

Thank you for the opportunity to provide comment on the Draft Five Year Spectrum Outlook 2022 - 2026.

The draft document is comprehensive in scope and appears to prioritise the main issues as they can be predicted now. However Auckland Transport would appreciate a more granular view around the impacts of spectrum allocation and reservation within the 5G bands as it pertains to transport operations.

To recap, RSM is seeking validation of the draft Five Year Spectrum Outlook 2022 - 2026 by asking three main questions:

1. Have we identified the range of technological advancements and probable new demands relevant to New Zealand?
2. Have we prioritised the right issues that we will need to actively manage through our work programme (to the extent this is possible to predict now)?
3. Are there other matters that we should cover?

These questions are asked against a backdrop that includes stated in-flight actions and core 5G considerations:

- The 2021 Policy Statement directing RSM to reserve the 1427 MHz – 1525 MHz frequency block that has been internationally identified for mobile broadband development (4G and 5G)
- Detailed consideration of allocation design of spectrum rights: 600 MHz, 3.3-3.4 GHz, 3.4-3.8 GHz, 3.8-4.2 GHz and 24-30 GHz bands for 5G and associated technologies.

In addition to this there is clear acknowledgement of future challenges pertaining to communications within the rail environment:

However, the newer systems available employ LTE-based technologies, with bandwidth requirements of 3-5MHz. This is a large increase in the spectrum required. This also reflects the increasing trend of the broader radio sector to move towards standardised cellular based systems.

The observation that arises from the above backdrop is whether it is inevitable that the current philosophy of reserved spectrum allocation for rail must extend into LTE and 5G NR due to vendor standardisation in cellular based systems and the consequential lack of other operational options.

If the answer is yes then prudence would naturally lead to a requirement to examine other transport environments and identify if such a similar cellular based system dependency will also occur.

Abstract

The foundation of connected vehicles lie in communication of telemetry and safety data which conceptually is closely aligned to rail and as such will have similar reserved spectrum requirements.

Questions to be examined by RSM based upon the above abstract:

If spectrum is reserved for rail use, specifically to support telemetry and safety in a highly structured centralised environment then does such a framework conceptually appear to be loosely replicated in the operational delivery principals of connected vehicles?

If so, then would it not be prudent to expand the examination of reserved spectrum allocation into related transport environments?

If this is deemed to be the case, then based upon existing evidence of vendor driven standardisation would it not make sense to examine communication requirements within the greater transport environment which would include road, marine and possibly aviation for unmanned aircraft?

If such examination is deemed prudent then should not the same reservation principles that apply around spectrum allocation for rail also apply to other transport modes regardless of whether this sits in a commercial 5G band or a differentiated ITS band as determined by the vehicle OEMs?

Following on from such an examination of vendor driven standardisation within the greater transport environment, if the framework and underlying philosophy of spectrum reservation is deemed relative, then shouldn't such reservations of spectrum within all applicable bands be prioritised to support national transport needs, prior to commercial allocation?

If any such reservation is deemed prudent, then what would the governance models look like to support this?

Are any such governance models currently in existence or would new shared models need to be developed?

Abstract Extension

Extending the scope of examination further, the infrastructure required to support a connected autonomous vehicle is not only the Vehicle to Infrastructure (V2I) point on the roadside or at the traffic lights but also the wider network for data delivery from the edge back to centralised management.

If this is considered to be true and since fibre to every edge end-point is not feasible along every suburban road, rural road, or national highway then should not the radio network backhaul from the roadside edge also be considered to form part of reserved spectrum for remote locations?

We look forward to your feedback on the inclusion of the above into the Draft Five Year Spectrum Outlook 2022 - 2026

Kind regards

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