



nbn's submission on Optimising arrangements for the 3400-3575 MHz band Options paper

31 May 2019



Executive Summary

Thank you for the opportunity to comment on the issues set out in the ACMA's 'Optimising arrangements for the 3400-3575 MHz band Options paper', April 2019 (Paper). We set out our responses below and would be happy to provide further information.

We understand that the proposed defragmentation (defrag) of the 3400-3575 MHz band requires the conversion of **nbn**'s 3.5 GHz band area-based PTS apparatus licences to spectrum licences. **[C-I-C] [C-I-C]**

All of the options for change proposed by ACMA in the Paper require some degree of third-party authorisation and/or licence trading. As such, defrag relies not only on the ACMA's planning decisions (and associated Ministerial actions), but also the willingness of market participants to effect the changes.

In the context of our comments above, we have considered the options proposed by the ACMA and have identified "Option 3a & 3b - Phase 1" as **nbn**'s preferred way forward. While acknowledging that this option will not result in a full defrag of area-based PTS and spectrum licences (including those held by **nbn**), it appears to be the option most likely to proceed to a stage where licensees can realise benefits such as greater utilisation of spectrum holdings and decreased network costs.

The ACMA has also identified a potential variant to phase 1 which would effect a two stage conversion of **nbn**'s PTS apparatus licences in "metropolitan" and "regional" licence areas to spectrum licences. **nbn**'s current Fixed Wireless (FW) deployments extend across both these geographies and as such any network changes made in metropolitan areas will need to be co-ordinated in time with changes in the adjacent regional areas. We also understand the variant would require a series of additional consultations, relative to the base option, which would further extend the timeline.

At this stage we have not identified any clear benefit in adopting the variant; however we remain open to considering this further in the event that it could contribute to an expedited defrag across all geographies.

The ACMA has identified an optional phase 2 that makes more spectrum available for spectrum licensing and provides for arrangements that may facilitate further defrag in major regional centres and the remaining regional areas. We note that the degree to which phase 2 can facilitate further defrag is dependent on the willingness of future licence holders of the proposed reallocated spectrum to enter into third-party authorisations and/or licence trades.

Should phase 2 proceed, option 3a appears more likely to assist in further defrag as it proposes to introduce spectrum licencing arrangements across more of the band, while maintaining PMP allocations.

Lastly, we note that the ACMA has identified two approaches that could facilitate access to urban areas of **nbn**'s PTS licences by other wireless broadband operators.

Approach 1 is effectively no change to existing arrangements and we are of the view that maintaining this approach will avoid introducing additional delay and/or complexity to the defrag process. We also agree with the ACMA's view that this approach provides **nbn** with the flexibility to consider case-by-case requests for access to manage interference and minimise restrictions on future deployments.

1 Introduction

nbn welcomes the ACMA's plan to investigate options for optimising arrangements for the 3400-3575 MHz band which, for historic reasons, is fragmented and inefficiently configured for current and planned future use.



nbn's consideration of spectrum is focused on ensuring that it meets the federal government's expectation that all Australians have access to very fast broadband as soon as possible, at affordable prices, and at least cost to taxpayers, and that **nbn** will be able to ensure upgrade paths are available as required¹.

In addressing the Government's expectations, **nbn** has rolled out a FW network that services end users in homes and business including in the metro-fringe, rural and regional areas of Australia. **nbn** remains on track to complete the rollout of high-speed broadband for Australians by June 2020, with a approximately 10.2 million premises currently Ready For Service, and 9.3 million premises currently Ready To Connect². The flexibility of the Multi-Technology Mix³ approach allows **nbn** to introduce new technologies into the coverage footprint when demand arises and where commercially viable, and **nbn**'s spectrum requirements are developed in this context.

2 Objectives and benefits

nbn is seeking to:

1. defrag its apparatus and spectrum licence holdings in the 3.4 and 3.5 GHz band to enable more efficient use of the spectrum and more cost-effective upgrade paths
2. [C-I-C] [C-I-C]

A defrag that meets the following criteria would also result in broader benefits for industry resulting from the improved spectral efficiency and consequently increase the overall public benefit derived from the relevant spectrum:

- maintain or establish contiguous spectrum holdings for each licensee within each spectrum licence area
- maximise the availability of contiguous spectrum holdings for all licensees
- minimise the need for investment in replacement equipment
- deliver the most efficient use of spectrum holdings, minimising the number and size of guard bands and reducing licensees' exposure to potential interference
- wherever possible, establish and/or maintain contiguous or co-channel spectrum frequency holdings over all of a licensee's geographical areas if licences are not held nationally
- deliver certainty on the practicality and timing of the solution to enable licensees to make appropriate infrastructure investment decisions.

3 Analysis of the ACMA options

nbn's analysis of the ACMA's options are based on the information available and the conclusions are set out below.

¹ See page 1 of NBN Co Ltd Statement of Expectations 24 August 2016 at: <https://www1.nbnco.com.au/content/dam/nbnco2/2018/documents/Policies/soe-shareholder-minister-letter.pdf>

² As at 16 May 2019, <https://www.nbnco.com.au/content/dam/nbnco2/2018/documents/weekly-progress-reports/16052019.pdf>. Figures referenced in this submission are rounded, see weekly progress report for exact figure.

³ <https://www.nbnco.com.au/blog/the-nbn-project/what-is-the-nbn-multi-technology-mix>



3.1 Options for change

- **Option 1: No change.** Existing arrangements, including paired spectrum allocations, were originally developed for technologies that are no longer deployed within the band. These arrangements include multiple frequency and geographic boundaries that require guard bands and geographic buffer zones that contribute to spectral inefficiencies. Conversely, current and next generation uses of the band benefit from wider contiguous bandwidths up to 100 MHz. The mix of spectrum and apparatus licencing arrangements have also impeded the potential for market forces to lead to defragmenting through third-party authorisations and/or licence trades. On this basis, we agree with the ACMA’s conclusion that there is a compelling case for change within the band and as such, do not support this option based on the information available.
- **Option 2: Convert and re-allocate more of the band for spectrum licencing.** The licensing arrangements proposed in option 2, particularly 2a, provide for the most uniform arrangements and enable an almost complete defrag. However the defrag will require agreement from all affected spectrum licensees, including successful bidders in the auction of the re-allocated spectrum. As the ACMA has noted, one or more of these licensees can influence whether and to what degree defrag can occur. This could lead to a protracted or partially completed defrag process and as a consequence is not our preferred option.
- **Option 3: Restack apparatus licences, then convert nbn PTS apparatus licences to spectrum licences and re-allocate additional spectrum for spectrum licencing.** While acknowledging that this option will not result in a full defrag of area-based PTS and spectrum licences (including those held by nbn), it strikes a balance between an ACMA-led apparatus licence restack and a market driven defrag. As such it appears to be the option most likely to proceed to a stage where licensees can realise benefits such as greater utilisation of spectrum holdings and decreased network costs. To avoid the risk of further geographic fragmentation, it is essential that, if implemented, phase 1 is executed to completion. As such, we are of the view that the restack of apparatus licences should not commence, and the period of time provided to incumbent apparatus licensees to implement the restack should not be determined, until the necessary commercial arrangements are in place to facilitate the defrag.

The ACMA has also identified an optional phase 2 that makes more spectrum available for spectrum licensing and provides for arrangements that may facilitate further defrag in major regional centres and the remaining regional areas. We note that the degree to which phase 2 can realise further defrag is dependent on the willingness of future licensees of the proposed reallocated spectrum to enter into third-party authorisations and/or licence trades. Should phase 2 proceed, option 3a appears more likely to assist in further defrag as it proposes to introduce spectrum licencing arrangements across more of the band, while maintaining PMP allocations.

- **Variation.** The ACMA has also identified a potential variant to phase 1 which would effect a two stage conversion of nbn’s PTS “metropolitan” and “regional” licence areas to spectrum licences. nbn’s current FW deployments extend across both these geographies and as such any network changes made in metropolitan areas will need to be co-ordinated in time with changes in the adjacent regional areas. We also understand the variant would require a series of additional consultations, relative to the base option, which would further extend the timeline. At this stage we have not identified any clear benefit in adopting the variant; however we remain open to considering this further in the event that it could contribute to an expedited defrag across all geographies.



3.2 Options for facilitating access to urban areas

- **Approach 1: Negotiate access under third-party authorisation agreements.**

This approach is effectively no change to existing arrangements. **nbn** agrees with the ACMA that this approach provides **nbn** the flexibility to consider case-by-case access requirements of other parties, while ensuring **nbn** is optimally placed to manage interference and maximise future deployment options. Relevantly, we are of the view that maintaining this approach will avoid introducing additional delay and/or complexity to the defrag process.

- **Approach 2: Excise defined urban areas from nbn's PTS licence and allocate them via a market-based mechanism (such as an auction).**

This approach is likely to lead to delays and may introduce further complexities that could add further risk to completion of the defrag process. Specifically, approach 2 will likely:

- increase interference potential to **nbn** sites
- limit future deployment and technical planning options relevant to capacity augmentations for **nbn** sites
- introduce new unique geographic boundaries within the 3400-3575 GHz band, but specific to the frequencies occupied by **nbn**'s PTS apparatus licences
- require a market based allocation process (such as an auction) for excised licence areas
- introduce one or more new area based licensees into the band
- require any new licensees to agree with the proposed defrag approach; and
- need to be concluded before a proposed plan for defrag of metropolitan areas can be developed.



4 Questions

1. *Do stakeholders have any comments on the case for action in the 3400–3575 MHz band?*

See the 'Objectives and benefits' section above.

2. *Do stakeholders have any comments on the planning options identified? Are there any other planning options that should be considered? (Please provide reasoning.)*

See the 'Options for change' section above.

3. *Do stakeholders have any comments on the planning goals for the 3400–3575 MHz band? Are there any other planning goals that should be considered?*

See the 'Objectives and benefits' section above.

4. *If Option 2a or 2b are adopted, do stakeholders have views on how long the re-allocation period should be?*

nbn has no comment based on available information.

5. *If Option 3a or 3b are adopted, do stakeholders have views on the period of time incumbent apparatus licensees should be given to implement restack? (Noting effected licences would not be reissued on existing frequencies beyond this point.)*

We are of the view that the restack of apparatus licences should not commence, and the period of time provided to incumbent apparatus licensees to implement the restack should not be determined, until the necessary commercial arrangements are in place between licensees to facilitate the defrag.

6. *If Option 3a or 3b are adopted, do stakeholders have views on how long the re-allocation period should be?*

nbn has no comment based on available information.

7. *Do stakeholders have any comments on the assessment of planning options against the principles?*

See the 'Introduction' and 'Objectives and benefits' section above.

8. *Is there any relevant evidence that provides an indication of the value wireless broadband operators place on how additional spectrum is made available (i.e. under spectrum or apparatus licensing arrangements)?*

nbn's view is that should phase 2 proceed, option 3a (that provides greater amounts of spectrum for spectrum licensing, as opposed to apparatus licensing arrangements) appears more likely to assist in further defrag as it proposes to introduce spectrum licencing arrangements across more of the band, while maintaining PMP allocations.

9. *Do stakeholders have any comments on the preferred planning option for remote areas?*

nbn has no comment based on available information.

10. *Should the broader 3400–3700 MHz band be considered when expanding arrangements for PMP in remote areas?*

nbn has no comment based on available information.

11. *Do stakeholders have any comments on the preferred planning option for metropolitan areas, regional areas and major regional centres?*

See the 'Options for change' section above.



12. *Would an earlier conversion of NBN Co's PTS licences in metropolitan areas provide greater certainty for negotiations on defrag to occur?*

See the 'Options for change' section above. At this stage we have not identified any clear benefit in adopting the variant; however we remain open to considering this further in the event that it could contribute to an expedited defrag across all geographies.

13. *Are the existing third-party authorisation arrangements (Approach 1) sufficient to facilitate access to urban areas of NBN Co's PTS licences by other operators? If not, should the ACMA investigate what, if any, urban areas might be available under Approach 2?*

See the 'Options for facilitating access to urban areas' section above.

14. *Do stakeholders have any views on what co-channel interference management technique should be applied under Approach 2?*

See the 'Options for facilitating access to urban areas' section above. **nbn** agrees with the ACMA's view that Approach 1 provides **nbn** with the flexibility to consider case-by-case requests for access, while ensuring **nbn** is optimally placed to manage interference.