CONSIDERATION OF COMMENTS RECEIVED

RE DRAFT IMT-2020 (5G) STRATEGY

On 1 July 2022, the Authority published a notice on its website and various newspapers, that it intends to invite public comments on the draft IMT-2020(5G) strategy developed as per the directive contained in Cabinet Resolution No. 10TH/21.07.20/006

Written comments were received from Eutelsat, Telecom Namibia Limited, Mobile Telecommunications Limited and Paratus Telecommunications (Pty) Ltd. Below is a list of all comments as received and the Authority's response to the comments:

EUTELSAT S.A.		
No.	**Comment**	**Proposed response from the Authority**
1.	Eutelsat understands that CRAN is considering making available the frequency bands identified for International Mobile Telecommunications (IMT) services at International Telecommunications Union (ITU) level, to support the deployment of 5G over the territory of Namibia. CRAN mentions in section 6 of the 5G Strategy the 700 MHz and 800 MHz band in the low bands, the 2300 MHz, 3600 MHz and 3300-3600 MHz bands in the mid-bands, and the 24.25-27.5 GHz, 37.0-43.5 GHz and 66-71 GHz in the millimetre waves	The statement made by Eutelsat is correct. In addition, the Authority is also considering the 2600 MHz spectrum band as stated in section 6 of the 5G strategy document. The Authority has provided a roadmap for the assignment of these bands in the Spectrum Assignment Strategy 2022-2024.
2.	In section 6 of the 5G Strategy, a reference is made to the need to assign contiguous spectrum blocks of 80-100 MHz	The consideration of contiguous block of 80 -100 MHz is aligned with ATU-R Recommendation 005-0, which

	in the mid-bands. Eutelsat would like to underline that in some countries, 40 to 60 MHz have been deemed sufficient per operator. In response to claims by some MVNOs that they need access to at least 80 MHz of contiguous spectrum, Ofcom, the communications regulatory in the United Kingdom, researched the ability of mobile operators to launch 5G services with 40 MHz of spectrum. The results demonstrated that terrestrial mobile operators would be able to deliver all the main services anticipated under 5G with 40 MHz of spectrum.	recommendations was formulated after lengthy industry consultations to facilitate the implementation of robust IMT-2020 networks in Africa.
3.	Six satellites of Eutelsat's fleet cover Namibia in C2, Ku3 and Ka4 bands. Eutelsat therefore particularly appreciates that CRAN is not considering for 5G the Fixed Satellite Service (FSS) frequencies of the Ku and Ka band, and that the Authority is only considering the frequency band 3.3-3.6 GHz in the C-band for 5G, which would leave the 3.6-4.2 GHz band for satellite networks. The C-band is fundamental with its unique characteristics such as wide coverage and rain resistance. This band has been used for decades by satellites to provide connectivity and video services. Satellite operators and their customers rely heavily on using these frequencies. Significant investments have been made to launch and develop C-band satellite services to provide reliable, resilient and secure communication services. Ku-band is widely used on the African continent for business connectivity applications and in mobile situations on	The Ku and Ka band has proven to be popular for Namibian licensees to deploy fixed satellite services, whilst the C-band is in very low demand. Subsequently, the Authority will only consider spectrum licences for fixed satellite in 3.9 GHz to 4.2 GHz, thereby creating a condusive environment for the co-existence of MOBILE (IMT), FIXED and FIXED SATELLITE services allocated on a primary basis in 3.3 GHz to 4.2 GHz spectrum bands as set out in the National Frequency Band Plan. All spectrum licenses are issued subject to adherence to ITU regulations and licence conditions prescribed by the Authority.

	board aircraft and ships, but also for direct broadcasting to the general public. The Ka-band is a crucial band which is used by more than 100 satellites in geostationary orbit and more than 1,000 satellites in non-geostationary orbit around the world to provide, among other things, broadband services to consumers and businesses. Eutelsat and the satellite industry have invested heavily in the development of new generation satellites and a comprehensive Ka-band ecosystem to provide broadband access and connectivity to Earth Stations in Motion (ESIM). Parts of the C-band (downlink in the 3.6-4.2 GHz band) and the Ka-band (uplink in the 27.5-30 GHz band) are adjacent to the 3300-3600 MHz and 24.25-27.5 GHz bands mentioned by CRAN in the 5G Strategy. However, the coexistence of terrestrial mobile networks and satellite networks in adjacent bands can pose difficulties, particularly when the satellite link is downlink, which is the case for the C-band. To protect existing satellite services and to ensure the possibility of future evolution and development of these services in Namibia, as well as enabling the deployment of 5G, the definition of detailed coexistence conditions between 5G base stations and FSS earth stations in adjacent bands will be essential. Eutelsat invites CRAN to take these elements into account, with the support of relevant parties, if necessary,	

	when preparing the regulatory measures to support the roll out of 5G in Namibia.	
4.	In section 4.2.2, CRAN clearly identifies the critical role of backhaul transmission in development of 5G in Namibia. Fiber and microwave networks are listed as potential solutions. We would like to raise attention of CRAN on the role that satellites can also play in the development of backhaul elements in mobile networks. This has been put in place in many African countries in recent years and it has demonstrated that satellite is a keystone to the development of mobile communications. Consequently, we encourage support for the deployment of satellite networks for that purpose in Namibia, in particular through ensuring a proper access to C-band spectrum to connect base stations to core network. Satellite technology only requires an antenna being installed on base station pylon, and a central antenna at hub side to gather traffic from all base stations. This simple architecture, using a single relay in space, enables the limitation of deployment of ground infrastructure required by other technologies, either relay pylons every ten kilometers or fiber dug into the ground over hundreds of kilometers. Satellite backhaul can therefore limit the impact on natural wildlife, thus contributing to achieving Strategic Objective 3 "Safeguarding the environment and public health".	The Authority appreciates the input received on the role that satellite can play in providing backhaul transmission for IMT-2020 and will amend the strategy document to reflect as such.

5.	Eutelsat would also like to highlight that the Q/V band (37.5-42.5 GHz space-to-earth, 42.5-43.5, 47.2-50.2 and 50.4-52.4 GHz earth-to-space) is key for the future of satellite services, by enabling access to wide bandwidths for the gateways of the forthcoming generation of high and very high throughput satellites, and for user terminals in a future step. The satellite industry is investing significantly in this band to provide in the foreseeable future high speed connectivity services everywhere. In the millimeter waves, Eutelsat would recommend deploying 5G first in the 26 GHz before considering making available the 40 GHz band for IMT, especially as it could have an impact on developing satellite activities in the band. Eutelsat believes that the 26 GHz band should be largely sufficient to accommodate current and future demand for IMT spectrum in the millimeter waves.	The spectrum bands 37.0-43.5 GHz and 47.2-48.2 GHz are currently unutilized in Namibia. These spectrum bands are not feasible for national rollout of IMT-2020 services given the topography and population density of Namibia. It is expected that demand of these spectrum bands for IMT-2020 will be low. The Authority is therefore, of the opinion that spectrum assignments in these spectrum bands will be done on a geographic basis for specific use cases and provide for co-existence with satellite services as per the outcomes of WRC-19. Similarly, the spectrum band 24.25-27.5 GHz (26GHz) is unutilised as should be sufficient to meet spectrum needs for IMT-2020 for the immediate future.
6.	In order to guarantee a thriving ecosystem for both satellite and IMT services, Eutelsat will attentively follow the activities of CRAN related to this 5G Strategy, and more specifically on Strategic Objective 1 "An enabling legislative and regulatory framework" and the Strategic Initiative 2 "Availing spectrum resources as necessary for deployment of IMT-2020 (5G) networks and services as per the mandate of the Authority". A sustainable access to the different frequency bands for satellite earth stations and satellite activities in general facilitate the development of	The spectrum licensing framework provides for the assignment of spectrum licences to all services contained in the Frequency Band Plan of Namibia based on demand for availing such spectrum resources for provision of communications services by licensees as per the objects of the Communications Act (Act No. 8 of 2009)

	satellite connectivity services for all citizens and businesses, regardless of their location. Satellites play a key role in connecting people worldwide and supporting the socio-economic development of many countries.	
PARATUS TELECOMMUNICATIONS (PTY) LTD		
No.	**Comment**	**Proposed response from the Authority**
7.	To effectively rollout 5G an operator requires at least 50 MHz of contiguous spectrum in a frequency band. The current allocation of spectrum creates white spaces, minimizing the effective allocation of contiguous spectrum for optimum bandwidth availability of 5G as well as efficiency of equipment costs. A licensed operator may need to move within the band to accommodate and additional allocations. The regulator is requested to indicate how the spectrum will be fairly allocated between the licensed operators in light of existing allocations.	The spectrum bands 2300, 2600 and 3400-3600 MHz is allocated to IMT as set out in the Frequency Band Plan of Namibia. These spectrum bands are included in the mid band spectrum (2-5 GHz) and the Authority has included the said spectrum bands and measures to be taken to create contiguous spectrum blocks for deployment of 5G in its Spectrum Assignment Strategy published in Government *Gazette* No. 6776 on 10 August 2022.
8.	The spectrum band 3400-3600 MHz has emerged as a primary band for IMT-202 deployed in that it is near globally harmonized and allows for the assignment of large (80-100 MHz) contiguous blocks of spectrum as per the frequency arrangements contained in ITU-R M. 1036-6. The licensee would like to know how this spectrum range will be harmonized for IMT-2020 to allow for economies of scale in respect of equipment availability and cost. The midrange spectrum must be shared equally amongst	The spectrum band 3300-3600 MHz is allocated to IMT as set out in the Frequency Band Plan of Namibia. This spectrum band is included in the mid band spectrum (2-5 GHz) and the Authority has included this spectrum band and measures to be taken to availed it for deployment of 5G in its Spectrum Assignment Strategy published in Government *Gazette* No. 6776 on 10 August 2022.

	operators to allow all operators to provide 5G services at a similar cost.	
9.	In par 4.2.1 specifically and generally in the strategy, reference is made to the enforcement of the regulations relating to infrastructure sharing. The licensee submits that the regulations do not have a proper enforcement mechanism and have proven ineffective in encouraging and enforcing infrastructure sharing amongst the operators. It is suggested that the regulations be amended before implementation of the strategy to ensure that 5G infrastructure can be shared at industry related prices without relying on the defense of insufficient capacity as incumbents currently do.	The comment is noted, and the Authority will take it into consideration in its pursuit to ensure the optimal implementation of the infrastructure sharing regulations.
10.	It is generally held that Namibia falls below the standard 4G up take rations which may be partly due to the lack of access to smartphones due to high costs. It is suggested that the Government consider the subsidization of 4G & 5G enabled end-user equipment to encourage migration to newer technologies to complement the digital transformation plan for migration from legacy technologies such as 2G and 3G to re-use the spectrum for 5G. The same suggestion has been included in the Notice of Intention to Make Regulations Prescribing the Universal Service Levy under Sections 56 and 129.	The Authority is in the process of considering interventions on how to make devices affordable and will take this advice into consideration.
11.	Part 5 refers to the need for environmental impact assessments (EIA) to be undertaken on the construction of	Given the nature of this comment, the Authority sought advice from the Ministry of Environment, Forestry and Tourism and the response is as follows:

	new 5G sites. The licensee would like clarification on the process for existing sites- • Must an EIA be undertaken for an existing site? • Will each operator need to conclde an EIA for 5G or will this only be required to be done once by the tower owner?	An Environmental Scoping Report and Environmental Management Plan (EMP) is required. The scoping report should identify impacts associated with 5G infrastructure especially those related to radiation and mitigation measure should be clearly presented in the EMP. Taking into consideration of all comments received pertaining to EIAs it is recommended that consultative meetings are arranged between the licensees, the regulator, the Ministry of Environment, Forestry and Tourism and the Ministry of information and Communication Technology to ensure the successful implementation of Strategic Objective 3: Safeguarding the environment and public health. The Authority will arrange the meeting in due course.
12.	Kindly provide a more detailed plan for the implementation of S12.5 Annexure A. Specifically indicate • How spectrum will be availed for IMT-2020 (5G) • When spectrum will be allocated to allow time to establish a 5G network • How spectrum licencense will be issued to licensed operators • The cost of obtaining the required spectrum	The Authority has provided a roadmap for the assignment of spectrum until 2024 in its Spectrum Assignment Strategy published in Government *Gazette* No. 6776 on 10 August 2022 inclusive of the spectrum bands to be availed and assignment method to be used. This includes 5G spectrum.

	• The annual fees for the spectrum • Where does final approval of the spectrum allocation lie • Where does final approval of the 5G strategy lie Licensed operators are unable to plan for the activation of a 5G network if they do not know the exact spectrum band to plan for as equipment for that range must be purchased and perhaps some incumbents will need to reconfigure existing equipment to another range to make room for 5G roll-out.	The spectrum licences will be issued in line with the procedure set out in the Spectrum Licensing Procedure Regulations. The cost and annual fees are as set out in the Spectrum fees regulations as published in Government *Gazette* No. 7359 published on 14 October 2020. In the event of a spectrum auction, the fees are determined by the industry during the auction process. The price offered by the successful bidder is payable in accordance with the payment schedule set out in the bidding document. Spectrum licences for mobile services is subject to approval by the CRAN Board of Directors. The 5G strategy document is to be submitted to Cabinet for approval. All spectrum bands allocated for IMT-2020 is set out in the National Frequency Band Plan as published in Government *Gazette* No. 7617 on 31 August 2021.
MTN BUSINESS SOLUTIONS (NAMIBIA)(PTY) LTD		
No.	**Comment**	**Proposed response from the Authority**

13.	Facilitation of spectrum sharing/pooling and spectrum leasing in order to maximise the benefit of spectral efficiency.	As per the Communications Act (Act No.8 of 2009) and the spectrum licensing regulation, ownership of spectrum is not transferred to the licensee. Spectrum is a national resource and assigned on a "right-to-use" basis. As set out in the spectrum licensing regulation no spectrum licensee may trade, pool or sublease spectrum licensees to other parties or licensees. The spectrum licence is assigned for the sole use of the license holder subject to adherence to the licence conditions attached to the said licence. The regulatory framework allows for licensed share access to spectrum and the Authority can consider spectrum licenses on a geographical or shared basis to ensure more efficient use of spectrum. This approach is not limited to future IMT-2020 networks. The Authority has already issued shared spectrum resources to enterprises such as mines utilizing the same frequencies, but in different geographical areas for mobile services.
14.	An industry aligned capacity assessment model to be used in congestion management when implementing models like MOCN and/or National Roaming. There seems to be an ease of being able to hide behind the "I have no capacity therefore I cannot share" narrative so an industry aligned capacity assessment model will create an objective way forward.	The Authority is currently in the process of addressing disputes submitted by licensees pertaining to national roaming.

15.	When rolling out 5G networks or a network in general, the leasing of infrastructure becomes very important so 'rapid deployment' for site build needs to be considered so that the time to market for the newcomer is better managed.	Any licensee may rollout its network by either sharing of infrastructure or deployment of its own infrastructure. The timelines for such deployment rests with the licensee.
16.	A blanket approach to be used for EIA and Local Authority for new entrants – this can be planned as a project so as to ensure governance is maintained but would remove barriers and facilitate a faster rollout. We urge the regulator to consider this under the "rapid deployment" theme.	Given the nature of this comment, the Authority sought advice from the Ministry of Environment, Forestry and Tourism and the response is as follows: An Environmental Scoping Report and Environmental Management Plan (EMP) is required. The scoping report should identify impacts associated with 5G infrastructure especially those related to radiation and mitigation measure should be clearly presented in the EMP. Taking into consideration of all comments received pertaining to EIAs it is recommended that consultative meetings are arrange between the licensees, the regulatory, the Ministry of Environment, Forestry and Tourism and the Ministry of information and Communication Technology to ensure the successful implementation of Strategic Objective 3: Safeguarding the environment and public health.
17.	Fiber sharing is important for the existing fiber in the ground. Here we would like to suggest a dark fiber leasing model based on cost of production and an amount of	The Authority is currently in the process of addressing disputes submitted by licensees pertaining to the sharing of dark fibre networks.

	tenants to share. Dark fiber leasing is key to truly remove competition barriers as it allows the market a fair shot at driving pricing down by being efficient. Leasing capacity of the fiber and not the dark fiber does not allow business to scale and transfer the savings in part back to the consumer. We ask for a Dark fiber leasing model to be developed within the industry and in time for the 5G rollout that will happen.	
MOBILE TELECOMMUNICATIONS LIMITED		
No.	**Comment**	**Proposed response from the Authority**
18.	Although we welcome the strategy and the proposed implementation of 5G, we must point out the delay for the regulator to avail the spectrum to enable 5G technology implementation. The implementation of different technologies and the timing thereof does not lie in powers of the Regulator, especially in our license regime where licenses to operate are both technology and service neutral. This delay has led to a delay in the development of Namibia as per the benefits in IMT-2020 Strategy, namely: • The enhancement of Mobile Broadband (eMBB) for faster data connection, higher throughput, greater capacity and extended mobile coverage.12 • Ultra- reliable low latency communication (URLLC) for time-sensitive connections providing for reduced latency for data, uploaded from a device to reach its target. • Massive machine type communications (mMTC).	The Authority developed the strategy for IMT-2020 as per the Cabinet directive. The so-called delay can thus not be attributed to the Authority. Service and technology neutrality only applies to the service license regime. The National Frequency Band Plan is service and technology sensitive.

	• Energy efficiency, which creates lower costs on the network via the quantity of information transmitted to or received from users per unit of energy consumption of the radio access network. • Security within networks, platforms and applications lead to high reliability and availability and is central diver to the adoption of 5G by end users and private public institutions.	
19.	The Licensee applied for 5G spectrum (which could also be utilised for 4G at the time) in September 2019 after the ITU WRC 2019 held in Egypt in anticipation of the release which was then released on 31 March 2020 but to no avail. At the time MTC wanted to be proactive and order equipment to be ready for launch as soon as released.	The application was not considered in that the licensee did not comply with the spectrum licensing regulatory framework in the submission thereof. This was formally conveyed to the licensee.
20.	It is concerning and rather embarrassing to Namibia as a country on the lack of deployment of 5G, in that Namibia (via the Licensee) was one of the first to launch 3G in Sub-Saharan Africa and Middle East and the first (via Licensee to launch 4G and commercially launch 4.5G in the whole of Africa and Middle East. Its important to take heed of the degree of delay with other African countries having started their roll out in 2020 and Namibia only discussing strategy 2 years later This delay has resulted in the delay in digital transformation and the implementation of 4IR for Namibia.	The tone in this statement is unfortunate and does not reflect well on the reputation and esteem of a company such as MTC.

21.	This strategy emanates from the public outrage against the deployment of 5G, which was linked to the Coronavirus and other health concerns. The strategy as presented, does not debunk the myths and concerns that were raised by the public. 6. The most common myths surrounding the 5G technology is that the electromagnetic radiation from the 5G technology caused the corona virus (Freeman et al., 2020). However, this is not true because the 5G technology use beam forming for transmission, whilst the corona virus transmits from person-to-person in-contact. In many quarters, the radiofrequency radiation in 5G is associated with unfounded health hazards, with no bases in empirical evidence. All previous mobile generations, including the 5G, use an electromagnetic energy (radiation) referred to as a radio frequency or radio waves for communication. Most electrical appliances emit radiation in some form, ranging from systems such as base stations, mobile phones, security systems, baby monitors, microwaves, television and alarm systems to mention a few (Mallery, 2020). This means that humans are always surrounded by electromagnetic radiation. Electromagnetic radiation has two main classifications, namely the ionizing and non-ionizing spectrum. The 5G technology in itself is not different from the other technology generations that came before it. It is the Licensee's submission that the	The Authority welcomes this observation. A key focus area in terms of CRAN's Strategic Plan is consumer advocacy and stakeholder engagement. This focus area has defined the way stakeholder engagement is managed, with the emphasis being on proactive, appropriate, and robust dissemination of information and consumer education. As part of this initiative, CRAN will thus ensure that ICT consumers are informed and engaged through various public awareness campaigns on the benefits of 5G and demystify these conspiracy theories. The Authority will rely on various ITU, GSMA and ICNIRP sources to develop consumer awareness campaigns to address health concerns and fake news linking 5G to COVID. We have also included a section in the strategy that deals with the need for consumer education and education.

	strategy should primarily focus on debunking the public concerns. The licensee therefore recommends awareness campaigns to be included in the strategy, which campaigns are to be aimed at debunking the 5G myths and easing the public's concerns. We reiterate that these awareness campaigns should have commenced in 2020, especially in light of the fact that ICNIRP provided guidelines for limiting exposure to humans already on 31 March 2020.	

22.	The licensee further submits that the strategy in itself prolongs the deployment of 5G, other jurisdictions are already looking at the deployment of 6G, while Namibia is still lacking behind. In terms of the strategy, 5G will only be deployed upon conclusion of the strategic initiatives set out, which initiatives are set to conclude between 2023 to 2026. Licensee does not object to the initiatives set in the strategy but rather the need to rollout these initiatives in order to deploy 5G, the initiatives should be rolled out alongside 5G considering the delay; impact on Namibia's development and being cognisant that a regulator should not dictate when technology should be deployed. We must add that this is unprecedented, even in Namibia, no elaborate strategies were embarked upon for implementation of 3G or 4G technologies. 5G is merely a next generation of IMT technology.	The strategy sets out the imperatives required to be implemented alongside the deployment of 5G, they are not pre-deployment conditions. The spectrum itself will be released as the timelines in the roadmap, which is 1st quarter 2023. We have also noted the need to expedite the release of the spectrum and same has been factored into consideration. As indicated by the licensee above, the crafting of the strategy was partly in reaction to public outcry pertaining to its relationship with COVID-19. Hence it is a correct observation that the elaborate strategy is unprecedented, as there was no similar outcry with other technologies.
23.	The Licensee notes the 700MHz band being earmarked for spectrum, however, as per the Spectrum Assignment Strategy, NBC is still operating analogue television transmitters within this spectrum band at Nkurenkuru, Rundu, Shamvuru and Gibeon although all analogue transmitters had to be replaced with digital television transmitters by 17 June 2015.	All timelines for opening of spectrum bands, including 700 MHz, for assignment is set out in the spectrum assignment roadmap until 2024 contained in the Authority's Spectrum Assignment Strategy as published in Government *Gazette* No. 6776 on 10 August 2022. The same document also indicates that the Authority will take the necessary steps to ensure migration of the remaining analogue television transmitter in accordance with the GE06 agreement entered into by the Namibian Government. To this

		end, the Authority has issued the appropriate notice to the NBC to migrate from the concerned band.
24.	The Regulator advised in the Spectrum Assignment Strategy released for public comments and reiterated same in this strategy that it would re-assign and re-allocate spectrum to ensure the band spectrum bands are opened up for assignment. The Regulator should advise when same will be finalised. As this is a contributing factor to postponement of 5G deployment.	All timelines for opening of spectrum bands for assignment is set out in the spectrum assignment roadmap until 2024 contained in the Authority's Spectrum Assignment Strategy as published in Government *Gazette* No. 6776 on 10 August 2022.
25.	The Mid band spectrum (2300 MHz, 2600MHz) is similarly not assigned as per ITU spectrum assignment as follows: • WiMAX was supposed to be migrated as the bands its on is designated for IMT. • Similarly with Fixed Satellite. Revocation has been threatened in the CRAN Spectrum Band Plans over the years with no action.	Both FIXED and MOBILE services are allocated on a primary basis in the 2300 MHz and 2600 MHz spectrum bands in accordance with ITU regulations as set out in the National Frequency Band Plan. Spectrum licences awarded to licensees in the band have been amended either in part or as a whole to provide for deployment of MOBILE services (4G TDD) as per the relevant notices published in the Government Gazette. The National Frequency Band Plan does not contain any allocation for FIXED SATELLITE in the spectrum bands 2300 MHz and 2600 MHz. As such the Authority has not awarded any spectrum licences that will allow for deployment of fixed satellite services in these spectrum bands.
26.	To effectively provide services with 5G technology, a continuous 100 MHz are required in a band. We are of the view that because of this it isn't possible for spectrum	It is the intention of the Authority to avail spectrum in contiguous blocks of 80-100 MHz in alignment with ATU-R Recommendation 005-0 as set out in the

	sharing between 4G and 5G. similarly CRAN agrees that "it is extensively used".	Authority's Spectrum Assignment Strategy as published on 10 August 2022 in Government *Gazette* No. 6776. To this end, the Authority has set out a roadmap until 2024, given that some spectrum bands need to be re-planned prior to assignment of contiguous blocks of spectrum for 5G deployment. It is more likely that dynamic spectrum sharing between 4G and 5G may be hampered by the network deployment model selected by licensees during the initial phases of deployment.
27.	It is MTC's submission that the deployment of 5G should not be depended on the commencement of Chapters 4, 5 and section 20 of the Electronic Transactions Act. The provisions are of relevance and importance to all telecommunications technologies, not only 5G and should therefore be passed but not hinder the deployment of 5G.	Enabling the provisions of the Electronic Transactions Act will allow Namibia to progress towards a digital economy and increase the demand of online services, thereby improving sustainability of ICT networks. It is therefore not aimed at hindering the deployment of 5G, but rather target to foster innovation based on ICT offerings in the market.
28.	The Cybercrime and Data Protection legislation are important pieces of legislation to the ICT industry, however, MTC asserts that the finalisation of these Bills should not halt the deployment of 5G.	The finalization of this legislation will not halt the deployment of 5G, but rather it will foster a safer online environment and create trust in the use of modern ICT services, applications and platforms resulting in a higher demand for these services. In turn it will improve sustainability of these networks and justify capital expenditure incurred by licensees to expand their service offerings.

29.	The Regulator states that the spectrum assignment strategy is 100% finalized, should licensees then assume that licensees' comments will not be considered.	The Authority considered all comments received, both from international organisations and licensees in finalizing its spectrum assignment strategy. The final document was published in Government *Gazette* No. 7876, General Notice No. 390 on 10 August 2020. Any licensee can request the Authority's response to the said licensee's comments from the Authority, should it wish to do so.
30.	The strategic initiative eight refers to the enforcement of infrastructure sharing, the Regulator should bear in mind that infrastructure sharing occurs per agreement between licensees. Further to that the deployment of 5G infrastructure is such that infrastructure sharing has to occur at inception, it cannot occur after an operator has set up their infrastructure. As such the Regulator should establish a technically feasible plan for the deployment of 5G.	The observation by the licensee is correct. We will consider the advice to set up a technically feasible plan for the deployment of 5G in consultation with all Licensees.
31.	The initiatives curtailed in Strategic objective 3 refers to requirements for licensees to obtain EIA certificates, adherence to type approval regulations (once amended) and so forth. MTC submits that these requirements should be the pre- requisites to the deployment of 5G, in addition to spectrum assignment, the remaining objectives should be deployed alongside 5G rollout	The requirements as listed by the Licensee reflects the pre-requisite for deployment of 5G once Cabinet approves the proposed strategy and all other initiatives are to be implemented in parallel over the time span of the said strategy.
32.	The strategy fails to advise whether the strategic objectives need to be implemented prior to the deployment of 5G, however, it is worth noting that the regulatory framework	The strategic plan has been developed to allow for the implementation of various initiatives over a five-year period from 2022 to 2026. The implementation of

	places no prohibition on telecommunications services licensees to adopt IMT-2020 technologies in constructing networks and providing services and applications, as stated in the strategy. Clarity to be provided in this regard	various initiatives set out under the four strategic objectives vary in time and financial resources required as set out in the implementation plan. The deployment of IMT-2020 networks is therefore not dependent on the implementation of all initiatives, but it is subject to the approval of this strategy as per Cabinet Decision Cabinet (Decision 10th/27.02.20/006).
TELECOM NAMIBIA LIMITED		
No.	**Comment**	**Proposed response from the Authority**
33.	Page 4: Introduction The statement 4G (IMT-2000) is incorrect. 3G (IMT-2000) and 4G (IMT-Advanced).	Noted. The Authority has incorporated the change as proposed.
34.	Page 7: (ii) Ultra-Reliable Low Latency Communication The latency from data in an IMT-Advanced (4G) system is 10 ms. The statement should therefore read (1 ms on 5G compared to 10 ms on 4G). Kindly, also refer to the diagram below comparing key features and requirements of an IMT-Advanced system to an IMT-2020 system (source ITU).	Page 7 (ii) seems to contain a typographical error and the Authority will amend it as highlighted in the licensees' comment.
35.	There is a typo on the last paragraph of 3.1 95G) – should perhaps read (5G)	The Authority takes note and will rectify the typographic error.
36.	Page 9: We take note that in the development of the 5G system, the possibility of the reduction of the human exposure to RF EMF is a key issue that needs to be considered. To this end, the ITU has published a number of EMF recommendations. The question is: How can Namibia	The Authority welcomes this observation. A key focus area in terms of CRAN's Strategic Plan is consumer advocacy and stakeholder engagement. This focus area has defined the way stakeholder engagement is managed, with the emphasis being

	benefit from these and fast track the development of IMT-2020 in the country, without re-inventing the wheel. A presentation by Dr. Fryderyk Lewicki ITU-T SG5, Chairman of WP1 at the ITU Regional Symposium for Europe and CIS on Spectrum Management and Broadcasting, stated that "…incidence data of the Surveillance, Epidemiology and End Results (SEER) do not support the view that cellular phone use causes brain cancer". The same presentation further states, "some people are against RF EMF, but the same problem was earlier as concerning electricity or steam machines 5G will replace 2G, 3G and 4G as it is much more efficient - require less energy and produce less RF EMF exposure send the same amount of information. 5G will be replaced by 6G – ITU is working on it since 2019."	on proactive, appropriate, and robust dissemination of information and consumer education. As part of this initiative, CRAN will thus ensure that ICT consumers are informed and engaged through various public awareness campaigns on the benefits of 5G and demystify these conspiracy theories. The Authority will rely on various ITU, GSMA and ICNIRP sources to develop consumer awareness campaigns to address health concerns and fake news linking 5G to COVID. We have also included a section in the strategy that deals with the need for consumer education and education.
39.	Page 13: section 4.2 Is the clearance certificate required for the mast, for the IMT-2000 radio equipment or both mast and equipment? We concede that as per Government Gazette No.4878, General Notice No.29, an EIA is required for the deployment of "masts of any material or type and of any height" as stated in the section. It is not very clear from reading the "List of Activities that may not be undertaken without (g) read and (j). Section 10.2 (g) lists communications networks including towers; however, it is not clear from the previously mentioned section whether	Response as received from the Ministry of Environment, Forestry and Tourism: An Environmental Scoping Report and Environmental Management Plan (EMP) is required. The scoping report should identify impacts associated with 5G infrastructure especially those related to radiation and mitigation measure should be clearly presented in the EMP.

	an "environmental clearance certificate" is required for the deployment of IMT-2000 radio equipment on an existing mast for which clearance for the mast has also been obtained in line with section 10.2 (g) of the said Gazette. With the deployment of IMT-2000 (3G) and IMT-Advanced (4G), licences were not required to obtain an environmental clearance certificate for the deployment of radio network equipment. The requirements and standards for IMT-2000, IMT-2000, and IMT-Advanced and the ratification of technologies as meeting these IMT requirements and standards are also done by the same body (ITU), and IMT-2020 has so far been successfully deployed in other parts of the world, and the SADC region. Therefore, requiring an environmental clearance certificate for the deployment of IMT-2020 radio equipment, especially when deployed in the spectrum that is already used for existing IMT services will not only unnecessarily delay the deployment of the technology but will inadvertently also increase the implementation costs. The question is: Is an environmental clearance certificate also required for the deployment of any other radio communications network equipment or only for IMT-2000 (5G) radio systems? Currently, the process to obtain environmental clearance certificates is quite a protracted process. Perhaps the Authority can develop strategies to help fast-track this process to facilitate the development of IMT-2020 systems	Taking into consideration of all comments received pertaining to EIAs it is recommended that consultative meetings are arrange between the licensees, the regulatory, the Ministry of Environment, Forestry and Tourism and the Ministry of information and Communication Technology to ensure the successful implementation of Strategic Objective 3: Safeguarding the environment and public health.

	in Namibia and ensure that Namibia can harness the benefits as articulated in section 2 of this strategy document. Is an environmental clearance certificate also required for the deployment of an IMT-2020 small cell (indoor and outdoor), where no mast structure is required to host the radio equipment? Small cells are especially suited for high-speed transmission that requires a very broadband transmission (big propagation losses). The use of the higher frequencies will result in lower coverages. Base stations will be located closer to the user, and the power output used is typically smaller.	
40.	Page 15, (i) Continuity of voice services. The Authority must advice whether approval is required from the Authority for a licensee to re-farm spectrum that is currently used for 2G, IMT-2000 (3G), and IMT-Advanced (4G) radio communication systems.	No approval is required from the Authority to re-farm spectrum for deployment of 2G, 3G or 4G technologies in respect of spectrum licences awarded for MOBILE services on a FDD or TDD basis provided that the licensee adheres to frequency channeling plans cited in the National Frequency Band as published in the Government Gazette. However, this does not apply to spectrum licences initially awarded for FIXED services, given the possibility of interference with other users in the spectrum band and applicability of different frequency channeling plans. In such a case, the licensee should seek authorization from the Authority and amendment of the spectrum licence if viable.

41.	Page 17. The statement that read "but to also consider licensed shared access to spectrum" first paragraph – the Authority must advise as to whether spectrum sharing and/or subleasing between licensees is allowed in terms of the Communications Act and the Infrastructure Sharing regulations Is the "licensed shared access to spectrum" only being considered for IMT-2020 systems, or also for IMT-2000, IMT-Advanced, and any other radio communication system?	As per the Communications Act (Act No.8 of 2009) and the spectrum licensing regulations, ownership of spectrum is not transferred to the licensee. Spectrum is a national resource and assigned on a "right-to-use" basis. As set out in the spectrum licensing regulation no spectrum licensee may trade, pool or sublease spectrum licensees to other parties or licensees. The spectrum licence is assigned for the sole use of the license holder subject to adherence to the licence conditions attached to the said licence. The regulatory framework allows for licensed share access to spectrum and the Authority can consider spectrum licenses on a geographical or shared basis to ensure more efficient use of spectrum. This approach is not limited to future IMT-2020 networks. The Authority has already issued shared spectrum resources to enterprises such as mines utilizing the same frequencies, but in different geographical areas for mobile services.
42.	Page 18, section 5: Is the clearance certificate required for the mast, for the IMT-2000 radio equipment or both mast and equipment? As stated previously, currently, the process to obtain an environmental clearance certificate is quite a cumbersome and protracted one. Perhaps the Authority can develop strategies to assist licensees to fast-track the process to facilitate the development of IMT-	Response as received from the Ministry of Environment, Forestry and Tourism: An Environmental Scoping Report and Environmental Management Plan (EMP) is required. The scoping report should identify impacts associated with 5G infrastructure especially those related to radiation

	2020 systems in Namibia and ensure that Namibia can harness the benefits as articulated in section 2 of this strategy document. An IMT-2020 system can be deployed in the spectrum already used for 2G, IMT-2000, or IMTAdvanced services. In addition, an IMT-2020 system can also be deployed in spectrum bands that are currently not used for 2G, IMT-2000, or IMT-Advanced services. Why is it necessary to obtain an environmental clearance certificate for specific sites where an IMT-2020 system is going to be deployed in the spectrum already used for 2G, IMT-2000, or IMT-Advanced services?	and mitigation measure should be clearly presented in the EMP. Taking into consideration of all comments received pertaining to EIAs it is recommended that consultative meetings are arrange between the licensees, the regulatory, the Ministry of Environment, Forestry and Tourism and the Ministry of information and Communication Technology to ensure the successful implementation of Strategic Objective 3: Safeguarding the environment and public health.
43.	Page 19, Mid-band spectrum (between 2-5 GHz) (a) in addition to the proposal to replace legacy WiMAX and other fixed networks and services with IMT-Advanced (4G) and IMT-2020 (5G), it further proposed that uneconomically unviable areas currently serviced with WiMAX be considered as candidates for UAS. It is also worth noting that IMT-Advanced (4G) is only a suitable replacement for WiMAX in very selected cases. We acknowledge that IMT-Advanced (4G) is spectrally more efficient than WiMAX (WiMAX (IEEE802.16) is a standard developed by the IEEE in response to the IMT-2000 requirements), however, even on the same operating spectrum, the coverage range of IMT Advanced (4G) cannot be compared with the coverage range of IEEE802.16D (which was specifically adapted for the	Deployment of universal access and broadband services is guided by the UAS Policy and regulatory framework. To meet service requirements of identified use cases for IMT, consideration is given to lower band (below 1 GHz) spectrum, mid-band spectrum (2-5 GHz) and high band (above 24 GHz) spectrum. This approach is to be used to ensure more efficient use of a scarce resource whilst providing users with modern technologies, foster innovation and meeting broadband targets as set out in the objects of the Communications Act, national policies, and development plans. The Authority is cognisant of the fact that Telecom Namibia holds spectrum licenses in 2-5 GHz for FIXED

	delivery of fixed services). A number of IMT-Advanced (4G) sites are required to provide the same coverage radius as one IEEE802.16D site. Some IEEE802.16D systems are currently providing services to users who are located up to 65 Km (in the case of a 3.5 MHz channel) or 90 Km (in the case of a 7 MHz channel) from the Base Station site. (c) It is proposed that the Authority should develop a strategy to protect existing services, especially in non-economically viable areas.	services. The Authority has subsequently set out the way forward in its Spectrum Assignment Strategy 2022-2024 as published in Government *Gazette* No. 6776 on 10 August 2022.
44.	Page 21 An IMT-2020 system is expected to support use cases across many vertical domains, and with control plane and user plane separation, service enabled via an IMT-2020 system can be hosted in the cloud. Is there any additional privacy and security standard envisaged to be adopted such as ISO 27001, ISO 27018 that licensees will be required to adhere to, or will this be limited to the inherent privacy and security features embedded in the IMT-2020 system as developed by the 3GPP? 11.	Any requirements in addition to the inherent privacy and security features of IMT-2020 systems will be set out in the Data Protection Bill and Cyber Crime Bill, currently nearing finalization as may be applicable to critical infrastructure and critical information infrastructure.
45.	Page 21 section 7.2 Kindly also add that theft, vandalism, and the instability of grid power supply as a risk to telecommunications networks.	Disruption of networks is listed as one of the four main areas impacting negatively on networks and/or services under (i) on page 21.
46.	Page 26 IMT-Advanced (4G) and not IMT-2000 (4G). Kindly also check the statement, there are no "backwards" compatibility with 2G and 3G technologies. Typically, the equipment is backwards compatible. That is, the IMT-2020 equipment can support IMT-2000 and IMT-Advanced from a common baseband unit, however the equipment is	The statement is correct in that IMT technologies cannot be implemented re-using 2G or 3G equipment as highlighted on page 26. 2G and 3G equipment will thus become obsolete to be disposed of e-waste once these networks are de-commissioned.

	generally not forward compatible. An IMT-Advanced baseband unit will not support IMT-2020 signal processing.	
47.	Page 28 In the Table, the 40 MHz (2 x 20 MHz) (FDD) cited as allocated to Telecom Namibia Limited in 2100 spectrum band is incorrect. According to our records, Telecom Namibia Limited is only allocated 2 x 5 MHz (FDD) in the 2100 spectrum band. That is 2155 – 2160 and 2165 – 2170.	As per the spectrum licences awarded to Telecom Namibia Limited, the licensee has been assigned 20 MHz (2x 10 MHz) e.g 1965-1970 (uplink), 1975-1980 MHz (uplink), 2155-2160 MHz (downlink) and 2165-2170 MHz (downlink). The Authority will update the table on page 28 accordingly.
48.	For fixed services, Telecom Namibia is currently allocated 2348 -2386/2442-2480 and 2308 - 2348, which is still used for Rurtel in some parts of the country.	In accordance with ITU Resolution 223, the spectrum band 2300-2400 MHz is allocated to MOBILE (IMT) services on a primary basis. This allocation does not apply to the spectrum band 2400-2500 MHz. The Authority is cognisant of the fact that Telecom Namibia holds spectrum licenses for the frequencies as stated in the comments submitted by the licensee for FIXED services. The Authority has subsequently set out the way forward in its Spectrum Assignment Strategy 2022-2024 as published in Government *Gazette* No. 6776 on 10 August 2022.
49.	Page 37 Propose that the Authority add an initiative to curb the theft and vandalism of ICT infrastructure, as part of the criminal justice system. The focus must be on the value of the losses suffered and the national security and economic impact, amongst others, as a result of theft and destruction, as opposed to the value of the copper wire being stolen.	The Authority proposes that consumer awareness campaigns are conducted to emphasize that theft and vandalism of ICT infrastructure, which constitutes a criminal offence and furthermore has a negative effect on the well-being of individuals and socio-economic activities of the country as a whole. The document will be amended to incorporate consumer awareness campaigns.

50.	IMT-Advanced (4G) and not IMT-2000 (4G).	Noted. The Authority shall incorporate the change as proposed.