

Response to Preparing for 5G in New Zealand Discussion Document

Q1. What are the likely uses for 5G in New Zealand initially and in the longer term?

We see 5G technologies being used for high-speed fixed broadband internet access for homes and businesses and to provide 'last mile' access as an alternative to copper and fibre where appropriate.

Q2. Do you consider competition should be encouraged at the infrastructure level or purely at the retail level for 5G?

I think that competition at the infrastructure level is preferable, however in urban areas a wholesale provider model would be appropriate to allow more competition from smaller providers.

Why? To allow the best level of competition and to facilitate a quicker market entry.

Q3. What regulatory issues need to be considered from a 5G perspective in New Zealand?

Clarification and/or revision of the NESTF must be undertaken. The current standard is so unclear that some local authorities request extensive RF emissions testing be done any time a radio transmitter (including a Wi-Fi hotspot) is attached to a utility pole.

Q4. What aspects of these regulatory issues are most significant for 5G?

Clarification of the NESTF and a process for utility pole access are most significant for 5G projects.

Q5. Do you agree that the 3.5 GHz band is the top priority for allocation for 5G?

I agree that it is top priority for the development and testing of 5G but long term the limited amount of spectrum available in this band will make it less important than the millimetre wave bands where more bandwidth is available. Where bandwidths of 500MHz to 2GHz are required then 3.5Ghz would not be suitable.

3.5GHz is ideal for fixed wireless internet access utilising 4G LTE technologies. No changes in policy should reduce the utility of 3.5 GHz band to existing rural and remote providers of these services.

Q6. Do you have any comments on reallocating 3587 to 3690 MHz for 5G?

The more bandwidth available for the band the better so I am fully in support of this.

Q7. Do you agree that the 26 GHz band is a high priority for allocation to 5G in New Zealand?

Yes. This is the most appropriate band for 5G.

Q8. Would this band be of interest to your organization for trials for 5G services in New Zealand?

Yes, in the long term.

Q9. Do you agree that the 31.8 to 33.4 GHz, 40.5 to 42.5 GHz and 42.5 to 43.5 GHz bands are a low priority for allocation to 5G in New Zealand?

Yes.

Q10. When do you think equipment is likely to become available in the bands identified in Q8?

I am not aware of any.

Q11. Do you have any comment on the possible allocation of 27.5 to 29.5 GHz to IMT?

5G is the most appropriate use of this band.

Q12. Is there demand for alternative uses other than IMT of the 1400 MHz band? If so, what uses?

Fixed wireless.

Q13. When is the demand likely to require consideration of reallocation of the 1400 MHz band for IMT, if at all?

Existing L-band linking users should be prepared to migrate to L-band linking compatible with an IMT channel plan from 2019.

Q14. Is there a need for more sub 1 GHz spectrum for IMT/5G?

Yes.

Q15. If so, how should we deal with radio microphones in the 600 MHz band?

Sub 1 GHz spectrum could be reserved for rural and remote use, avoiding conflicts with the majority radio microphone users.

Q16. When is the demand likely to require reallocation of the 600 MHz band to IMT, if at all?

From 2019

Q17. Which allocation methodology should be used for allocating spectrum bands identified for use with 5G? Why?

I believe that a combination of auction and a managed spectrum park model should be used to ensure that smaller regional providers are not disadvantaged.

Q18. Should different allocation mechanisms be used for rights for regional providers and national providers? Why?

Providers wishing to acquire a national spectrum block for private use should compete via auction for that block. By winning, they have the long-term right to exclude others from using the spectrum, which they may choose to use only in areas where population density will support its commercial use.

Regional providers should be administratively allocated spectrum with criteria favouring providers with existing networks and revenue to support a build.

Q19. Should deployment of 5G technology be specified for some or all bands? If not, why not?

Technology should only be specified where not doing so would limit the utility of neighbouring spectrum blocks. In areas of low population density, regional providers should be able to use whatever technologies they choose as long as that use does not impact on users wishing to implement 5G.

Q20. What implementation requirements should be specified and how should these be expressed? – time, extent, etc

No implementation requirements should be specified for blocks sold at auction, provided that significant blocks are also available for administrative allocation. Administrative allocation of spectrum should only be done for providers with existing networks, customer bases, and financial support to begin implementing a production network immediately. Administrative allocations that do not progress towards a pre-agreed build plan within eighteen months of allocation should be withdrawn.

Q21. What should be the consequence of non-implementation – lose spectrum, additional payment, other

Non-implementation of administratively allocated blocks should result in the loss of spectrum.

Q22. Should the implementation requirements be different for regional and national providers?

Implementation requirements should be a condition of administrative allocations, but not of auction blocks, provided the majority of spectrum in each band is administratively allocated.

Q23. Should acquisition limits be imposed on 5G bands? If so, what should these be and why?

No retail provider should be allowed to acquire more than 25% of any band, and this should be subject to timely implementation. This will ensure that wholesale-only providers have adequate spectrum to offer robust urban & rural products without disadvantaging retail providers competing on cost.

Q24. Should acquisition limits be imposed for regional providers? If so, what should these be and why?

Acquisition limits should be applied to all retail providers proportionate to the number of operators in the region. The maximum for one operator should be 50% of regionally allocated blocks.

Q25. What term should be used for management rights suitable for 5G? Why?

A minimum ten year term should be applied to 5G management rights to reflect the fast-moving technology.

Q26. Should the 5G bands be replanned as TDD bands or some bands or parts of bands be retained as FDD? Why?

10MHz of the 600MHz band should be assigned as TDD for IEEE 802 in rural areas. The balance should be offered as FDD to match existing sub-GHz band plans.

The 3.5 GHz band should be replanned as TDD to most efficiently use the spectrum.

Millimeter bands should be replanned as TDD to most efficiently use the spectrum.

Q27. What bandwidth should be used as the basis for allocation? Why?

The 600 MHz band should be offered with a basis of 5 MHz bandwidth to match existing sub-GHz band plans.

The 3.5 GHz band should be offered with a basis of 10 MHz bandwidth to compromise between efficiency and fair distribution of spectrum.

Millimeter bands should be offered with a basis of 100 MHz bandwidth to compromise between efficiency and fair distribution of spectrum.

Q28. What out of band emission limits should apply to management rights when first created for allocation? Why?

Out of band emission limits to suit the 5G air interface should be applied to management rights to ensure the most efficient possible use of the spectrum.

Q29. Should out of band emission limits be different if the band is technology neutral? If so, what out of band emission limits should be applied?

No. Even in technology neutral bands, 5G compatible limits should be implemented to ensure the most efficient possible use of the spectrum.

Q30. How should interference between adjacent frequency 5G TDD networks be managed? Should this be the same for all frequency bands?

It should be up to providers with adjacent 5G TDD networks to manage their own interference.

Q31. How should interference between different technologies within the same band be managed, if bands are technology neutral?

Using 5G compatible (and most restrictive) out of band emission limits will eliminate the potential for interference between different technologies within the same band.

Q32. Should regional uses be provided for in the 3.5 GHz band plan? Why?

Yes. 3.5 GHz is an additive band for national mobile network operators which will be used in much the same way 2.3 and 2.5 GHz bands are used. On the other hand, 3.5 GHz is currently important to regional operators as a radio access technology. No changes in policy should reduce the utility of 3.5 GHz band to existing rural and remote providers

Q33. If allowed in the 3.5 GHz band, how could this be managed or facilitated?

Some 3.5 GHz band allocations should be divided between national urban allocations and regional rural ones, with sufficient peri-urban buffer areas to ensure no significant coordination or interference mitigation is required between providers.

Q34. Which alternative bands may be suitable for regional allocation? Why?

Alternative bands are only suitable for regional allocation where equipment is widely available and inexpensive. These include 2.3-2.4 GHz, 3.3 – 3.8GHz, and 4.9-5.95 GHz.

Q35. Is early access to the 3.5 GHz band required for roll out of 5G networks prior to the expiry of existing rights in 2022?

Yes. It is the most logical band for the development and testing of 5G but long term the limited amount of spectrum available in this band will make it less important than the millimetre wave bands where more bandwidth is available.

Q36. How could early access to the 3.5 GHz band be achieved?

Early access could be achieved by the Government funding the migration of existing rights holders who have implemented this band, such as Connecta, from their existing FDD to TDD equipment supporting a new band structure. Existing rights holders who have implemented would be allocated new rights to spectrum in the new structure. Connecta, as the most extensive user of this band, will be sending a proposal to the RSM to achieve this migration. Existing rights holders who have not implemented services using this band would not be compensated but could be reallocated rights in the new band structure.

Q37. Should the government be involved in early access arrangements for the 3.5GHz band?

Yes – see Q36 above.

Q38. Is early access to the 26 GHz band required for roll out of 5G networks prior to the expiry of existing rights in 2022? If so, why?

Yes – this is the most important band for 5G due to the larger bandwidths available.

Q39. How could early access to the 26 GHz band be achieved?

The Government should immediately claw back all spectrum which has not been used to build significant regional or national networks, with no compensation. In the few cases where spectrum has been used for microwave linking, government should offer to purchase existing links at their replacement value, providing a capacity matched link in an alternative band such as 23 GHz.

Q40. When is demand for the bands above 30 GHz likely to eventuate?

The demand is immediate.

Q41. When is demand for the 600 and 1400 MHz band likely to eventuate, if at all?

Demand for 600 MHz spectrum is likely to eventuate immediately post WRC-19. MSS demand for 1400 MHz band is likely to eventuate within the next five years.

Kind regards



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