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Response by Jersey Airtel Limited ('Airtel') to JCRA,
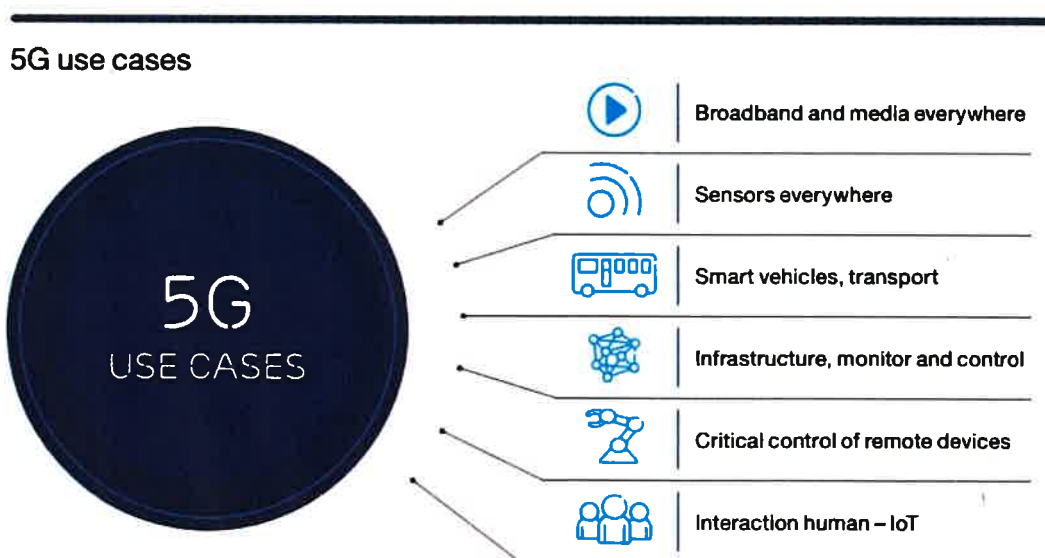
<u>"5G Spectrum: Draft Statement of Intent"</u>

Please find Jersey Airtel & Guernsey Airtel's joint response to the above consultation dated 03rd May 2019:

Q1. What '5G services' do you foresee could be delivered through this allocation of spectrum? What economic and social benefits will these bring to the Channel Islands?

Airtel: The last generation of mobile communication, i.e. 4G/LTE was all about higher bit-rate to deal will massive mobile broadband. The generation before that viz. 3G was about improved spectrum efficiency to deliver higher capacities for voice and data. 5G as a technology will not only focus on high-bit rate but at the same time, it will have goals towards low bit-rate devices and sensors for IoT applications.

5G will form the backbone for many new types of services starting from broadband connectivity to large public areas to remote automation to critical machines. The following are the categories that cover the most talked about 5G use cases, some of which won't be realized from day one of 5G launch in any market.

5G use cases

- Broadband and media everywhere
- Sensors everywhere
- Smart vehicles, transport
- Infrastructure, monitor and control
- Critical control of remote devices
- Interaction human – IoT

<u>**Initial 5G Use Cases:**</u>

- o **Fixed Wireless:** One of the top 5G use cases will be fixed wireless access. Fixed wireless will provide Internet access to homes using wireless network technology rather than fixed lines. It will use 5G concepts such as millimeter wave (mmWave) spectrum and beamforming to bolster wireless broadband services. Specific examples of use cases and benefits are detailed below: Wireless technology will also benefit retail customers as they will no longer need to pay a fixed line connection into the home and reconnection fees on relocation. More specific examples and benefits are listed below:

    1. Cost consideration and access to market: For the home user the 5G experience of 'fibre in the air' will negate the need for fixed line and broadband connections, as well as avoiding reconnection fees for home relocation. Market entry barriers such as ease of use and cost are removed giving greater access to all. One example will be guest and immigrant workers that play such vital role in the Channel Islands economy who may have been previously excluded.
    2. Augmented services: 5G enables cloud gaming, immersive augmented and virtual reality services. For example, sporting events such as The Island Games in 2021 would benefit and drive greater commercialization for local businesses, e.g. blending virtual and physical experiences.
    3. Supporting SME's and startup businesses especially in Digital sector: 5G negates the need for costly fixed line services, e.g. PBX system powered by ultra-reliable 5G wireless technology.

- o **Enhanced Mobile Broadband:** The 5G standard promises to usher in the next era of immersive and cloud-connected experiences with faster, more uniform data rates at lower latency and lower cost per bit. The 5G standard will take mobile computing performance to the next level with high-speed, always-on, always-connected internet links with real-time responsiveness. The goal is to reach up to 20 Gb/s peak throughput and 1 Gb/s throughput in high mobility. The need for high-speed internet with real-time responsiveness is seen with virtual reality (VR) and augmented reality (AR) experiences. Key benefits and use cases defined below:

    1. This will benefit the finance sector in the Channel Islands for time sensitive transactions which can be done reliably and securely because of the low latency of 5G technology.
    2. Immersive video conferencing and massive multi-person video calling will benefit many Channel Islands businesses.

Later 5G Use Cases:

- o **Massive Machine-Type Communications:** One of the most anticipated 5G use cases is the ability to seamlessly connect embedded sensors in virtually everything. The industry foresees huge numbers — as many as 20.4 billion — of potential IoT devices in service by 2025. Industrial IoT is one area where 5G will play a major role, enabling smart cities, asset tracking, smart utilities, agriculture, and security infrastructure (e.g. alarms or geofencing).
- o **Ultra-Reliable Low-Latency Communications:** This category includes new services that will transform industries with ultra-reliable/available low-latency links, such as remote control of critical infrastructure, and (popularly) self-driving vehicles. The level of reliability and latency will be vital to smart-grid control, industrial automation, robotics, and drone control and coordination

    Benefits across multiple business sectors:

    1. Energy and utilities – smart energy management

2. E-Governance / Government infrastructure – traffic management, pollution reduction, weather, smart buildings, smart refuse collection, smart towns, environmental monitoring (high pollution rates in St Helier and St Peter Port).
3. Health – eHealth, and assisted living will help reduce significant costs of patients entering the health care system without any pre-diagnosis and patient management – keeping Channel Islands resident in their homes for longer and reducing pressure on the health care system.
4. Education, entertainment and tourism – immersive learning, AR/VR assisted tours, media drones and remote events.

Future 5G Use Cases:

Once everything is connected via 5G, use case opportunities will increase enormously as new services and applications emerge. Vertical industries and national priorities ranging from healthcare to smart cities, to remote industrial machine operation, to virtual sports attendance will experience revolutionary changes.

Use Cases in context of CI:

The benefits specifically for Channel Islands with respect to 5G deployment will be limited to faster and reliable mobile broadband for consumers and small businesses. This is in many ways will be comparable to fibre broadband. With price per byte for mobile data falling sharply in comparison to fixed broadband, this will make super-fast broadband affordable for every section of society.

The future applications of 5G may not arrive quick enough if historical trends are to be used as a guidepost. 4G was launched in Channel Islands in 2015 and the market still does not see any of the innovative use cases associated with it having materialized locally or globally. Consumers and Networks have continued to stick to 2G for IoT. Only Airtel have taken the progressive initiative of moving away from legacy technology of 2G and migrating its users to 3G/4G. Even then, the IoT customers struggled to find 4G enabled IoT devices at affordable price.

The success of 5G use cases other than broadband will be determined by:

o Device availability
o Device pricing
o Technology and policy eco-system required to harness the 5G network
o User acceptance and willingness to migrate away from legacy platforms

While the first two are dependent on Telecom OEMs, the latter two will need concerted efforts from Government, Digital Jersey/Greenhouse, IoD, Chamber of Commerce and other similar bodies. The challenges are further outlined in the answer to Q14 and Airtel is keen to understand what role CICRA and government will play in communication, social inclusion, consumer and enterprise adoption and how industry will define and implement the use cases for 5G to stimulate economic growth.

Q2. In what timescale do respondents believe these services and benefits can be delivered?

Airtel: As stated in response to question 1, the immediate benefit of 5G will be limited to faster and reliable wireless broadband. Given that the time-table set out in this consultation for spectrum and license allocation envisages 5G network rollout to commence by late 2020, this service can be delivered on day one of 5G launch.

With respect to the advanced use cases of 5G involving URLLC and massive IoT there are several challenges which industry, CICRA and Government need to overcome, some are:

1. Specification still under development
2. Absent device eco system
3. Challenges due to lack of clarity around specific vendors due to security concerns.
4. Greater involvement of Private and State sponsored bodies like Digital Jersey and Digital Greenhouse, IoD, Chamber of Commerce, in promoting adoption and development of 5G use cases.

Q3. Are there any potential opportunities for existing or new operators to partner with government(s) to enhance the economic value of the 5G network or to better meet the policy ambitions in either or both jurisdictions?

Airtel: Considering the fact that 5G has the potential to usher in sweeping changes in how society operates as a system, there is a definite value in public private partnership to accelerate the adoption of this new technology in various areas. As mentioned in response to question 1, government policy regarding greater adoption of technology in areas like health and education, transport and security, utility and smart grid can act as a catalyst to 5G use.

Having said that, the cost of rolling out a 5G network is bound to be in tens of millions of pounds. A green-field operator will struggle to create a business case. Further, we believe that an MVNO approach will not work (going by cost+ model) due to the deployment cost being very high. In the interest of promoting quick uptake of new technology and building use cases, government in both Bailiwicks must partner not only with the existing operators to meet the policy ambitions and deliver the benefits, but also partner with all sectors of local economy to encourage development of use cases.

Another significant factor to achieve scale of economies for both jurisdictions is 'PAN Island 5G Roll Out', whilst we appreciate that SOG's position is clear, and both SOG and SOJ have been in discussion with regards to a pan island 5G roll out, which in our view is the most viable approach commercially and environmentally.

Therefore, we request CICRA to clarify following:

1. Their position on PAN island 5G roll out
2. The time scales in which this is to be achieved and
3. What type of 5G network the Government wants to build in Jersey clearly defining cell edge throughput, coverage level, etc.
4. Approach to be taken to establish one network for 5G
5. Government funding availability

The 4th point is very critical and unclear i.e. the approach to be taken to establish one network for 5G. A single 5G operator cannot mean that only one MNO gets the spectrum. An open debate is needed on what kind of sharing will be done.

This is an opportunity for a establishing a pan CI infrastructure company (privately or government owned) all three opcos lease sites from it. Please refer to our note in Annexure 1 which gives full details of how profitable infrastructure sharing can be achieved in the Channel Islands to the benefit of **all** operators and government, by reducing capital expenditure and opening further revenues streams.

Economies of scale will be created through shared infrastructure and provide a better network experience to end users as operators will be free to compete on price and service delivery whilst the end user benefits from

one consistent network experience. Benefits to the economy as a whole include reduced energy costs and well as reducing the environmental impact of mast proliferation.

Last but not the least, during the 5G summit in November 2018 there had been mention of State funding being made available in Guernsey which was welcomed by us, hence, request CICRA how and basis what parameters government funding would be available to help with 5G roll out.

Q4. Respondents are asked to consider the most appropriate means for the allocation of 5G spectrum for the Channel Islands – an auction, a comparative selection process ('beauty parade') or alternative method.

Airtel: Spectrum allocation in Channel Islands has always been via 'beauty parade'. We believe that this remains the best means of spectrum allocation. Hence, we agree with CICRA's provisional view.
Airtel intends to clarify its position that it does not envisage three physical 5G networks in the Channel Islands. However, it also does not believe that a single network with MVNO allowed is the right approach to sustain competition and make 5G affordable for all. Background to this is explained more in detailed response to Q6.

Airtel also believes that the charge per MHz currently levied is the best approach and the value needs no revision. Additionally, there have been few mentions of introducing Spectrum tax in one of the Bailiwicks. This will be detrimental to the economic health of MNOs and to the viability of sustainable operations. Any such tax will most likely be passed on to consumers thus making 5G more expensive (and perhaps the mobile services as a whole).

5G would have lot of use cases for vertical markets, e-governance, B2G & B2B cases which would help grow the GDP. In this perspective, government should have broader view of allocating spectrum, which should ideally be free of cost with minimum commitment on deployment of applications which can drive e-commerce, digitization & automation of enterprise & government processes.

Q5. Respondents are asked what spectrum allocation would be necessary and in what bands for an operator to offer the services and provide the benefits described in Question 1.

Airtel: On a broad level, three main spectrum bands have been specified for use in 5G:

- o Sub 1GHz, dubbed the 'coverage layer', will provide wide area and deep indoor coverage, and in Europe encompasses the 700MHz band. These frequencies will combine with the next band to enable operators to roll out 5G quickly and more cost-effectively.
- o 1GHz-6GHz, aka the 'coverage and capacity layer', relies on C-band spectrum around the 3.5GHz mark to deliver the best compromise between capacity and coverage. European regulators have identified the 3.4-3.8GHz band and plan to harmonize it to make it suitable for 5G. It will be the main frequency band for the launch of 5G.
- o Above 6GHz, aka the 'super data layer', uses higher frequency millimetre-wave (mmWave) spectrum to deliver high data rates for specific use cases. Europe has agreed to harmonize frequencies in the 24.25-27.5GHz band, although it's commonly referred to the 26GHz band. It will be the key enabler of future 5G services and be critical to 5G networks.

It is highly likely that additional spectrum will be opened up for 5G use, and work is ongoing to identify what that spectrum might be. For example, Ofcom plans to put the 37-43.5 and 66-71GHz bands forward for

discussion at the World Radiocommunications Conference 2019 (WRC-19) in late 2019. It may also raise the 32GHz (31.8 – 33.4GHz) band for further discussion.

A similar approach to spectrum was seen with 4G allocations. Where 800MHz served as the coverage layer offering deep indoor coverage, 1800 MHz was allocated to provide increased throughputs. The latter has been the main layer for supporting mobile broadband product at Airtel.

Therefore, we agree with CICRA's approach to do a joint allocation of spectrum in both sub-1GHz and 1GHz to 6GHz bands.

With regards to quantum of spectrum, depending on the final approach adopted by CICRA and the two Governments regarding a) how many licenses are to be issued, and b) technical requirements to be imposed on the winner(s), we believe one of below two approaches will need to be taken:

1. **One license on each island for some initial period** (same or different MNO's): Airtel do not believe this is the right approach as explained in responses to many questions as part of this consultation.
2. **Multiple licenses on each island** (all 3 MNO's given spectrum to launch 5G): Here an equitable distribution on the lines of 4G should be done. A minimum allocation of 25MHz in sub 1GHz and 100MHz in 1-6GHz should be done. This will benefit in two ways: one, the requirement for the number of masts needed to provide good speeds will be reduced, and two, the goal of providing 100 Mbps broadband in Guernsey to every household will be achieved quicker.

Q6. Would this demand for spectrum vary depending on whether there were single or multiple networks developed in future (for example, at the end of any exclusivity period), or as technologies develop in future?

Airtel: As mentioned in response to Q4, Airtel do not believe that a single MNO with 5G license coupled with MVNO is the best approach. This is because of the following reasons:

o 5G network would work in NSA (non-standalone mode), which have close interworking of 4G & 5G technologies.
o If only one operator would be given 5G spectrum, it would not be possible for operators to share the 5G network as it would only interwork with provider's 5G spectrum / network & would not work with another operator. For other operators to share the "Single" 5G network, they would have to share the 4G network as well, which would be very challenging.
o Voice on 5G devices would still work on 4G (VoLTE) and hence coordination of fall back of voice service to multiple 4G network would be challenging as well.
o A complete lack of clarity on license & commercial conditions regarding MVNO.
o Till date no global telecom company has shown any interest in starting MVNO operations in the Channel Islands.

Hence, A 5G only MNO will create a challenge i.e. exclude existing MNOs from becoming an MVNO because an MVNO will have to use all technologies from the donor operator i.e. 5G only MNO.

In light of the above, single 5G MNO and an exclusivity period is not the right way forward. Multiple licenses should be allocated with infrastructure sharing being made mandatory. Please refer to Annexure 1 which gives a detailed note on how profitable infrastructure sharing can be achieved in the Channel Islands to the benefit of all operators by reducing the need for higher capital investment through sharing, which will also reduce cost and bring operational efficiencies.

Q7. Does this Draft Statement of Intent support and align with the policies of the States of Jersey and Guernsey? If not, what alternative approach could CICRA take to implement government policies?

Airtel: This draft statement aligns with the policies of both Governments in so much as that it is starting the formal discussion on 5G rollout in Channel Islands.

However, any discussion on future data technologies, and also regarding the potential for massive uptake in mobile data cannot happen without consideration to suitable backhaul. While CICRA is engaging on this topic separately which is appreciated by us, however, there is a need to tie these two together. Without availability of right backhaul product at right price, it will be impossible for Airtel (or any other new operator) to offer true competition in broadband.

With regards to planning guidelines, there is a need to revisit these and allow masts to be built on public spaces and land, near residential hubs, on apartment blocks etc. Further, recently all three MNO's have been asked to remove their mast from Cyril Le Marquand House. While the future of the building is not publicly made clear, but the loss of such a busy site in the heart of town is not encouraging as it will affect the customer experience. States could have either allowed the site to run or offered any nearby State building as alternate location. A simple dialogue could have been initiated at the very least.

Lastly, this consultation only talks of one approach to sharing i.e. single license for 5G and MVNOs mandated by license condition. This is a very narrow approach and will not serve the interests of local consumers in any way. Whether a 'cost plus' or 'retail minus' path is chosen to define the rates MVNOs will pay, it will be prohibitive for any on to set up an operation and offer services. Retail competition can only be ensured if there are sufficient operators with capability to deploy 5G. Having "single" operator with 5G spectrum is going to discourage competition. Hence, its very important that at least 2 or 3 operators are allocated 5G spectrum.

Instead a better approach will be if Government mandates infrastructure sharing and puts it as a license condition for future licensing allocations, which will also help with future evolution such as 6G and 7G and beyond! Please refer to Annexure 1 which gives a detailed note on how profitable infrastructure sharing can be achieved in the Channel Islands to the benefit of all operators by reducing the need for higher capital investment through sharing, which will also reduce cost and bring operational efficiencies.

Therefore, to summarise above following areas /concerns need to be addressed by CICRA & Government:
1. Infra readiness like:
   a. Space & tower strengthening (given 5G would be using massive MIMO radios)
   b. Fibre readiness (especially at mast locations) & E/V-band spectrum for backhaul
2. Special reduced Power Tariffs for MNOs – In last 10 years we have seen electricity charges going up regularly and enormous data growth especially after 4G has increased the power consumption and expenses substantially.
3. Technical challenges around single 5G MNO (as explained in previous responses)
4. Network infrastructure sharing

Q8 Respondents are asked to comment on the issue spectrum initially only to one operator in Jersey and one operator in Guernsey, which may be the same operator.

Airtel: Airtel have always advocated the requirement to consolidate Radio Networks. Both Bailiwicks are very small to warrant physical presence of 3 field networks. Between the three MNOs, we have almost 350+ unique locations which is enough to provide full 5G coverage across Channel Islands, however, despite efforts by us, network sharing has not been achieved.

So, given the fact that there are 3 full-fledged operators for 3G and 4G technologies, having only one for 5G can lead to market distortion. We believe the best way to allow for true competition in mobile data space to thrive will be to allocate spectrum to all three operators post a 'beauty parade'. The requirements for coverage and capacity can be imposed, a time limit set for achieving these, and licenses can be issued mandating infrastructure sharing with clear guidelines and requirements.

As elucidated in our answers to previous questions, a better approach will be if Government mandates infrastructure sharing and puts it as a license condition for future licensing allocations. Please refer to Annexure 1 where we have given a detailed note on how profitable infrastructure sharing can be achieved in the Channel Islands. The note is derived not only from our parent company Bharti Airtel but several independent global examples of successful network sharing models.

Q9. What period of exclusivity would be sufficient to ensure a fair return on investment for a single operator before the remaining spectrum became available for allocation?

Airtel: Following on from our response to Q8, we do not believe there should be any exclusivity period. Any operator with a credible business case must be allocated the spectrum and allowed to build 5G network. Introduction of exclusivity will inhibit competition and will lead to price increases.

The challenges facing the telecom sector in general and specifically in the Channel Islands are very clear. Consolidated mobile revenue of Channel Islands has been on the decline, all three MNOs are yet to generate any profits from the investments made in 4G, technology refresh cycles are getting shorter implying we could all be looking at 6G/7G in 5 years' time. Hence it is extremely imperative that infrastructure sharing be made mandatory, spectrum given to all MNOs with a credible business plan and no exclusivity should be considered. Again, please refer to the detailed note given in Annexure 1.

Are CICRA able to share an example from similar sized jurisdiction where exclusivity has been applied to ensure fair return on investment?

Q10. Respondents are asked to consider the types of conditions which would be necessary to encourage the development of retail competition during the rollout of 5G services?

Airtel: It is well established that of the various utility services present on the island, mobile telecom is the only one where real competition exists, and Channel Island consumers enjoy some of the lowest voice and data rates anywhere in the world. But this competition is under threat and, in a way is a victim of its own success. The increased data demand on mobile is putting strain on mobile backhaul. The prohibitive costs for fibre backhaul is making it difficult to continue offering the prices and service levels which the consumers have come to expect.

Retail competition can only be ensured if there are sufficient operators with capability to deploy 5G. Having "single" operator with 5G spectrum is going to discourage competition. Hence, Airtel firmly believes it's very important that at least 2 or 3 operators are allocated 5G spectrum and Government should mandate infrastructure sharing via a license condition for future licensing allocations, this will help in best technology access to consumers at an affordable price.

Q11. Respondents are asked to consider the types of conditions which would be necessary to protect consumers and ensuring the most efficient use of spectrum as a scarce resource?

Airtel: We agree with all the issues mentioned by CICRA in the consultation. All of these need to be defined clearly and in detail. Any spectrum allocation should be based on sound business plan, a time bound commitment and funding details. Additionally, a minimum coverage and throughput condition will need to be specified.

Regarding health concerns, we have seen that various citizen groups are actively seeking for the government to delay 5G rollout. We at Airtel will firmly follow the law of the land and adhere to all the relevant guidelines as prescribed by CICRA and Ofcom. Additionally, the approach suggested by Airtel with regards to infrastructure sharing will remove the requirement to build new masts. We have already seen public protest arising in both islands regarding environment concerns which no doubt will become more vociferous. Such planning and environmental concerns will be much easier to negate with through a pan-island network approach (please refer to Annexure 1).

Q12. What are the environmental and planning considerations which CICRA should take into account when considering spectrum allocation? This may include respondent views on the number of any additional sites which may be required in each Island.

Airtel: Environmental concerns are top agenda for Airtel and, hence, our established stand for a single RAN across the three MNOs (or at least 2). Between the three, we have almost 350+ unique locations which is enough to provide full 5G coverage across Channel Islands. Government will need to play a more active role in pushing this proposal. If, however, the States are unable to drive this through and/or the MNO's themselves are not able to reach a right conclusion, the right amount of spectrum as specified in response to Q5 will need to be allocated to all winners. Higher spectrum allocation will allow more capacity from same mast and reduce mast proliferation. If e.g. CICRA could allocate 100MHz (as opposed to 50MHz) in 1-6GHz then this can reduce no. of additional masts by a third.

It is established now that some level of mast proliferation will be there to offer 5G services reliably. It has also been demonstrated that the shape and structure of masts will change considerably. Planning on both islands will need to develop internal procedures and guidelines to approve this new design. Especially in Guernsey, where Airtel have had to share poles from JT and Sure resulting in reduced coverage and hence network disadvantage because of lower height. Additionally, there is disparity in planning rules between the islands. In Jersey permission is needed to change anything on the site (even if an antenna is changed for one with similar dimensions). Please refer to Annexure 1 on how successful infrastructure sharing can be achieved.

Q13. What are the health and safety consideration which CICRA should take into account when considering spectrum allocation? This may include respondent views on reassurance to the public

Airtel: Airtel will follow all industry norms as prescribed by Governments & CICRA on both islands. Having said that, and as elucidated in our answers to previous questions, CICRA can allay any health and safety concerns if Government mandates infrastructure sharing and puts it as a license condition for future licensing allocations. Please refer to Annexure 1 where we have given a detailed note on how profitable infrastructure sharing can be achieved in the Channel Islands. The note is derived not only from our parent company Bharti Airtel but several independent global examples of successful network sharing models.

Q14. Are there any other considerations which CICRA should take into account in order to maximize the economic benefits which can be achieved through the allocation of this spectrum? Are there additional ways in which economic and social benefits could be maximized, perhaps through partnerships with government to stimulate additional growth or bring down costs for consumers?

Airtel: This has been **answered in previous questions / points** above, the only way to maximize the economic and social benefits is via the route of netco or infrastructure sharing. This will also ensure reasonable cost of 5G to the consumer. In addition, it is vital that CICRA engages with various stakeholders to ensure that all use cases are put forward by the industry over and above enhanced mobile broadband, which alone does not justify a robust business case for implementation of 5G. We have already seen this with the implementation of 4G.

For example, what engagement does CICRA plan to have with key bodies such as The Institute of Directors, Chamber of Commerce, Digital Jersey, Digital Greenhouse, as well as key players in the field Fintech and potential beneficiaries of Aristech solutions? How will CICRA encourage the cultural and education changes required to support the technology development, without which users adoption will not take place?

How people connect, do business, travel and conduct their everyday life has fundamentally shifted because of the arrival of better, faster and more reliable mobile networks. 5G is going to change all that again. Innovation will be key for Channel Islands businesses to compete in local, nationally and international markets, and 5G will be a key catalyst to support economic growth.

We can build robust, future proof, world class 5G infrastructure leveraging our global supply chain, but encouraging awareness and usage will require a sustained engagement and communications plan. We are interested to understand more from CICRA regarding plans here. For example, basic mobile number portability was introduced over 10 years ago and we still experience a high level of ignorance about this through daily customer interaction. For such a sea change of technological advance that will come with 5G, this cannot be repeated.

In conclusion, Airtel's position with regards to 5G is very clear. To maximise economic and environmental benefits for every stakeholder and create a sustainable, future proof 5G eco-system for all, network sharing is an absolute necessity. We believe this should be in the form of either 3 MNO's sharing one network or creating one Netco from which all three MNO's buy services. Many successful cases of how this operates globally have been shared in Annexure 1.

We trust our response to be seriously considered. Should you have any further questions in this respect please don't hesitate in contacting the undersigned.

Yours sincerely

Lisa Moyse
Head-Roaming & Regulatory Affairs

Note on Network Infrastructure Sharing

We wholeheartedly support the view that sharing of network infrastructure is the most viable, cost-effective and environmentally friendly roll out model, this will also pave the way and set a viable platform for launch of newer technology such as 5G, 6G and beyond in the Channel Islands.

This document, which has been shared with Government of Guernsey & Jersey, defines our view of how a sharing model might work, practically and commercially as outlined below, allows the industry to reduce duplication in CAPEX and Operating Costs whilst investing in quality of services giving the consumer best possible value and choice.

The Telecom industry offers several interesting perspectives to countries wanting to replicate the model of cost-effective service rollout. Understanding these perspectives and the strategic planning for implementing them can immensely aid the transition from an operator-owned to an independent-owned infrastructure model, especially for mast and fibre infrastructure.

1. Background

Historically, operators saw captive masts as offering a strategic advantage. The need for monetisation of assets, focus on customer acquisition and efficient Capex utilisation lured operators to hive off their mast assets to other entities in order to secure the advantages of infrastructure sharing.

2. Need for sharing telecom infrastructure

- o Sliding ARPUs (Average Revenue Per User) in a hyper-competitive market
- o Deeper penetration to rural unprofitable areas
- o Energy cost too high for single usage
- o Higher capital investment seen as a non-value creator for MNO's
- o Cost reduction through sharing and bringing Opex efficiencies

3. Benefits to operators

- o Faster time-to-market
- o Focus on core business
- o Economies of scale & optimal utilization of infrastructure
- o Improved network quality – better uptime and asset management
- o Inherent cost benefits of sharing
  - ▪ No Passive Infra Capex outlay
  - ▪ Lower Opex led by sharing
  - ▪ Lower Energy Cost due to sharing

4. Benefits to the economy

- o Helps avoid creation of duplicate infrastructure which is unproductive and improved aesthetics
- o Enhanced rate of telecom penetration and deeper rural coverage

- o Price affordability for end consumer
- o Lower carbon emissions led by lower energy consumption
- o Lower foreign exchange outlay for import of equipment and supplies

In summary, the huge benefits of sharing driven by telecom infrastructure companies promote a faster and economical penetration for operators and thus, help drive the country's economic development at large.

5. Governments proactive efforts to promote sharing

The change in infrastructure ownership has unfolded on the back of a series of actions undertaken by regulators.

- o Telecom mast sharing regulations can be simple and easy to administer through an IP-1 (Infrastructure Provider 1) registered locally at a nominal one-time registration fees.
  - No license is issued for IP-1 and hence no consumer service
  - Companies registered as IP-I can provide assets such as Dark Fibre, Right of Way, Duct space and Masts to Telecom operators
  - The sharing should be done on a nondiscriminatory manner

- o Government can allow 100% Foreign Direct Investment (FDI) in the telecom mast infrastructure industry

6. Recommendations for Bailiwicks of Jersey and Guernsey

- o Open mast industry to have seamless sharing and remove all entry barriers by defining simple guidelines for registration of telecom infrastructure providers providing for:
  - Right to provide all passive infrastructure sharing services including masts, dark fibre, right of way (ROW), duct space, etc., to telecom operators
  - Services to be offered on a non-discriminatory basis to all telecom licensees in the area.
  - Nominal one-time fees for registration
  - No License fee

- o Considering the larger economic need of capital, and also the highly capital-intensive nature of tower and fiber infrastructure, Government should allow 100% Foreign Direct Investment (FDI) for telecom infrastructure providers.

- o Considering telecom masts are critical infrastructure for economic growth of the country and has a direct multiplier effect on the GDP, Government could look at incentivizing the sector by grant of benefits in the form of:
  - Tax holidays, say for a period of 10 years
  - Accelerated tax depreciation on assets
  - Lower Excise duties
  - Higher External Commercial Borrowing (ECB) limits
  - Softer lending rates
  - Viability Gap funding particularly for investments on green energy initiatives, etc.

7. Impact of 5G on radio networks

5G key technical takeaways:
- o Higher speeds greater than 1Gbps
- o IoT and connected devices (10-100x)

Higher frequency bands with large bandwidth and fiber as a backhaul

o   Low latency (<= 1ms)

For a good 5G user experience, the pre-requisite would be a large number of sites connected on fiber for the following reasons:

1. Need for uniform high speeds – bringing sites closer to the user
2. Higher frequency signals travel lesser distances (most 5G trials are happening in 3.5Ghz)– thus reducing the inter-site distances to a few hundred meters
3. Need for lower latency and higher data backhaul fiber becomes a necessity
4. Large bands of spectrum (>100MHz) would be required (different bands of spectrum for different industries) – leading to multiple masts for the same coverage required

Multiplier of number of masts in a given area at various frequencies						
		New Frequency Band				
		900 MHz	**1800 MHz**	**2100 MHz**	**2600 MHz**	**3500 MHz**
Base Frequency Band	**900 MHz**	1.0x	1.6x	1.9x	3.7x	5.0x
	1800 MHz		1.0x	1.2x	2.3x	3.1x
	2100 MHz			1.0x	2.0x	2.7x
	2600 MHz				1.0x	1.3x
	3500 MHz					1.0x

Therefore, each operator would be rolling out nearly 5x sites along with fiberisation of nearly all sites. Hence, large amount of capital investment is needed by the operator to rollout.

Most of the infrastructure is sharable, and sharing will avoid by:

1. Eliminating multiple digging of roads for fiber by each operator
2. Multiple masts at similar location (saving skyline); and use of existing street furniture and small cells
3. Environmental impact (esp. outside of St. Helier and St. Peter Port)
4. Electricity consumption
5. Prudent capital allocation

Recommendation: The governments of the Bailiwicks of Jersey and Guernsey can take proactive steps in incentivizing sharing of tower and fiber to save on capital and also avoid multiple installations on public infrastructure for 5G rollout and existing infrastructure.

Whilst our suggested approach in the Channel Islands is a view derived from our associate's global position on network sharing, below are some links to leading network infrastructure companies globally, for your reference:

https://www.crowncastle.com/network-infrastructure/

https://www.americantower.com/index.html

http://www.heliostowers.com/about-us/overview/

http://www.bharti-infratel.com/cps-portal/

https://eatontowers.com/

https://www.businesstoday.in/current/corporate/bharti-airtel-vodafone-idea-plan-to-create-optical-fibre-venture-to-take-on-reliance-jio/story/322933.html

If CICRA require any further information, or would like to arrange further workshops or consultations, please do not hesitate to get in touch with us.