25 July 2022

Mr Nick Cooke
Executive Director, Merger Investigations
Australian Competition and Consumer Commission
Level 17, 2 Lonsdale Street
Melbourne VIC 3000

By email: nick.cooke@accc.gov.au

Dear Mr Cooke

ACMA response to ACCC request for information

I refer to the email dated 29 June 2022, requesting that the Australian Communications and Media Authority (ACMA) provide information to assist the Australian Competition and Consumer Commission's (ACCC) review of a merger authorisation application involving Telstra Corporation Limited (Telstra) and TPG Telecom Limited (TPG).

The ACMA has considered the questions posed and provides the attached responses. We are currently unable to provide full responses to questions 2 and 6, and may provide an additional response at a later date, pending the provision of further information by the ACCC to facilitate the analysis necessary to answer those questions.

While the response contains information that is confidential to Telstra and TPG, please note that the ACMA has not taken steps to identify what parts of the advice contain confidential information. The ACMA does not request that any part of the response be kept confidential. However, the ACCC should consider whether any part of the response might disclose any information that is confidential to one or both of Telstra and TPG before publishing the response. The ACMA does not intend to publish the response independently.

If you have any further queries or wish to clarify the provided information, the contact for this matter is Rachel Blackwood (or).

Yours sincerely

Linda Caruso
General Manager, Communications Infrastructure Division

Phone
Email

Attachment A **Responses to questions**

Attachment B **Summary of spectrum licence holdings**

Attachment C **Spectrum licence map (Excel)**

Attachment D **Spectrum licence map (Shapefile)**

Attachment A

Introductory information

1. The Australian Communications and Media Authority (ACMA) is providing this information in response to a request from the Australian Competition and Consumer Commission (ACCC) to assist it in its review of a merger authorisation application from Telstra Corporation Limited (Telstra) and TPG Telecom Limited (TPG).

2. The ACMA has provided responses to the questions posed by the ACCC which explore different aspects of the spectrum management framework, with a particular focus on spectrum allocation processes and use of spectrum holdings.

3. To inform the consideration of the responses, the ACMA considers it useful to provide general information about the operation of the regulatory framework, with respect to the allocation and licensing of spectrum use, and the conditions associated with spectrum use during the life of a licence.

4. The *Radiocommunications Act 1992* (the Act) establishes a regulatory framework that supports the planning, allocation, licensing and authorisation of the use of spectrum.

5. For the purposes of regulatory decision-making under the Act, ACMA decisions are guided by the object of the Act. The object of the Act is to promote the long-term public interest derived from the use of the spectrum by providing for the management of spectrum in a manner that:

   (a) facilitates the efficient planning, allocation and use of the spectrum

   (b) facilitates the use of the spectrum for:

      (i) commercial purposes

      (ii) defence purposes, national security purposes and other non-commercial purposes (including public safety and community purposes)

   (c) supports the communications policy objectives of the Australian Government.

6. The ACMA aims to facilitate efficient spectrum planning, allocation and licensing arrangements in each band for the use or uses that best promote the long-term public interest derived from the use of that spectrum. We will often promote the object of the Act and relevant government policy through a balanced application of market and regulatory mechanisms.

7. Spectrum planning is initiated by the ACMA and determines the general service and application-level uses of the spectrum. By establishing the technical conditions for co-existence arrangements between different spectrum uses and users, it informs the type of licence that authorises access to the spectrum. An overview of our approach to spectrum planning and management is publicly available across a number of planning documents, and the *Draft Five Year Spectrum Outlook 2022-27* (draft FYSO).[1]

8. To the extent possible, the planning arrangements are intended to allow the allocation (or movement) of spectrum with no, or minimal, further regulatory

[1] In particular, pages 6 and 7.

intervention. Planning arrangements may remain stable over long periods; however, where there is evidence of changing optimal use, it may be necessary to amend the arrangements to enable a new use or better support an existing use. Reviewing spectrum planning arrangements in the band in question is a key step to ensuring arrangements continue to support optimal use.

9. The ACMA's band-planning process is made up of 4 stages: monitoring, initial investigation, preliminary replanning and implementation. This staged approach has proven to be a flexible and responsive way of addressing changes in spectrum demand and ensuring the timely delivery of spectrum to market.

10. The Act also provides for a mix of regulator and market-initiated activities supporting the acquisition of spectrum assets. The mix of regulatory tools provides flexibility to enable changes in spectrum use and holdings over time, and during the term of an individual licence.

11. Relevant provisions for ACMA-initiated allocation and licensing processes include:

    > Section 62 of the Act enables the ACMA to issue a spectrum licence allocated in accordance with procedures determined under section 60 of the Act, including via auction, tender, pre-determined or negotiated price, or direct allocation.

    > Section 77C of the Act enables the ACMA to renew a spectrum licence on application by issuing an applicant a new spectrum licence in accordance with the procedures described in Division 3A of Part 3.2 of the Act, without following the procedures determined under section 60 of the Act.

    > Section 81 of the Act enables the ACMA to 're-allocate' a spectrum licence due to expire in accordance with procedures determined under section 60 of the Act.

    > Subsection 98(1) of the Act enables the ACMA to, by legislative instrument, determine the types of transmitter licences and the types of receiver licences (that is, apparatus licences) that it may issue.

    > Section 100 of the Act enables the ACMA to issue an apparatus licence on application, of a type determined under subsection 98(1), or of no type (subsection 98(2)).

    > Section 106 of the Act enables the ACMA to determine a price-based allocation system for the allocation and/or issue of transmitter licences.

    > Section 130 of the Act enables the ACMA to renew an apparatus licence on application.

    > Section 132 of the Act enables the ACMA, by legislative instrument, to issue a class licence.

    > Part 3.6 of the Act enables the ACMA to declare that a part of the spectrum is available for re-allocation by spectrum licences, apparatus licences or a combination of both; if it allocates those licences, any existing apparatus licences in that part of the spectrum will be cancelled.

12. Relevant provisions for licensee-initiated changes to spectrum holdings and spectrum use include:

- Section 68 enables a person to obtain a right to operate radiocommunications devices via third party authorisations, for spectrum licences
- Section 114 enables a person to obtain a right to operate radiocommunications devices via third party authorisations, for apparatus licences, subject to the ACMA having made a determination that a person must not be authorised for any category of apparatus licence, for a class of persons, or in specified circumstances
- Section 85 enables a person to acquire a spectrum licence through an assignment (subject to rules made by the ACMA) (i.e. trading)
- Section 131AA enables a person to apply for approval by the ACMA of a transfer of an apparatus licence (i.e. licence trading or transfer), subject to any determination by the ACMA that certain apparatus licences are not transferable or may not be transferred in specified circumstances.

13. There may also be avenues for obtaining the use or benefit of spectrum outside these provisions. For example, a person may engage the exclusive services of a spectrum licensee to provide radiocommunications services for the person in a specific area. The spectrum licensee retains the spectrum licence and does not authorise the first person to use radiocommunications devices under the licence, but has agreed only to use its devices under the licence for the benefit and at the direction of the first person. The ACMA would generally be unaware of the existence or nature of these agreements.
14. The ability for licensees to initiate changes to how spectrum is used also provides flexibility to share spectrum. We note that the radiocommunications regulatory framework itself does not generally place restrictions on sharing communications infrastructure or assets.
15. Each of these mechanisms enables the allocation and re-allocation of spectrum to support its efficient use and may result in changes to the uses of spectrum over time, and the spectrum holdings of individual licensees.
16. The Act makes clear that the issuing of, or third party authorisation in relation to, a spectrum licence or apparatus licence is taken to be an acquisition for the purposes of section 50 and related provisions of the *Competition and Consumer Act 2010* (CCA) (see sections 68A, 71A, 106A and 114A of the Act).

Response to questions

17. Noting the above information about the regulatory framework, the ACMA's response to each question follows:

1. ***A table, by spectrum band, of spectrum licensed holdings used by MNOs or fixed wireless providers to provide mobile or fixed wireless services. We need this table to include the licence term, licence expiry date, and the general geographic location (e.g. regional Victoria, Melbourne metro). Where spectrum was auctioned, please provide details of that auction.***

   (We consider that relevant bands (Sub Services) are likely to include 700 MHz, 800 MHz, 1800 MHz, 2 GHz, 2.3 GHz, 2.5 GHz, and 3.4 GHz.)

18. See Attachments B, C and D.

2. ***Please identify spectrum holdings which geographically overlap both the Regional Coverage Zone specified by the MOCN Service Agreement and areas to be authorised to Telstra beyond the MOCN coverage zone.***

19. This information will be provided separately, subject to receipt of the additional information requested by the ACMA.

3. ***The likelihood and quantum of any efficiency gains from potential restacking that may occur related to the proposed transaction. As you will see from paragraph 128(a) of the Authorisation Application 'Telstra and TPG will agree to work together and with the ACMA to re-stack the 850MHz spectrum bands in the RCZ.***

20. [redacted]

21. In effect, the restacking contemplated by the agreement would see Telstra's 850 MHz and 850 MHz expansion band spectrum licences becoming contiguous, resulting in holdings of 2x20 MHz in metropolitan areas and 2x25 MHz in regional areas at the bottom of the band.[3] TPG would then hold its 2x10 MHz in metropolitan areas and 2x5 MHz in regional areas directly adjacent to Telstra.

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[2] Except when renewing a spectrum licence, the ACMA may only vary 'core conditions' (which includes those conditions specifying the frequencies and geographic areas in which radiocommunications devices may be operated) with the consent of the licensee, under section 72 of the Act.
[3] The 850 MHz expansion band refers to parts of the 850 MHz band auctioned in 2021.

22. Achieving this outcome would require Optus' willingness to move the spectrum licence it holds in the 850 MHz expansion band to the top of the 850 MHz band. Optus currently holds 2x1 MHz of spectrum in this band. To support a restack and defragmentation of Telstra and TPG spectrum holdings, Optus would need to be willing to move these holdings to occupy the 844-845/889-890 MHz frequency range. If Optus is not willing to move, the next point at which restack could be considered and possibly implemented is during the 850 MHz spectrum licence expiry (which is 17 June 2028).[4]

23. If Optus is willing to restack its spectrum, TPG and Telstra would be able to implement a restack so that their individual holdings are contiguous and adjacent to each other.

24. Under this scenario, the main benefits are likely to be realised in areas where the agreement does not apply (i.e. metropolitan and surrounding areas) and Telstra and TPG are independently using their own spectrum holdings. Of course, if the agreement is ever terminated (or modified) then these benefits may extend to other areas as well.

25. While the agreement is in force, the main benefit of restack in the Regional Coverage Zone is realised when Optus' holdings are moved to the top of the band. Once this occurs, from a spectrum utility perspective, it does not matter whether Telstra's and TPG's individual holdings are contiguous or not. This is because under the terms of the agreement, Telstra and TPG are sharing their spectrum within these areas and that shared spectrum would be contiguous. Conversely, a restack that secured defragmentation and alignment of metropolitan and regional spectrum holdings would be likely to lead to efficiency gains by reducing the impact of dead zones at licence boundaries.

26. In areas to be authorised to Telstra beyond the Regional Coverage Zone, if Telstra is utilising all TPG's 850 MHz band spectrum licence, then again there would appear to be no difference in utility of the spectrum whether or not restack occurs. If Telstra is utilising some or none of TPG's spectrum licences, then the general benefits of a restack listed below would apply.

27. To the extent that any restack involves or requires administrative decisions to be made by the ACMA (primarily, a decision to vary a condition of a licence under section 72 of the Act), it would be inappropriate for the ACMA to give an indication about whether it would or would not make that specific decision. However, in the explanatory statement for the *Radiocommunications Spectrum Marketing Plan (850/900 MHz Band) 2021*, the ACMA stated that the 'downshift spectrum' (824 MHz to 825 MHz and 869 MHz to 870 MHz) was:

> *designed to allow the 'downshift' of existing spectrum licences in the part of the spectrum known as the '850 MHz original band' (frequency ranges 824-845 MHz and 870-890 MHz). Once spectrum licences are issued for the downshift spectrum,*

[4] 850 MHz band spectrum licences due to expire in June 2028 include licences re-issued in 2013, and the 2x1 MHz 850 MHz expansion band licence (i.e. the downshift licence) held by Optus. Other 850 MHz expansion band spectrum licences auctioned in 2021 will expire in 2044.

they may be traded or otherwise dealt with to allow existing spectrum licences to shift frequencies down by 1 MHz.

General benefits of a restack

28. The ACMA considers it likely there would be efficiency gains associated with any move to defragment the spectrum in the manner proposed. 4G standards are such that frequency duplex division (FDD) 4G networks are generally deployed in 2x5 MHz, 2x10 MHz, 2x15 MHz and 2x20 MHz configurations.[5] 5G standards are similar but can support larger configurations including 2x25 MHz and 2x30 MHz.[6]

29. Large contiguous spectrum holdings are generally more cost effective because they can minimise the number of adjacent channel interference management issues to consider, and there is typically a reduction in infrastructure costs (for example, where fewer devices need to be deployed). They are also more spectrally efficient as there are lower overheads in managing access to the spectrum allowing for better data throughput for the same amount of overall spectrum.

30. For example, the ACMA understands that the costs of deploying a 2x5 MHz channel are similar to that of a 2x20 MHz channel, but the useful data throughput is at least four times greater for a 2x20 MHz channel. Carrier aggregation technology may be available to "combine" non-contiguous holdings. However, this may come with a greater risk of interference if services are deployed in the interleaved spectrum and such use is not as spectrally efficient. It could also introduce additional costs if extra transmitters and receivers are required. The ACMA does not know whether 850 MHz band equipment is capable of supporting the aggregation of non-adjacent channels – this information would need to be confirmed with licensees and equipment manufacturers. If such equipment is not available for a band, licensees tend to value wider contiguous holdings, and in designing spectrum allocations, we usually implement arrangements to ensure that spectrum won in any given area is contiguous.

31. In the absence of detailed network cost modelling, it is not possible for the ACMA to estimate the quantum of these efficiency gains. Indeed, even if network cost modelling were undertaken, the estimates of the efficiency gains derived would be heavily dependent on assumptions about future costs and demand.

32. 

[5] 3GPP 36.104 V17.6.0 "*Technical Specification Group Radio Access Network, Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception*", June 2022

[6] 3GPP 38.104 V17.6.0 "*Technical Specification Group Radio Access Network, NR, Base Station (BS) radio transmission and reception*", June 2022

4. The likely effect of the proposed transaction on incentives to invest in:

a) future spectrum, and

b) future infrastructure.

33. The ACMA notes that access to additional spectrum, or improved use of existing spectrum holdings, is only one of three factors that enable increases in capacity. The other factors are the use of increasingly spectrally efficient technologies (e.g. moving from 4G to 5G) and the deployment of appropriate network equipment and topologies (e.g. network densification).

34. The ACMA also notes that the agreement enables pooling of spectrum assets and rationalisation of transmission infrastructure. As access to spectrum is a necessary input supporting the deployment of wireless communications infrastructure, to the extent that the agreement changes access to spectrum assets and the costs of deployment of infrastructure assets, it can be expected that the agreement will impact on future demand for spectrum by both Telstra and TPG, and their decisions concerning infrastructure investment.

35. Decisions about the appropriate balance between spectrum acquisition and the capacity to invest in new technologies and/or deploy additional communications infrastructure and the incentives to invest will be different for each company, depending on whether they already hold appropriate spectrum and have available communications network deployments.

36. The ACMA has no information about these matters in relation to TPG and Telstra.

5. Whether TPG has spectrum licences that will expire during the term of the proposed arrangement, and whether the ACMA is likely to renew these licences.

37. The initial term of the agreement is ten years which, assuming a Service Start Date of around December 2022 (following regulatory approval and satisfaction of any other Conditions), would mean an expiry date of December 2032. TPG has a number of extant spectrum licences that are expiring in that initial term, including its spectrum licences in the 700 MHz, 850 MHz, 1800 MHz, 2 GHz, 2.5 GHz, and 3.4 GHz bands. This encompasses all of TPG's spectrum licences, apart from its holdings in the 26 GHz band. If the options for the Further Terms are exercised, this would in turn mean an expiry date of December 2042; TPG's spectrum licences in the 26 GHz band would expire during this period.

38. For all spectrum licences currently issued, the Act sets out a process for the renewal of the licences:

    (a) the licensee can only apply for renewal in the 2-year period ending when the spectrum licence is due to expire (**renewal application period**) (s 77A(3));

    (b) however, a licensee is deemed to make an application for renewal if:

(i) the ACMA gives the licensee a 'licence renewal notice'; and

(ii) in response to the notice, the licensee pays the amount specified, by the date specified, in the notice;

(c) before deciding whether to renew the spectrum licence, the ACMA:

(i) must have regard to all matters that it considers relevant (s 77C(7)(a));

(ii) must have regard to the effect on radiocommunications of the proposed operation of the radiocommunications devices that would be authorised under the new spectrum licence (s 77C(7)(b));

(iii) if the licence would be renewed for a period of 10 years or longer – must be satisfied it is in the public interest to do so (s 77C(7));

(iv) may have regard to a number of matters, relating to contraventions of licence conditions involving the licensee, any outstanding liability of the licensee to pay amounts of taxes or charges associated with apparatus and spectrum licences, and the cancellation of other licences held by the licensee (s 77C(8));

(v) may ask the licensee for additional information (s 77B).

(d) if the ACMA fails to make a decision on renewal within 6 months after receiving the application, or within 6 months after receiving further information in accordance with s 77B, the ACMA is taken to have refused the application for the purposes of Part 5.6 of the Act and must explain the failure to the licensee (s 286(6) to (8));

(e) the ACMA is not obliged to renew a licence without the licensee (s 77C(2)):

(i) paying to the ACMA the spectrum access charge (determined under s 294) for issuing the new spectrum licence; or

(ii) reaching an agreement with the ACMA for payment of that charge.

39. This procedure was introduced into the Act in 2021, by the *Radiocommunications Legislation Amendment (Reform and Modernisation) Act 2020* (Modernisation Act). The ACMA has not yet had the occasion to act under this procedure. The ACMA has published an information paper that sets out its current policy for, among other things, acting under this procedure. In particular, at pages 27-28, the policy states:

> …to engage [spectrum] licensees early and enable full consideration of relevant matters, we expect to undertake work in relation to the renewal process, prior to the renewal application period.

…

In all cases, we would expect that holders of long- and medium-term licences would apply for renewal at the beginning of the renewal application period. This would enable us to decide on renewal well ahead of expiry, providing clarity to licensees over their future arrangements.

40. A decision to refuse to renew a spectrum licence, or a decision to renew a spectrum licence with different conditions, is subject to reconsideration by the ACMA (section 285 of the Act) and, if on reconsideration the decision is affirmed or varied, to review by the Administrative Appeals Tribunal (section 292 of the Act).

41. It would be inappropriate for the ACMA to give an indication about whether particular licences may or may not be renewed until the renewal processes have been undertaken and all relevant considerations taken into account. The ACMA will approach each decision on its merits, having regard to all relevant matters. The ACMA may develop policies with respect to particular bands, and the renewal of licences in those bands, but has not done so yet in relation to any of the relevant bands.

42. In the information paper, the ACMA identified that, for spectrum licences in force at the commencement of the Modernisation Act, it would begin consideration of licence renewal 5 years from expiry, with a preferred policy outcome for a band identified no later than 2 years from expiry.

43. The ACMA has indicated in the draft FYSO, that it intends to release a discussion paper in Q2 2023 on renewal processes for expiring 850 MHz band and 1800 MHz band spectrum licences (which expire in June 2028), examining matters we would consider in assessing generally whether renewal is in the public interest, the assessment process for renewal, and the taxes and charges payable.

44. For spectrum licences that are issued (including by renewal) after the commencement of the relevant provisions of the Modernisation Act, the ACMA may include statements in the licence that modify aspects of the procedure set out above (see section 65A of the Act). For the statements that modify those aspects for licences recently allocated in the 850/900 MHz band, see section 17 of the *Radiocommunications Spectrum Marketing Plan (850/900 MHz Band) 2021*. These licences have not yet been issued and will likely be issued closer to their commencement date of 1 July 2024.

6. Any information the ACMA has regarding the current utilisation of Telstra and TPG's spectrum, in particular in the geographic area covered by the MOCN service agreement.

45. The ACMA maintains a Register of Radiocommunications Licences (RRL). This contains details of devices authorised to operate under both apparatus and spectrum licences. When looking at data in the RRL it is important to note the following:

    > Some devices, typically those that are mobile, nomadic or low powered in nature, are not required to have their details recorded on the RRL.

    > Except for those exempt from registration, devices are required to be licensed and registered before they are operated. There can be a lag

time between these two events. There is also no requirement for a licensee to ever deploy an operational transmitter.

> There is no requirement to surrender apparatus licences or remove from the RRL device registrations associated with devices that are no longer in use.

46. Subject to those limitations, RRL data can be used to provide a level of understanding for the current (or planned) utilisation of spectrum. If more detailed or accurate information than this is required, the ACCC should approach Telstra and TPG directly.

47. Further information regarding number of device registrations will be provided separately, subject to receipt of the additional information requested by the ACMA.

7. Whether, to ACMA's knowledge, any TPG spectrum is currently leased, and likely implications for the lessees.

(We note that parties are not required to inform the ACMA about third party authorisations of spectrum, unless the ACMA asks. We understand that parties can tell the ACMA as a courtesy and that Telstra/TPG did this with the 3.6GHz spectrum that TPG has authorised to Telstra until Nov 2023.)

48. We are aware of an agreement that has been in place, at least in the past, between Pivotel and Vodafone. This is referenced, for example, in a public submission previously made by Pivotel.[7] It's not possible for us to say anything about any potential implications for Pivotel (or any other parties that may lease spectrum from TPG), because we are not familiar with the terms of that agreement.

8. Whether the proposed transaction has implications for the ACMA's processes, including in respect of auction design. Does the ACMA consider there is any detriment in allowing the proposed transaction to allocate spectrum outside of the ACMA's auction process.

Acquiring rights to operate radiocommunications devices outside of auction processes

49. Before addressing the specific question posed, it is important to note, as outlined in the introductory section (paragraphs 11-17 above), that the statutory framework established under the Act expressly contemplates scenarios where a person may acquire rights to spectrum and rights to operate radiocommunications devices other than by a price-based or administrative allocation of spectrum.

50. Under section 100 of the Act, the ACMA may, by administrative decision, issue an apparatus licence to a person who has applied for it. For some apparatus licensed frequency bands, the ACMA has developed particular policies around the process for applying for and issuing apparatus licences, such as an 'allocation window'.[8] When issuing apparatus licences under section 100, the ACMA may have regard to the aggregate parts of the

[7] See Pivotel submission to the Department of Infrastructure, Transport, Regional Development, Communications and the Art's 2019 Regional Connectivity Program consultation

[8] See, for example, https://www.acma.gov.au/area-wide-apparatus-licensing-26-and-28-ghz-bands

spectrum that, under transmitter licences or spectrum licences, may be used by the application (section 100(4C)), and may impose allocation limits (section 102G).

51. Accordingly, under the Act there are a number of ways outside of an auction of spectrum or apparatus licences that a person may acquire rights to operate radiocommunications devices, with varying degrees of regulatory oversight by the ACMA. Several sections of the Act specifically reference the fact that an authorisation to operate devices under a licence, or a transfer or assignment of a licence, is taken to be an acquisition for the purposes of the provisions of the CCA. Given long-standing nature of most of the mechanisms that exist in the Act for acquiring rights to operate radiocommunications devices outside of auction or price-based allocation processes for spectrum and apparatus licences, subject to the operation of the CCA, as a general proposition the ACMA does not consider there to be any detriment from the operation of those mechanisms.

Potential effect on future allocation processes

52. The ACMA's processes for bringing spectrum to the market (referred to as our planning and allocation processes) necessarily have a long lead time. The ACMA engages extensively in international fora that consider band harmonisation. These processes inform the development of technology standards that underpin affordable communications technologies. The ACMA develops the regulatory framework that establishes the coexistence arrangements between spectrum uses and users by managing interference (spectrum interactions between different spectrum uses/users) and hence the negative externalities of spectrum use.

53. If a given spectrum band is identified for use for wireless broadband or other use cases, then we may include it among the bands in our band-planning framework. In establishing new planning frameworks, we consider bands at 4 distinct stages: monitoring, initial investigation, preliminary replanning and implementation. This process is detailed in the draft FYSO.

54. When the band is moved into the implementation stage, we consider the appropriate form of allocation. In instances where demand for spectrum is likely to exceed supply, we may consider using price-based allocations mechanisms such as an auction. In other instances, an administrative allocation may be used. We also consider the type of licence that may best support the relevant use cases, informed by the different types of demand for the use of the spectrum.

55. When spectrum licensing is used, there is a lengthy process for allocating the spectrum. Relatively early in this process, well before we know the identity of the interested parties, we consult on the proposed auction format, as auction design is a function of the spectrum being offered, likely use cases, as well likely participants. A general level of interest may be ascertained from the multiple rounds of consultation across the planning and implementation stages, but there is generally no commitment to participate in the auction until the auction bids are made, nor is participation in an auction process contingent on participation in the preceding consultation processes.

56. The main impact of the existence and nature an agreement such as the MOCN Agreement on our processes is in assessing issues relevant to

potential allocation limits. Such agreements, that provide for rights to use spectrum, may be matters the ACMA has regard to when considering the imposition of allocation limits. Moreover, where such an agreement exists, the ACMA would carefully consider the nature of any commercial arrangements operating in the market to ensure the legislative instruments giving effect to any allocation limits operate effectively. The ACMA has discretion within the framework of the Act to draft such instruments as appropriate. The Minister may also direct the ACMA in relation to determining allocation limits.

57. Another potential consequence of the agreement relates to our considerations of geographic lot configuration. When designing geographic lots for an auction, we attempt to design lots to meet the business cases of all potential bidders. If a potential bidder's demand for spectrum is only focused on metropolitan areas, for example, we may design the lots in a consistent manner with this demand. While we would attempt to design lots to meet all potential business cases, due to interference protection requirements at lot boundaries and the implications of lot design for the complexity of the auction process itself, there is a practical upper limit on the number of geographic lot configurations we can offer in an auction.

9. What demand is there for TPG's existing spectrum holdings?

58. As a general proposition, the ACMA is seeing increasing demand for spectrum to deliver increased capacity and data rates for a variety of use cases including wireless broadband, localised area wireless broadband and fixed wireless broadband, with interest in particular spectrum bands expressed to the ACMA through various consultations and feedback on the draft FYSO. This increasing demand for low, mid and high band spectrum is relevant to spectrum currently held by TPG, as well as spectrum held by a range of other licensees. Beyond that, we cannot comment on any specific level of demand for TPG spectrum.

10. To what parties could TPG potentially authorise its spectrum holdings?

59. Under section 68 of the Act, a spectrum licensee may authorise any person to operate radiocommunications devices under its spectrum licence, subject to the operation of the CCA (section 68A). The ACMA may make rules about the operation of radiocommunications devices under spectrum licences by authorised third parties, including rules about the way in which licensees may authorise third parties (subsection 68(3)), but has not done so.

60. Under section 114 of the Act, an apparatus licensee may authorise any person to operate radiocommunications devices under its apparatus licence, subject to a determination under section 115 and the operation of the CCA (section 114A). A third party may not be authorised if they held a licence of the same type that is currently suspended or has been cancelled within the last 2 years (subsection 114(3)). The limitation in subsection 114(3A) is not relevant to TPG.

61. The ACMA has made the *Radiocommunications (Limitation of Authorisation of Third Party Users and Transfer of Apparatus Licences) Determination 2015* under section 115 of the Act, among other provisions. Section 5 of that determinations prevents an apparatus licensee from authorising a third party to operate radiocommunications devices under section 114 of the Act if, broadly speaking:

- the licensee is exempt from apparatus licence tax, or subject to a concessional rate of tax, and the third party is not exempt or subject to a concessional rate; or
- the licence authorises the operation of a radiocommunications device for the provision of an international broadcasting service, but no corresponding international broadcasting licence is allocated under the *Broadcasting Services Act 1992*; or
- the licensee is the ABC or SBS, and the third party intends to provide a broadcasting service;
- the licence authorises the operation of a radiocommunications device for the provision of an exempt broadcasting service, but the third party does not intend to provide an exempt broadcasting service within the meaning of section 18A of the *Broadcasting Services Act 1992.*

62. To the best of the ACMA's knowledge, none of these prohibitions in that determination would affect any of the apparatus licences held by TPG.

Attachment B: Current holdings

Band	Licensees (holdings)	Licence commencement	Licence expiry	Geographic coverage	Allocation details
700 MHz (703 MHz-748 MHz /759 MHz-803 MHz (paired))	Telstra 2x20 MHz Australia-wide	1 January 2015	31 December 2029	Australia-wide	Digital Dividend – 2x45 MHz Australia-wide - 2013 Residual lots – 2x15 MHz Australia-wide – 2017
	Optus 2x10 MHz Australia-wide	1 January 2015			
	TPG 2x15 MHz Australia-wide	1 April 2018			
850 MHz (825-845/870-890 MHz (paired))	Telstra Metro: 2x10 MHz Regional 2x15 MHz	18 June 2013 (re-issue)	17 June 2028	Australia-wide (noting split holdings across metro and regional)	Personal Communications Services (PCS) PCS Auctions - 2x20 MHz in metropolitan areas / 2x15 MHz in regional and remote areas – 1998 (PCS2) (PCS3) Residual lots – 2x5 MHz in regional and remote areas Re-issued in 2013. Unit amount applicable to calculating Spectrum Access Charge payable on re-issue was $1.23/MHz/pop.
	TPG Metro 2x10 MHz Regional 2x5 MHz	18 June 2013 (re-issue)	17 June 2028	Australia-wide (noting split holdings across metro and regional)	
850 MHz expansion band	Telstra 2x10 MHz Australia-wide	1 July 2024	30 June 2044 (Optus 2x1 MHz 850 MHz expansion band	Australia-wide	900 MHz is currently apparatus licensed to Optus, TPG and Telstra. These apparatus

Band	Licensees (holdings)	Licence commencement	Licence expiry	Geographic coverage	Allocation details
(814–825 MHz/859–870 MHz paired) **900 MHz** (890–915 MHz / 935–960 MHz)	Optus 2x1 MHz Australia-wide Optus 2x25 MHz Australia-wide		licence expires on 17 June 2028)		licences will automatically be cancelled on 30 June 2024. 850 MHz (2x10 MHz) / 900 MHz (2x25 MHz) Australia-wide - 2021
1800 MHz (1710-1785/1805-1880 MHz (paired)) (Canberra and Darwin are considered regional areas)	Telstra 2x15 – 2x20 MHz metro areas 2x35 – 2x40 MHz regional areas Optus 2x15 MHz metro areas 2x20-2x25 MHz regional areas TPG 2x25-2x30 MHz metro areas 2x10-2x35 MHz regional areas	Metro areas: 18 June 2013 (re-issue) Regional areas: 18 June 2013 (re-issue) Regional areas: 30 May 2017 (auctioned)	17 June 2028	Metropolitan and regional areas (i.e. not remote)	PCS Auctions – 2x45 MHz metro / 2x15 MHz regional – 1998 (PCS 2) PCS Auction 2000 – 2x30 MHz in mainland state capitals Licences were then subsequently re-issued 2013-15 (depending on when issued). Unit amount applicable to calculating Spectrum Access Charge payable on re-issue was $0.23/MHz/pop. 2x60 MHz in regional areas / residual lots - 2016 Residual lots - 2017 Note: state rail operators also hold spectrum licences within the 1800 MHz band. Parts of their

Band	Licensees (holdings)	Licence commencement	Licence expiry	Geographic coverage	Allocation details
					holdings are restricted to use for rail safety and communications.
2 GHz (1920-1980/2110-2170 MHz (paired)) (Includes up to 2x10 MHz of PTS apparatus licence holdings in addition to spectrum licence holdings in regional areas. Apparatus licences are not held by Telstra, Optus and TPG in all regional and remote areas and the spectrum is used by a total of 60 different licensees)	Telstra 2x15-2x20 MHz metro areas 2x10-2x20 MHz regional areas Optus 2x20 MHz metro areas 2x5-2x15 MHz regional areas TPG 2x20-2x25 MHz metro areas 2x5-2x15 MHz regional areas	12 October 2017	11 October 2032	Metropolitan and regional (i.e. not remote)	20 MHz unpaired capital cities / 2x60 MHz in capital cities (excl. Canberra) / 2x45 MHz in Canberra / 2x20 MHz in regional - 2001 Broadband Wireless Access Auction - 15 MHz in 8 metro and regional areas (only 10 MHz in WA) - 2006 Licences were re-issued in 2017. Unit amount applicable to calculating Spectrum Access Charge payable on re-issue was $0.625/MHz/pop. Multi-band residual lots - 2017
2.3 GHz (2302 – 2400 MHz)	Optus 98 MHz inner metro areas (excl. Canberra) 70 MHz in Canberra 7 – 14 MHz in Melbourne, Adelaide and Brisbane outer metros	25 July 2015 (re-issue)	24 July 2030	Parts of regional Western and Northern Australia (Telstra) Metropolitan areas and Eastern Regional Australia (Optus) Outer metropolitan areas and regional Australia (NBN)	Multipoint Distribution Station Apparatus licence auction – 1994 Multipoint Distribution Station Apparatus licence auction – 1995 Multipoint Distribution Station Conversion – 2000 Residual lots auction - 2012

Band	Licensees (holdings)	Licence commencement	Licence expiry	Geographic coverage	Allocation details
	0-98 MHz in regional areas				Licences were re-issued in 2015 Multi-band residual lots auction - 2017
	NBN 84 – 98 MHz in outer metros 70 – 98 MHz in regional areas				
	Telstra 35 – 98 MHz in regional WA				
2.5 GHz	Dense Air 2x10 MHz Australia-wide	1 October 2014	30 September 2029	Australia-wide	2x70 MHz Australia-wide - 2013 (Note: TPG subsequently traded its 2.5 GHz spectrum to Dense Air for their 3.4 GHz holdings)
	Telstra 2x40 MHz Australia-wide				
	Optus 2x20 MHz Australia-wide				
3.4 GHz (3.4–3.7 GHz)	NBN 65 – 175 MHz in outer metro areas (excl. inner metropolitan areas) 67.5 – 142.5 MHz in major regional centres 0 – 140 MHz in regional areas	NBN: 13 July 2021 (converted) 3400 – 3575 MHz: December 2015 (re-issue) 3575 – 3700 MHz: 30 March 2020 (auctioned)	13 December 2030	Generally, metropolitan and regional areas (i.e. not remote) Not all of 3.4–3.7 GHz is currently spectrum licensed within metropolitan and regional areas (e.g. 'urban excise' areas surrendered by NBN and areas not	3400 – 3575 MHz originally issued in 2000. Residual lots offered for allocation between 2002 – 2008. Re-issued in 2015. Unit amount applicable to calculating Spectrum Access Charge payable on re-issue was $0.03/MHz/pop.

Band	Licensees (holdings)	Licence commencement	Licence expiry	Geographic coverage	Allocation details
	Telstra 60-62.5 MHz in metro areas 50-107.5 MHz in outer metro areas 82.5 MHz in major regional centres 30 – 80 MHz in regional areas			previously included in auction)	3575 – 3700 MHz in metropolitan and regional areas - 2018 (Note: TPG subsequently traded its 2.5 GHz spectrum to DenseAir for their 3.4 GHz holdings) Apparatus (PTS) licences originally allocated to NBN, and later converted to spectrum licences in 2021 as part of 'restack' process.
	Optus 65 – 100 MHz in metropolitan areas 30-35 MHz in outer metro areas 35 MHz in major regional centres 0 – 65 MHz in regional areas				
	TPG 65 – 95 MHz in metro areas 40 MHz in major regional centres 20 – 95 MHz in regional areas				
26 GHz	Telstra	15 July 2021	14 July 2036		

Band	Licensees (holdings)	Licence commencement	Licence expiry	Geographic coverage	Allocation details
(25.1 – 27.5 GHz)	1 GHz in metro areas and major regional centres			Metropolitan areas and major regional centres	2.4 GHz auctioned in metropolitan areas and major regional centres - 2021
	Optus 800 MHz in metropolitan areas and major regional centres (excluding Hobart and Margaret River Lower) 600 MHz in Hobart and Margaret River Lower				
	TPG 600 MHz in metropolitan and major regional centres (excl. Melb, Syd, Perth, Ballarat and Bathurst) 400 MHz in Melb, Syd, Perth Metro and Bathurst and Ballarat 100 MHz in outer Perth				

Band	Licensees (holdings)	Licence commencement	Licence expiry	Geographic coverage	Allocation details
	Dense Air 200 MHz in Melbourne, Sydney and Ballarat/Bathurst				
	Pentanet 200 MHz in Perth and Margaret River Lower				

We note that, for the purposes of the above table, common business names (e.g. Telstra or TPG) have been listed as the relevant spectrum licensees in each band. However, this may not reflect the name of the licensee specified in the licence or that appears on the Register of Radiocommunications Licences, in part due to licences having being issued at different times, and in some cases, were originally acquired by other entities (e.g. Unwired) before being acquired by the current licensees. It should also be noted that multiple associated entities hold spectrum licences within the same bands and that the table describes the totality of their holdings. We have provided a more complete list of the entities which hold spectrum licences below.

Telstra	Telstra Corporation Limited	ACN 051775556
	Telstra 3G Spectrum Holdings Pty Ltd	ACN 094166542
Optus	Optus Mobile Pty Ltd	ACN 054365696
	Optus Vision Investments Pty Ltd	ACN 072091180
	AKAL Pty Ltd	ACN 094107794
	BKAL Pty Ltd	ACN 105833681
TPG	Vodafone Hutchison Australia Pty Limited	ACN 096304620
	TPG Internet Pty Ltd	ACN 068383737
	Vodafone Australia Pty Ltd	ACN 056161043
	Mobile JV Pty Limited	ACN 628500916
	Dense Air Australia Pty Ltd[1]	ACN 628385455
NBN Co	NBN Co Limited	ACN 136533741
Dense Air	Dense Air Networks Australia Pty Ltd	ABN 46650875942
Pentanet	Pentanet Pty Ltd	ACN 617506279

[1] It is our understanding that TPG acquired Dense Air Australia Pty Ltd, which held the relevant 3.4 GHz licence. To our knowledge, Dense Air Australia Pty Ltd is separate and distinct from Dense Air Networks Australia Pty Ltd.

Details of existing spectrum licences are available from the Register of Radiocommunications Licences (RRL). This information can be viewed online or by downloading a copy of the daily RRL extract. The online RRL displays licences on a band-by-band basis. It provides a function that allows the different areas associated with each frequency range on a licence to be viewed. Alternatively, this information can be extracted from the daily RRL extract. The ACMA's online convertor tool can then be used to develop placemark files (viewable in Google Earth) of spectrum licence areas.

Links to the online RRL data for spectrum licence band used to deliver wireless broadband (WBB) services follow:

- 700 MHz band
- 850 MHz band (note: this is referred to as 800 MHz on the RRL)
- 1800 MHz band
- 2 GHz band
- 2.3 GHz band (note: that BKAL Pty Ltd is owned by Optus)
- 2.5 GHz band
- 3.4 GHz band (note: AKAL Pty Ltd is owned by Optus, Mobile JV Pty Ltd and Dense Air Australia Pty Ltd is owned by TPG)
- 26 GHz band

As spectrum licences for the 850 MHz expansion and 900 MHz bands won't be issued until closer to their commencement date in 2024, information on them is not available on the RRL. Information on the outcomes of the spectrum auction in these bands is available on the ACMA website.

Attachment C and **Attachment D** provide a more detailed overview of licence holdings, including quantum of spectrum held in corresponding geographic areas.

Where spectrum licences were re-issued, the applicable Spectrum Access Charges (i.e. the amount paid for the licence) varied on a per band basis. The then Minister for Broadband, Communications and the Digital Economy directed the ACMA through the *Radiocommunications (Spectrum Access Charges) Direction 2012* in setting the unit amount, defined as $/MHz/pop, to be applied by the ACMA in calculating the spectrum access charge applicable to spectrum licence re-issue. Copies of the individual spectrum access charge determinations for re-issued spectrum licences, made under section 294 of the *Radiocommunications Act 1992*, are available from the Federal Register of Legislation.

Apparatus and class licensing use in wireless broadband

We note that both apparatus and class licensing arrangements are also used to facilitate WBB services, particularly for smaller operators, but also for mobile network operators in some cases.

Class licensed bands

There are numerous class licenced bands available for WBB use under the *Radiocommunications (Low Interference Potential Devices) Class Licence 2015*. This includes the 900 MHz, 2.4 GHz, 5GHz, 26 GHz and 60 GHz bands. Access to these bands is on a shared basis and services are not generally afforded

protection from interference. Operators are also not required to register use of these bands on the RRL, consequently the ACMA has no visibility on the number or location of services.

Apparatus licensed bands

Apparatus licensing for WBB is available in a number of bands and areas, including:

Band	Apparatus licence type[1]	Applicable areas[2]	ACMA policies on spectrum limits [3]
1710–1785 / 1805–1880 MHz	PTS	Remote	2x15 MHz max for Optus, Telstra and TPG
1900–1920 MHz	PMP	Regional and remote	N/A
1920–1980 MHz/ 2110–2170 MHz	PTS	Regional (2x40 MHz only) and remote (entire band)	2x10 MHz max per operator
3425-3442.5 MHz & 3575-3492.5 MHz	Currently PMP	Current arrangements support PMP in regional and remote areas. New arrangements being developed for 3400-4000 MHz	N/A
3575–3700 MHz	Currently PMP	Current arrangements support PMP in remote areas. New arrangements being developed for 3400-4000 MHz	N/A
5600–5620 MHz and 5630–5650 MHz	PMP	Regional	N/A
24.7–25.1 GHz and 27.5–29.5 GHz	AWL	Australia-wide	N/A
25.1–27.5 GHz	AWL	Regional and remote	N/A

Note 1: PTS = public telecommunications service; PMP = point-to-multipoint; AWL = area-wide licence.

Note 2: Refer to relevant Radiocommunications Assignment and Licensing Instructions (RALI) for a detailed definition of an area's arrangements. Copies of the RALIs are available from the ACMA's website.

Note 3: Although the ACMA now has the power to set apparatus licence issue limits (section 102G of the Radiocommunications Act 1992), it has not done so. The ACMA has adopted non-binding policies in relation to maximum spectrum amounts for these bands.