

## **Appendix I. Decisions on Recommendations (DORs) Matrix from Second Consultation Round on Technical Standards for Wireless Networks**

The following summarises the comments and recommendations received from stakeholders in September 2022 on the *Consultative Document on Technical Standards for Wireless Networks (Second Round)*. The decisions made by the Telecommunications Authority of Trinidad and Tobago (the Authority) have been incorporated in the final version of the document. The Authority wishes to express its thanks for all comments and recommendations received from the following stakeholders:

1. Digicel (Trinidad & Tobago) (Digicel)
2. Telecommunications Services of Trinidad and Tobago (TSTT)
3. Trinidad and Tobago Civil Aviation Authority (TTCAA)

<b>Item</b>	<b>Section</b>	<b>Stakeholder</b>	<b>Comments</b>	<b>Recommendations</b>	<b>TATT’s Decision</b>
1	The Authority’s response to Digicel’s comment in item 3 of its Decisions on Recommendations Matrix for First Consultation Round (“DORs”) on	Digicel	Digicel notes the Authority’s response to Digicel from the first consultation DORs. From Digicel’s review of the ITU recommendation cited by the Authority, we understand same to refer to the resources on eNodeb and EPC: “3.2.8 packet data traffic utilization: The ratio of the cumulative utilized packet data	The Authority is asked to clarify what it means by “access traffic capacity” in its recommendation.	The Authority acknowledges that ITU E.811 refers to the RF traffic channel utilisation of an RBS and not its access traffic capacity. The Authority has therefore amended mandatory standard 28 to reflect the term “RF traffic channel utilisation”, as used in the ITU’s recommendation, E.811, as follows: “(28) Public RF transport networks shall be engineered to handle an RF

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	<p>Section 3.3.2.1 Network Congestion (33) Public mobile transport networks shall be engineered to handle a minimum of 120% of the access traffic capacity of an RBS site:</p> <p>The Authority acknowledges that other types of services, along with mobile traffic, share the capacity of a transport network. This standard will apply to transport networks and not specifically mobile transport networks.</p>		<p>resource elements (REs) on the e-NodeBs and EPC to the available packet data resources.”</p> <p>(ITU, E.811, 2017) Reference is made to the following recommendation made by the Authority: (28) Public RF transport networks shall be engineered to handle a maximum of 85% of the access traffic capacity of an RBS site (ITU, E.811 2017). This recommendation appears refer to access traffic. Can the Authority clarify if it is referring to Um or S1 interface here?</p>		<p>traffic channel utilisation of at least 85% of an RBS site (ITU, E.811 2017 or relevant subsequent updates).”</p> <p>The definition, as follows, “<b>RF traffic channel utilisation:</b> The ratio of the cumulative occupation of RF traffic channels on the access network to the available RF traffic channels in a specific cell (ITU, E.811 2017 or relevant subsequent updates)”, has been included in section 1.9 of the document.</p> <p>“Um interface” refers to the air interface in GSM networks, while the S1 interface permits communication between the RBS and the packet core. Mandatory standard (28) refers to the capacity of the pipe between the serving site and the core network, which corresponds to the S1 interface.</p>

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	<p>Based on further feedback and research, it is noted that the International Telecommunication Union (ITU) recommends that, to ensure access to services during a major event such as a natural disaster or its aftermath, packet transport networks are to be engineered to handle a maximum of 85% of the access traffic capacity of a radio base station (RBS) site. Mandatory standard 28, formerly mandatory standard</p>				

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	<p>33, has been amended to reflect RF transport networks and the ITU's recommendation, as follows: "(28) Public RF transport networks shall be engineered to handle a maximum of 85% of the access traffic capacity of an RBS site (ITU, E.811, 2017)."</p>				
2	<p>The Authority's response to Digicel's comment in item 4 of its DORs on Section 3.3.3: The Authority welcomes Digicel's comment and</p>	Digicel	<p>Digicel is in agreement that under emergency situations 15% headroom (i.e. the 85% peak traffic threshold recommended by the Authority) is acceptable. Can the Authority indicate the timeframe for operators to conform after this standard is established?</p>	<p>Digicel recommends no less than one (1) year for operators to meet the standard after implementation.</p>	<p>The Authority recognises that, after the establishment of the standard, operators would require a grace period to implement. The Authority will work with operators to prescribe a suitable time frame for the implementation of this standard.</p>

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	<p>acknowledges that core networks have evolved to provide both data and voice services. The peak traffic utilisation percentage is for voice and data services. At times, the network may become congested due to an unexpected increase in the number of consumers utilising the network. To ensure that services remain accessible to consumers during the high utilisation of the network, the ITU recommends that packet data</p>				

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	<p>traffic utilisation on the core network be equal to or &lt; 85%. This is relevant to networks that have N+X route scenarios. For networks that have 1+1 route scenarios, traffic utilisation on the core network shall be equal to or &lt; 40%. Accordingly, mandatory standard 30, formerly mandatory standard 35, has been amended to reflect this, as follows: “(30) Public mobile core networks with 1+1 redundancy levels shall be</p>				

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	<p>engineered for a maximum peak packet data traffic utilisation of 40%. Public mobile core networks with N+X (X is equal to multiples of (1) redundancy levels shall be engineered for a maximum peak packet data traffic utilisation of 85% (ITU, E.811, 2017).”</p> <p>The definition of packet data traffic utilisation: “Packet data traffic utilisation: The ratio of the cumulative utilised packet data resource elements</p>				

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	(REs) on the e-NodeBs and EPC to the available packet data resources (ITU, E.811, 2017)” has been included in section 1.10 of the document.				
3	Section 3.3.3 – Technical Standards for Public Mobile Core Networks	Digicel	We note the Authority refers to “Core Networks” in this section although this phrase has not been defined.	Digicel requests that the Authority define “Core Network” in section 1.9 of this document.	The following definition of core network has been included in section 1.9 of the document:  <b>“Core network:</b> The backbone of a telecommunications network that provides services such as authentication and call control to customers connected by the access network <sup>1</sup> ”
4	3. The Authority’s response to Digicel’s comment	Digicel	Digicel is not able to comment substantially on this section at this time as it requires the	The Authority is asked to define between which nodes the Core Network is being	Due to the evolving technology landscape and the different ways that individual manufacturers

<sup>1</sup> Based on definitions from Ofcom [https://www.ofcom.org.uk/data/assets/pdf\\_file/0013/63220/nga\\_glossary.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0013/63220/nga_glossary.pdf), GSMA [GSMA | GSMA Glossary of Aviation and Mobile Terms | Internet of Things](#), and the European Commission [Glossary:Core network \(CN\) | CROS \(europa.eu\)](#), for Core Network

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	<p>in item 5 of its DORs on Section 3.3.3: The Authority informs Digicel that the availability value of 99.999% refers to service availability. Accordingly, mandatory standard 31, formerly mandatory standard 36, has been amended to reflect this, as follows: “(31) Public mobile core networks shall be engineered to ensure service availability of 99.999%.”</p>		<p>Authority to identify the exact demarcation points of the Core Network that are being measured here.</p>	<p>considered for service availability of 99.999%.</p>	<p>design their equipment, the required changes to equipment configurations will vary, making it difficult to state specific nodes in the core network at which this standard should be applied. An operator is required to ensure its core network is functional and available to provide voice and data services to end users 99.999% of the time over the course of one year.</p>
5	<p>The Authority's response to</p>	<p>Digicel</p>	<p>Digicel notes that the cost of battery technologies have been</p>	<p>Digicel recommends three (3) hours as a minimum</p>	<p>The Authority appreciates Digicel's comment regarding the increase in</p>

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	<p>Digicel's comment in item 6 of its DORs on Section 3.3.5 - Technical Standards for Structures Used to House Communications Equipment</p>		<p>steadily increasing and that vandalism of cell sites has also been increasing.                      Digicel reiterates that a six (6) hour standard throughout the life of the battery system would be impractical.</p>	<p>standard throughout the life of the battery system.</p>	<p>vandalism to cell sites, which may involve the theft of batteries.</p> <p>However, access to remote cell sites during the aftermath of a natural disaster may be impassable, and the time taken to reach the site may be beyond 3 hours. During the approximately 12-hour island-wide power outage that occurred on 12<sup>th</sup> August 2022, services provided by the telecommunications concessionaires were lost at various locations throughout Trinidad and Tobago, due to the depletion of standby power at the relevant sites. Given the operating environment in Trinidad and Tobago and the region in relation to prolonged power outages, the TWG agreed that the life of standby batteries at communications sites should be a minimum of 6 hours.</p>

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6	Section 3.3.5 - Technical Standards for Structures Used to House Communications Equipment - Mandatory Standards to Mitigate the Effects of Man-Made Disasters on Structures Used to House Communications Equipment Operated by Concessionaires or Licensees: Item (38): Outdoor cabinets used to house RBS equipment shall be wired to accommodate	Digicel	Digicel is unclear as to why an outdoor RBS cabinet should provide support for building ancillary service loads.	Digicel requests clarification as to why an outdoor RBS cabinet should provide support for building ancillary service loads. Digicel recommends the removal of the phrase "building ancillary service loads" from item (38)	The Authority clarifies that the RBS cabinets referred to in mandatory standard (38) are not required to support building ancillary service loads. Instead, outdoor cabinets must be designed to operate off the standby power, which supports full equipment and building ancillary service loads.  To clarify this point, mandatory standard (38) has been amended as follows:  "(38) Outdoor cabinets used to house RBS equipment shall be wired to accommodate standby power. Such standby power shall also support full equipment and building ancillary service loads and charge standby power batteries."

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	standby power. that would support full equipment and building ancillary service loads and charge standby power batteries.				
7	Section 3.3.5, Mandatory Standards to Mitigate the Effects of Man-Made Disasters on Structures Used to House Communications Equipment Operated by Concessionaires or Licensees: <b>Note:</b> During power outages that last longer than the run time of standby	Digicel	Digicel sees the deployment of mobile generators to all sites operating with standby batteries only as impractical. There is no available generator fleet that can accommodate all applicable sites. Operators should be allowed to use their discretion to determine which sites require mobile generators.	Digicel recommends that the note be a Discretionary Standard rather than a Mandatory Standard.	The note stated in section 3.3.5 is a procedure that may be carried out by operators to help prolong the operation of telecommunications services during extensive power outages. The Authority acknowledges that deploying a fleet of generators to accommodate all sites that use standby batteries may be impractical, and it therefore agrees that operators should use their discretion regarding which sites are critical and require mobile generators. The note has been amended to reflect this, as follows:

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	<p>power supply systems, relevant standby generators are to be refuelled and mobile generators are to be deployed at sites that operate with standby batteries only.</p>				<p>“Note: During power outages that last longer than the run time of standby power supply systems, relevant standby generators are to be refuelled and mobile generators are to be deployed at critical sites that operate with standby batteries only.”</p> <p>The deployment of mobile generators at critical sites during prolonged power outages is required and the Authority therefore disagrees that the note should be made discretionary.</p>

8	General comment on entire document	Digicel	<p>Digicel notes that the Authority seeks to impose mandatory standards that were not contemplated at the time of issuance of the Concession when Digicel built out its network.</p> <p>Compliance to the mandatory standards may require major changes to the architecture and/or operation of the networks requiring costly investment and an increase in operational costs for operators. This may, in turn, lead to increased costs to consumers.</p> <p>We ask that the Authority take note of section (18) (3) of the Telecommunications Act which guides the Authority: “In the performance of its functions, the Authority shall have regard to the interests of consumers and in particular -</p> <p>(a) to the quality and reliability of the service provided at the lowest possible cost”.</p>	<p>Digicel recommends that the Authority conduct a feasibility study to understand the cost impact in making these standards mandatory.</p>	<p>The Authority is aware that wireless networks owned by concessionaires meet international standards and, therefore, it may be premature to claim that required modifications to the networks, if any, would affect capital expenses to the extent of causing an increase in operational costs and hence an increase in retail prices. However, should the cost of implementing these technical standards be significant, consideration will be given to implementing the standards within a reasonable timeframe, more so given the natural aging and replacement of equipment as technology progresses.</p>
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9	General	TSTT	<p>TSTT notes that notwithstanding the fact that we advised the Authority that our wireless network is in conformity with accepted international standards pursuant to Section 45 (1) of the Telecommunications Act Chap. 47:31 (“the Act”), the Authority in the Decisions on Recommendations (“DORs”) advised that “the technical standards apply to networks that have already been constructed and operate in accordance with accepted international standards. The Authority will work with operators to prescribe a suitable timeframe for the implementation of these technical standards into existing networks.”</p> <p>This statement is quite unfortunate as the Authority has deviated from what was discussed and agreed at the Technical Working Group i.e., that these standards will not be applied</p>	<p>TSTT strongly recommends that these standards are applied to new builds, or that the Authority incurs the cost of these implementations for networks that were built in line with international standards as per Section 45 (1) of the Act.</p>	<p>A draft of the first-round consultative document was sent to members of the TWG for comments and feedback on 28<sup>th</sup> July 2021, with an initial deadline date of 4<sup>th</sup> August 2021. The deadline date was extended to 6<sup>th</sup> August 2021. The feedback received was discussed between the Authority and the relevant TWG members and the draft document was revised based on the discussions. Only after the TWG reviewed and agreed on the draft document did the Authority commence the process of the first round of public consultation.</p> <p>The TWG, in its review of the document, did not submit any comments that suggest that these standards shall apply only to existing networks. Therefore, no statement was included in the document to indicate which networks, retroactive or new, the standards should be applied to. The Authority acknowledges that the</p>
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			<p>retroactively to networks that have already been constructed and in operation in accordance with the technical standards deemed appropriate by concessionaires and licensees and in conformity with accepted international standards.</p> <p>The Authority is reminded that operators would have gone to great lengths to ensure their networks conform to international standards. Furthermore, the Authority has not demonstrated that the operators' networks are deficient and require upgrading. TSTT strongly recommends that these standards are applied to new builds, or that the Authority incurs the cost of these implementations for networks that were built in line with international standards.</p>		<p>wireless networks owned by concessionaires are required to meet international standards. However, the Authority may identify and adopt standards that make networks more robust against natural and man-made disasters. The standards adopted by the Authority are internationally recognised; therefore, the required modifications to the existing networks may be minimal. It is the responsibility of the concessionaires and licensees to finance any modifications required to their networks and facilities, to ensure adherence to these technical standards.</p> <p>The Authority will work with operators to prescribe a suitable time frame for the implementation of these technical standards into existing networks, given the natural aging and replacement of equipment as technology progresses. In this way, it is</p>
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					expected that the cost to implement these standards will not be onerous and will not result in cost increases to customers.
10	1.5 Relevant Legislation	TSTT	<p>TSTT notes the Authority’s citation of Section 2 (1) of the Act, in the definition of “facility” which is a “physical component of a telecommunications network”. Accordingly, the Authority’s statutory jurisdiction is limited by the Act to physical network elements and does not include non-physical, or intangible elements, such as channels, bandwidth etc.</p> <p>This interpretation is not limited to TSTT. Indeed, TSTT reminds the Authority that in the public consultation of 2013 into the proposed amendments to the Act, the then line Ministry indicated that this interpretation was the justification for many of the proposed amendments (including</p>	The Authority to delete any reference to intangible “resource elements”.	<p>The Authority is mandated, pursuant to section 3(b) of the Telecommunications Act, Chap. 47:31 (the Act), to establish conditions for “the facilitation of the orderly development of a telecommunications system that serves to safeguard, enrich and strengthen the national, social, cultural and economic well-being of the society.”</p> <p>Section (18)(1)(d) of the Act states:  “Subject to the provisions of this Act, the Authority may exercise such functions and powers as are imposed on it by this Act and in particular – Establish national telecommunications industry standards and technical standards.”</p>

			<p>the inclusions of the definition of the term “telecommunications resource” and a proposed Section 26A) into the Act.</p> <p>This interpretation cannot thus be blithely ignored by the Authority. The Authority’s powers as outlined in the Act are not unfettered. Indeed, the Act provides a comprehensive framework which constrains the Authority’s powers to specific points of leverage – of which intangible resources are not included – and this has been previously identified by the State and the Authority and cannot be conveniently ignored at this time.</p> <p>Accordingly, any reference to intangible “resource elements” – a term undefined in the Act - as a source of regulatory obligation is ultra vires the Act and should be deleted.</p>		<p>The definition of a telecommunications network according to the Act is as follows: “Telecommunications Network: a system or any part thereof used for the provision of a telecommunications service.” This definition does not specify only the physical elements of a network.</p> <p>The Authority disagrees with TSTT’s narrow interpretation of the Act and is of the view that the Act confers powers on the Authority of a much broader scope than that identified by TSTT with regard to setting standards. Therefore, the Authority declines to delete any references to intangible “resource elements” in the document.</p> <p>The Authority is not aware of the interpretation of the then line Ministry and the proposed amendments to the Act, as suggested by TSTT.</p>
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11	1.9 Definitions	TSTT	<p>The definition of “Packet data transfer utilisation” is based on the evaluation of “packet data resource elements” – something that is neither a facility nor radio frequency spectrum. This seems to attempt to identify and address intangible elements that are not currently covered under the Act.</p> <p>This interpretation is not limited to TSTT. Indeed, TSTT reminds the Authority that in the public consultation of 2013 into the proposed amendments to the Act, the then line Ministry indicated that this interpretation was the justification for many of the proposed amendments (including the inclusion of a proposed Section 26A) into the Act.</p> <p>This interpretation cannot thus be blithely ignored by the Authority.</p> <p>Accordingly, this item is outside the regulatory remit of the</p>	<p>“Packet data transfer utilisation” is outside the regulatory remit of the Authority and any derivative standard should be deleted from this document.</p>	<p>Section (18)(1)(d) of the Act states: “Subject to the provisions of this Act, the Authority may exercise such functions and powers as are imposed on it by this Act and in particular – Establish national telecommunications industry standards and technical standards.”</p> <p>According to the Act, the definition of a telecommunications network, namely, “a system or any part thereof used for the provision of a telecommunications service” does not specify only physical elements of a network.</p> <p>The Authority disagrees with TSTT’s narrow interpretation of the Act and is of the view that the Act confers powers on the Authority of a much broader scope than that identified by TSTT with regard to setting standards. Therefore, the Authority declines to delete any standards with reference to “packet</p>
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			Authority and any derivative standard should be deleted from this document.		data transfer utilisation” or any such derivative from the document.
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12	1.9 Definitions	TSTT	<p>While TSTT recognises the proposed use of the Underwriters Laboratories (UL) categorisation of zones, TSTT noted that the Authority has remained silent on which administrative body in Trinidad and Tobago will be responsible for the operational classification of areas in the categories identified. Such categorisation is ultra vires the Authority’s powers under the Act. Accordingly, the Authority is still to advise as to the appropriate administrative agency of the State that will be responsible for the classification of areas in accordance with the UL categories.</p>	<p>The Authority to advise as to the appropriate administrative agency of the State that will be responsible for the classification of areas in accordance with the UL categories.</p>	<p>In Trinidad and Tobago, there is no administrative state agency responsible for the classification of areas in accordance with the UL categories. In addition to adopting these internationally recognised classifications of hazardous locations and zones, companies within the industrial sector, such as oil and gas companies, adopt internationally recognised guidelines that define where hazardous zones and locations are in relation to facilities within an industrial environment. The UL’s classification of hazardous zones, and its guidelines that define these zones, are employed throughout the oil and gas industry of Trinidad and Tobago. The Ministry of Energy and Energy Industries of Trinidad and Tobago recognises industrial standards that ensure plants are safe to operate.</p>
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13	1.9 Definitions	TSTT	<p>TSTT rejects the Authority’s claim that the term “in effect” simply refers to documents that have completed consultation processes. The term “in effect” has the common imputation that it is mandatory and enforceable. However, documents that have completed consultation processes need not be applicable to the market for a number of reasons, including:</p> <ul style="list-style-type: none"> <li>- Incompatibility with the prevailing statute, where the document recommends changes to the legislative framework; and</li> <li>- Pending requirement for the passage of Regulations to enable the proposals in the document.</li> </ul> <p>In either of these cases, both of which apply to the documents referenced as “in effect” throughout this consultation, the documents are not in effect as</p>	<p>The Authority to replace “in effect” wherever it appears with the date of the final publication of the consulted upon document (with DoRs) – which according to the Consultation Procedures is the only time when a consultation process is actually completed.</p>	<p>Documents such as the <i>Technical Standards for Public Fixed Telecommunications Networks</i>, which have been referenced as in effect throughout this document, state the standards that concessionaires must comply with. Periodically, documents written by the Authority are reviewed and the version and date of each iteration of the documents change accordingly. Throughout the document, the Authority will cite all documents that are referenced using the format <b>(Author, Year or relevant subsequent update)</b>.</p> <p>The Authority is empowered to establish standards under section 18 (1) of the Act, while section 78 (1) does not require standards to be proclaimed under regulations. If the Authority deems that regulations</p>
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			<p>regulatory instruments that bind concessionaires.</p> <p>The Authority is seeking here as sleight of hand to mislead readers to believe that it has undertaken the necessary regulatory steps to implement and make enforceable the documents referenced, when neither the Concession, the Act or any Regulations encode the proposals of the documents into law.</p>		<p>are required in order to ensure compliance with these standards, the Authority will pursue.</p>
14	1.10 Compliance Notation	TSTT	<p>TSTT notes that the Authority herein seeks to tie the obligations herein to a licensee’s obligations pursuant to their holding of the licence document.</p> <p>However, the Act limits licences to matters of spectrum use, and necessary facilities associated with spectrum use. As a facility is limited to physical components of networks, it is inappropriate for any “standard” in this document</p>	<p>The Authority to remove all obligations, mandatory or discretionary from this document that are not related directly to the management of spectrum use or facilities directly associated with spectrum use.</p>	<p>Section 3 (b) of the Act states:</p> <p>“The objects of the Act are to establish conditions for—</p> <p>(b) the facilitation of the orderly development of a telecommunications system that serves to safeguard, enrich and strengthen the national, social, cultural and economic well-being of the society”.</p>

			<p>to impose obligations on concessionaires that are either:</p> <ul style="list-style-type: none"> <li>- Not directly related to the use of spectrum resources; and</li> <li>- Not directly associated with facilities necessary for the use of spectrum.</li> </ul> <p>Accordingly, all “standards” that seek to control or regulate the operation of a licensee’s network that is related to other matters (identifications and prioritisation of traffic, comparative capacities and utilisations etc.) are ultra vires the legal remit of the enforcement capacity of the licence and should be deleted.</p> <p>Notwithstanding the foregoing, TSTT notes that in the DoRS where these issues were raised prior, the Authority constantly seeks to hide behind the provisions of either Section 3,</p>		<p>Section (18) (1) (d) of the Act::</p> <p>“Subject to the provisions of this Act, the Authority may exercise such functions and powers as are imposed on it by this Act and in particular – Establish national telecommunications industry standards and technical standards.”</p> <p>According to the Act, the definition of a telecommunications network is “a system or any part thereof used for the provision of a telecommunications service”. This definition does not specify only the physical elements of a network.</p> <p>Resources such as the RF capacity of a wireless telecommunications network are dealt with in this document, as these resources help maintain the orderly operation of networks, safeguarding the well-being of the society in the event of a natural or man-made disaster.</p>
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		<p>Section 18 or Section 45 of the Act.</p> <p>TSTT rejects these arguments as these generally enabling provisions do not authorise the Authority to operate outside the limitations established in Section 2, Section 22 to Section 24 and Section 42 of the Act. Accordingly, it is clear from the cited Sections, that the Authority does not have unfettered authority to do whatever it pleases in contravention of the rights of concessionaires and licensees.</p> <p>While TSTT is not averse to many of the proposals outlined in this regard, as outlined below, the appropriate place for these matters would be in:</p> <ul style="list-style-type: none"> <li>- The Concession</li> <li>- Regulations associated with Quality of Services, such as CQOS or Network QOS.</li> </ul>	<p>Section 45 of the Act further clarifies that technical standards established by the Authority apply to both concessionaires and licensees and does not limit such standards to spectrum use.</p> <p>This document deals with wireless networks in general, which includes wireless components within a network and forms of redundancy. Wireless concessionaires may choose to implement redundancy, using wired technology such as fibre optic cables. Although cables are not directly associated with the use of RF spectrum (wireless), they do, in the context of this document, form modes of redundancy, which mitigates the effects of both natural and man-made disasters on the operation of a wireless network.</p> <p>The Authority therefore disagrees with TSTT’s recommendation to remove mandatory or discretionary</p>
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			And not in a framework which seeks to create a regulatory backdoor through radio frequency licences.		<p>standards from this document that are not directly related to the management of spectrum use or facilities directly associated with spectrum use.</p> <p>The standards stated in the Authority’s <i>Customer Rights and Obligations Policy</i> (CROP) are standards relating to measurable key performance indicators (KPIs) which are telecommunications performance benchmarks.</p> <p>The standards in this document that mitigate the effects of network traffic congestion on parts of a wireless network are the technical standards to which networks must be engineered to operate. The standards to mitigate network traffic congestion on parts of a wireless network are therefore suited to this document.</p>
15	2.2 Man-Made Disasters	TSTT	TSTT maintains that it is inappropriate to declare	The term “network traffic congestion” should be	In the context of this document, a man-made disaster is a disaster

		<p>“Network Traffic Congestion” as a disaster of any kind. Network traffic congestion occurs naturally and periodically in the operation of any network and is mitigated in that regard through either ongoing optimisation activities or capital investment in infrastructure. In no way does periodic congestion meet the definition of a “disaster” in any context.</p> <p>Further, as network traffic congestion is neither directly and exclusively related to the use of spectrum, nor is it related to the management of physical facilities, TSTT reiterates its position as outlined in response to Section 1.10 above that matters related purely to network congestion are outside the remit of this document.</p> <p>Through this regulatory sleight of hand, the Authority is trying to</p>	<p>removed from the list of identified man-made disasters forthwith.</p>	<p>caused by human activity, which negatively affects the performance of a network.</p> <p>The Authority acknowledges that networks are engineered or constructed based on the number of users and foreseeable activity on the network. However, network traffic congestion, in the context of this document, can occur when there is overuse of the network due to major events, special occasions, or natural disasters. Overuse of the network would cause customers to be unable to make telephone calls or access data services, which is a negative impact on the network. By implementing standards within a network to reduce traffic congestion, the well-being of the society, in the event of a natural or man-made disaster, will be safeguarded. The Authority therefore disagrees that network traffic congestion should be</p>
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		<p>create a backdoor through which it can seek to intervene in the daily operations of concessionaires and licensees even where there is no disaster, in a manner that is ultra vires the Concession.</p> <p>The Authority through this proposal is seeking to implement heavy-handed regulatory control over both fixed and wireless networks of concessionaires and licensees – through a combination of regulatory instruments none of which have been subject to Parliamentary scrutiny. TSTT notes that there is still no Spectrum Regulations that oversees the Authority’s use of licences, and the Authority has been strident in the DoRS to avoid commitment to converting this document to Regulations.</p> <p>The implication is clear: The Authority seeks to regulate the</p>		<p>removed from the list of identified man-made disasters.</p> <p>The Authority is empowered to establish standards under section 18 (1), while section 78 (1) does not require standards to be proclaimed under regulations. If the Authority deems that regulations are required to ensure compliance with these standards, the Authority will pursue.</p>
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			<p>industry through fiats which are not subject to Parliamentary oversight. This approach should not be condoned, and should be rejected as offensive to the Constitution.</p> <p>Accordingly, network traffic congestion should be deleted from the definition as a man-made disaster.</p> <p>If the Authority seeks to maintain the inclusion of “network traffic congestion” the specific definition in this document should be tied to a concurrent natural disaster event</p>		
16	3.2.2.2 Hurricanes	TSTT	<p>Mandatory standard (21) states that “Trees that are in close proximity to a radiocommunications tower or overhanging the perimeter of a radiocommunications site shall be kept trimmed.”</p>	<p>The Authority to either:</p> <ul style="list-style-type: none"> <li>- Remove the offensive phrase “in close proximity”; or</li> <li>- convert this to a discretionary standard.</li> </ul>	<p>The Authority is aware that trees in close proximity to a communications site are not under the jurisdiction of the operator and that permission to trim the trees may not be granted. The Authority agrees with TSTT that concessionaires, in accordance with</p>

		<p>The Authority is aware that TSTT has no jurisdiction over trees outside of its property that may be considered to be in “close proximity” and landowners are not obligated to trim trees at TSTT’s request.</p> <p>Indeed, Section 1.5 of the document cites Section 35 of the Act where it is pellucid that the concessionaire can treat with trees that “overhang or interfere” by obtaining the consent of the owner. However, Section 35 of the Act does not provide any legal cover to treat with trees in “close proximity”. Accordingly, that prong of the standard is ultra vires the Act, and thus cannot be required pursuant to any secondary regulatory instrument.</p> <p>Thus, TSTT reiterates that either the offensive prong of this standard be removed or the</p>		<p>section 35 of the Act, can carry out the trimming of overhanging branches without requiring permission from an external party. The Authority therefore agrees with TSTT to remove the term “in close proximity” from mandatory standard 21 and has done so, as follows:</p> <p>“(21) Tree branches that hang over the perimeter of a radiocommunications site shall be kept trimmed.”</p>
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			standard itself be changed to a discretionary standard.		
17	3.2.1.2 Bush Fires	TSTT	<p>Regarding Mandatory Standard (4), while TSTT prefers this definition over what pertained prior, TSTT queries the inclusion of the word “material”.</p> <p>Among the points made, and presumably agreed by the Authority in TSTT’s last contribution was that cabinets include vents and other design elements which compromise the “proofing” of the facility. A more appropriate phrasing of this standard should be:</p> <p>“Outdoor cabinets used to house (active) communications equipment shall be constructed to ensure fire retardance”.</p>	<p>The Authority to rephrase to read as follows:</p> <p>“Outdoor cabinets used to house (active) communications equipment shall be constructed to ensure fire retardance”.</p>	<p>The Authority agrees with TSTT that outdoor cabinets are to be designed to be fire retardant. The Authority notes, however, that cabinets that require protection from fire may contain passive or active electronics; therefore, the standard will not only apply to cabinets with active communications equipment but also passive equipment. Mandatory standard 4 has been amended as follows:</p> <p>“(4) Outdoor cabinets used to house communications equipment shall be constructed to ensure fire retardancy.”</p>
18	3.2.3.1 Hurricanes	TSTT	<p>While TSTT does not object to the recommendation in principle, TSTT does object however to this</p>	<p>This recommendation should be deleted from the subject document and</p>	<p>Although cables are not associated with the use of RF spectrum (wireless), wireless network</p>

			<p>obligation – which is not related to the use of spectrum, nor is it related to facilities directly related to the use of spectrum - being proposed as an obligation of a licence to use Radio Frequency (“RF”) resources.</p> <p>This recommendation should be deleted from the subject document and included in a revised consultation on the Technical Standards for Wired Networks.</p>	<p>included in a revised consultation on the Technical Standards for Wired Networks.</p>	<p>concessionaires may choose to implement redundancy using wired technology, such as fibre optic cables. One of the objectives of this document is to establish standards that enhance resilience in key aspects of a wireless network, such as the implementation of redundancy. The standard stated in section 3.2.3.1 mitigates the effects of hurricanes on cables used as a form of redundancy in transport networks, which is a key aspect of a wireless networks; therefore, the Authority disagrees with TSTT about removing these standards from this document.</p>
19	3.2.3.3 Mud Volcanoes	TSTT	<p>Re: Mandatory Standard 25</p> <p>While TSTT does not object to the recommendation in principle, TSTT does object however to this obligation – which is not related to the use of spectrum, nor is it related to facilities directly related to the use of spectrum –</p>	<p>This recommendation should be deleted from the subject document and included in a revised consultation on the Technical Standards for Wired Networks.</p>	<p>Although cables are not directly associated with the use of RF spectrum (wireless), they do, in the context of this document, form modes of redundancy within the transport network, which is a key aspect of a wireless network infrastructure. The standards stated in section 3.2.3.3 mitigate the</p>

			<p>being proposed as an obligation of a licence to use RF resources.</p> <p>This recommendation should be deleted from the subject document and included in a revised consultation on the Technical Standards for Wired Networks.</p>		<p>effects of mud volcanoes on underground cables used as a form of redundancy in the transport infrastructure of a wireless network; therefore, the Authority disagrees with TSTT about removing these standards from this document.</p>
20	3.3.1 Technical Standards for Public Mobile Access Networks	TSTT	<p>Mandatory Standards (26) and (27) are not technical matters for the radio access network. This is a technical matter managed by core network and traffic management utilities that have no locus standi in respect of Radio Access Network elements, and the specifics of RF licences.</p> <p>While TSTT does not object to the recommendation in principle, TSTT does object however to this obligation – which is not related to the use of spectrum, nor is it related to facilities directly related to the use of spectrum -</p>	<p>This recommendation should be deleted from the subject document and included in a revised consultation on the Consumer Rights and Obligations Policy.</p>	<p>The Authority is mandated, pursuant to section 3 (b) of the Act, to establish conditions for “the facilitation of the orderly development of a telecommunications system that serves to safeguard, enrich and strengthen the national, social, cultural and economic well-being of the society.”</p> <p>The standards stated in the Authority’s CROP are standards relating to measurable quality of service (QoS) KPIs, which are telecommunications performance benchmarks. Mandatory standards</p>

			<p>being proposed as an obligation of a licence to use RF resources. This obligation, if not already included therein, should be an element of the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p> <p>This recommendation should be deleted from the subject document and included in a revised consultation on the Consumer Rights and Obligations Policy.</p>		<p>(26) and (27) indicate how concessionaires are to configure their networks with regard to emergency services. Prioritising emergency services on a telecommunications network helps to safeguard the well-being of society during a natural disaster and in its aftermath.</p> <p>The Authority disagrees that these mandatory standards should be removed from this document and be included in CROP.</p>
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21	3.3.2.1 Network Congestion	TSTT	<p>Mandatory Standards (28) and (29) are not technical matters, and thus have no locus standi in respect of the specifics of RF licences.</p> <p>While TSTT does not object to the recommendation in principle, TSTT does object however to this obligation – which is not related to the use of spectrum, nor is it related to facilities directly related to the use of spectrum - being proposed as an obligation of a licence to use RF resources. This obligation, if not already included therein, should be an</p>	<p>This recommendation should be deleted from the subject document and included in a revised consultation on the Consumer Rights and Obligations Policy.</p>	<p>The standards stated in CROP are standards relating to measurable QoS KPIs, which are telecommunications performance benchmarks.</p> <p>The standards to mitigate the effects of network traffic congestion, stated in section 3.3.2.1 of this document, are technical standards that networks must be designed and engineered to operate at. These standards are therefore suited for this document.</p>

			<p>element of the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p> <p>This recommendation should be deleted from the subject document and included in a revised consultation on the Consumer Rights and Obligations Policy.</p>		
22	3.3.3 Technical Standards for Public Mobile Core Networks	TSTT	<p>Mandatory Standards (30) and (31) are not technical matters thus have no locus standi in respect of the specifics of RF licences.</p> <p>While TSTT does not object to the recommendation in principle, TSTT does object however to this obligation – which is not related to the use of spectrum, nor is it related to facilities directly related to the use of spectrum - being proposed as an obligation of a licence to use RF resources. This obligation, if not already</p>	<p>This recommendation should be deleted from the subject document and included in a revised consultation on either the Technical Standards for Wired Networks or the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p>	<p>The Authority disagrees that mandatory standards 30 and 31 are not technical standards relating to public wireless networks.</p> <p>Section (18) (1) (d) of the Act states: “Subject to the provisions of this Act, the Authority may exercise such functions and powers as are imposed on it by this Act and in particular – Establish national telecommunications industry standards and technical standards.”</p>

			<p>included therein, should be an element of the Technical Standards for Wired Networks or the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p> <p>This recommendation should be deleted from the subject document and included in a revised consultation on either the Technical Standards for Wired Networks or the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p>		<p>The standards to mitigate the effects of network traffic congestion or failure, stated in section 3.3.3 of this document, are technical standards that networks must be designed and engineered to operate at. These standards are therefore suited for this document.</p>
23	3.3.6 Technical Standards for Radiocommunications Equipment Located in Industrial Environments	TSTT	<p>In the DORs the Authority states that “the Class 1 Division 1 or Division 2; and Zone 0, Zone 1 or Zone 2 hazardous classifications are international classifications that have been adopted by the Ministry of Energy and Energy Industries of Trinidad and Tobago.”,</p>	<p>The Authority to provide, in conjunction with the agency identified (Ministry of Energy and Energy Industries), information indicating:</p>	<p>As established in the TWG, the Ministry of Energy and Energy Industries is responsible for adopting and setting standards that ensure that the overall operation of industrial plants runs safely. The following refers to the adoption of hazardous location/zones classification and guidelines by the</p>

			<p>As such, we are requesting that the Authority provides, in conjunction with the agency identified (Ministry of Energy and Energy Industries), information indicating:</p> <p>a) how these standards have been adopted in Trinidad and Tobago and how it is applied;</p> <p>b) the name of the agency that is operationally responsible for this function, how this function works, and the website from which documentation related to the administration of this function is published; and</p> <p>c) confirmation of the service level agreement with the marketplace with respect to responsiveness to requests in relation to zoning matters and compliance.</p> <p>In this way, concessionaires and licensees are aware of the</p>	<p>a) how these standards have been adopted in Trinidad and Tobago and how it is applied;</p> <p>b) the name of the agency that is operationally responsible for this function, how this function works, and the website from which documentation related to the administration of this function is published; and</p>	<p>relevant industries in Trinidad and Tobago, as queried by TSTT:</p> <p>a) Industries, such as those involved in oil and gas and those located in Point Lisas, adopt internationally recognised classifications of hazardous locations and zones, and also adhere to internationally recognised guidelines that define these hazardous zones and locations in relation to the location and layout of facilities within an industrial environment.</p> <p>b) Internationally recognised classifications of hazardous locations/zones and guidelines that define these hazardous locations/zones are directly adopted by companies operating with the industrial sector of Trinidad and Tobago.</p>
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			<p>administrative framework the Authority is asking to be adopted, and we are assured that this is not another ad hoc, arbitrary framework that the Authority is proposing to impose on the market with no clear indication of how this is to be operationalised.</p>	<p>c) confirmation of the service level agreement with the marketplace with respect to responsiveness to requests in relation to zoning matters and compliance.</p>	<p>c) Given the above, no service level agreement would be applicable, as licensees would adhere to the classifications adopted by the industry at which the equipment will be situated.</p>
24	<p>4. Redundancy in Transport Networks of Public Mobile Telecommunications and Broadband Wireless Access Networks</p>	TSTT	<p>Discretionary Standards (6) and (7) are not technical matters thus have no locus standi in respect of the specifics of RF licences.</p> <p>While TSTT does not object to the recommendation in principle, TSTT does object however to this obligation – which is not related to the use of spectrum, nor is it related to facilities directly related to the use of spectrum - being proposed as an obligation of a licence to use RF resources. This obligation, if not already</p>	<p>This recommendation should be deleted from the subject document and included in a revised consultation on either Technical Standards for Wired Networks or the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p>	<p>Section (18) (1) (d) of the Act states: “Subject to the provisions of this Act, the Authority may exercise such functions and powers as are imposed on it by this Act and in particular – Establish national telecommunications industry standards and technical standards.”</p> <p>The standards in section 4 establish redundancy in public mobile telecommunications networks and broadband wireless access (BWA) networks. The Authority disagrees</p>

			<p>included therein, should be an element of the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p> <p>This recommendation should be deleted from the subject document and included in a revised consultation on either Technical Standards for Wired Networks or the Consumer Rights and Obligations Policy and the associated CQoS draft Regulations.</p>		<p>that discretionary standards 6 and 7 are not technical standards.</p> <p>The purpose of this document is not only to establish technical standards relative to spectrum or facilities relating directly to spectrum, but also to establish standards relating to implementing redundancy and resilience within wireless networks. Furthermore, the standards stated in CROP and associated CQoS regulations are baselines for measurable QoS KPIs and not standards related to establishing redundancy in wireless networks. The Authority therefore disagrees with TSTT that the standards in section 4 of the document should be deleted from this document and included in the Authority’s CROP or CQoS regulations.</p>
25	Section 3.3.4 Technical Standards for Radio	TTCAA	There must be the inclusion of the Regulations that governs aerodromes, TTCAR No.12 in the	Restate the first and second sentences to the following: In accordance with the TTCAR No.12 Civil	The Authority acknowledges that the regulations governing aerodromes in Trinidad and Tobago, TTCAR No. 12, should be

	<p>communications Towers and Antennas</p>		<p>introductory sentence of section 3.3.4. Within the second sentence of this section, it states that according to ICAO Annex 14, there are restrictions on heights of towers built within defined radii and these towers must be approved by the TTCAA. The Annex 14 does not objectively state that towers defined within these identified radii must be approved, instead, it would require an aeronautical study to determine whether the structures negatively impact the safe and efficient use of the navigable airspace by aircraft</p>	<p>Aviation [(No.12) Aerodrome Licensing] Regulations, the Trinidad and Tobago Civil Aviation Authority (TTCAA) has adopted the International Civil Aviation Organization (ICAO) Annex 14 to the Convention on International Civil Aviation International Standards and Recommended Practices for the design of aerodromes (airports and heliports). As stated in ICAO Annex 14, Obstacle Limitation surfaces are defined in and around aerodromes. A determination will be made by the TTCAA regarding the construction of any obstacle (including towers) within these defined radii, within which these Obstacle Limitation Surfaces lie. For</p>	<p>included in the document, as this regulation is the reason why standards such as the International Civil Aviation Organization (ICAO) Annex 14 to the Convention on International Civil Aviation International Standards and Recommended Practices for the design of aerodromes (airports and heliports) have been adopted by TTCAA. The Authority has amended the first sentence in section 3.3.4, as follows:  “In accordance with the TTCAR No.12 Civil Aviation [(No.12) Aerodrome Licensing] Regulations, the Trinidad and Tobago Civil Aviation Authority (TTCAA) has adopted the International Civil Aviation Organization (ICAO) Annex 14 to the Convention on International Civil Aviation International Standards and Recommended Practices for the design of aerodromes (airports and heliports).”</p>
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				towers that are located outside of the defined radii and 110 meters or more in height, the TTCAA requires notification of their construction (TTCAR No.12).	<p>The Authority agrees with TTCAA’s recommendation on the change to the second sentence in section 3.3.4, which has been amended, as follows:</p> <p>“A determination will be made by TTCAA regarding the construction of any obstacle (including towers) within these defined radii, within which these obstacle limitation surfaces lie. For towers that are located outside of the defined radii and are 110 metres or more in height, the TTCAA requires notification of their construction (TTCAR No.12).”</p>
26	Section 3.3.4 Technical Standards for Radio communications Towers and Antennas:		Part 32 states, ‘The height of radiocommunications towers located within a height restriction radius of an aerodrome shall comply with the tower height specifications adopted	Restate Part 32. to the following: The defined Obstacle Limitation Surfaces will determine the height of the proposed radio communication towers in	The Authority acknowledges TTCAA’s recommendation to revise the first section of mandatory standard 32 and has amended it as follows:

<p>Mandatory Standards to Reduce the Chance of Aircraft Colliding with Radio communication Towers</p>		<p>by the Trinidad and Tobago Civil Aviation Authority (TTCAA), which are stated in the International Civil Aviation Organization (ICAO) Annex 14, as follows’. This should be restated as seen in Recommendation column.</p> <p>Part 32b, states that according to Annex 14, Volume II, the height of radio communications towers located within a radius of 3.5km from a heliport/helideck shall comply with specifications stated in Chapter 4. This radius of 3.5km was a determination made internally by the TTCAA utilising the maximum dimension of Obstacle Limitation Surfaces as well as an added safety buffer. However, this radius should be amended to the exact maximum dimension of Obstacle Limitation Surfaces for heliports, which is 3.386km.</p>	<p>the vicinity of the aerodrome in accordance with the Annex 14 Volume I and Volume II.</p> <p>Restate Part 32.b to the following: The height of radio communications towers located within a radius of 3.386 kilometres from a heliport/helideck, shall comply with the specifications stated in chapter 4 of the International Civil Aviation Organisation (ICAO) Annex 14, volume II.</p>	<p>“The defined obstacle limitation surfaces will determine the height of the proposed radiocommunications towers in the vicinity of the aerodrome, in accordance with the Annex 14 Volume I and Volume II.”</p> <p>The Authority has changed 3.5 kilometres to 3.386 kilometres in part (b) of mandatory standard 32.</p>
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			<p>Note: Kindly make this adjustment for all aspects of the document.</p> <p>The Note at the base of the Mandatory Standards section states that ‘TTCAA should also be notified of radio communication tower builds outside of restricted radiuses around an aerodrome that exceed 110 meters in height.’ According to the TTCAR No.12, TTCAA shall be notified of any tower build 110 meters or more in height.</p>	<p>Restate the Note to the following: A determination will be made by the TTCAA regarding all radio communication tower builds carried out within the Obstacle Limitation Surfaces around an aerodrome. The TTCAA shall be notified of radio communications tower builds outside of the Obstacle Limitation Surfaces around an aerodrome that is 110 meters or more in height (TTCAR No.12).</p>	<p>The Authority acknowledges TTCAA’s recommended revision of the note at the end of section 3.3.4. This revision, however, has been included higher up in section 3.3.4 and therefore the note at the end of section 3.3.4 has been removed.</p>
27	Appendix II. Decisions on Recommendations (DORs) Matrix for First Consultation Round on Technical	TTCAA	<p>Within the TATT’s decision section of this Appendix 2 No. 39 states, ‘According to the TCPD’s policy, tower construction requires consent</p>	<p>Restate No. 39 of TATT’S decision column to the following: According to the TCPD’s policy, tower construction requires consent</p>	<p>The Authority acknowledges TTCAA’s need to reference the TTCAR No.12 Civil Aviation [(No.12) Aerodrome Licensing] Regulations. However, the DORs matrix for the first consultation round on this document is based</p>

	<p>Standards for Wireless Networks. No. 39, 40.</p>		<p>or approvals from the Trinidad and Tobago Civil Aviation Authority (TTCAA), depending on the location of the tower in relation to aerodromes. The TTCAA has adopted standards and procedures from the International Civil Aviation Organization (ICAO) Annex 14 to the Convention on International Civil Aviation standards and recommended practices, volumes I &amp; II, with respect to the construction of towers that are located in restricted radiuses around aerodromes.’ This should be restated as seen in recommendations column.</p>	<p>or approvals from the Trinidad and Tobago Civil Aviation Authority (TTCAA), depending on the location of the tower in relation to aerodromes. In accordance with the TTCAR No.12 Civil Aviation [(No.12) Aerodrome Licensing] Regulations, the Trinidad and Tobago Civil Aviation Authority (TTCAA) has adopted the International Civil Aviation Organization (ICAO) Annex 14 to the Convention on International Civil Aviation standards and recommended practices, Volumes I &amp; II, with respect to the construction of any obstacle (including towers)</p>	<p>solely on recommendations from that round of consultation, which was completed, and the document has been published on the Authority’s website. In accordance with the Authority’s approved consultation procedures, no further changes can be made to that document.</p> <p>In any event, the final version of the document includes the DORs matrix for the second round of public consultation as Appendix 1, and not the DORs matrix for the first round of public consultation.</p>
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				<p>Obstacle Limitation Surfaces around an aerodrome. The TTCAA must also be notified of the construction of towers that are located outside of the Obstacle Limitation Surfaces, which are 110 meters or more in height. The following statement indicating the required approval and notification in relation to the TTCAA regarding tower builds has been included in section 3.3.4.:</p> <p>“Note: A determination will be made by the TTCAA regarding all radio communication tower builds carried out within the Obstacle Limitation Surfaces around an aerodrome. The TTCAA is to also be notified of radio communication tower builds outside of the restricted</p>	
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				radiuses around an aerodrome that are 110 meters or more in height.”	
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