



1 March 2017

Radio Spectrum Management Team
Ministry of Business Innovation and Employment

By email: radiospectrum@mbie.govt.nz

Submission on Draft Five Year Spectrum Outlook 2017

Vodafone welcomes the opportunity to comment on the draft Five Year Spectrum Outlook. We appreciate the ability to engage at the early planning stages of the Radio Spectrum Management (RSM) team.

The planning document covers a wide range of activities, however RSM needs to be clearer about its expected work timetable and priorities. In our view, the highest priorities must be to:

- run a robust renewal process for the 1800 and 2100 spectrum;
- accelerate work to allocate spectrum to mobile networks to meet rapidly growing demand, and future technological developments such as 5G; and
- increase focus on international engagement and compliance activities.

We also provide some brief comment on other matters raised in the consultation document.

Robust renewal of 1800 and 2100 spectrum

Ensuring a robust renewal of the 1800 and 2100 spectrum must be the highest priority for RSM. This decision will have a significant bearing on how the industry operates for the coming years.

Vodafone supports a direct renewal offer of all 1800 and 2100 MHz spectrum held by existing operators. Vodafone efficiently uses these spectrum bands nationwide to provide mobile capacity and speed. If renewal was scaled back, Vodafone would be forced to invest in additional cell sites to sustain the existing level of performance – investment we believe is better spent increasing performance and coverage.

The case for, and likelihood of, further efficient nationwide entry is very unclear. Spectrum must not be reallocated to simply lay fallow and unused.



If the Government decides to allocate some spectrum for potential future entrants, care must be taken to ensure that:

- this spectrum is used efficiently, by including a "use it or lose it" condition;
- costs to incumbents are minimised by allocating less congested spectrum (for example the 2100MHz spectrum rather than the 1800MHz); and
- a competitive price for that spectrum is reached by auctioning the spectrum and allowing incumbents to bid at that auction. Anything less would amount to government favouritism.

More spectrum will be needed to fully realise mobile potential

The Government must continue to smartly manage the available spectrum to allow mobile operators to keep New Zealand at the forefront of mobile capability. The need for more spectrum to be made available is greater than ever, with a sevenfold increase in data traffic anticipated by 2021,¹ and with the transformative shift to 5G technologies.

Simply put, the current spectrum allocations are not sufficient to meet future demands. To avoid New Zealanders being left behind, RSM must:

- accelerate the study and allocation of the 3.6-3.7GHz band and the L-band;
- begin re-planning the 600MHz spectrum for mobile use;
- place greater urgency on the re-planning of the C-Band (3.4-3.6GHz) to ensure it can be effectively used for the growing mobile market;
- look into the possibility of reallocating 450MHz band for public protection and disaster relief (PPDR) use; and
- be more actively involved in discussions at international and regional bodies on the allocation of spectrum for 5G, such as those already happening at the International Telecommunication Union (ITU) and the Asia-Pacific Telecommunity.

It is crucial that New Zealand is not left behind in the transition to 5G. This technology is only just around the corner, and will be unlike any previous generational step. 5G will allow significantly increased data capacity and the ability for connected devices to do so much more.

To ensure New Zealand is well prepared for this shift, RSM should immediately set up a specific project to start planning for 5G in New Zealand.

¹ Cisco Visual Networking Indx: Global Mobile Data Traffic Forecast Update, 2016-2021



International engagement and compliance work need to increase

International engagement and compliance are core 'business as usual' activities of RSM. These must be amongst the highest priorities, as they are essential to the effective functioning of the industry in New Zealand.

International engagement should step up

As a small market, it is difficult for individual spectrum users to effectively engage with international spectrum organisations. The RSM provides a crucial role in representing New Zealand's interests to these organisations, and in keeping the industry fully informed of future developments.

The importance of this role should not be underestimated. RSM should ensure it does not miss any further international meetings such as those organised by ITU Radiocommunications Sector and AWG. When these meetings are not attended, New Zealand misses important opportunities to engage the international community and standards bodies.

More proactive compliance

RSM must allocate more budget, people and equipment in its compliance team, and focus on both prevention and resolving of harmful interference. We believe that past instances of interference could have been prevented or eliminated altogether if RSM had increased focus on prevention and early responses. Furthermore, the chance of harmful interference is only getting greater with the increasing density of radio communications networks.

Interference is a major issue for the industry. At a minimum, it risks harming customer experience (a significant competitive pillar for mobile operators like Vodafone, and something we have invested hundreds of millions of dollars in enhancing). At worse, interference risks disrupting mission-critical communications (such as mobility solutions utilised by emergency services, infrastructure providers, or transport operators).

Other issues

Authorisation regimes

Authorisation regimes such as LSA and ASA may be an effective way to make more spectrum available for mobile use. However, it would not be appropriate for government to impose such schemes where private companies have purchased management rights for certain spectrum. This would impose on the rights conferred under such agreements.



Vodafone internationally has had some experience with dynamic spectrum access and has not found it effective. In practice such schemes encourage and reward arbitrage players, which can result in inefficient allocations of spectrum.

Public safety communications

As we noted in our submission on the 1800 and 2100 spectrum renewal, public safety communications should be on frequencies:

- low enough to provide nationwide deep coverage at a reasonable cost; and
- that are aligned with international standards to exploit economies of scale, such as the 694-894MHz and 450MHz band.

We therefore support the use of the 800MHz band as suggested in the Draft Spectrum Outlook. We also strongly suggest RSM investigate the opportunity to reallocate the 450MHz band for public safety use, due to the enormous advantage this band has in respect of coverage.

Machine Communications

We support RSM's engagement on machine communication. It is important that a specific allocation is set aside for this fast emerging market. This spectrum must be aligned with the rest of the world so we can take advantage of scale economies, and there should be no risk of interference for machine communications with a safety component, such as connected vehicles.

A handwritten signature in blue ink, appearing to read 'Chris Abbott', is located below the 'Machine Communications' section.

Chris Abbott

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