



11 December 2017

174 MHz to 184 MHz: Land Mobile Radio technical consultation  
Radio Spectrum Management Policy and Planning  
Ministry of Business, Innovation and Employment  
PO Box 2847  
Wellington 6140

### **174 MHz to 184 MHz Technical Consultation**

Dear Sir/Madam

Thank you for the opportunity for making a submission on the land mobile radio (LMR) technical consultation for the 174 MHz to 184 MHz frequency band. This submission is made from the Next Generation Radio Network Programme perspective and is not intended to be a formal submission representing the views of the individual agencies participating in the Programme. Any specific reference to an agency will be limited to providing examples of possible impacts of the proposed approaches.

The NG-RN initiative proposes Emergency Services agencies (Police, Fire and Ambulance) need a modern, nationwide broadband communications capability to effectively deliver their services. This capability will be provided over public networks by commercial service providers. This approach will see agencies transition from their existing narrowband radio services to cellular and satellite services in most areas, significantly reducing their need for traditional land mobile radio.

The NG-RN initiative is currently progressing through the Better Business Case process and is awaiting approval of the Programme Business Case. Due to this early stage in the process, this response has been separated into two sections. The first scenario assumes the NG-RN proposal is successful, with the second scenario assuming the proposal is unsuccessful and the participating agencies need to replace their existing radio networks with similar services. This part of the document covers the questions and issues in more detail.

Where possible, the relevant question numbers from the consultation document have been included with each section, however the nature of this response is not naturally aligned with the question structure of the consultation document. Not all questions have been addressed in this response.

#### **Scenario One – NG-RN initiative is successful**

The NG-RN strategy proposes a limited role for LMR in the future, with the majority of services being on commercial LTE and satellite services. LMR will possibly be used in more remote areas and for itinerant solutions to support specific operations. The scale of fixed LMR infrastructure is likely to be significantly smaller than currently used by the collective Emergency Services sector and the existing ESB and ESC bands should have sufficient capacity to meet future needs of participating agencies in the areas where LMR is being

deployed. All commentary regarding the 174 to 184 MHz therefore only applies under the second scenario.

### **Scenario Two – NG-RN initiative is unsuccessful**

If the NG-RN proposal is unsuccessful, Emergency Services will need to reconsider their approach and this may include investment in LMR networks. In this case, there is likely to be insufficient capacity in the ESB band to accommodate expansion of networks, especially in the upper North Island.

To meet this demand, additional radio spectrum in the 174 to 184 MHz band would be desirable. A dedicated block of nationwide channels would be preferable, as this would give assurance that licences would be available when required, make engineering and interference management easier, and potentially improve re-use.

No detailed spectrum planning has been carried out to determine the additional spectrum required, however a minimum of 80 channels has been estimated, based on the need to build new services around Auckland. This estimate is based on the Police VHF network configuration in these areas and builds on experience gained in frequency re-use for the Whole of Government Radio Network (WGRN) P25 network in Auckland.

The frequency separation between ESB and the new band would present tuning range problems for mobile equipment, and vehicle antennas in particular, but it is expected that any limitations could be worked around.

### **Licensing Regime (Questions 2, 3 & 11)**

The NG-RN Programme is not in favour of managing the band under the Management Right regime. Emergency sector agencies would not be in a financial position to competitively bid for spectrum and, if funded to do so, would effectively be buying spectrum from government with government money. If the Crown retains ownership of the Management Right, the need for agencies to purchase rights is avoided, however the spectrum licensing regime is more administratively complex and potentially expensive for agencies to obtain licences for services. The potential resource charge component of spectrum licences, at whatever rate is determined, also makes the spectrum licence regime less attractive.

The Spectrum Licence regime requires all licences to be certified by Approved Radio Engineer (ARE). At present, Police engineer their own radio licences with staff who have Approved Radio Certifier (ARC) status. Moving to the spectrum licence regime would impose additional costs on agencies to either upskill or to use commercial AREs.

A radio licence regime for the new band would be the preferred approach, as this is familiar for sector agencies, avoids the need to employ AREs and does not require the purchasing of spectrum.

This position applies regardless of whether an exclusive allocation is made for Emergency Services use.

### **Channel Plan (Questions 4-10 & 44)**

As stated previously, the NG-RN Programme preference would be for an exclusive block of at least 80 duplex channels. A provision for a small number of exclusive simplex channels would also be desirable, as these may be required if switching range difficulties with the ESB band cannot be overcome.



Future NG-RN LMR services would use some form of digital modulation therefore the basic channel width should support internationally available data modulation techniques such as P25 and DMR. This would ensure a wide range of equipment availability at competitive pricing. The latest versions of P25 and DMR can both achieve two voice channels within a 12.5 kHz bandwidth but these would be precluded if a strict 6.25 kHz channel plan was adopted. Adjacent channel aggregation would address this issue but is less attractive as it would be dependent on the availability of two adjacent channels and could potentially double the licence fee for each service.

Digital services could be made available as either trunked or non-trunked, based on the requirements of each agency. As such, it would not be desirable for this decision to be specified as part of the licence conditions.

### **Technical Requirements (Q32, 33 & 42)**

A standards-based approach for equipment would be the preferred method of imposing technical requirements. The specified standards should be internationally recognised and industry supported to ensure a competitive supply of a wide range of specialist equipment required by emergency services.

The standards approach is well understood by both service providers and equipment manufacturers and ensures that engineering work can be based on known performance expectation across all potential users. It is successfully used worldwide for LMR services and it is unclear what benefits could be gained from alternatives. Moving away from this approach would place responsibility on licensees to prove the equipment they operate is within the terms of their licence. This could burden agencies with significant costs compared to the radio licence regime, where the proof of compliance is borne by the equipment manufacturers.

### **Confidentiality**

This response does not contain any confidential information and therefore the contents can be made available on the RSM website.

### **Conclusion**

The NG-RN initiative proposes Emergency Services moving away from traditional land mobile radio services and adopting commercial broadband services. This would substantially reduce agency demand for land mobile radio spectrum, enabling them to live within existing Emergency Service Band allocations. If the NG-RN initiative is unsuccessful, then access to spectrum in the 174 to 184 MHz band would be desirable for possible expansion of narrowband radio communications. Under this scenario, an exclusive band for Emergency Services use, managed under the Radio Licensing regime, would be strongly preferred.

Yours faithfully



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New Zealand Police  
NG-RN Senior Responsible Owner

