nbn's submission on Planning for wireless broadband use of urban areas in the 3400-3475 MHz band (31/2021)

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Thank you for the opportunity to comment on the proposed amendments to the 3.4 GHz spectrum licence technical framework and options for use of urban excise areas set out in the 'Planning for wireless broadband use in urban areas in the 3400–3475 MHz band, Options paper, September 2021'.

We set out our response to your issues for comment below and would be happy to provide further information.

1 Introduction

nbn appreciates the ACMA's assistance in enabling defragmentation of the 3.4/3.5GHz band and engagement with the technical liaison group that informed the proposed options for use of the urban excise areas. **nbn** supports the implementation of a framework for the use of spectrum in the urban excise areas that balances the need to protect **nbn**'s existing and planned services and ensure **nbn** is not unreasonably constrained in its ability to deploy new technologies in future with the utility of the urban spectrum. In responding to the questions highlighted our focus has been on the areas of consideration in relation to the potential for interference to, or constraint in, deployment or augmentation of our existing Fixed Wireless network, particularly those sites most proximate to these urban excise areas.

We operate a network with over 2,200 sites offering services to approximately 644,000 homes and businesses with our Fixed Wireless network. There are around 600 sites solely reliant on the use of the 3400-3475 MHz spectrum adjacent to the urban excise areas. As ACMA demonstrated in their studies during the TLG, a macro-cell deployment within the 'urban excise' areas is not feasible under the existing frameworks. **nbn** acknowledges there may be some utility in this spectrum but an entirely new approach is required. In **nbn**'s view the 4 options to enable the new approach do not present materially different outcomes provided the interference management criteria are suitably defined. We do note that since these have yet to be defined there is greater risk to **nbn** under Option 1 & 4 since the inherent mitigation of interference presented by the restricted cell model may well provide the most effective and appropriate co-existence protections.

2 Issues for comment

Question 1

Comment is sought on the draft amendments to the s.145(4) Determination contained at Appendix B (separate attachment in key documents section of this consultation).

Should additional measures be included to also grandfather device registrations when minor modifications are made? If so, what minor modifications should be permitted? For example, changes that results in the same or lower horizontal radiated power for the purposes of device boundary calculations? Alternatively, changes that result in the same or smaller device boundary as originally calculated when registering a device?

nbn supports these draft amendments including the exemption for **nbn** co devices meeting the device boundary criteria (DBC) at this new urban excise boundary. We note that there are multiple instances where both our users and our sites are very close to the boundary and meeting any DBC would effectively result in preventing access to the spectrum. In these areas, **nbn**'s spectrum holdings in the 3400-3475 MHz frequency range is critical in supporting customers at premises required to be serviced by the fixed wireless network (the installed customer base and new customer connections) and will serve in the longer term as an anchor layer for any future 5G mmWave deployments in these areas.

Question 2

Comment is sought on the proposed changes to receiver spurious emission limits on 3.4 GHz spectrum licences detailed in Tables 4 and 5 for non-AAS and AAS receivers respectively.

nbn supports the alignment of these spurious emission limits to those identified in 3GPP.

Question 3

Comment is sought on the draft amendments to RALI MS44 contained in Appendix C (found separately in key documents section of this consultation).

No comment.

Question 4

Comment is sought on the options developed for use of spectrum in urban excise areas.

nbn highlights the importance of any use of 3400-3475 MHz within the urban excise areas not interfering with, or reducing the performance of, our deployed network or restricting us from upgrading the equipment deployed using our spectrum in these areas in order to meet future broadband demand growth. Any effective reduction to our ability to serve customers on this network must be avoided as we have no other suitable 4G spectrum to make use of in these areas (our 5G 28GHz AWLs will also likely rely on our 3400-3475 MHz frequency as an anchor layer for an NSA deployment in the future).

Whilst Option 1 and 4 appear more permissive in so far as they permit Macro-cell deployments, the anticipated interference protections required will limit the usefulness or extent of such a network deployment. There is more certainty offered by Option 2 and Option 3 in relation to:

- the deployment model;
- the possible exposure of interference both from new spectrum licensees within the urban excise area and towards those new licensees from our existing deployed network; and
- any future upgrades we may make.

As **nbn** is not planning to utilise spectrum in the urban excise areas **nbn** is specifically concerned with the possible interference management criteria of each option.

Question 5

Views are sought on the possible interference management approaches for both co-channel mechanisms (including ducting) and adjacent channel mechanisms (including adjacent band coexistence) contained at Appendix E.

Synchronisation requirement

nbn supports Option A and would like to highlight that our exclusive use of TDD technology means **nbn** is uniquely impacted by the effects of ducting as we do not have any other FDD layers that can be relied upon during ducting events. Most other operators have access to a number of different frequency layers, specifically FDD, that would not be affected by such events and can manage traffic dynamically between their available spectrum on a given site affording a level of protection that is not available to **nbn**. As such, agreed and negotiated joint outcomes may be difficult to achieve since the exposure and impact differs greatly between the parties. **nbn** therefore

supports the use of a secondary fallback mechanism in the event any option that increases the risk and likelihood of ducting interference is selected.

Registering new devices outside urban excise areas

There are cases where **nbn**'s existing sites and spectrum holdings prove insufficient to meet customer demand in the future. In such cases **nbn** would need to acquire additional spectrum or increase frequency re-use through the introduction of additional sites. Further analysis of either of ACMA's proposed options is required to ensure that **nbn** is afforded sufficient flexibility for such future deployments, in particular the values remaining TBD.

Unregistered devices outside urban excise areas

nbn believes Option B is an appropriate exception that should be adopted as it minimises any risk to the delivery of the **nbn** broadband services to all users currently within our Fixed Wireless footprint.

Measures to enable **NBN** Co to deploy more spectrally efficient technologies in the future

nbn supports Option A. We have an ongoing capacity programme that will continue to upgrade our existing sites, making fuller use of our available spectrum over time including changes to our cell configuration, frequency re-use and technology on site including AAS and ultimately upgrades to 5G. Given the proximity of the boundary to our active network it would be prohibitive to pursue any options other than Option A (Placing a condition on all urban excise area licences limiting their protection from interference caused by base stations associated with the delivery of the **nbn.**)

The proposed interference management criteria identified relating to Option 2 & 3 are much simpler and would avoid many of the complexities ACMA is trying to address with the options discussed above to provide protections for **nbn**.

Options 1 and 4 would be acceptable to **nbn** provided that current and future deployments can operate free of interference.

Question 6

Comment is sought on the desirable planning outcomes for use of spectrum in urban excise areas.

nbn supports the 4 desirable planning outcomes identified by ACMA, particularly those of providing protection to **nbn**'s services and enabling flexibility to deploy new cells and technology and potentially new sites within its network.

Question 7

Comment is sought on the ACMA's preliminary preferred option. Are other options preferred, and if so, why?

nbn believes Options 2 and 3 provide the simplest interference management criteria to preserve **nbn**'s network capability. **nbn** would be supportive of any final arrangements that maintain the flexibility to continue to add customers and enhance capacity through activating additional cells, implementing new technologies such as AAS or deploying additional sites to increase frequency re-use.