SATELIOT
Space · Connecting · 5G IoT

Papua New Guinea
National Information and Communications Technology Authority

Discussion Paper on Proposed Variations to the License Conditions Rule 2011 - 2nd Round Consultation

Contact information:

Satelio IoT Services, S.L.
Carrer de Berlin 61
Esc. A Entresuelo
08029 Barcelona
Spain

Elisabet Fonalleras
Head of Regulatory Affairs
elisabet.fonalleras@sateliot.com
+34 660 753 381

Mariona Pazos Rovira
Regulatory Affairs Associate
mariona.pazos@sateliot.com
+34 647 742 366

Date: 10th of October 2024

_____

Introduction

Sateliot appreciates the opportunity to contribute to the consultation process regarding the proposed variations to the Licence Conditions Rule 2011. As a company at the forefront of delivering global narrowband IoT (NB-IoT) connectivity via a constellation of Low Earth Orbit (LEO) satellites, we commend the National Information and Communications Technology Authority (NICTA) for its efforts to adapt the regulatory framework in line with the rapid advancements in the telecommunications and satellite sectors.

Since its founding in 2018, Sateliot has been focused on providing innovative IoT solutions that extend mobile network operators' (MNOs) reach beyond the traditional constraints of terrestrial networks. Through the 3GPP 5G NB-IoT Non-Terrestrial Network (NTN) standard, officially approved in June 2022, we are able to offer MNOs seamless connectivity for IoT devices across remote and underserved areas, eliminating the need for significant infrastructure investments. Our constellation of LEO satellites acts as cell towers in space, connecting commercial terrestrial devices compatible with the 3GPP Release 17 standard, allowing MNOs to enhance their service offerings without hardware modifications.

We recognize the critical importance of expanding connectivity across Papua New Guinea (PNG), where remote and rural areas face significant connectivity challenges, making the potential of satellite IoT services even more pronounced. Sateliot's solution offers reliable and affordable connectivity for sectors such as agriculture, environmental monitoring, disaster response, and asset tracking, which are areas where traditional networks often fall short.

The steps NICTA is taking to update the Licence Conditions Rule, especially the inclusion of Non-Geostationary Satellite Orbit (NGSO) networks like those of LEO constellations, reflect a forward-looking approach to ensuring that PNG remains at the cutting edge of global telecommunications developments. We appreciate NICTA’s focus on expanding network coverage and availability, particularly in rural and remote areas, as these efforts directly align with Sateliot’s mission of providing scalable and cost-effective IoT connectivity solutions.

Sateliot’s unique value proposition lies in our collaborative approach with MNOs, operating as a wholesale satellite network operator rather than serving end-users directly. By entering into standard GSMA roaming agreements, we enable MNOs to extend their coverage seamlessly across our satellite network, ensuring uninterrupted connectivity for IoT devices across diverse geographies. This model not only complements the existing mobile infrastructure but also allows MNOs to tap into new markets and offer enhanced services to their customers without significant capital expenditure.

The proposed amendments to the Licence Conditions Rule 2011, are crucial to fostering a more inclusive and technologically advanced ICT sector in PNG. In particular, the satellite-based service obligations resonate with Sateliot’s operational model, as our constellation is designed to provide continuous, reliable coverage in areas where terrestrial networks face significant challenges.

Moreover, to further ease market entry and encourage more innovative satellite solutions, Sateliot encourages NICTA to consider regulatory measures that simplify licensing for NGSO systems and foster closer coordination between satellite and terrestrial operators. Specifically, regulatory frameworks that promote partnerships between foreign satellite operators and local entities—such as MNOs or infrastructure providers—could accelerate the rollout of critical connectivity solutions while boosting local industry development.

Below, we present our detailed comments on the relevant issues.

1. **On the Proposal Requiring Licensees to Build an Earth Station within PNG *(Schedule 4, Section 6)***

Under the proposed amendment to Schedule 4, Section 6, licensees would be required to commission and commence operation of one or more earth stations within PNG territory for the provision of services connecting the Licensee's user terminals in the country, with compliance expected within 18 months of licensing.

While Sateliot is not yet operating in PNG, we believe that this requirement could pose significant challenges, particularly for newer or smaller operators entering the market, and operators such as Sateliot´s whose business model does not include the roll out of proprietary user terminals. Establishing in-country gateways increases market entry costs, making it more cumbersome and potentially prohibitive for operators who are still scaling their operations. This stands in contrast to global regulatory trends, where similar mandates are generally not imposed, allowing operators to manage infrastructure more flexibly across regions.

We also see the requirement as misaligned with the global movement toward shared and regional infrastructure, which fosters more cost-effective and efficient network operations. Instead of requiring each licensee to build its own gateway within PNG, we suggest a more flexible approach. For instance, shared facilities, whether regional or centralized, could be utilized to serve multiple operators, or at the very least, a single gateway located in PNG could suffice for all licensees.

Sateliot utilizes third-party gateways for the ground segment network requirements. By partnering with third-party providers our operations are significantly more efficient and cost-effective. Third-party ground station providers are specialized in ground segment operations, ensuring that the infrastructure supporting our services is reliably managed. Sateliot's constellation uses store and forward technology, meaning that our satellites do not need to maintain constant visibility of a gateway to operate. This capability, combined with strategically positioned ground stations worldwide, ensures full global coverage, faster deployment, and the flexibility to scale our services in response to market demand.

We understand the importance of data management and lawful interception requirements globally for reasons of security and privacy. Our ground-segment infrastructure partners guarantee that our network security is enhanced and our overall system architecture can meet compliance requirements. Our team is prepared to brief NICTA on our network design and ground-segment partner data management in this regard.

Additionally, according to GSOA's paper on national gateways,[1] ground stations are no longer required in every country due to advancements in data technology. Functions such as encryption, decryption, and data routing, which were traditionally handled by local ground stations (Teleport Gateways), can now be managed at a Point of Presence (PoP) or Point of Interconnect (PoI) outside the country.

[1] GSOA. (2024). Rethinking Local Gateways – A Satellite Industry Perspective. The Global Satellite Operators Association. Available at: https://gsoasatellite.com/wp-content/uploads/GSOA-National-Gateway-Paper-Aug-24.pdf.

The paper emphasizes that national security and Lawful Interception (LI) requirements can be fulfilled without the need for a local gateway. Instead, satellite operators can use virtual gateways or leverage

centralized infrastructure while still complying with security and regulatory standards. This approach not only enhances flexibility but also reduces costs and operational complexities, especially for satellite services in motion, such as those used on aircraft and vessels

In conclusion, Sateliot's shared approach reduces the financial burden on operators, promotes faster market entry, and ultimately enhances connectivity in PNG. It also ensures that operators of varying sizes and capacities can comply with the regulations without facing unnecessary operational barriers. We believe this would foster a more competitive and inclusive market environment, which aligns with the goals of the proposed amendments.

2. **On the Proposal to Enter into a Commercial Arrangement with a Local Telecommunications Network Operator *(Schedule 4, Section 7)***

Sateliot has consistently operated under a wholesale business model, partnering with mobile network operators (MNOs) across various countries to roll out IoT services. This collaborative approach aligns with our core principle of enhancing MNO capabilities without directly competing with them. As such, Sateliot is supportive of initiatives that encourage collaboration between satellite operators and local licensed operators, particularly in the context of NTN complementarity for IoT and mobile applications.

In line with this approach, Sateliot often engages in licensing processes in close collaboration with, or jointly alongside, our MNO partners. This is especially important for NTN complementary services, which provide connectivity solutions that are not always specifically addressed in licensing frameworks worldwide. However, we recognize that this is evolving, and we commend NICTA's initiative to address these emerging needs in its regulatory framework.

Additional Considerations

The complementarity of satellite networks with mobile network expansion is currently an item being considered within the ITU WRC-27 Study Cycle. Specifically, the spectral and technical feasibility of allocating co-primary or secondary MSS allocations in IMT bands towards servicing IMT terminals, including IoT (commonly referred to as machine-type) is being explored under AI 1.13. While ITU-R is mandated to study the feasibility of network complementarity from NTN to TN, national regulatory bodies may envision specific deployment strategies for NTN complementarity. Therefore, a mandatory requirement for LEO operators to partner with local MNOs touches on broader international regulatory discussions.

There is a general concern regarding the use of Mobile (IMT) bands for MSS-type services such as D2D without the conclusion of prior technical studies at the International Telecommunication Union (ITU). Imposing mandatory partnerships as a licensing requirement, which conditions the deployment options of these service typologies, could be a premature measure. While Sateliot´s 3GPP-standardized approach, using Release 17 MSS Bands, already delivers connectivity in partnership with MNOs, we recognize that a resolution of this agenda item could provide clearer guidance on how other satellite networks should interact with terrestrial networks within IMT spectrum–vital for compliance with both national and international regulatory frameworks.

We suggest waiting for the outcome of these technical studies before instituting mandatory partnership conditions, as these discussions could impact how satellite and terrestrial services will interact in future.

In conclusion, Sateliot recommends adopting a more flexible approach instead of mandating partnerships with local MNOs, allowing operators to form partnerships as necessary and suitable.

Implementation of Amendments

In summary, while there are certain aspects of the proposed amendments that we believe would benefit from further flexibility and alignment with international standards, Sateliot is broadly supportive of the changes NICTA is pursuing. These updates reflect a progressive approach to ensuring Papua New Guinea's regulatory framework can adapt to the evolving satellite and telecommunications sectors.

We are particularly supportive of the requirements related to data reporting, blocking unlicensed terminals, and the shutdown of websites as part of compliance measures (Schedule 4, Section 6). These provisions are practical, enforceable, and necessary to ensure the integrity and security of satellite-based services in PNG. Sateliot remains committed to adhering to these measures and recognizes their importance in maintaining a reliable and accountable telecommunications environment.

We appreciate NICTA's ongoing efforts to foster a competitive, innovative, and inclusive ICT sector in Papua New Guinea. We look forward to continued engagement as the regulatory landscape evolves, and we welcome further discussions on how Sateliot can contribute to enhancing connectivity across the country.

We are fully available to assist NICTA in further refining this framework and are enthusiastic about the prospect of expanding our collaborative efforts within the region. Our goal is to help unlock the full potential of satellite IoT services and enhance connectivity in remote and underserved areas of PNG. We look forward to continuing our engagement with NICTA and other stakeholders as we work together to advance PNG's leadership in the global satellite communications landscape.

Sincerely,

Elisabet Fonalleras
Head of Regulatory Affairs
Satelio IoT Services, S.L.