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Public

Chorus submission in response to "Fixed Services in New Zealand Discussion Document: Ensuring efficiency in the backbone of the digital economy, January 2015"

Chorus

INTRODUCTION

1 This submission responds to the Ministry of Business, Innovation & Employment's (**MBIE's**) "Fixed Services in New Zealand Discussion Document: Ensuring efficiency in the backbone of the digital economy".

2 We use fixed service bands to supply services to hard to reach rural end users and meet our obligations to the Crown under the "Telecommunications Service Obligations (**TSO**) Deed for TSO Network Services" (amongst other things). Some of the proposals in the discussion document will impact our ability to serve these end users and meet our TSO obligations, and the social, economic and compliance implications of any proposed changes should be factored into MBIE's assessment.

3 We also encourage MBIE to ensure there is coherency across the reviews of fixed services, the TSO, the telecommunications regulatory framework and the development of the next round of UFB and RBI. If, for example, MBIE proposed to amend the use of fixed service bands, and this impacted our ability to serve rural end users, this should be factored into the TSO review (to either relieve Chorus of its obligations or compensate for the cost of upgrading the line) and MBIE could consider whether these lines might be suitable for inclusion in RBI.

FEEDBACK

Impact of the proposals

4 We use fixed services in a variety of frequency bands to provide both Ethernet and traditional time-division multiplexing, transmission bearers for broadband and telecommunications linking. We also use legacy point-to-point and point-to-multipoint fixed services to meet our TSO obligations.

5 MBIE's digitisation and spectral efficiency proposals have significant implications for our ability to maintain TSO services to end users in remote rural areas.

6 Rural services are highly dependent on fixed wireless technologies, which have historically been the only means available to provide services to sparse end users located in difficult geographic terrain. The systems deployed to serve these end users are very expensive to deploy and maintain, with annual revenues often insufficient even to cover the annual radio license fees.

7 In the case of analogue technologies operating in the sub-1GHz bands, sourcing replacement digital technologies that are able to operate in the same conditions, providing the same service performance, and supporting the interfaces and capabilities necessary to interwork with Spark, has proven to be a difficult problem.

8 Similarly, existing digital technologies which would fail to meet a spectral efficiency requirement of at least 4 bits/Hz are also used to support TSO services to end users in remote and difficult rural areas. The impact of a mandatory spectral efficiency requirement in such areas would have similar consequences to mandatory digitisation.

9 This raises serious questions as to whether it would be possible to maintain services to end users at all, let alone without having a substantial cost impact on both Chorus and Spark, who are jointly obligated to maintain TSO services.

MBIE should consider these impacts as part of its efficiency analysis

10 MBIE has stated that its key goal for spectrum management is "to ensure efficient use of the radio spectrum" and that this "comprises both technical efficiency and economic efficiency."

11 As part of its efficiency analysis, MBIE should turn its mind to the overall social and economic impact of its proposals. This includes the direct economic impact on users of fixed services, the implications for third parties and the implications for end users of impacted services.

L-Band

12 Given international discussions concerning the future use of L Band spectrum, we agree with MBIE that consideration of any changes to this band should be deferred until after those international discussions are completed. In our view, this should include all general matters addressed by MBIE's discussion document, including the application of any minimum spectral efficiency standards to the L Band.

Broader context

13 We note that in addition to this review of Fixed Services, MBIE has also recently completed a review of the TSO, has called for expressions of interest in the next round of UFB and RBI, and will shortly start a review of the telecommunications regulatory framework. Each of these either directly impact Chorus' and other parties' use of fixed services bands or has the potential to do so.

14 We are keen to engage with MBIE on how best to ensure policy coherency across each of these pieces of work. MBIE could, for example, delay any changes to fixed services bands until after the TSO review, the regulatory framework review and UFB/RBI have been completed.

Response to Questions

15 The remainder of this submission provides specific responses to each of the questions in the discussion document.

QUESTIONS & ANSWERS

2.1 Digitisation

Q1	**Should all or some sub 1 GHz fixed service bands be digital only? If so, are there particular bands that should be given priority to change to digital only services?**

Response:

While we support the trend to digitisation in general, we note that some analogue services in some of the sub 1 GHz bands are still required.

Provision of TSO services to a significant number of remote rural customers is reliant upon analogue links operating in EE Band, I Band and J Band. In order to maintain existing services, we require the continued ability to obtain licenses under the existing rules.

Q2	**Should any requirement for digital services apply to new licences only or should existing analogue services be required to transition to digital? If all licences are required to transition to digital services, over what time period should analogue licences be phased out?**

Response:

Digital services should not become mandatory in the meantime.

2.2 Spectral efficiency

Q3	**Should the Ministry increase the minimum spectral efficiency of digital services from one bit to four bits per second per Hertz? If so, should this apply to some (please identify which ones) or all bands?**

Response:

As noted above (Q1 and Q2 responses), some services need to remain analogue.

In the case of digital services, while we support the increased use of spectrally efficient solutions in all fixed linking bands 2.7GHz and above, we note that for some requirements, reliability and availability will continue to require operation of solutions at lower modulation rates with lower bits per second per Hertz.

Provision of TSO services to a significant number of rural customers is still reliant upon CMAR (Customer Multi-Access Radio) systems operating at 1.5GHz (L Band). The CMAR systems operate at spectral efficiencies of no better than 2 bits per second per Hertz. Chorus requires the continued ability to obtain licenses under the existing rules.

Q4	**Should any requirement for increased spectral efficiency apply to new licences only or should existing licences be required to transition to this**

	standard? If so, over what time period should the lower standard be phased out?

Response:

We do not support a requirement for enforced increase in minimum spectral efficiency.

2.3 Metropolitan site congestion

Q5	**Should further areas be added to the designated DMAs and if so which areas?**

Response:

No comment.

Q6	**Should further DMA rules be introduced? If so, what should the rules specify? Should these be tailored to each particular DMA?**

Response:

No comment.

Q7	**Should any DMA specific rules be applied to new licences only or also apply to existing licences? If existing licences become subject to the new rules, how should the transition be managed?**

Response:

No comment.

2.4 Interference evaluation method for digital microwave radio (DMR)

Q8	**Should the current '1 dB interference threshold degradation' method prescribed in Section 4.3 'Co-channel interference threshold' of PIB 38 be retained or replaced with a carrier to interference method? Please provide information on why the method should be changed and the increased spectral efficiency over the current 1 dB threshold degradation method expected to result from the change.**

Response:

Our view is that the '1dB interference threshold degradation" method should be retained.

Q9	**If the method is changed to a carrier to interference method, how should this be implemented?**

Response:

Not applicable.

2.5 Adjacent channel interference criteria

Q10	**Are the Frequency Dependent Rejection values in PIB 38 appropriate? If not, what should these values be? Should there be different values for different bands?**

Response:

The values (or at least the 1st Adjacent Channel value) are inappropriate in the case of interference calculations relative to lower modulation rates e.g. the figure of 30dB is significantly above the 23dB specification for 1st Adjacent Channel Frequency Dependent Rejection of equipment operating at 4QAM. It would be more appropriate to reference a relevant standard such as ETSI EN 302 217-2-2.

2.6 Equipment standards

Q11	**Should the Ministry implement equipment standards for fixed services above 1 GHz? If so, what standard should be specified?**

Response:

Appropriate ETSI standards such as ETSI EN 302 217-2 in the case of Digital Point-to-Point Systems should be specified.

2.7 Necessary bandwidth and channel widths for digital services

Q12	**Should the Ministry adjust the general licencing conditions for digital services to ensure licences better reflect occupied bandwidth in the microwave bands?**

Response:

We support Option 2 "Emphasise the relevant parts of the International Radio Regulations by adding references to specific recommendations in the general licence conditions" (such as ITU-R F.1191).

2.8 Information on licence records

Q13	**Is inaccurate information on licences a significant issue for AREs and ARCs and licensees? If so, how should the Ministry respond to the issue?**

Response:

We are not aware of significant inaccurate information on modern licences but some older, historic licences have less detailed information. ARE's and ARC's should be encouraged to accurately complete all parameters.

2.9 Transition of spectrum to the management rights regime

Q14	**Should the Crown consider creating management rights for bands where there is predominantly a single licensee? If so, are there other criteria that should be met before a management right is created for fixed service bands?**

Response:

No, they should remain in the Radio Licensing Regime.

Q15	**If spectrum is transferred into the management rights regime, should it be managed by the Crown or allocated to a private manager? If allocated to a private manager, should the allocation be by contestable means or to the predominant user?**

Response:

Not applicable. MBIE should retain the spectrum in the Radio Licensing Regime.

2.10 Channel widths

Q16	**Should the Ministry apply consistent channel sizes across specified frequency ranges in fixed service bands? If so, what should be the basis for these channel sizes? Should channel sizes be based on the preferred channel width shown in Table 3?**

Response:

Yes, consistent channel sizes should be specified. Relevant international standards and ITU-R Recommendations should be the basis for the channel sizes. We support the preferred channel widths documented in Table 3.

Table 3: Preferred Channel Widths

Frequency	Preferred channel width	Comments
Below 800 MHz	Multiples of 12.5 kHz	I band starts out with 25 kHz channel widths.
800 MHz to 1 GHz	Multiples of 250 kHz	
1 to 2 GHz	Multiples of 25 kHz and 2 MHz	For LL and L Band use respectively
2.7 GHz and above	Multiples of either 3.5 or 10 MHz	The 80 GHz band however has significant larger channel sizes due to its operational characterises and equipment availability

2.11 Band renaming

Q17	**Should the Ministry rename bands that are currently prefixed with letters, by numbers representing their approximate frequency of operation?**

Response:

We support the renaming of bands that are currently prefixed with letters, by replacing them with numbers representing their approximate frequency of operation.

3.1 ISTL, JKSTL, KL and K STL bands

Q18	**Should digital services be permitted in STL bands? If so, should digital and analogue services be permitted or should all existing analogue services be required to transition to digital?**

Response:

No comment.

Q19	**Should a minimum link distance be specified for STLs in some bands for current and / or future links? If so, which bands should have the minimum link distance specified?**

Response:

No comment.

Q20	**Should no new dual mono STL services be allowed? If not, should the Ministry transition users from dual mono services to digital links?**

Response:

No comment.

Q21	**If the Ministry allows digital licences in the STL bands, should any broadcaster that transmits more than 3 programmes between a studio and broadcasting site be required to use a 500 kHz channel digital STL and those broadcasting a single programme be required to use a 250 kHz channel digital STL?**

Response:

No comment.

Q22	**Should a limit of three STL licences (via a combination of analogue and digital transmissions) at any single location be introduced for any single licensee? If so, should this be limited to congested sites only? If so, which ones? Should these limits apply retrospectively to current licences or should they only apply for new licences. Should the limits apply once any licence holder applies to make a change to any one licence at a site?**

Response:

No comment.

Q23	**How should the Ministry manage the timing and introduction of any changes to STL services? How should each of the five proposals above be managed?**

Response:

No comment.

3.2 EE Band

Q24	**Are there any issues with the current band plan, use of, or future demands for the EE band?**

Response:

The provision of TSO services to a significant number of remote rural customers is reliant upon analogue links operating in EE Band.

3.3 I Band

Q25	**Should the Ministry offer 100 kHz channels in the I band (Group G) which interleave with the current 50 kHz channel plan? If not, how should the channel plan be amended, if at all?**

Response:

While we have no view to express in relation to the 100kHz channels option, we note that provision of TSO services to a significant number of remote rural customers is reliant upon analogue links operating in I Band.

3.4 J Band

Q26	**Should the Ministry offer 100 kHz channels in the J band (Group D) which interleave with the current 50 kHz channel plan? If not, how should the channel plan be amended, if at all?**

Response:

While we have no view to express in relation to the 100kHz channels option, we note that provision of TSO services to a significant number of remote rural customers is reliant upon analogue links operating in J Band.

3.5 JL Band

Q27	**Are there any issues with the current band plan, use of, or future demands for the JL band?**

Response:

We have no issues with JL Band.

3.6 KK Band

Q28	**Are there any issues with the current band plan, use of, or future demands for the KK band?**

Response:

We are not aware of any issues.

3.7 L Band

Q29	**What services should L band be used for in the future? Why?**

Response:

We agree with the statement "With the current TSO review and international discussions around an IMT identification for L band, the Ministry considers that the any review of L band should be deferred until the future of the band become clearer."

The provision of TSO services to a significant number of rural customers is still reliant upon CMAR (Customer Multi-Access Radio) systems all of which operate specifically in L Band.

3.8 5GHz Band

Q30	**Are there any issues with the current band plan, use of, or future demands for the 5 GHz band?**

Response:

No comments in the case of the 5GHz band.

3.9 P Band

Q31	**Do you have comments on the current coordination process or possible future demands for services in the P band?**

Response:

We have no plans to use P Band and have no particular views on this band.

3.10 R Band

Q32	**Should the Ministry adopt 28 MHz channelling for the R band?**

Response:

Any perceived benefits of adopting a 28MHz channelling for R band would need to be weighed up relevant to the implications for the existing licensed installations noting that at least some of the existing installed equipment is not practical to retune from the existing channelling.

Q33	**If the Ministry is to adopt 28 MHz channelling, should this be applied to new licences only or should all existing licences be required to transition**

	to the new channelling? How long a timeframe should be allowed for the transition?

Response:

If 28MHz channelling were to be adopted then we believe it should only apply to new licences.

3.11 T Band

Q34	**Is the N+1 designation still required for efficient use of T band?**

Response:

No.

Q35	**Should the redundant TA channels be removed from the channel plan for the T band?**

Response:

Yes.

Q36	**Should the Ministry consider rechanneling the T band to 14 MHz channel widths? If not, why not?**

Response:

We do not support rechanneling T band to 14MHz channel widths as the band has significant deployments of modern equipment optimised for efficient use of the 40MHz channelling including numerous multiple channel trunk Ethernet DMR routes of the Rural Broadband Initiative (including the routes to Stewart Island and to Gt Barrier Island). These are critical to support mobile operators and broadband customers.

Rather than rechanneling to 14MHz channel widths we would recommend retaining the current 40MHz channels (T but not TA channels) and consideration of adding an overlay raster of 80MHz channels.

3.12 V Band

Q37	**Should new 56 MHz channels V23A (7110.5 MHz) and V23A# (7341.5 MHz) be created? If so, could the new 56 MHz channels coexist with the TVOB channels currently in place? What would be an acceptable coordination policy if this were to occur? Should the new 56 MHz channels be available only on a non-interference basis?**

Response:

In general we support creation of 56MHz channels in traditionally 28MHz channel plan Bands.

The new 56 MHz channels should only be available on a non-interference basis.

Q38	**Can existing demand for the TVOB channels in V band be accommodated on other TVOB channels?**

Response:

No comment.

3.13 U, W and Y bands

Q39	**Do you have comments on the current coordination process or possible future demands for services in the U band?**

Response:

We believe there will continue to be significant use of and requirements for U Band channels especially for linking in rural areas.

Q40	**Should W band be rechanneled to enable either 28 MHz, 40 MHz, or 56 MHz channelling to enable new services? Which channel size is preferred? Why?**

Response:

Noting that there is already 56MHz bandwidth licences registered in W Band, the appropriate rechanneling option would appear to be 28MHz channelling with overlay raster of 56MHz channels.

Q41	**Should the Yx channels be disestablished from the Y band channel plan, enabling the current dominant channel plan (YxA) to become the single channel plan for Y band?**

Response:

We support the disestablishment of the Yx channels.

Q42	**Should the Y band have an additional 56 MHz allocation added to the current YxA 28 MHz channel plan?**

Response:

Yes.

Q43	**Should the band boundaries be realigned to match ITU-R F.386, by adjusting the U / W boundary at 7.730 GHz down to 7.725 GHz, and by adjusting the W / Y boundary from 8.290 GHz to 8.275 GHz?**

Response:

We support the boundaries realignment.

3.14 H Band

Q44	**Should the Ministry offer a 14 MHz channel plan for H band and migrate users away from 21 MHz channelling?**

Response:

No comment.

Q45	**Should the band be reallocated to a different service or use? If so, what other services or uses should be allocated to the H band?**

Response:

No comment.

3.15 Z Band

Q46	**Should the Z band channel plan be changed to 28 MHz channels? If not, why not?**

Response:

With this band increasingly being used for Ethernet backhaul to cellsites and for rural broadband bearers, we recommend retention of existing 40MHz channelling as recent licensing in this Band has been of Ethernet DMRs optimised for efficient use of the 40MHz channel bandwidth.

Q47	**If a 28 MHz channel is adopted, should the Ministry also adopt a 56 MHz channel plan?**

Response:

We suggest retaining 40MHz channelling with adoption of 80MHz channel overlay.

Q48	**If the band is rechanneled, should incumbent licensees be required to transition to the new band plan?**

Response:

We have no comment as we have already recommended retaining 40MHz (or multiples of 10MHz) channelling.

3.16 G Band

Q49	**Are there any issues with the current band plan, use of, or future demands for the G band?**

Response:

We have no issues with the current band plan, use of, or future demands for the G band.

3.17 X Band

Q50	**Should the Ministry introduce an additional 56 MHz channel to the X band, or should it remain unavailable for assignment?**

Response:

We support the introduction of the additional 56MHz channel provided the concerns regarding Ku satellite downlink is resolved.

3.18 18 and 23 GHz bands

Q51	**Should the Ministry facilitate in any specific way the development of satellite services in the Ka band? For example, should the Ministry consider early clearances of some fixed services in either the 18 or 23 GHz bands?**

Response:

There should be no clearances of these bands without clarity over compatibility between the Ka band development and the fixed service usage.

Q52	**Should the Ministry remove the underutilised 3.5 and 7 MHz channels from the 23 GHz channel plan?**

Response:

No comment.

3.19 38 GHz bands

Q53	**Are there any issues with the current band plan, use of, or future demands for the 38 GHz band?**

Response:

We are not aware of any issues.

3.20 70-80 GHz bands

Q54	**Should the Ministry move the licencing regime for the 70 – 80 GHz band from administrative licencing to a New Zealand general user radio licence?**

Response:

No Comment.