# Submission in response to DITRDC Consultation Paper

Designation of spectrum in the 3.4 GHz band for spectrum licensing

# Public Version

October 2020

**EXECUTIVE SUMMARY**

1. Optus welcomes the opportunity to provide feedback to the Department of Infrastructure, Transport, Regional Development and Communications (Department) consultation paper: *Designation of spectrum in the 3.4 GHz band for spectrum licensing* (the Consultation Paper).
2. Optus supports the progression of this milestone as identified in the Australian Media and Communications Authority (ACMA) Implementation Plan for optimising the 3400- 3573 MHz (3.4 GHz) band.
3. Optus welcomes the Department’s proposal to designate for spectrum licensing the 3400-3425 MHz and 3492.5-3542.5 MHz portions of the band in metro and defined regional areas to facilitate the defragmenting of Optus and NBN Co’s 3.4 GHz spectrum holdings. Notably, that:
   1. Designation will be required to formally commence the licence conversion stage: to convert NBN Co’s PTS licences from apparatus to spectrum licence.
   2. Once conversion is completed, any agreement between NBN Co and Optus for de-fragmentation can then be formalised.
4. The current 3.4 GHz restack activities are due to be completed by 30 November 2020, following which the Minister is considering making the Designation Notice that is the subject of this consultation.
5. Finalising the optimisation of the 3.4 GHz band will ensure the efficient use of that spectrum and as well as maximising the public benefit of its use. This will help to deliver key mobile services to Australian consumers. Optus also looks forward to continuing to work with the Department and the ACMA to resolve the minor outstanding issues that remain from the restack process.

**IMPORTANCE OF DE-FRAGMENTATION**

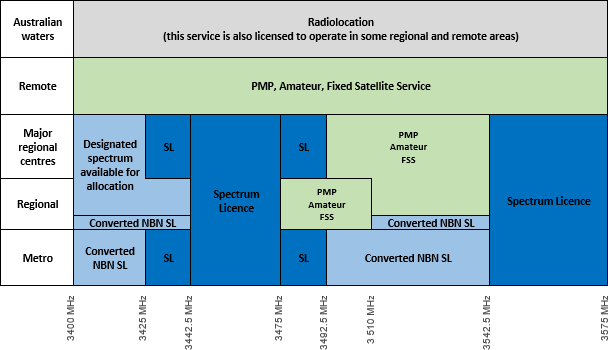
1. The 3400-3575 MHz (3.4 GHz) band is subject to a mix of spectrum and apparatus licensing arrangements across Australia. This mix of licensing types has arisen as a result of legacy uses and licensing arrangements within the band. It has also been this mix that has impeded commercial negotiations to implement de-fragmentation and efficient use of the band.
2. In summary,
   1. Spectrum licences have been issued in the frequency ranges 3425-3492.5 MHz and 3542.5-3575 MHz in both metro areas and major regional centres; and 3442.5-3475 MHz and 3542.5-3575 MHz in regional areas.
   2. The PTS licences granted to NBN Co were initially awarded via Ministerial Directions and granted NBN Co the authorisation to use spectrum under apparatus licensing arrangements in the frequency ranges 3400-3425 MHz in both metro and regional areas; as well as 3492.5-3542.5 MHz in metro areas.
   3. In all other areas, including remote areas, of the frequency range 3400-3575 MHz, authorisation to use spectrum for PMP, Amateur and Fixed Satellite services comprise either apparatus or class licensing arrangements.
3. Over time, as IMT technologies have developed and consumer appetite for data services increased, demand has grown for access to large contiguous spectrum portions.
4. It is generally argued that operators need at least 100 MHz of contiguous mid-band spectrum for initial 5G deployments. Across many jurisdictions, large bandwidth blocks across the global 3.5 GHz (which can range from 3300-3800 MHz) band have been increasingly allocated to operators. For example, the EU considers *“Large contiguous spectrum portions of preferably 80-100 MHz facilitate the efficient deployment of 5G wireless broadband services, for example using Active Antenna Systems (AAS), with high throughput, high reliability and low latency in line with the policy objective of gigabit connectivity.”* 1
5. However, even though the 3.4 GHz band offers 175 MHz of spectrum in all regions, there are currently no incumbent licensees who hold more than 62.5 MHz of contiguous spectrum (using any combination of licence types) within this allocation. For example, even in the key metro areas of Sydney and Melbourne where Optus has 100 MHz of spectrum licensed holdings and NBN Co has 75 MHz of apparatus licensed holdings, the largest contiguous portions held by each licensee is both 62.5 MHz and 50 MHz, respectively. This highlights a clear fragmentation issue that is impeding the efficient use of this spectrum band.
6. Following the ACMA’s planning decision in November 20192, work has commenced among affected spectrum licensees to address this fragmentation issue. As shown in Figure 1, conversion of NBN Co’s PTS licences will allow the formalisation of the restack activities in agreed areas between the agreed parties.

1 Commission Implementing Decision 2019/235/EU of 24 January 2019 on amending Decision 2008/411/EC as regards an update of relevant technical conditions applicable to the 3 400-3 800 MHz frequency band (OJ L37/135, 8.2.2019)

2 ACMA, 2019, Optimising arrangements for the 3400-3575 MHz band, Planning decisions and preliminary views, November

Figure 1 Final planning arrangements for the 3400-3575 MHz band

***FSS = fixed satellite service, PMP = point-to-multipoint, SL = spectrum licence***



*Source*: ACMA

1. The ACMA’s planning decision also foreshadowed its consideration to:3
   1. Progress work on urban excise by:
      1. Engaging with industry to develop interference management criteria to and from urban excise areas; and
      2. Determine the utility of urban excise areas and the appropriate licensing approach to make the spectrum available.
   2. Allocation of urban excise areas as well as spectrum licences in the 3400-3442.5 MHz frequency in the defined areas and the 3400-3425 MHz frequency range in major regional centres.
2. Optus reiterates our comments that any investigation into the utility of urban excise areas, greater consideration must be given to the extent of the device boundary conditions (DBC), co-channel interference and the impact of device registrations. Preliminary analysis already indicates that the usable area of several potential urban areas will be unusably small from the imposition of the DBC, even without taking into account co-channel interference.
3. We similarly acknowledge the Department’s comments that fixed satellite services (FSS) will continue to have access in some parts of the band. Optus also supports retaining access for FSS in the proposed Earth Station Protection Zones (ESPZ) around Moree, Roma, Uralla and Quirindi for the specified frequency segments.
4. Finally, Optus supports the ACMA’s stated planning goals for the 3400-3575 MHz band, which include ensuring, as much as possible, the following:4
   1. Barriers to change (for example, trading) are removed;
   2. Arrangements for wireless broadband use are put in place across the entire 3400-3575 MHz band, Australia-wide;
   3. Area-based apparatus and spectrum licensees achieve contiguous spectrum holdings in all areas in which they hold licences;
   4. Area-based apparatus and spectrum licensees’ total spectrum holdings are maintained in all areas they hold licences; and
   5. Spectrum arrangements for localised wireless broadband apparatus licensing are consolidated into a single frequency range to facilitate the adoption of TDD technologies and provide access to larger channel sizes.
5. Optus further notes that by extension, these same fragmentation principles should be harmonised across the entirety of the 3.4 GHz, 3.6 GHz and the upper bound of any future 3700-4200 MHz band that is allocated to wireless broadband.

**THE SPECTRUM DESIGNATION P ROCESS**

1. Optus welcomes the Department’s proposal to designate for spectrum licensing the 3400-3425 MHz and 3492.5-3542.5 MHz portions of the band in metro and defined regional areas to facilitate the defragmenting of Optus and NBN Co’s 3.4 GHz spectrum holdings. Notably, that
   1. Designation will be required to formally commence the licence conversion stage: to convert NBN Co’s PTS licences from apparatus to spectrum licence.
   2. Once conversion is completed, any agreement between NBN Co and Optus for de-fragmentation can then be formalised. It is intended that a s72 variation via agreement could then take place to formalise the de-fragmentation outcome in the agreed areas.
2. The Department also acknowledges that the proposed designation would also facilitate the allocation of additional spectrum for spectrum licensing in regional areas that will be vacant following a restack of apparatus licences currently being conducted by ACMA. However, these future activities should not delay the overall decision on whether the designation proceeds. We welcome future consultation on these matters at a later stage.
3. Optus also acknowledges the HCIS identifiers in the proposed Designation Notice is in line to those set out in Attachment A of the Consultation Paper.
4. The current 3.4 GHz restack activities are due to be completed by 30 November 2020, following which the Minister is considering making the Designation Notice that is the subject of this consultation.
5. Optus also looks forward to continuing to work with the Department and the ACMA to resolve the minor outstanding issues that remain from the restack process.