



# nbn's submission on the future use of the 3.6 GHz band



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Thank you for the opportunity to comment on the questions in the:

- ‘Discussion paper: Future use of the 3.6 GHz band—Options paper’ (Options Paper)
- ‘Future use of the 3.6 GHz band—Highest value use assessment: Quantitative analysis’ (HVU Paper).

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

## 1 Introduction

**nbn**’s consideration of spectrum is focused on ensuring that it meets the Federal Government’s expectation that all Australians have access to 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 required.<sup>1</sup>

To enable **nbn** to continue providing and upgrading services most effectively in accordance with the Government’s expectations, **nbn** requires continued access to spectrum under current terms and conditions, together with enhanced opportunities to acquire, manage and trade spectrum that may be provided by appropriate developments to the spectrum management framework.

**nbn** considers that the ACMA can, and should, apply its spectrum management principles in the ACMA’s consideration of the future use of the 3575 – 3700 MHz band (3.6 GHz band) to ensure that **nbn** can continue meeting the Government’s expectations. The principles that require:

- promotion of both certainty and flexibility<sup>2</sup>, which, in the case of major infrastructure developments, requires certainty for long term infrastructure planning; and
- maximising the overall public benefit derived from using spectrum<sup>3</sup> by balancing regulatory and market mechanisms<sup>4</sup>

are particularly relevant.

**nbn** notes the ACMA’s acknowledgment that the discussion of mobile broadband (MBB) in the Options Paper is used to refer to a variety of different technologies including terms such as 3G, 4G and 5G, and that the term should also be taken to include fixed broadband systems. **nbn** notes that fixed wireless broadband, while using the same technology as mobile operators, has some different fundamental capacity requirements as previously submitted to the ACMA.<sup>5</sup>

The ACMA has included the 3575 to 3600 MHz band in the current consideration. **nbn** submits that this band should be allocated to fixed wireless broadband services.

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<sup>1</sup> Statement of Expectations dated 24 August 2016

<sup>2</sup> Spectrum Management Principle 4

<sup>3</sup> Being a key object of the *Radiocommunications Act 1992*

<sup>4</sup> Spectrum Management Principle 6

<sup>5</sup> **nbn** submission dated 23 October 2015 in respect of ACMA’s IFC22/2015.



- [C-i-C] [C-i-C]

**nbn** notes that it will be important for the ACMA to consult with **nbn** on any specific options being considered to optimise and improve the overall utility of the broader 3400-3700 MHz band, given **nbn**'s holdings in this band.<sup>6</sup> Contiguous spectrum holdings are highly desirable to **nbn** and would maximise spectrum efficiency.

**nbn** notes that the following issues are not within the scope of this current consultation process: detailed licensing and allocation options (such as auction methods and lot configuration); arrangements in 3400 – 3575 MHz; engagement in international activities; and the 1427 – 1518 MHz band (the 1.5 GHz band). **nbn** welcomes further discussions with the ACMA on these issues.

## 2 Questions

### 2.1 Issue for comment: Options paper

1. *Should the 3.6 GHz band be progressed from the preliminary replanning stage to the re-farming stage in the ACMA's process for considering additional spectrum for MBB services? Why/Why not?*

**nbn** agrees that the 3.6 GHz band should be progressed from the preliminary replanning stage to the re-farming stage. This band is identified as the candidate band for deployment of early 5G services in domestic and international markets. Further, this band is suitable to provide early 5G services for operators before utilising mmWave bands to cater for future capacity and peak speeds.

- **nbn** notes the ACMA's view that replanning the 3.6 GHz band in a manner suitable for wide-area fixed / mobile broadband services will be net beneficial and increase overall economic welfare in metro and regional areas of Australia. **nbn** considers that this would include **nbn**'s fixed wireless use cases.
- **nbn** notes that fixed wireless broadband, while using the same technology as mobile operators, has some different fundamental capacity requirements as previously submitted to the ACMA.

2. *Do the areas identified in this analysis cover the likely areas of high demand for access to the 3.6 GHz band? Would smaller or larger areas be more appropriate? Why?*

**nbn** agrees that the areas identified in the analysis cover the likely areas of high demand.

[C-i-C] [C-i-C]

3. *If any part of the 3.6 GHz band is re-allocated for the issue of spectrum licences is seven years a suitable re-allocation period? If not, what period of time would be appropriate?*

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<sup>6</sup> The Paper states '... while options to optimise and improve the overall utility of the 3400–3700 MHz band may be explored as part of (or separate to) the consideration of the 3.6 GHz band for future use for MBB, these will be subject to the limitations of the existing licensing arrangements. This includes the need to obtain agreement from spectrum licensees before any licence core conditions can be varied.' Page 18



**nbn** supports, based on currently available information, the ACMA's proposal that incumbents be provided with a 7 year allocation period.

4. *Should different re-allocation periods be considered for different areas? For example, should a longer period be considered for services outside Area 1?*

See **nbn**'s comments under 3 above.

- [C-i-C] [C-i-C]

5. *Are these guidelines appropriate? Why?*

**nbn** considers that the ACMA's guidelines are, in principle, appropriate noting the below.

- [C-i-C] [C-i-C]

6. *Are there any other issues that affect the usability of an area-wide licence that should be taken into account when defining the licence area?*

**nbn** has no further comment, based on available information, on issues that affect the usability of an area-wide licence that should be taken into account when defining the licence area.

7. *If point-to-point licences are affected by replanning activities in the 3.6 GHz band, are the options identified for point-to-point licences suitable? Are there any alternative options that should be considered?*

**nbn** has no comments on the suitability of the options identified for point-to-point licences and whether there are any alternative options that should be considered.

8. *Is the 5.6 GHz band a viable option for wireless broadband systems?*

**nbn** has no comments on whether the 5.6 GHz band is a viable option for wireless broadband systems.

9. *Under what circumstances should apparatus- and class-licensed arrangements be considered for the 5.6 GHz band?*

**nbn** has no comments on the circumstances under which apparatus and class licence arrangements should be considered for the 5.6 GHz band.

10. *If apparatus licensing arrangements are developed for wireless broadband systems in the 5.6 GHz band, are the notional arrangements proposed in Appendix 3 suitable?*

**nbn** has no comment on the suitability of the notional arrangements proposed in Appendix 3.

11. *If point-to-multipoint licences are affected by replanning activities in the 3.6 GHz band, are the alternative options identified suitable? Are there any alternative options that should be considered?*



**nbn** has no comments on the suitability of the options identified for point-to-multipoint licences and whether there are any alternative options that should be considered.

12. *The ACMA seeks comment on the suitability of the current west coast earth station protection zone located near Mingenew, WA, for long-term satellite service use. Are the current regulatory arrangements effective?*

**nbn** has no comment on the suitability of the current west coast earth station protection zone located near Mingenew, WA, for long-term satellite service use.

13. *In the event FSS earth stations are affected by replanning activities in the 3.6 GHz band, the ACMA seeks comment on:*

a) *Any issues surrounding the development and establishment of an east coast earth station protection zone; particularly on what factors would be necessary to make it an attractive option for earth station operations.*

**nbn** submits that any east coast earth station protection zone must not interfere with the operation of **nbn**'s existing or planned networks. **nbn** has made long term investment and business decisions in designing its networks and any new earth station protection zone must accommodate **nbn**'s network design.

**nbn** has extensive existing 3.4 and 3.5GHz band deployments on the east coast to provide fixed wireless broadband. Due to adjacent coordination protection criterion, the location of an east coast earth station protection zone should be carefully selected to ensure that there is no impact on existing or future deployments/upgrades in the 3.4, 3.5 and / or 3.6 GHz band.

b) *Whether there are any views on potential candidate locations to consider.*

**nbn** submits that a central Australia earth station zone would have minimal impact on any of the existing or future fixed/ mobile broadband deployments.

c) *Whether there should there be more than one earth station protection zone on the east and west coasts of Australia.*

**nbn** has no comments on whether there should be more than one earth station protection zone on the east and west coasts of Australia.

d) *If the identification of a central Australia earth station zone should be considered.*

**nbn** submits that a central Australia earth station zone would have minimal impact on any of the existing or future fixed/ mobile broadband deployments.

14. *Are the approaches for amateurs, radiolocation services, class licensed devices and TVRO systems suitable?*

**nbn** has no comment on the suitability of the approaches identified in the Options Paper.



15. *Are there any other options for incumbent services, not identified in this paper, which should be considered?*

**nbn** has no comment on other options for incumbent services, not identified in this paper, which should be considered.

16. *Should any of the sharing arrangements discussed in this section be considered for implementation in the 3.6 GHz band? Why or why not?*

**nbn** considers that any sharing arrangements need to protect against interference and respect the rights of incumbents. Sharing of spectrum may, for example, require detailed coexistence rules in respect of geographical boundaries and compliance may be difficult for the ACMA to monitor unless there is mutual agreement of participating parties.

17. *Are there any other sharing arrangements that should be considered?*

**nbn** has no comment on other sharing arrangements that should be considered, noting comments under 16 above.

18. *Are there any other replanning options that should be considered?*

**nbn** has no comment on this matter.

19. *Which replanning option should be implemented in the band? Why?*

**nbn** submits that option 3c should be implemented in the band, noting comments under 20 below.

20. *In the event an area-wide licensing option is implemented, in which of the defined areas (that is, Area 1, 2, 3 and Australia-wide as defined in Appendix 6) should these arrangements be implemented? Are the current area definitions appropriate? If not, what area should be defined?*

**nbn** considers that an area-wide licensing option should be implemented in area 3. In all areas, the extent of the geographic area needs to be large enough to have meaningful deployment.

**[C-i-C] [C-i-C]**

21. *If Option 4a is implemented, what frequencies and areas should be re-allocated for the issue of spectrum licences? How much spectrum should remain subject to site-based apparatus licensing arrangements? Should different amounts be considered in different areas?*

If Option 4a is implemented, **nbn** considers that spectrum licence arrangements should be put in place in area 3. In all areas, the extent of the geographic area needs to be large enough to have meaningful deployment.

In respect of the amount of spectrum that should remain subject to site-based apparatus licensing arrangements and whether different amounts be considered in different areas:

- **[C-i-C] [C-i-C]**



- **nbn** considers that the proposal that any area to remain subject to apparatus licensing arrangements would best be placed at the upper end of the 3.6 GHz band to support defragmentation of licence holdings in the broader 3400 – 3700 MHz band appears sound in principle. **nbn** notes its holdings in this band and that contiguous holdings are highly desirable.

22. *If Option 4b is implemented, what frequencies and areas (that is, incumbent apparatus licence services) should remain subject to site-based apparatus licensing arrangements?*

**nbn** has no comments on the frequencies and areas that should remain subject to site-based apparatus licensing arrangements subject to the following:

- [C-i-C] [C-i-C]
- **nbn** submits that an area-wide licensing option should be implemented in area 3. In all areas, the extent of the geographic area needs to be large enough to have meaningful deployment.

23. *Comment is sought on the ACMA's preferred option (Option 3c) for the 3.6 GHz band.*

See **nbn**'s comments under 19 and 20 above.

## 2.2 Issue for comment: Highest value use assessment

1. *Are there any general economic impacts that should be included but are not currently included in the method to determine highest value use?*

[C-i-C] [C-i-C]

2. *Are there any other spectrum valuations (for example, domestic or international auction prices or re-issue prices) that should be considered as a guide to the value of the 3.6 GHz band?*

**nbn** has no comment on any other spectrum valuations that should be considered as a guide to the value of the 3.6 GHz band.

3. *Is the range of \$/MHz/pop values suitable for this analysis, or is there a case to narrow or broaden the range?*

**nbn** considers, on the available information, that the range of \$/MHz/pop values is suitable for this analysis.

4. *Would there be a change in the quality of services that could be provided by WISPs with the 5.6 GHz band compared with the incumbent 3.6 GHz band services?*

**nbn** has no comment on whether there would be a change in the quality of services that could be provided by WISPs with the 5.6 GHz band compared with the incumbent 3.6 GHz band services.



5. *What alternative internet services could regional consumers access (excluding NBN Sky Muster services) if WISPs are unable to provide their fixed wireless broadband services?*

**nbn** has no comment on alternative internet services that regional consumers could access (excluding **nbn**'s Sky Muster services) if WISPs are unable to provide their fixed wireless broadband services.

6. *How could the loss of point-to-multipoint licences in the 3.6 GHz band affect regular business operations for non-WISP licensees?*

**nbn** has no comment on how the loss of point-to-multipoint licences in the 3.6 GHz band could affect regular business operations for non-WISP licensees.

7. *Are the applicable costs for equipment replacement and re-tuning for point-to-multipoint licences suitable? If not, what cost ranges should be applied?*

**nbn** has no comment on the suitability of the applicable costs for equipment replacement and re-tuning for point-to-multipoint licences.

8. *Are there any additional costs (applicable under a Total Welfare Standard) that have not been considered in this analysis?*

**[C-i-C] [C-i-C]**

9. *If the 3.6 GHz band is re-farmed, what is the extent to which a longer re-allocation period would reduce incremental costs under a TWS?*

**nbn** has no comment, based on available information, on the extent to which a longer re-allocation period would reduce incremental costs under a TWS.

10. *Is the cost range for the relocation of all C-band licences from an FSS earth station facility suitable for this analysis?*

**nbn** has no comment on the suitability of the cost range for the relocation of all C-band licences from an FSS earth station facility for this analysis.

11. *Are the applicable costs for equipment replacement and re-tuning for point-to-point licences suitable? If not, what cost ranges should be applied?*

**nbn** has no comment on the suitability of the applicable costs for equipment replacement and re-tuning for point-to-point licences.