

29 September 2023

RSM would like to thank stakeholders who provided submissions to our consultation on the draft New Zealand Spectrum Outlook (previously Five Year Spectrum Outlook). There were submissions from a wide range of spectrum users which were valuable in finalising the Spectrum Outlook.

In our finalisation of the Spectrum Outlook, we have considered and integrated the feedback from stakeholders, as relevant. Some of the feedback received was more detailed in scope than what we would typically consider for the Spectrum Outlook, which is a broad, high-level document. In these instances, we will consider the detailed issues as we undertake work on the potential items on our work plan.

As we received many submissions across a wide range of topics, we are not able to provide a response to every point raised. Instead, we have summarised the key themes we saw across submissions and noted our comments or actions taken in our response below.

### **New mobile uses in 450 MHz**

We received submissions highlighting the growing mobile equipment ecosystem in the 410 - 470 MHz frequency range, adoption by other countries, and different use cases. These submissions suggested that RSM consider this band for new mobile use (e.g. 4G / 5G). We note the developments in these frequency bands as highlighted by submissions. The 410 – 470 MHz frequency band currently has large amounts of existing deployment of narrow band land mobile and fixed services with interleaved band plans. We note that replanning these bands would be a large multi-year exercise.

Due to the scale of this exercise, further consideration likely falls outside of the 2023 - 2027 period of this Spectrum Outlook and we have, therefore, not included it. However, this may be something we reconsider in a future Outlook depending on interest in and further developments on this band.

### **600 MHz**

We received many views focused on the 600 MHz frequency band. This included responses on replanning the 600 MHz band for mobile (e.g. 5G) and concerns around the ongoing use of radio microphones. 600 MHz is already an item on the work plan and the various detailed views expressed in the responses will be further considered as the work on 600 MHz is considered. On this basis, we believe the current text is sufficient and we have not made any changes to the proposed work plan.

## **1492 – 1525 MHz**

We received various views on the 1492 - 1525 MHz frequency band. This included responses with some detailed comments on the future use of mobile (e.g. 5G) in the 1492 - 1518 MHz band, future Mobile Satellite Service (MSS) use in the 1518 – 1525 MHz band and the existing fixed services in the 1427 - 1525 MHz band. We have updated the Spectrum Outlook to include monitoring of developments for both mobile in 1427 - 1518 and mobile satellite services in 1518 - 1525 MHz. The various detailed views expressed in the responses can be further considered under the work that may be undertaken.

## **1980 – 2010 MHz and 2170 – 2200 MHz**

We received various views in submissions on the 1980 - 2010 MHz and 2170 - 2200 MHz frequency bands. This currently continues to be reserved for short-term trial opportunities (under strict criteria), pending a later decision about long term allocation. See our website for further details here:

<https://www.rsm.govt.nz/projects-and-auctions/completed-projects/1700-2300-mhz-band-planning/>.

We note that there is interest in these frequency bands for Mobile Satellite Services, Direct Air-to-Ground and Mobile use. Further detailed work would be needed to make a decision(s) on the use for this frequency band. We have added this to our work program in the Spectrum Outlook for further consideration.

## **3.3 – 4.2 GHz**

### ***5G in 3.4 – 3.8 GHz***

Since closing consultation on the Spectrum Outlook in February 2022, significant work has been progressed on this frequency band. Earlier this year, long term rights for national mobile networks and Māori were assigned following a series of decisions which have led to a final outcome. See our website for further details on this is available here:

<https://www.rsm.govt.nz/projects-and-auctions/current-projects/preparing-for-5g-in-new-zealand/>.

We received many responses regarding the 3.4 - 3.8 GHz band, some with detailed views on the various aspects to be considered in the band. As work on this frequency band was progressed, the various views were considered in that work.

There is still some work to complete in on the remaining spectrum in the 3.4 - 3.46 GHz frequency range and, thus, it remains on our ongoing work plan in the Spectrum Outlook.

### ***Regional Broadband in 3.30 – 3.34 GHz***

Since closing consultation on the Spectrum Outlook in February 2022, work has been progressed within this frequency range. An auction for the rights to 6-month exclusive licensing in Territorial Local Authorities (TLAs) was completed following decisions. Licences for regional broadband in 3.30 – 3.34 GHz have started to be placed and approved. The band will open for further licencing in early 2024. See our website for details here:

[Regional Broadband Licences | Radio Spectrum Management New Zealand \(rsm.govt.nz\)](#)

We will continue to consider regional and private networks use in the remaining 3.34 – 3.40 GHz frequency band. This is on our work plan for the coming period in the Spectrum Outlook.

### **3.8 – 4.2 GHz**

We received a range of views in submissions relating to the 3.8 - 4.2 GHz frequency band. These submissions included some views in favour of considering this frequency band for new uses, some views that were not in favour of new uses, views around coexistence and views on detailed issues.

We consider that spectrum usage is continuing to evolve globally and that it is important that New Zealand keeps up with this evolution. The 3.8 - 4.2 GHz range (or portions thereof) has been, or are actively being, considered for new uses in the United States, Australia, United Kingdom, and Europe under various spectrum access models and conditions.

We have kept the 3.8 - 4.2 GHz frequency band in the work plan of the Spectrum Outlook. We note the views and issues raised within submissions. While many views were too detailed for changes to the body of this Spectrum Outlook, these can be discussed in detail as a part of the process, when we turn to the work.

### **4.4 – 5.0 GHz**

We received submissions highlighting the mobile equipment ecosystem in the 4.4 - 5.0 GHz frequency band, adoption by other countries and the various use cases. These submissions suggested that RSM consider this band for new mobile use (e.g. 5G). We note the developments in different portions of this frequency band highlighted in these submissions. The 4.4 – 5.0 GHz frequency band is currently used for fixed links across the country and at this stage we do not intend to undertake a replanning exercise.

Further consideration of this frequency band likely falls outside of the 2023 - 2027 period of this Spectrum Outlook and we therefore have not included it. However, this may be something to reconsider in a future Outlook depending on further developments in this frequency band and the level of interest.

## **6 GHz**

We received a wide range of responses regarding the 5.925 – 6.425 GHz and the 6.425 – 7.125 GHz frequency bands. Since closing consultation on the Spectrum Outlook in February 2022, we have progressed work on the 5.925 – 6.425 GHz frequency band, leading to an outcome and decisions in August 2022. More information can be found on our website here: <https://www.rsm.govt.nz/projects-and-auctions/completed-projects/wlan-use-in-the-6-ghz-band/>

### **5.925 – 6.425 GHz**

In August 2022 the 5.925 – 6.425 GHz frequency band was made available for Wireless Local Area Network (WLAN) under the Low Power Indoor (LPI) use and the Very Low Power (VLP) Indoor and Outdoor use regimes. This aligns with the approaches adopted in Australia, United Kingdom and Europe by adopting comparable conditions.

During this work we received interest on the use of Automatic Frequency Coordination (AFC) to enable higher power while avoiding interference to existing licenced fixed links, however it

is currently unclear when industry will provide an AFC for New Zealand. We have updated the Spectrum Outlook work plan to include monitoring developments in Automated Frequency Coordination (AFC) systems in the 5.925 – 6.425 GHz frequency range.

We also received mixed responses on individual case-by-case licensing approaches during this consultation process. Given the difficulties and international trends in this band, we do not intend to further consider individual licensing approaches at this point in time and have, therefore, not included it in the Spectrum Outlook.

### **6.425 – 7.125 GHz**

The 6.425 – 7.125 GHz frequency band remains under international discussion, including at the upcoming WRC-23. We also note that internationally the 6.425 – 7.125 GHz frequency band has been, or is being, considered for RLAN, Mobile (e.g 5G / 6G) or shared models between RLAN and Mobile. We remain open to all possibilities at this stage and are monitoring this.

We have updated the Spectrum Outlook to include investigation of future use of the 6.425 – 7.125 GHz frequency band, taking into account international and regional developments on the work plan.

## **Use of Higher Frequencies**

The Spectrum Outlook considers the trend towards use of higher frequencies. We received many submissions focused on this issue as it related to increasing the availability of this spectrum. While we received and considered these submissions, many were too detailed to result in a change to the high-level Spectrum Outlook. However, we have considered or will consider these comments as we turn to the work on the specific frequency ranges.

### **24 – 30 GHz**

We received a range of views in submissions relating to the 24 -30 GHz frequency band. Since the publication of the draft outlook, work has progressed on 24 - 30 GHz. Cabinet has made high level allocation decisions regarding long term use of the 24 – 30 GHz radio spectrum range. The high level allocation is:

In the 26 GHz band:

- the 24.25 – 27.5 GHz spectrum range will be primarily allocated for mobile use, with the option to include some satellite services in some areas under technical conditions.

The 28 GHz band been split into two portions:

- the 27.5 – 28.35 GHz spectrum range will follow a sharing model between mobile and satellite services.
- the 28.35 - 29.5 GHz spectrum range will be primarily allocated for satellite services, with the option to include some mobile use under technical conditions.

The 24-30 GHz process has now moved on to “next steps” and we are working towards making this spectrum available for long term use around May 2026.

Further information can be found here:

<https://www.rsm.govt.nz/projects-and-auctions/current-projects/future-use-of-the-24-30-ghz-spectrum/>

The comments provided on the draft Spectrum Outlook consultation were considered alongside the submissions we received on the 24 - 30 GHz use in New Zealand consultation.

Further information on this consultation can be found here:

<https://www.rsm.govt.nz/projects-and-auctions/consultations/24-30-ghz-use-in-new-zealand/>

## **40 GHz**

### ***40 GHz (mmWave)***

We note the submissions received on this 37 -43.5 GHz frequency band and use for mmWave mobile (e.g. 5G). We have kept the 40 GHz band, particularly the 40.5 -43.5 GHz band on the work plan in the Spectrum Outlook and moved this up from monitoring.

### ***Q and V Band (40 / 50 GHz)***

We received submissions highlighting the growing satellite interests in the Q and V (40 /50 GHz) bands, particularly for gateways but also user terminals in the near future. These submissions suggested that RSM consider opening up the Q and V bands for satellite use. We note that technologies are continuing to evolve and that there is increased interest in these bands. We have added the Q and V bands to our work plan for further consideration for satellite in this Spectrum Outlook.

### ***E-band Satellite (70 / 80 GHz)***

We received submissions highlighting the growing satellite interests in the E band (70 / 80 GHz) particularly for gateways. These submissions suggested that RSM consider opening up E band (70/80 GHz) for satellite use. We note that technologies are continuing to evolve and that there is interest in these bands. We have added E band (70 / 80 GHz) to our work plan for the Spectrum Outlook under monitoring.

## **Trends in spectrum management**

We received a number of views and comments in submissions on overall trends in spectrum management from the different industry sectors covering a wide range of issues with different perspectives. We have updated the text in the body of the Spectrum Outlook to address some of these points. However, some of the items raised were beyond the scope and / or too detailed for the Spectrum Outlook.

## **Regulatory frameworks and fees review**

We received a number of views and comments in submissions on regulatory frameworks including the Radiocommunications Act and fees review. Some of the issues raised, including broader regulatory issues outside of radio spectrum matters are beyond the scope of the Spectrum Outlook. We have updated the text in the body of the Spectrum Outlook to address some of the points that were in scope.

Again, I thank all those who submitted on our draft Spectrum Outlook. We have considered these comments in our final New Zealand Spectrum Outlook 2023 – 2027. This document is available here:

[Spectrum outlook and annual reports | Radio Spectrum Management New Zealand \(rsm.govt.nz\)](https://www.rsm.govt.nz/spectrum-outlook-and-annual-reports)

I look forward to hearing from you in the coming years.

Regards

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