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## **TRR Summary of Comments on Consultation Paper**

### **'PLANNING FOR THE 700 MHZ BAND IN VANUATU'**

TRR, July 2014

**This document contains a summary of comments received on TRR's Consultation Paper on Planning for the 700 MHz Band in Vanuatu**

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## Background

One of TRR's functions under the Telecommunications and Radiocommunications Regulation Act is to manage the radio spectrum.

Access to reliable high capacity mobile broadband is a recognized economic enabler. To ensure the people of Vanuatu and visitors have access to the most modern technology, 4<sup>th</sup> Generation Long Term Evolution (LTE) services, TRR had planned for work on a band plan for the 700 MHz band to be conducted later in 2014.

TRR's consultation paper on planning for the 700 MHz band was put out for public comment and ran from 30<sup>th</sup> April 2014 to 13 June 2014.

## Purpose

This document summarises responses and comments from those who have responded to the questions in the consultation paper and includes TRR's responses and comments.

It was declared on the Consultation Paper under Feedback Information;

- (a) that *"In the interests of transparency, TRR will make public all or parts of any submissions made in response to the Consultation Document unless there is a specific request to treat all or part of a response in confidence. If no such request is made, TRR will assume that the response is not intended to be confidential. TRR will evaluate requests for confidentiality according to relevant legal principles; and*
- (b) that *"Respondents are required to clearly mark any information included in their submission that they consider confidential. They shall provide reasons why that information should be treated as such. Where information claimed to be confidential is included in a submission, respondents are required to provide both a confidential and a non-confidential version of their submission. TRR will determine, whether the information claimed to be confidential is to be treated as such, and, if so, will not publish that information. In respect of the information that is determined to be non-confidential, TRR may publish or refrain from publishing such information at its sole discretion."*

## Respondents

Responses were received from:

- Telsat,
- TVL,
- Digicel,
- Wantok Networks, and
- Teralight

Also a policy view on TRR's Consultation Paper and Spectrum Management was received from the Office of the Chief Government Information Officer (OGCIO).

## Planning for the 700 MHz band in Vanuatu Consultation Paper

### Summary of Comments

Consultation Question	Telsat	TVL	Digicel	Wantok	Teralight	OGCIO	Comment
1. Should the TRR allocate the 700 MHz spectrum?	Yes, this frequency space should be allocated.	TVL recognises that 700 MHz band is particularly well suited to Vanuatu geography, enabling wireless broadband services provisioning in optimal conditions, both technically and financially. However, deployment of LTE systems would require additional investments. TVL has spectrum available in the 1800 MHz band. It is required to investigate whether it will be more economical to start deployment in 1800 MHz for traffic areas and consider 700 MHz for rural coverage.	Yes.	Yes.	Yes. Harmonization, as well as stakeholder success is highly important.	Yes.	There is general support for allocating the 700 MHz band.
2. If so, when will industry need this spectrum for	As soon as possible.	Based on experience in other countries, the LTE 700 MHz ecosystem based on	As currently 700 MHz is not in use and equipment and terminals are not	In 2 to 3 years' time.	The spectrum should be released in Vanuatu as it is viably possible in being		One responder favours immediate allocation; the others would prefer delay of between 1 and 3 years.

mobile broadband?		APT band plan is still to be developed. So far few countries from Asia Pacific region have awarded this spectrum (Australia, NZ and Japan). From 2016 onwards, Latin America, Europe, Africa and Middle East will start 700 MHz spectrum based on APT band plan. Thus, it will be better for this band to be allocated from 2016 onwards, to benefit from the worldwide economies of scale. Also note many existing mobile handsets do not include this frequency band. Multimode and multiband user devices integrating this frequency band are expected to be commercially available in at least 2 years' time, hence our proposal for 2016.	available for reasonable prices it will be difficult to promote 700 MHz as the device price will be too high for many consumers. End user terminal costs will decrease over time; as such we suggest 12 months' time for allocation of 700 MHz spectrum.		allocated.		Because allocation of a new band generally is a lengthy process, TRR proposes to now proceed to set matters in train for an allocation. Note that in fact 700 MHz has been awarded in Fiji in 2013.
3. If so, should this be configured for 4th Generation (LTE) services?	No. A restriction should NOT be placed on the type of technology providing the service. Instead, the spectrum should be	The 700 MHz band should be technology neutral and service neutral. A reference to radio access MT and IMT advanced technologies can be	Yes, 700 MHz should be configured for LTE only. Otherwise we will waste the spectrum for old technologies.	Yes.	In a best case scenario, the spectrum would be licensed as technology and service agnostic, but in any case must	Agree with the thrust that a majority of the band should be reserved for an auction of spectrum blocks for improved high capacity mobile	Mixed views between support for LTE and for a technology neutral approach. There may be some confusion on this issue: configuring the band for LTE does not prevent technology

	restricted to the “provision of broadband services” but not limiting its scope to 4G/LTE technologies only. In the future there may be other technologies which can leverage these frequencies that carriers may wish to adopt which don’t fall into the 4G/LTE category but do provide broadband services.	made. Hence, we are of the opinion that there is no need to specify the technology that should be used. The 700 MHz should be for Mobile broadband services only. The core basis of a technology neutral spectrum is that any service should be provided through any kind of technology in any frequency band, and the use of spectrum can be changed at any time. That is, the actual use of the spectrum is not specified.			undoubtedly be configured for LTE and LTE Advanced at minimum (IMT Advanced).	service. This will increase broadband availability and help meet UAP goals.	neutrality. Technical conditions are designed with LTE in mind; but other technologies and services can be used provided they fit within the technical conditions. We should continue to use the technical parameters proposed until new/different 3GPP standards become available and accepted.
4. Should the TRR align its configuration of the 700 MHz band with the harmonised Region 3 arrangements or those from another Region?	Yes, given our geographic location, it would make sense to remain in the same region as our neighbours.	Strongly believe that TRR should align its configuration with the harmonized Region 3 band plan in general. It is recommended to have the frequency bands for one operator continuous. Deployment of 4 <sup>th</sup> generation services in 700 MHz should be driven on economic, technical and social benefits for a globally harmonized solution with cross-border co-	Yes, align with Region 3. The allocation of 5 MHz pairs or a block of 20 MHz is a critical factor for planning purposes.	Region 3.	The TRR should align its configuration of the 700 MHz plan Band 28 in harmonized region 3.		There is general support for APT plan.

		ordination, wide portfolio of consumer devices, lower cost to consumers and ease of roaming. Consideration should be given to existence of any Analogue TV system and its migration to Digital Terrestrial TV rollout in 470 to 790 MHz.					
5. Should the TRR align its configuration of the 700 MHz band with the harmonised Region 3 arrangements, the APT 700 MHz FDD plan?	Yes	Global harmonization of the 700 MHz is currently shaping around the APT paired band plan (with the exception of USA/Canada). We are of the opinion that TRR must assign the 700 MHz following APT FDD band plan, also known as 3GPP band 28.	Yes, TRR should align with APT 700 MHz FDD plan.	Region 3.	Yes, should align with the APT 700 MHz plan Band using FDD. The 3GPP standardized using FDD. However, the 3GPP also allowed standardization of LTE to operate using TDD. The choice of FDD for Vanuatu is a stronger solution given multiple reasons.		General support for APT plan.
6. If not, what configuration arrangements should the TRR put into place for the 700 MHz band?	n/a	None.	TRR approach is great as it is considering the international market and roaming options; this is the preferred way for 700 MHz allocation.		The answer is yes to Q5, so this question is not applicable (N/A), however, the chief opposition is how the other plan for 700 use is interleaved and not efficient, not allowing the use of contiguous spectrum.		As above.
7. What are the benefits and risks	Given the number of countries already adopting this plan, it	The benefits of such harmonization are advantages associated	Risk is the cost of devices; this will give an advantage		Benefits are numerous. The major reasons are greater		As above. TRR proposes to proceed with the approach proposed in the consultation

<p>of the TRR's preferred approach? Is there sufficient evidence to support the proposal?</p>	<p>makes absolutely no sense to adopt a different one. By choosing the plan with the highest number of participating nations, we're ensuring greater interoperability as well as cheaper priced devices and carrier equipment. Savings of which can be passed onto the consumer.</p>	<p>from a huge ecosystem and economies of scale by adopting the APT 700 MHz band plan. This will drive devices prices down to customers' benefits. It will also benefit roaming requirements in the region. Additionally, we believe that harmonization will bring technical, economic and social benefits to users, resulting in lowering the cost to consumers and will drive the development of multimode and multiband user devices.</p>	<p>in infrastructure but for customer it will cost them more. The advantage is future proofing and better performance, with higher BW the speed will be better and in future more subs will have access to LTE services. The real advantage of introducing LTE can only be experienced by the customer once off-island.</p>		<p>reach for less dense population base, lower cost of installation for BTS sites, stronger propagation characteristics and a strong impetus for harmonization with other markets etc which will provide lower costs for network equipment and handsets. As a consequence of its propagation characteristics, spectrum in sub 1 GHz frequencies is better suited for rural applications than higher frequencies.</p>	<p>paper.</p>
<p>8. Should the TRR configure each lot to cover the entire Republic of Vanuatu?</p>	<p>Yes. The complexity to administer geographic regions is overkill for this environment, furthermore, if a smaller carrier later wants to expand to another region would place a delay on service expansion while waiting for licensing reviews.</p>	<p>TVL is in favour of a national spectrum licence, allowing better management of frequencies at boundaries and will prevent resurgence of signals and bad quality network. Management of regional spectrum licence would be too complex with a lot of co-existence issues from one island to</p>	<p>There should be a single allocation for entire Vanuatu, all the islands are close to each other and with different frequency spectrums there will be interference issues.</p>	<p>Yes.</p>	<p>Yes.</p>	<p>No support for regional lots; TRR proposes to allocate spectrum in national lots as preferred by everybody.</p>



		another.					
9. Are there other preferred geographic configurations?	No. A single unified license is best.	No.	No.	No.	No, none are preferable.		See above.
10. Which of the options for allocating the 700 MHz band do you prefer, and why?	We would prefer four allocations of 2x 10MHz and one of 2x 5MHz. This option provides for at least 4 carriers while still providing a 5MHz band for the emergency services. Limiting the country to 2 or 3 carrier slots would limit competition given that a number of licensees already provide wireless broadband services and would be interested to provide these kind of services as well.	Choosing between options will depend on how many companies require a national licence. Should avoid creating spectrum scarcity and creating spectrum abundance (for instance promoting 2x5 MHz blocks could enable a small player to acquire only one block to deliver low cost services.) Given two operators in Vanuatu with possibility of a third, if the price of a licence is reasonable, it would be better to go for 3x15 MHz with the possibility that a further 5 MHz be allocated to another operator if such spectrum is available.	The preferred option is to have 2 allocations of 2x20 MHz and a guard band of 5 MHz. Failing that, option 3 is our preference.	Any combination using 5 MHz lots as the basic building block.	Four allocations of 2 x 10 MHz for MNOs and 2 x 5 MHz for PPDR activities is preferred. The reasons are multiple. First, this allows multiple options for the TRR to produce additional spectrum options for future purposes, whether it be further market liberalization or expansion for existing operators. Second, this provides ability to build in PPDR capabilities without disrupting plans of service providers. Third, current market characteristics of Vanuatu do not show requirement for 2x15 or 2x20 MHz at this time.	We agree with the idea that a portion of the band should be reserved for at least one additional possible future mobile operator.	Differing views: between one responder (Digicel) wanting 20 MHz blocks and others supporting smaller allocations (10 MHz, 15 MHz or more flexible methods). This will be a key decision point for TRR. TRR first needs to decide on whether it reserves spectrum for new entrant(s) as proposed in the letter from OGCIO. One approach to proceed on this issue could be to call for expressions of interest in acquiring 700 MHz spectrum, with responders to nominate their preferred allocation.
11. Should TRR set aside one 5 MHz pair in the	Yes, we would support this under the structure	The 700 MHz spectrum should be kept for commercial	There are limited chances of emergency service	Yes.	Yes. Given the population and density factors of	We agree with the idea that a lesser but usable portion of the	Mixed views on this issue. TRR may defer this decision pending resolution of lot size

700 MHz plan for future emergency services use, or make spectrum available in the 800 MHz band for this purpose?	detailed in response #10	mobile broadband growth. Emergency services could use the 800 MHz and 4.9 GHz bands rather than 700 MHz. It is worth noting that ITU guidance put PPDR in the 806-824/851/869 MHz frequency range.	use as there is limited infrastructure available. Depending on the spectrum allocation request the 5 MHz allocations should be decided.		Vanuatu the set aside of one 5 MHz pair is ample.	band should be reserved for public service transmissions, especially (but not limited to) emergency and disaster operations.	question. TRR is in favour of a PPDR allocation but notes that a decision of whether to make this in 700 MHz or 800 MHz band will be made later.
12. Which of the proposed options do you consider best meets the needs of Vanuatu? If none of these options is suitable, can you propose a different configuration to meet the needs of industry?	We prefer "Option C". While technically less efficient, it provides better benefits such as: a Ensuring better competition (allowing up to 4 competitors) b Ensures all competitors are on a level playing field (no competitor would have an advantage by having a larger block). c It provides 5 MHz block for emergency use.	Please refer to reply to Q10. We are in favour of 3x15 MHz and possibility of additional spectrum if available or unused by another operator.	Please see answer to Q10.	Option A.	Option C is the preferred option. The requirement for future allocation of spectrum overrides the need for contiguous 20 MHz blocks, given the potential for future license and spectrum allocations in Vanuatu. 2x10 MHz should suffice any MNO requirement in Vanuatu. Technical efficiency benefits would potentially suffer in comparison with Option A; however, the other merits of Option C allow its selection as a prudent choice.		See comments on Q10.
13. If you prefer Option A (20 MHz blocks), which of the three possible	n/a – We don't prefer 20MHz blocks, this restricts competition too much.	It would be a better option for mobile operator to have PPDR in lower band as it will give more guard band	Option 2 to keep the PPDR in center will allow an automatic guard band between two		This is not preferred.		TRR proposes to defer deciding on this until decision is made on block sizes. TRR notes that there is little support for 20 MHz blocks.

arrangements would you prefer?		to DTV protection. So far, there is no TV channel above channel 40 (center frequency 626 MHz) but it could change.	operators.				
14. Are the proposed limits on wireless microphones sufficient to protect other services and users without placing an overly stringent requirement on wireless microphone users?	Yes, happy with these provisions.	We refer the Regulator to decisions taken by ACMA which has introduced new arrangements supporting the use of digital wireless audio transmitters in the frequency range 520-694 MHz and the use of wireless audio transmitters operating in the frequency range 1790-1800 MHz.	This should be done on market level not on user level as most users don't have extensive knowledge of frequencies, TRR should enforce it through distributor and operators.	Yes.	Yes		General support on this (note that proposals in the consultation paper are consistent with those of ACMA).
15. Is the proposed guard band suitable for continued wireless microphone users?	Yes, this would be suitable and ideally any interference caused by wireless microphones would cause local interference only in the venue where the microphone is in use.	Please refer to reply to A14. We propose that TRR makes minimal use of guard bands to avoid spectrum wastage.	Yes.	Yes	Yes		General support for the proposal.
16. How should TRR allocate and assign a price for access to the 700 MHz band?	Prefer spectrum sold at same price across the board; provides fairest level playing field for all. Auction might unnecessarily drive	The appropriate price for spectrum will depend on how advanced the country's economy is and the socio-economic status of the	Price for access to 700MHz should be linked to market demand. With current pricing of fiber there will be no use of LTE as no	No idea.	Vanuatu should provide an appropriate auction process with which to allow MNOs to bid for the appropriate spectrum best for	We agree with the thrust that a majority of the band should be reserved for an auction of spectrum blocks for improved high capacity mobile	Little support for an auction amongst responders. Responders want prices not to be set too high. TRR will need to make a decision on whether to hold an auction based on its

	up prices and increase cost to consumers. Focus should be on reducing costs to carriers to keep consumer prices low. Suggest that once a licence is granted, the licensee must have plans in place to begin utilizing the band within 6 to 12 months (to avoid frequency squatting). Suggest limiting carriers to a single band license (ensures that the market has up to 4 possible competitors).	population. Prices set too high will prevent uptake of wireless broadband services and will reduce value of spectrum. Likewise, prices that are set too low may potentially lead to an inefficient allocation of spectrum. Using spectrum pricing and fees from other administrations in a given region, an appropriate benchmark for spectrum pricing can be found by observing the policies of other nations with comparable GDP per capita.	one can increase the BW from interchange with current pricing. TRR should first encourage setting of a lower price for off-island BW. A base price should be set for 1Gbps, which is equivalent to the current price for an STM1. This pricing could be revised as demand grows in future but now there is a huge capacity sitting on the sea floor unused.		their use. The spectrum should be contiguous and appropriate for the market conditions. A market based auction would be best suited, to allow transparency and value to be assessed by the actual stakeholders. Favor would be given to either the Simultaneous Ascending Auction or the Combinatorial Clock Auction if multiple technologies may be allowed, with regard to technology neutral stance of a spectrum licence.	service.	assessment of the overall benefits and costs. It could make this decision after calling for expressions of interest (see the comment on Q10.) Choice of auction type (e.g. SMA or CCA) can be deferred pending decision on whether to auction at all. 'Fibre price' issue is outside terms of this consultation. TRR will need to make a decision on 'use it or lose it' provisions.
17. Is the – 34 dBm/MHz limit suitable for the mobile and broadcasting services in Vanuatu?	Power level of 34dBm EIRP would be quite restrictive; instead support an open power limit providing that the transmissions emitted do not interfere with any other licensed bands (ie: power levels are set by the operator to ensure their transmissions are kept within their	Yes, this limit appears to be suitable and will depend on the topology of Vanuatu.	Yes, correct.	Yes.	Yes, as per industry standards with regard to radiated maximum true mean power.		General support for the limit. It is not clear whether the Telsat comment refers to in band or out of band power limits. In fact, no in band power limits are mandated. The powers used in band will be dictated by the equipment used and the standards that define it (LTE systems are defined in 3GPP standards). However, regardless of equipment type or standard used, specified out of band limits should apply.

	licensed band).						Increasing the power levels may cause intermodulation problems.
18. Are the proposed out of band and out of licence emission limits sufficient to protect other services and users without placing an overly stringent requirement on the licensees?	Yes, happy with the limitations.	Yes, the proposed out of band and out of licence emission limits are sufficient to protect other services and users.	This would need to be checked and verified by TRR before the allocation of BW, further information on best practice in the region and indeed globally should be taken into consideration.	Yes.	Yes, as per industry standards, according to the APT 700 MHz Band 28 plan.		General support for the proposals (the proposals are based on international practice and standards).
19. Are the proposed spurious emission limits sufficient to protect other services and users without placing an overly stringent requirement on the licensees?	Yes, happy with the limitations.	Yes, the proposed spurious emission limits are sufficient to protect other services and users.	We would like more detail on this topic.	Yes.	Yes, as per industry standards, according to the APT 700 MHz Band 28 plan.		General support for the proposals.
Other comments	Having read through the proposal for assignment of the 700MHz spectrum, we are overall happy with the current tabulated plan, factoring in the comments to questions listed above. We would	TVL supports the overall objective set forth by TVL to release the 700 MHz band for mobile broadband.				Commend TRR for analysis of the issues. Other matters in the management of this portion of the spectrum are best left to TRR.	

	prefer that an emphasis on fairness across carriers (both on pricing of spectrum as well as sizing of spectrum allocations) is paramount in the decisions on the final version of the policy.						
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