance with the Authority’s guidelines for interference complaints.”</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>in this document to strengthen the fairly innocuous section 2.4 of the document.</p> <p>TSTT posits that given the proposals to revise the Spectrum Management regime outlined in Section 6 of the document, strengthening of the Authority's processes in Spectrum Monitoring and enforcement would be a significant aspect of its internal evaluation and preparation to meet the demands of its proposals. In that regard, TSTT demands that the Authority provide further information on the referred to Technical Coordination Manual – including excerpts and citations where appropriate - so as to more transparently address the question of improved efficiency in operations in treating with interference complaints.</p>	<p>The Authority to broaden the discussion to include evaluation of its current procedures and recommended process modification with a view to preparing itself to implement the proposed revised spectrum management regime.</p> <p>For any procedures developed in subsequent versions of this document, TSTT suggests that there be at least two rounds of consultation after its definition as set out in the <i>Procedures for Consultation in the Telecommunications Sector of Trinidad and Tobago (version 2.0, 2010)</i></p>	<p>TSTT's recommendations will be considered in the implementation of the revised spectrum management regime.</p> <p>Any procedures developed by the Authority as a result of the Framework, that require public consultation, will be consulted upon, in keeping with the Consultation Procedures.</p>
16	3	Current and Emerging Trends in Wireless...	TSTT	<p>TSTT is of the position that this entire section seems extremely dated and is in need of review and updating.</p> <p>Indeed, many of the “emerging trends” cited are actually mainstays of operations of wireless users for quite</p>	<p>This section is largely irrelevant and should be updated or deleted.</p>	<p>TSTT's assessment is duly noted.</p> <p>An understanding of trends in wireless technologies is vital to the revision of a spectrum management regime. The Authority acknowledges that some of the technologies listed in section 3 have been on the market for as much as 10 years; however, these</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>some time, even in operation in Trinidad and Tobago for decades.</p> <p>Consider that SDR's have been in the market for over 15 years. Accordingly, this isn't an emerging trend, and there is a significant body of work surrounding their operation. The same can be said about technologies such as WiFi (20 years), WiMAX (15 years), Digital Terrestrial Television (DTT, 10 years), digital radio and smart antennae (10 years). etc. LTE-Advanced has been in operation in Trinidad and Tobago for over 4 years!</p> <p>Indeed, some of these technologies and systems have been subject to still incomplete consultations of the Authority that began over 10 years ago.</p> <p>With respect to IMT-2020, IoT and HAPS the section provides no cogent argument about how the use or deployment of these technologies is hindered by the current spectrum management regime. Indeed, a case can be made that the current regime has facilitated the piecemeal deployment of some of these technologies in the</p>		<p>technologies have evolved and become more spectrum efficient in recent years.</p> <p>For clarity and a better understanding, section 3 has been renamed and now reads, "Technology Consideration". The Authority has also amended section 3 to focus on the trends in technology and their impact on the spectrum management framework and processes.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>domestic market seamlessly. The case has not been made in this section for any urgent need for review of a regime that has not been tested by market demands.</p> <p>Accordingly, this section should be deleted or significantly amended to make it relevant to a document published in 2021/22.</p>	<p>In updating the section, the Authority must make a case on how the existing regime has hindered the implementation of these technologies. If the case cannot be made that there is such hindrance, then this exercise should be aborted.</p>	<p>The Authority remains technology neutral. The existing and revised spectrum management regimes do not support any particular technologies but rather the efficient allocation and assignment of spectrum using contemporary and emerging licensing types. Section 6.2 of the Framework contains information on the various proposed licence types. The revised spectrum management regime promotes the efficient allocation and assignment of spectrum to both primary and secondary users to maximise public benefits.</p>
17	6	The Revised Spectrum Management Regime	TSTT	<p>The major change proposed in the Authority's document is the introduction of a secondary licensing regime.</p> <p>While this, as a principle and regulatory strategy, is far from novel and a decade overdue, TSTT is troubled by the lack of procedural clarity proposed by the Authority in this Policy. Indeed, despite its length, the policy scarcely provides any insight into how the Authority is to engender regulatory certainty, transparency, operational efficiency and maintain order in the new mode of operation.</p>	<p>While TSTT supports approaches which result in more efficient use of the spectrum resource, the Authority would need to delineate – in detail - the procedures of how this new modality is expected to operate.</p>	<p>The Authority notes TSTT's support for licensing approaches that result in more efficient use of the spectrum resource.</p> <p>TSTT is advised that the Framework captures the policy positions regarding spectrum management in Trinidad and Tobago. Procedures developed by the Authority as a result of the Framework will provide the details outlined. For example, a secondary access licensing document will detail the relevant procedures on how this new approach is expected to operate.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>Whereas the current aspects of the spectrum management regime could function somewhat without the definition of these procedures in Regulations, through the issuance of licences by the Authority (direct licensing) to particular spectrum users, the new regime proposed would allow third- and fourth-party users to access spectrum, without being licensed by the Authority directly. The Authority is however unclear on how this would work.</p> <p>Further, the Authority proposes (again) to take action against the mitigation of hoarding of spectrum resources, however, is simultaneously proposing primary licence holders to establish a market for secondary licences. The establishment of such a market could create a motivation for unscrupulous primary spectrum holders to hoard spectrum – which is the situation that the Authority has stated it wants to eliminate.</p> <p>The key to resolving these apparent policy deficiencies and inconsistencies</p>	<p>How will parties without licences directly issued by the Authority be subject to enforcement without Regulations?</p> <p>How will the Authority ensure that licensed operators can predictably determine whether they can access new spectrum without claims of hoarding?</p> <p>Procedures the Authority must outline in detail and reduce to Regulations:</p> <ol style="list-style-type: none"> (1) How participants and spectrum users from the secondary licensing market are identified, and managed; (2) Who would be held responsible if a spectrum user, by virtue of the secondary licence, causes interference inside or outside the band of secondary authorization; 	<p>The Authority understands TSTT's comments and recommendations as being applicable to spectrum trading. However, the Framework does not support spectrum trading.</p> <p>The revised spectrum management regime, section 6 of the Framework, proposes several secondary access licences for third-party users, such as Licensed Shared Access (LSA) and Pluralistic Licensing. The minimum technical standards and conditions will be established before the implementation of the new licences.</p> <p>Subsidiary documents developed by the Authority as a result of the Framework will provide the relevant details. For example, a secondary access licensing document will detail the relevant procedures of how this new licensing approach will operate.</p> <p>TSTT's recommendation is interpreted as referring to spectrum trading. TSTT is informed that spectrum trading is not supported by the Framework. Subsidiary documents developed by the Authority, such as, Licensed Shared Access and Pluralistic Licensing Implementation Plans, will provide the clarification requested by TSTT in recommendations 1, 2, 3 and 4.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>is the establishment of clear procedures on:</p> <p>(1) How participants and spectrum users from the secondary licensing market are identified, and managed;</p> <p>(2) Who would be held responsible if a spectrum user, by virtue of the secondary licence, causes interference inside or outside the band of secondary authorization;</p> <p>(3) What are the limits of the primary licence holder in reining errant secondary licensees, as this is traditionally a statutory function;</p> <p>(4) What would be the criteria and procedures for determining a primary licensee that can enter into the secondary licence market, so as to mitigate hoarding;</p> <p>(5) How the criteria and procedures identified in (4) above would impact the ability of primary licensees from accessing spectrum from the Authority;</p> <p>(6) What would be the technical, economic, procedural and commercial criteria to determine</p>	<p>(3) What are the limits of the primary licence holder in reining in errant secondary licensees, as this is traditionally a statutory function;</p> <p>(4) What would be the criteria and procedures for determining a primary licensee that can enter into the secondary licence market, so as to mitigate hoarding;</p> <p>(5) How the criteria and procedures identified in (4) above would impact the ability of primary licensees from accessing spectrum from the Authority;</p> <p>(6) What would be the technical, economic, procedural and commercial criteria to determine participants in the secondary licensing market, and whether there will be prequalified, limited or open access to the secondary spectrum markets;</p> <p>(7) The definition of the technical and economic indicators that can be objectively assessed by all parties to confirm that participants in the</p>	<p>Prior to the implementation of the secondary licences, the relevant criteria and procedures will be developed by the Authority and subject to public consultation if required, in keeping with the Consultation Procedures.</p> <p>The Authority will establish the relevant technical, economic, procedural and commercial criteria before implementing the secondary access licence types.</p> <p>The technical and economic indicators will be established before the implementation of the secondary access licence types.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>participants in the secondary licensing market, and whether there will be prequalified, limited or open access to the secondary spectrum markets;</p> <p>(7) The definition of the technical and economic indicators that can be objectively assessed by all parties to confirm that participants in the secondary market (suppliers or buyers) are bona fide; and</p> <p>(8) The framework through which transactions in the secondary market are audited, and the signed results published, to encourage transparency by the general public, to engender trust in the process, and mitigate against “gaming” of the system through collusion and other anti-competitive conduct.</p> <p>All of these procedures are necessary, and must be enshrined in enforceable law, with clear enforcement provisions and penalties for breach, BEFORE THE AUTHORITY can implement the secondary licensing regime proposed.</p> <p>Each of these procedures should be subject to robust consultation with all</p>	<p>secondary market (suppliers or buyers) are bona fide; and</p> <p>(8) The framework through which transactions in the secondary market are audited, and the signed results published, to encourage transparency by the general public, to engender trust in the process, and mitigate against “gaming” of the system through collusion and other anti-competitive conduct.</p> <p>The Authority’s track record of converting policy framework to Regulations and enforcement is unenviable. TSTT recommends that the Authority takes the necessary steps to remedy this prolonged issue.</p>	<p>The Authority will develop the framework though which transactions in the secondary market are audited. This document will be subject to consultation, in keeping with the Consultation Procedures.</p> <p>The Authority is committed to converting the Framework policies to regulations for enforcement in a timely manner.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>stakeholders in accordance with S.18(4) of the Telecommunications Act Chap. 47:31 (the “Act”), and the Authority’s Consultation Procedures. Each of these procedures would also require a quantum leap in the efficiency and responsiveness of the Authority’s spectrum audit functions over what exists today. The actual and required KPI’s with respect to current spectrum management versus the proposed spectrum management regime have not been raised in this consultation. They also need to be assessed, so as to ensure that the regime proposed is workable in Trinidad and Tobago’s context.</p> <p>Further, in accordance with its Consultation procedures, after multiple rounds of consultation to outline these procedures, the Authority would then be obliged to undertake a consultation of the proposed Regulations, and the standards therein where applicable.</p> <p>Without undertaking these steps, this proposal, though laudable and long delayed, would be ineffective. The opportunity existed for the Authority to include initial proposals for all of these</p>	<p>For any procedures developed in subsequent versions of this document, TSTT demands that there be at least two rounds of consultation after its definition as set out in the <i>Procedures for Consultation in the Telecommunications Sector of Trinidad and Tobago (version 2.0, 2010)</i></p>	<p>Any procedures developed as a result of the Framework that require stakeholder consultation will be consulted upon, in keeping with the Consultation Procedures.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>procedures in the document currently under consultation. As it has failed to do so, TSTT is hard pressed to support such a titanic shift in spectrum administration without first having sight of these procedures, as the Authority's track record of seeking to implement frameworks based on approvals in principle, without undertaking the work to flesh out those principles into actual procedures, is not encouraging.</p>		
18	6.1.2	Spectrum for National Security, Law Enforcement and Emergency Services	TSTT	<p>TSTT notes that in this section, the Authority studiously does not state whether spectrum for these parties will be limited to that clearly identified as for their use only in the National Spectrum Plan.</p> <p>Otherwise a situation is being established where certain persons may, without a licence, access commercial spectrum that should ideally be used by parties in the market. Worse, they will not be paying the market price to access the resource.</p> <p>TSTT seeks to clarify how it would be fair for operators to pay the economic</p>	<p>The Authority should avoid creating a two-tiered pricing regime based on the users of the same spectrum. This creates regulatory arbitrage and the opportunity for the application of improper discretion.</p>	<p>Currently, the Authority does not have a two-tiered spectrum pricing regime. Government, commercial and non-commercial users are all charged the same for the use of the spectrum. Additionally, the policy statement in section 6.1.2 does not recommend a two-tiered pricing regime based on the users of the spectrum.</p> <p>Reference was made to multitiered pricing in the discussion in section 6.1.2, to highlight the different methods used for the pricing of spectrum for the purpose of national security, law enforcement and emergency services.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>value for spectrum deemed commercial, but have those who are declared “Government users” (an undefined term) charged only “opportunity cost” for the same spectrum.</p> <p>This reduces the transparency associated with spectrum management and introduces the opportunity for regulatory arbitrage and administrator discretion (and thus unofficial and illegal incentives) in the classification of a user.</p> <p>For example: a private firm that is using spectrum, only one of its clients of which is a government or quasi-government agency, would pay which price for commercial spectrum? Will they pay the economic value or opportunity cost? There is the opportunity for arbitrage in that:</p> <ul style="list-style-type: none"> - If the Authority charges opportunity cost for the spectrum, that private firm may gain savings benefits for services offered on the same spectrum for non-Government users. Thus, they will have an 		<p>Section 6.1.2 (on page 30) has been amended for clarity.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>unfair advantage in the price offered to parties compared to competitors who do not have “Government users” among their clients.</p> <ul style="list-style-type: none"> - If the Authority charges the economic value for the spectrum, they may not be able to recoup their required ROI from “Government users” who cite this quizzical policy as the basis for reduced prices for services. <p>This scenario becomes worse if two similarly situated licensees are treated differently at the discretion of the regulator.</p> <p>This approach will create more challenges and market distortions.</p> <p>With respect to the interest of these parties to use technologies or systems deployed by the private market, particularly those in the public telecommunications or broadcasting space, this interest only arises as there is no constraint to their design considerations. The practice in mature</p>	<p>There should be one cost for commercial spectrum regardless of the user.</p> <p>Spectrum users exempted from licensing by the Act should be limited to use spectrum clearly defined for them in the spectrum plan which is distinct from commercial spectrum bands.</p>	<p>Governmental, commercial and non-commercial users are charged the same for the use of the spectrum. The Framework provides an incentive for national security, law enforcement and health services, inter alia, to make more efficient use of spectrum allocations via the reimbursement of fees and does not allow governmental and national security blocks to be traded.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>spectrum management markets is that the military and health care uses do NOT compete with the private sector and telecoms service providers for protected spectrum. Their networks are designed and built in bands that are NOT used by commercial operators.</p> <p>There should be one cost for commercial spectrum, and commercial spectrum should not be used by non-commercial actors. The specified users who are exempted from licences by the Act should not have access to the spectrum available for commercial use.</p>		
19	6.1.4	Spectrum Use for Universal Service	TSTT	<p>Policy proposal 11 states that <i>“Consideration may also be given to developing fee formulae that provide direct incentives for rolling out telecommunications networks and services and broadcasting services in underserved areas”</i></p> <p>The Authority is silent on how this would work in the context of the licensing regimes identified in this document. It seems to apply only to the Contractual Universal Service</p>	<p>Policy proposal 11 is an unrefined idea which should be deleted until it is better developed to treat with operational concerns and ensures that there is no abuse of this proposal which has a negative distortionary effect on the wider market.</p>	<p>TSTT is advised that the Framework captures the policy positions on spectrum management in Trinidad and Tobago. Subsidiary documents such as the PMTS Spectrum Plan and the Fees Methodology will be revised as a result of the Framework and will provide details on the allocation of spectrum for universal service and the related fee.</p> <p>The Authority will consult with stakeholders, in accordance with its Consultation Procedures, with regard to the revision and development of subsidiary documents, in support of the allocation of spectrum for universal service.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>Initiatives (CUSIs) as established under the Universal Service Regulations.</p> <p>First, all the licence regimes have a geographic component. As an example, a spectrum licence with national coverage has a price per MHz which is applicable across the entire country. The Authority has to identify how the spectrum fee regime would be amended where only a segment of the geographic area covered by the spectrum charge benefits from some price incentive. Indeed, the Authority has not outlined how it will ensure that spectrum costed at a discount for one area of the country is not used at that discounted price in another area that is not within an access gap or subject to a USF initiative. Accordingly, the Authority has not undertaken any analysis in outlining the feasibility of its proposal.</p> <p>Secondly, the Authority is also unclear as to whether this incentive will apply only at the time of build-out or becomes a long-term price incentive.</p>	<p>IF the Authority seeks to maintain this proposal, it needs to be developed to outline:</p> <ol style="list-style-type: none"> 1) How the Authority intends to effect discounted costs for spectrum in one geographic location while maintaining standard costs for other geographic areas; 2) If the discount incentives will apply only at the time of build-out or would these incentives persist after build-out. <ol style="list-style-type: none"> (a) How it plans to mitigate long term competitive distortionary effects due to a long-term incentive which creates an imbalance in the market. 3) The relevance of this proposal given that the Authority has never defined an access gap and given broadband penetration per household in Trinidad and Tobago; and 	<p>Section 6.1.4 has been amended for clarification.</p> <p>The Authority may or may not consider introducing discounted costs for spectrum in one geographic location while maintaining standard costs for other geographic areas. This will be clarified when the fee formula is developed.</p> <p>The fees formula that provides direct incentives for rolling out telecommunications networks and services and broadcasting services in underserved areas will be developed and provide the relevant details. The fee formula will be subject to public consultation, in keeping with the Consultation Procedures, prior to the implementation of the Framework's policy statement 11.</p> <p>Information on the relevance of policy statement 11 will be made available in the fee formula that provides direct incentives for rolling out telecommunications networks and services and</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>In either instance, this creates a market distortion that can be leveraged beyond the targeted district of network rollout and cause undue unfair competition effects to the wider market. Such unmanaged distortionary effects would compromise the development of the sector in the long term.</p> <p>Thirdly, after 15 years, the Authority has never defined an access gap. Accordingly, the Authority has to outline whether this proposal is reasonable in the context of a country with over 87% household penetration and over 95% household access for highspeed broadband services, which utilize a mix of Fixed wireless and wired technologies. Given these impressive rollout realities, the question arises as to whether the Authority did any cost-benefit analysis to confirm whether this cost and risk associated with this proposal is less than or exceeds the marginal social benefit that would accrue.</p> <p>Finally, despite all these issues, the Authority has NOT outlined a</p>	<p>(a) In that regard, the Authority must present a cost-benefit analysis demonstrating how the risk and cost of implementing this proposal is less than the marginal socio-economic benefit of this proposal.</p> <p>4) Defining the framework of monitoring to eliminate the possibility for abuse given the negative distortionary effects outlined in (1) and (2).</p> <p>For any procedures developed in subsequent versions of this document, TSTT suggests that there be at least two rounds of consultation after its definition as set out in the <i>Procedures for Consultation in the Telecommunications</i></p>	<p>broadcasting services in unserved and underserved areas.</p> <p>Abuse or hoarding of spectrum will be treated in accordance with the Authority's guidelines for spectrum monitoring for compliance enforcement.</p> <p>Any procedures developed as a result of the Framework that require stakeholder consultation will be consulted upon, in keeping with the Consultation Procedures.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>methodology of monitoring the implementation and continued operation of these proposed spectrum assignments for Universal Service. Without outlining its approach to mitigate abuse and widespread market distortion, this proposal is unreasonable and should be shelved.</p> <p>The conjoined effect of these deficiencies is that this proposal would make the Authority be in breach of its obligation, enshrined in S.3 and S.18 of the Act to be non-discriminatory in treating with similarly situated parties</p>	<p><i>Sector of Trinidad and Tobago (version 2.0, 2010)</i></p>	
20	6.2.1.1.1	Spectrum Licence	TSTT	<p>Spectrum Management Framework Policy Statement 24 states that <i>“exclusive assignment under a spectrum licence shall mean the right to use the spectrum without precluding other productive uses of the spectrum, in areas or at times where the primary use is dormant, or where underutilised capacity can be shared.”</i></p> <p>While this may sound reasonable in theory, the reality is that a clear framework needs to be established that defines how dormant or underutilized</p>	<p>The Authority to either:</p> <ul style="list-style-type: none"> - develop a clear framework that defines how dormant or underutilized capacity is to be determined; or - delete Policy Statement 24 as it is unreasonable and prone for abuse. 	<p>Subsidiary documents such as the PMTS Spectrum Plan and the Fees Methodology will be revised as a result of the Framework and will provide details on dormant or underutilised capacity.</p> <p>The Authority will consult with stakeholders, in accordance with its Consultation Procedures, with regard to the revision and development of subsidiary documents for the implementation of policy statement 24.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>capacity is to be determined. No such framework exists, and an outline of such a framework has not been proposed in this Consultation document.</p> <p>The Authority must be aware that because of the high cost involved with the deployment of networks, providers may build on a priority or phased basis. The determination of whether spectrum is dormant or underutilized must recognize this reality and should not penalize an operator in that regard.</p> <p>Indeed, the Authority must establish a clear procedure which provides predictability to operators to ensure that this assessment is not prejudicial to the benefits of the operator in a relatively short timeframe after the investment in spectrum resources. If the determination of spectrum as dormant or underutilized is not clear, operators will be encouraged to challenge the Authority for operating in bad faith in issuing spectrum at a cost, knowing that it would seek to</p>	<p>For any procedure developed in a subsequent version of this document, TSTT demands that there be at least two rounds of consultation after its definition as set out in the <i>Procedures for Consultation in the Telecommunications Sector of Trinidad and Tobago (version 2.0, 2010)</i></p>	<p>Any procedures developed as a result of the Framework that require stakeholder consultation will be consulted upon, in keeping with the Consultation Procedures.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>maliciously recoup that spectrum from the licensee.</p> <p>The establishment of clear procedures now is essential before such a broadly empowering Policy Statement, which without checks and balances can be prone to abuse, can be ratified.</p>		
21	6.2.1.2.1	Licensed Shared Access (LSA) Licence	TSTT	<p>Spectrum Management Framework Policy Statement 29 states that “<i>minimum technical standards and conditions shall be established before the implementation of the LSA licence</i>”. It can only be assumed that the Authority seeks to consult in writing, in accordance with S.18(4) of the Act and its Consultation Procedures, with the industry and relevant stakeholders transparently in establishing the minimum technical standards prior to the implementation of the LSA.</p> <p>TSTT further seeks clarification about the modality of implementation, if not through the establishment of Regulations, as although a minimum technical standard may be defined, one would hope that the policy will also specify what will be done if</p>	<p>The Authority to confirm that it will undertake transparent, written consultation in accordance with S.18(4) of the Act and its Consultation Procedures in establishing the minimum technical standards prior to the implementation of the LSA.</p> <p>The Authority to confirm the modality of implementation: if not Regulations, what enforceable mechanism is the Authority expecting to use and with what legal authority?</p>	<p>Technical documents developed in support of the implementation of the Licensed Shared Access (LSA) licence type, which require stakeholder consultation, will be consulted upon, in keeping with the Consultation Procedures.</p> <p>The terms and conditions enshrined in the licensing documents will allow for enforcement. If considered necessary, the Authority will develop regulations in support of the implementation of the LSA licence types.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				interference persists and who will bear the cost of addressing the interference.		
22	6.2.1.2.2	Pluralistic Licence	TSTT	<p>Spectrum Management Framework Policy Statement 33 states that “<i>The relevant technical conditions shall be established before the implementation of the pluralistic licence.</i>” It can only be assumed that the Authority seeks to consult in writing, in accordance with S.18(4) of the Act and its Consultation Procedures, with the industry and relevant stakeholders transparently prior to the implementation of the pluralistic licence.</p> <p>TSTT further seeks clarification about the modality of implementation, if not through the establishment of Regulations.</p>	<p>The Authority to confirm that it will undertake transparent, written consultation in accordance with S.18(4) of the Act and its Consultation Procedures in establishing the technical conditions prior to the implementation of the pluralistic licence.</p> <p>The Authority to confirm the modality of implementation: if not Regulations, what enforceable mechanism is the Authority expecting to use and with what legal authority?</p>	<p>A Pluralistic Licence Implementation Plan developed as a result of this licence type, which requires stakeholder consultation, will be consulted upon, in keeping with the Consultation Procedures.</p> <p>The terms and conditions enshrined in the licensing documents will allow for enforcement. If considered necessary, the Authority will develop regulations in support of the implementation of the Pluralistic Licence types.</p>
23	6.2.1.2.3	Light Licence	TSTT	<p>Spectrum Management Framework Policy Statement 37 states that “<i>The relevant technical conditions shall be established before the implementation of the light licence type.</i>” It can only be assumed that the Authority seeks to consult in writing, in accordance with S.18(4) of the Act and its Consultation Procedures, with the industry and</p>	<p>The Authority to confirm that it will undertake transparent, written consultation in accordance with S.18(4) of the Act and its Consultation Procedures in establishing the technical conditions prior to the implementation of the light licence.</p>	<p>A Light Licence Implementation Plan, developed as a result of this licence type, that requires stakeholders consultation, will be consulted upon, in keeping with the Consultation Procedures.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>relevant stakeholders transparently in establishing the technical conditions prior to the implementation of the light licence.</p> <p>TSTT further seeks clarification about the modality of implementation, if not through the establishment of Regulations.</p> <p>Spectrum Management Framework Policy Statement 38 states that “<i>The Authority shall determine which frequency bands to apply the light licensing to, from time to time.</i>” However, TSTT suggests that stakeholders be provided with a clear timeframe by which the Authority intends to complete its review of the frequency bands to apply light licensing to.</p>	<p>The Authority to confirm the modality of implementation: if not Regulations, what enforceable mechanism is the Authority expecting to use and with what legal authority?</p> <p>TSTT suggests that stakeholders be provided with a clear timeframe by which the Authority intends to complete its review of the frequency bands to apply light licensing to.</p> <p>For any procedures developed in a subsequent version of this document, TSTT demands that there be at least two rounds of consultation after its definition as set out in the <i>Procedures for Consultation in the Telecommunications</i></p>	<p>The terms and conditions enshrined in the licensing documents will allow for enforcement. If considered necessary, the Authority will develop regulations in support of the implementation of the Light License type.</p> <p>Pursuant to the approval and publication of this Framework, spectrum plans such as the PMTS Spectrum Plan will be considered for modification in the next strategic planning period (2022–2025), to reflect the evolving needs of the telecommunications industry and to meet changing circumstances. When the need for modification is identified, the Authority will announce its intention to review the relevant spectrum plans, and any interested party or entity in the telecommunications sector or any appropriate industry forum may suggest changes to the spectrum plan(s).</p> <p>Any procedures developed as a result of the Framework that require stakeholder consultation will be consulted upon, in keeping with the Consultation Procedures.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
					<i>Sector of Trinidad and Tobago (version 2.0, 2010)</i>	
24	5.1	Allocate Spectrum to the Highest Value Use	5G Americas	<p><u>Spectrum Management Framework Policy Statement 1: Spectrum will be allocated to the highest value use, to ensure that maximum benefits to society are realized.</u></p> <p>Mobile technologies continue to solidify as the main alternative for internet access in Latin America and the Caribbean. The increased adoption of smartphones requires access to additional spectrum for mobile networks. The effective utilization of the spectrum allocated to mobile services can provide social benefits by reducing the digital divide and allowing users to adopt a wider variety of mobile use cases over LTE and 5G networks. 5G Americas suggest considering accompanying the vision of this statement with a spectrum roadmap with long-term spectrum planning for IMT bands. Implementing spectrum roadmaps provides information and certainty to its potential users. This roadmap must</p>		<p>The Authority thanks 5G Americas for its comments and suggestions on the Framework. The suggestions will be considered by the Authority in the 5G Framework. The approval and publication of the 5G Framework will inform the PMTS Spectrum Plan as it relates to the bands outlined for IMT services.</p> <p>Harmonisation of bands for IMT services is supported by the Authority for Region 2 and is considered in the 5G Framework.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>observe the international harmonization of spectrum bands, including tentative dates for new spectrum assignments and information on the current occupation of frequency bands to anticipate processes needed to reorganize spectrum and prevent harmful interference.</p>		
25	5.2 and 6.2.2	Enable and Encourage Spectrum to Move to its Highest Value Use	5G Americas	<p><u>Spectrum Management Framework Policy Statement 2: Mechanism will be put in place to enable and encourage spectrum to move to its highest value use, and spectrum Management Framework Policy Statements 41. Where Spectrum is scarce (i.e., demand is greater than supply), the Authority shall utilise competitive licensing mechanisms, such as auctions and/or beauty contests, as the main tools for awarding licenses.</u></p> <p>Market-based mechanisms can ensure that spectrum is awarded to entities that plan to deploy wireless networks and efficiently use the resource. Spectrum auctions are widely adopted as a licensing mechanism. The international experience suggests that the design of</p>		

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>auctions, tenders, and competitive processes, in general, can impact spectrum access, depending on the valuation of the spectrum blocks and the obligations attached to the licenses. Regulators must consider the dynamics of their domestic market while planning mechanisms of spectrum licensing and renewals.</p> <p>Furthermore, the line between auctions and comparative review processes (“beauty contests”) has become blurred by “hybrid processes” that combine auctions and specific obligations (e.g., coverage requirements/goals, minimum speeds, particular technologies). 5G Americas respects the regulators’ views on licensing mechanisms and suggests considering transparent, fair, open, and balanced processes to promote participation and further network investments. However, this must be done in a framework of technologically neutral spectrum licenses.</p> <p>5G Americas suggests considering further criteria to complement Policy Statements 2 and 41: continuous</p>		<p>5G Americas’ suggestions are duly noted. The Authority supports licensing mechanisms that are transparent, fair, open and balanced. Processes that encourage stakeholder participation and network investments are promoted. The Authority remains technology neutral.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>consultation with the industry to ensure that spectrum is made timely, with reasonable conditions, and free of harmful interferences. An open dialogue with the industry must be maintained to ensure that enough capacity is available with band plans that preclude artificial scarcity. 5G Americas suggests considering the differences between rural and urban areas to establish incentives for network deployments in underserved and remote areas (e.g., coverage <i>in lieu</i> of spectrum payments).</p>		<p>Open dialogue with the industry's stakeholders will be maintained, in keeping with the Consultation Procedures.</p> <p>For network deployment in underserved and remote communities, the differences between rural and urban areas will be considered by the Authority. This is highlighted in the Framework's policy statement 11, which states, "Consideration may also be given to developing a fee formula that provides direct incentives for rolling out telecommunications networks and services and broadcasting services in underserved areas."</p>
26	5.4	Promote Both Certainty and Flexibility, to the Extent Possible	5G Americas	<p><u>Spectrum Management Framework Policy Statement 4: To the extent possible, the Authority will promote both certainty and flexibility.</u></p> <p>Licensed spectrum for exclusive use remains a pillar of 4G and 5G networks for the foreseen future, making the figure of Primary Access Licenses of Trinidad and Tobago a pivotal element to promote certainty. In addition, the possibility of trade licenses in a secondary market helps promote flexibility to current and new users,</p>		<p>The Authority understands 5G Americas' comments as relating to spectrum trading. However, the Framework does not support spectrum trading.</p> <p>The revised spectrum management regime, (section 6 of the Framework), proposed several secondary access licences for third-party users, such as Licensed Shared Access (LSA) and Pluralistic Licensing. The minimum technical standards and</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>subject to a framework that allows free negotiations of feasible agreements.</p> <p>The standardization of 5G considers unlicensed spectrum and shared spectrum as flexible elements of new mobile networks. Sharing may be acceptable under certain circumstances and may be aligned with public policies aiming to reduce the digital divide. Still, clear regulations must be established to protect primary users and reduce interference risks. For example, spectrum sharing by co-frequency coordination of users with similar access rights can facilitate access to underutilized spectrum or allow access to bands that are subject to a prolonged clearing process. In that sense, spectrum sharing can enable mobile service deployment in bands currently occupied by incumbents with limited operations with low interference risks. Still, these scenarios should be carefully managed to ensure sufficient rights, the regulations must provide enough certainty to primary users.</p>		<p>conditions will be established before the implementation of the new licences.</p> <p>The importance of unlicensed spectrum and shared spectrum as flexible elements in the deployment of 5G is recognised by the Authority. This will be considered in the drafting and revision of spectrum plans and regulations if required in support of the new licensing regime.</p> <p>Additionally, mechanisms, such as the licence terms and conditions, which provide certainty to primary users while promoting sharing, will be considered by the Authority.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
27	5.5	Balance the Cost of Interference Against the Benefits of Greater Spectrum Utilisation	5G Americas	<p><u>Spectrum Management Framework Policy Statement 5: The risk and cost of interference will be balanced against the benefits gained from greater spectrum utilization.</u></p> <p>5G Americas suggests considering interference mitigation strategies as part of spectrum planning. Depending on the type of services, users, and frequency bands, reorganization processes can be prolonged and take years to complete, resulting in delayed access to the spectrum. Moreover, there are no unique solutions to potential interference problems. 5G networks will require more spectrum across different spectrum bands, and some use cases require higher levels of network availability and lower latencies, making interference mitigation more critical. 5G Americas suggest considering open and continuous dialogue with the telecommunications industry to address spectrum reorganization needs with reasonable terms.</p> <p>Innovation in wireless services implies a greater demand for frequencies,</p>		<p>The Authority agrees with 5G Americas' comments on the importance of interference mitigation. As part of its interference mitigation strategies to reduce the possibility of interference, the Authority has plans for both responsive and scheduled monitoring activities.</p> <p>Additionally, the Authority will continue to engage stakeholders in all spectrum planning processes to meet the needs of the telecommunications industry and meet changing circumstances.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p>including those designated for unlicensed use. In addition, unlicensed spectrum is generally subject to shared use, and some unlicensed bands are contiguous to bands selected for licensed and exclusive use. Given those conditions, 5G Americas suggest considering a continuous review of terms and conditions of use of unlicensed bands to establish adequate technical regulations for spectrum sharing (e.g., power limits, radiation patterns, channel width).</p>		<p>Spectrum plans and licence terms are reviewed and modified as deemed necessary by the Authority to reflect the evolving needs of the telecommunications industry and meet changing circumstances. When the need for modification is identified, the Authority will announce its intention and any interested party or entity in the telecommunications sector or any appropriate industry forum may suggest changes.</p>
28	5.6	Harmonise Spectrum Use with International and Regional Allocations and Standards	5G Americas	<p><u>Spectrum Management Framework Policy Statement 6: Spectrum use will be harmonized, as far as practical, with international and regional allocations and standards, to generate additional benefits in terms of access and economies of scale.</u></p> <p>5G Americas agrees with the vision of Policy Statement 6 and suggests considering spectrum harmonization as a potential guide for developing a long-term spectrum roadmap for IMT bands. 5G networks will require access to a broader set of harmonized spectrum</p>		<p>The Authority thanks 5G Americas for its suggestion on spectrum harmonisation. Harmonisation of priority bands for IMT services is supported by the Authority for Region 2 and is considered in the 5G Framework and in the revision of the PMTS and BWA Spectrum Plans.</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				bands to provide sufficient capacity. Technical parameters for more use-cases and spectrum roadmaps can provide relevant information to plan future network investments.		The Caribbean Telecommunications Union (CTU) is currently implementing an initiative for regional spectrum harmonisation amongst CARICOM states. The Authority is actively involved in this initiative.
29	6.13	Spectrum to Facilitate Public Telecommunications (Radiocommunications) Services	5G Americas	<p><u>Spectrum Management Framework Policy Statement 9: Radiofrequency spectrum shall be provided for public telecommunications services, using a market-based approach to ensure an equitable return for use of the spectrum resources</u></p> <p>See comments on Spectrum Management Framework Policy Statement 2 and Spectrum Management Framework Policy Statements 41.</p>		<p>A key objective of spectrum management is to maximise the net benefits to society that can be realised from the spectrum resources. The Authority facilitates this objective through the mechanics of a free market. However, some degree of economic efficiency may have to be sacrificed in order to safeguard the provision of certain public services such as scientific research, defence, safety and public broadcasting.</p> <p>Spectrum policy must evolve towards more flexible and market-oriented models, to increase opportunities for efficient spectrum use (ITU, 2019).</p>
30	6.2.1.1.1		5G Americas	<p><u>Spectrum Management Framework Policy Statement 22: Authority shall utilise a primary access licence type (spectrum licence) to authorise the exclusive assignment of spectrum for the operation of radiocommunications systems</u></p>		

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
				<p><u>within a specified frequency band under specific conditions on a technology-neutral basis, i.e., no restrictions will be placed on the type of technology used and Spectrum Management Framework Policy Statement 24: exclusive assignment under a spectrum licence shall mean the right to use the spectrum without precluding other productive uses of the spectrum, in areas or at times where the primary use is dormant, or where underutilised capacity can be shared.</u></p> <p>See comments on Spectrum Management Framework Policy Statement 4 and Spectrum Management Framework Policy Statements 5.</p> <p>5G Americas thanks TATT for the attention it has given to bring its vision on issues related to the development of telecommunications.</p> <p>Without further ado, I greet you sincerely.</p>		<p>The Authority thanks 5G Americas for taking the time to comment on the Framework.</p> <p>Primary access licence types (spectrum licences) give the holder of the licence the exclusive right to use and manage the frequency band in a pre-determined geographic area. These licence types normally confer various rights and obligations on the licensee. However, exclusive assignments via spectrum licences do not preclude other productive uses of spectrum capacity in areas or at times where the primary use is dormant. Assignment of spectrum</p>

Item	Section	Section Title	Stakeholder	Comments	Recommendations	TATT's Decision
						on a secondary basis will be accommodated by the Authority, where practical.