NEP Broadcast Services New Zealand Limited

Response to

Radio Spectrum Management Discussion Document

“Five-Year Spectrum Outlook 2022-2026”

February 2022

Introduction

NEP Broadcast Services New Zealand (NEP) is part of the NEP Group

NEP Group is the leading technology partner for content creators around the globe. For more than 35 years, we have been delivering innovative products and services that enable our clients to make, manage and show the world their content—anywhere, anytime, on any platform.

Headquartered in the United States, NEP Group has operations in 25 countries with over 4,000+ employees. Together, we have supported productions in over 100 countries on all seven continents, and we're still growing. Our clients range from the leaders in sport, music, film and TV, to major corporate brands, agencies, to new content owners and creators all around the world.

NEP use a variety of wireless technologies across the radio spectrum in New Zealand, such as, Land Mobile Radio, Wireless Microphones, In-Ear Monitors (IEM), Short Range Devices and Fixed Links.

The draft "**5 Year Spectrum Outlook 2022-2026**" highlights several work plan priorities for various technologies within the 600MHz band requiring allocation design, review and replan of this spectrum.

NEP hold an inventory in excess of 100 wireless microphones which operate in the 600MHz band. We own less than 10 IEM transmitters in the 500MHz band with approximately 50 corresponding IEM receivers. These wireless microphones and IEM's are spread across our fleet of Outside Broadcast trucks which operate throughout New Zealand and within various studio facilities. They are used extensively on Live Television Sports Events and Entertainment Productions. A number of these events would be classed as Major Events that have significant economic impact to the New Zealand economy, therefore usable spectrum and reliability of wireless microphones and IEM's is vital.

NEP regards itself as a professional user of wireless microphone and IEM devices.

Response

NEP would ask the RSM to consider the following and take note of our concerns as you rework the allocation design and replan the 600MHz band.

- **Continue engagement with the various suppliers, importers and professional users of wireless microphones to ensure suitable hardware is available within any proposed or new frequency bands.**
  New Zealand is fully reliant on wireless microphones that are manufactured for other international markets. Harmonisation of certain radio frequencies is not consistent globally, especially for products such as wireless microphones.

  Manufacturers have released new ranges of wireless microphones to operate in alternative frequency bands but not all these products are intended for professional users or fit requirements of broadcast facilitators such as NEP

  Some of our events such as Golf require the use of wireless microphones over long distances, so we require transmitters with transmit power levels up to 250mW. We also require different styles of transmitters, such as body pack with lapel mic, handheld mic, or plug-on transmitter. Only a small number of manufacturers make all these styles of transmitters for professional use. Audio latency is critical for live production, so some newer technology may also not be suitable at present.

  Certain products which may be suitable often extend into frequencies that are not licenced for wireless microphone usage, i.e., units manufactured for the North American market typically start at 470MHz. Allowing professional users such as NEP to legally own such equipment; if usage complies with the relevant GUSL, should be considered.

  NEP acknowledges that the RSM has been proactive in engaging with the industry on wireless microphone spectrum issues, so NEP continue to encourage this ongoing dialogue.

- **Protect common radio spectrum for wireless microphones throughout New Zealand**
  NEP operates 7 Outside Broadcast trucks that are based across 3 cities in New Zealand which constantly travel between venues around New Zealand and often go directly to different events in different cities over the space of several days. We also have several broadcast fly-packs which are also deployed to venues when required.

  RSM's proposal to implement 5G services in the 600MHz band in Rural and Peri-urban area's would significantly affect not only NEP but also other wireless mic users who travel or tour with their equipment.

NEP require access to common radio spectrum in a contiguous block throughout New Zealand to operate wireless microphones as it would be impractical to carry duplicate sets of hardware in different frequency bands.

- **RSM to consider spectrum requirements and implement active frequency co-ordination for Large and Major Events.**
  Large or Major events, such as an All Blacks Test Match, Rugby World Cup, World Premieres and Music Festivals all require large number of wireless microphones and often these events are held in both rural and urban areas.

  NEP will typically use a moderate number of wireless microphones (6-15 transmitters) on an event but the addition of the wireless microphones by the other vendors will often mean the total number of wireless microphones in use on-site could be in the region of 50-80 transmitters.

  Much like NEP, many of these vendors have also invested heavily in wireless microphones which operate in the 600MHz band. This is primarily due to the availability of contiguous spectrum and the flexibility of being able to use their equipment anywhere in New Zealand, as they too are often travelling or touring with their systems.

  With all users operating under a GUSL, there is no regulatory body coordinating frequencies between the various users. It is often left to a NEP representative, or an individual appointed by the event organiser to co-ordinate frequencies between users. As neither have any regulatory authority, we rely on the goodwill of all users to comply.

- **500MHz band alone is not a fully viable replacement for the 600MHz band**
  In previous consultation documents the RSM identified the 500MHz band as being available for wireless microphone users to migrate to. The 500MHz band is primarily allocated for Digital Terrestrial Television Broadcasts.

  At some geographical locations in New Zealand, the 500MHz band could have as little as 16MHz[1] of available spectrum due to the combination of main and infill DTV transmitter sites. This would be an inadequate amount of spectrum for even moderate events, let alone Large or Major Events.

  In contrast wireless mic users currently have 76MHz of contiguous spectrum available in the 600MHz band throughout New Zealand.

[1] 16MHz includes the range from 502-510MHz (Short Range Device GURL). Excludes an unused block of 16MHz allocated to DTV Channels 30 & 31.

Spectrum Sharing and Television White Space Devices (TWS)

NEP notes that the RSM have discussed Spectrum Sharing and in particular, static licensing of Television White Space Devices in the 500MHz band.

The use of TWS devices in the 500MHz band further reduces the certainty required by wireless mic users that we can reliably operate within unused DTV channels in this band. There appears to be no user-friendly database that lists what TWS devices have been issued static licences. There is also no mechanism for wireless microphone and IEM users to declare or reserve frequencies they intend on using to avoid interference from TWS devices.

Spectrum Sharing with other potential itinerant services doesn't appear to be on an equitable basis and is of concern to wireless microphone users.

- **RSM to consider cost implications on wireless mic owners who are required to upgrade their hardware**

  The radio spectrum is highly valuable and any future sale of the 600MHz spectrum would generate significant income for the New Zealand Government.

  A high number of wireless microphone users were required purchase or re-tune hardware to vacate the 700MHz band by March 2015. NEP has spent a significant amount to retune or purchase legal hardware since the spectrum changes were first advised in 2013.

  The impact of Covid on the live sports and entertainment sector in New Zealand over the past 2 years has been significant and asking wireless microphone owners to potentially retune or re-equip themselves will be a financial burden.

  NEP uses high-end wireless microphone systems as we require transmitters and receivers with specific technical specifications. The current cost to replace our inventory with equivalent wideband systems can be between $3000-$8000 per channel (dependant on type of transmitter and receiver required). Subject to RSM's final decisions on the 500MHz and 600MHz bands, NEP could be required to spend anywhere between $500,000 and $900,000 to replace our wireless microphone hardware in order to comply with regulations and fulfil our client requirements.

- **General User Spectrum Licence (GUSL) expiry**
  The GUSL covering the usage of wireless mics in the 510-606MHz band (Licence 210650) and 622-698MHz band (Licence 210651) are due to expire in March 2025.

  NEP and other radio mic users need to know if both licences will be renewed beyond March 2025 and what transitional period will apply should a band replan be actioned.