



**Draft spectrum reallocation
recommendation for the
3.6 GHz band**
Metropolitan and regional areas of Australia –
Discussion Paper

**Submission to The Australian Communications &
Media Authority**

November 2017

Vodafone Hutchison Australia Pty Limited (**Vodafone**) welcomes the opportunity to respond to the Australian Communications & Media Authority (**ACMA**) consultation on the draft re-allocation recommendation (the “**Discussion Paper**”).

Executive Summary

Vodafone has been a strong advocate of early re-farming of the 3.6 GHz band for mobile broadband services as this is clearly the highest value use of scarce internationally-aligned spectrum, and Australia is on the leading-edge of global demand for mobile data services.

However, Vodafone has several serious concerns with the proposed approach to spectrum allocations over the next 2 years including but not limited to the 3.6 GHz spectrum.

The ACMA’s proposals for the 3.6 GHz band require substantial reconsideration as they introduce substantial inefficiencies and uncertainties. Moreover, elements of the ACMA’s proposed approach are highly likely to strongly favour larger firms with stronger balance sheets and a higher ability to absorb large one-off costs and withstand the multiple uncertainties and risks of sequential allocations that the ACMA’s proposed approach involves. To that end, we are extremely concerned by the unusually close alignment of the ACMA’s proposals regarding this and other allocations with the submissions of the dominant mobile provider.

We are concerned that:

- the ACMA’s approach to sequential allocation of different spectrum bands is fundamentally flawed. We are not aware of any country which has contemplated let alone attempted 4 separate sequential auctions within a 14 month period. The overheads, uncertainties and inefficiencies introduced by this proposal are large and unnecessary;
- this only serves to create uncertainty for bidders, and reduce substitutability between lots that prospective bidders are very likely to regard as complements and/or substitutes. Both factors are likely to substantially reduce the rate of return to the community from the sale of these scarce and valuable resources by eliminating the ability of bidders to make efficient trade-offs. The extremely high fixed costs of radio access network upgrades means that substantial uncertainties and risks eventuate if bidders do not have certainty on holdings in both bands before a radio access network upgrade is planned and undertaken. This is accentuated by the move from one generation of technology to a new generation with fundamentally different features (for example, active antennas with beam-forming and MIMO);
- the ACMA’s approach to sequential vs combinatorial auctions is plainly inconsistent. The ACMA is at the same time proposing that:
 - the 850 MHz expansion band and 900 MHz bands be auctioned simultaneously in order to avoid inefficient allocation outcomes even though the proposed timing of access

- varies dramatically between the two bands (current access for the 900 MHz band and access to new allocations in 2021 vs 2024 for the 850 MHz expansion band); but
- that the 3.6 GHz and 26 GHz bands be auctioned sequentially even though similar or even larger concerns regarding inefficiency arise and the dates of access are likely to be substantially closer than for the 850 MHz expansion band and 900 MHz band given that our understanding is that the 26 GHz spectrum has fewer incumbency issues than the 850 MHz expansion;
 - the ACMA's preference for the "Option 4" lot sizes is inefficient and anti-competitive as it aggregates all of Regional Australia into one lot. This tilts the playing field substantially in favour of larger firms with existing infrastructure, that is, Optus to some extent and clearly in Telstra's favour. This creates a substantial barrier to entry as a bidder would need to incur the costs of spectrum for all of Regional Australia even if they wanted to or were only practically able to actually utilise the spectrum in smaller geographic areas. This substantially disadvantages smaller firms including Vodafone and the regional WISPs.
 - the unconventional and unprecedented proposal to combine separate areas with substantially different access timeframes into single lots is inefficient and again substantially tilts the playing field in favour of firms who have existing infrastructure and larger scale across both very different areas; and
 - the inordinately long re-allocation periods are inconsistent with the ACMA's own assessment of the highest value use, substantially undermine the efficiency of use of the spectrum, and substantially favour firms which have both an interest in mobile deployment and a presence as incumbents in the existing allocations (as they would have every incentive and ability to discriminate by seamlessly trading-off between their competing interests while denying mobile competitors access during the re-allocation period).

We do not have enough information to properly assess the ACMA's proposed auction methodology. The ACMA must undertake a separate consultation on the auction methodology with worked examples and more detail on critical auction features such as activity rules and withdrawal penalties. We note previous allocation processes have led to unsold spectrum in large part due to deficiencies in either the auction design, the auction mechanics or the ACMA's inaccurate expectations about bidders' valuations or behaviour.

The staggered payment terms made available in the 700 MHz auction clearly went some way towards lowering the barriers to entry and expansion for smaller firms. These terms are essential to ensure a reasonable degree of competition for any significant spectrum allocation processes and should be replicated for the 3.6 GHz and other processes the ACMA is considering. Given that the principles established for the 700 MHz auction "kept government whole" through the interest terms which more than covered the government's cost of capital, government should be indifferent to, or even prefer the staggered payment option.

While we recognise that some of these concerns may not lie strictly within the ACMA's remit, they have serious implications for the issues which clearly do lie within the ACMA's remit, that is maximising the public benefit of spectrum allocation and are essential to consider in order to have a coherent, efficient and fair approach.

Introduction

Vodafone is a strong advocate of re-farming of the 3.6 GHz band for mobile broadband services as the highest value use of this spectrum. In line with the imminent harmonisation of the 26 GHz as the pioneer mmWave band for 5G, the growing traction on device ecosystem with 26 GHz receiving considerable thrust from global equipment vendors, the need for a multi-frequency strategy for 5G owing to its spectrum-intensive nature and the complementarity of the two bands, Vodafone has previously proposed that the 3.6 GHz band and 26 GHz band be allocated concurrently,¹ even if the timing of access might be somewhat apart. At Radcomms 2017, the ACMA has announced it is proposing a number of other spectrum bands for auction, with two further mobile-targeted spectrum allocations within 14 months covering spectrum in the 850 MHz expansion, 900 MHz and 1.5 GHz bands.

While we welcome the release of new spectrum bands such as the 850 MHz expansion and 3.6 GHz bands, the ACMA's approach to sequential allocation of different spectrum bands is fundamentally flawed. It creates uncertainty for bidders and reduces substitutability between lots that prospective bidders may regard as alternatives. Both factors are likely to substantially reduce the rate of return to the community from the sale of these scarce and valuable resources.

Ideally the ACMA should instead consider a combined auction comprising all available spectrum in the 850 MHz expansion, 1.5 GHz, 3.6 GHz, 26 GHz bands and, to the extent the ACMA has not reconsidered its proposed approach to the reallocation of 900 MHz spectrum,² spectrum in that band as well. This approach will allow bidders to plan a cohesive deployment strategy for 4.9G/5G and enable realisation of a fair market value of the spectrum. We envisage the combined auction could take place in 1Q19 thereby having no impact on the timing of access to spectrum in the 3.6 GHz band and hence no impact on the associated benefits arising from the allocation of that spectrum. (Access to other spectrum bands should be staggered according to their availability). Vodafone recognises the ACMA will need to accelerate its planning on some bands, e.g., 850 MHz expansion and 26 GHz to allocate the spectrum in the combined auction. Our proposal brings the allocation 3-6 months ahead in the ACMA's current planning (as set out in the Radcomms 2017) however it also delivers a significant benefit for the ACMA by reducing the administration costs associated with four separate allocation processes and replacing them with a single allocation process.

¹ <https://www.acma.gov.au/-/media/Spectrum-Transformation-and-Government/Issue-for-comment/IFC-22-2017/Vodafone.pdf>

² <https://www.acma.gov.au/-/media/Space-and-National-Interest-Planning/Issue-for-comment/IFC-35-2016/VHA-submission.pdf>

In the above submission, Vodafone argued that Option 3 (i.e. band clearance followed by a price based allocation) requires extensive regulatory interventions, could impose significant asymmetric costs on MNOs and their customers and does not adequately evaluate the competition impacts from the reconfiguration. The amount of usable spectrum likely to be achieved by the reconfiguration is less than is assumed by the ACMA since the occurrence of a downshift cannot be presupposed. Vodafone supports Option 2 (i.e. conversion to spectrum licences with administratively-set prices and reliance on trading to obtain optimal band configuration) which promotes the most efficient allocation through the market.

Vodafone supports the ACMA's decision to allocate the 3.6 GHz band via spectrum licensing, as the certainty associated with the long-term property rights over a 15 year horizon can foster large scale investments in mobile networks.

We broadly support the spread of geographic area to be licensed i.e. Area 3 of the Options Paper although we are disappointed that our suggestion to include other areas of high-demand / high population density / significant trade activity such as Darwin, Geraldton and the mining region in the Pilbara have not been included. Given the ACMA's highest value use assessment, it has not provided sufficient justification to exclude these areas from the allocation of the spectrum.

The ACMA's proposals on lot configuration and the re-allocation periods are inconsistent with its highest value use assessment, anti-competitive and likely to deter demand for the spectrum. It is imperative that the ACMA urgently reconsider its preference for Option 4 (i.e., six metropolitan lots and one regional lot) and create new alternatives that foster competition, innovation and investment across different parts of Australia. The ACMA's preference for option 4 heavily favours incumbents with large 'sunk infrastructure' investments across broad parts of Australia (e.g., Telstra and Optus) at the expense of players such as Vodafone or the WISPs (Wireless Internet Service Providers). The ACMA already has strong evidence of demand for access to spectrum in some parts of Australia as evidenced by the ongoing desire for access to spectrum expressed by the WISPs. Rather than designing a lot structure that provides these prospective bidders with an opportunity to acquire spectrum to support small incremental investments or expansions, the ACMA is proposing a lot structure that creates barriers to entry through the broadness of the geographic areas. It then addresses the WISPs' demand for access to the 3.6 GHz spectrum through an overly long seven-year transition that undermines the value of the spectrum for new users.

The ACMA's highest value use assessment identified the cost of shifting the point-to-point and point-to-multipoint users out of the 3.6GHz band estimated at \$11-59 m whereas the incremental benefit of permitting mobile use was assessed to be between \$26-500 m for Area 3 less Area 1 (i.e. metro-plus³ and regional area). The extended transition means the spectrum could be encumbered for more than half of the proposed 12-year term, reducing the value of allocating this spectrum by more than 60% (given the time value of money) and hence reducing the rate of return the community should expect from auctioning this spectrum. Given the 60% erosion in economic benefits, the foregone value associated with the extended re-allocation periods is up to \$236m.

It is extraordinary that the ACMA are proposing a re-allocation period which is so inconsistent with its own assessment of the highest value use at the same time as it is looking to expedite the

³ The 'metro-plus' area is as defined in the 'Future use of the 3.6 GHz band - Decisions and preliminary views paper October 2017'

allocation of the 3.6 GHz band. These two actions are incompatible and illogical. Either the ACMA should have a consistent re-allocation period of 2 years for the entire geographical area on offer, (with the possible exception of the earth station facility in Perth) or delay the auction of spectrum in regions where it cannot provide a 2-year re-allocation period.

Vodafone strongly opposes the inordinately long re-allocation periods for Perth (5 years) and metro-plus and regional areas (7 years), which will strain deployment plans, deny the benefits from 5G to regional Australia, dampen the valuation of the 3.6 GHz band spectrum and depress the auction revenue to the government. Vodafone regards the proposed lot configuration which combines areas that have two distinct re-allocation periods⁴ as unworkable, creating uncertainties in terms of deployment possibilities and valuation. The unsound approach calls into question the apparent urgency shown by the ACMA in allocating the 3.6 GHz spectrum which comes encumbered for 5 or 7 years out of the 12 year term.

The ACMA's proposed lot design for metropolitan areas departs from past practices for the 1800 and 2100 MHz bands. We are extremely concerned that the unconventional grouping of metro-plus and regional areas it is likely to disadvantage metro-focussed bidders at auction and provide significant advantage to incumbent regional players such as Telstra. As such, the ACMA's proposed lot design is anti-competitive and likely to undermine the integrity of the auction. The ACMA must avoid bundling high demand geographic areas with shorter re-allocation periods, together with geographic areas that are likely to exhibit lower levels of demand.

A better approach is to design geographic lots for the spectrum that enable participation by small MNOs and the WISPs in the allocation process. A lot design that supports heterogeneous demand for spectrum across Australia is warranted and is more consistent with how 5G technologies are likely to be deployed in practice. Packaging the spectrum into smaller defined-area lots would enable targeted deployment of services and bidders keen to operate on a broader scale can acquire adjacent geographic regions to meet their needs. We note the smaller geographical lots are compatible with small cells which are typical of 5G networks.

We do not believe the ACMA's geographically heterogeneous option, Option 5 (i.e., six metropolitan lots and four regional lots), is fit for this purpose as the aggregation of disparate regional areas means it is too similar to Option 4. Instead, the ACMA should revisit its proposed licence areas and prioritise lot designs that encourage competition and targeted-investment in Australia's major regional cities (e.g., Hobart, Townsville and Albury-Wodonga). As a starting point, the geographical lots could be similar to those used for the 3.4 GHz band. Any ongoing concerns

⁴ The ACMA has proposed a re-allocation period of 2 years for the metropolitan areas of Adelaide, Brisbane Canberra, Melbourne and Sydney, and a re-allocation period of 7 years for their metro-plus areas. Similarly the re-allocation period proposed for Perth metropolitan area is 5 years and for its metro-plus area 7 years

around inefficient boundaries (such as boundary passing through a high user density area creating a dead zone in a high-demand area) can be addressed by tweaking the boundary based on experience from current holders of the 3.4 GHz spectrum.

The details regarding the auction methodologies and its proposal to use the enhanced simultaneous multi-round ascending (E-SMRA) auction are grossly inadequate. Vodafone has not been provided with sufficient detail on the auction design and its associated mechanics to comment on its suitability for the proposed allocation or its suitability for the combined-auction of 3.6 GHz, 26 GHz, 1.5 GHz, 850 MHz-expansion band that we recommend. The ACMA must undertake a separate consultation on the auction methodology with worked examples and more detail on critical auction features such as activity rules and withdrawal penalties. We note previous allocation processes have led to unsold spectrum in large part due to deficiencies in either the auction design, mechanics or inaccurate expectations about bidders' valuations or behaviour.

The proposed frequency lot configuration is complex and, likely to create an unnecessarily large number of lots in circumstances where the ACMA's proposed geographic configuration curtails demand for the spectrum. Based on our understanding of technology roadmaps, Vodafone disagrees with the ACMA's assessment that the Band 42 spectrum (3575-3600 MHz) is perfectly substitutable with the Band 43 spectrum (3600-3700 MHz), as such this spectrum should be distinguished within the auction. With respect to both Bands 42 and 43 spectrum, we prefer 25 MHz lots. Thus, Vodafone proposes that the lots be configured as 5 x 25 MHz lots

- 4 x 25 MHz (generic lots in the 3600-3700 MHz range); and
- 1 x 25 MHz (i.e., 3575-3600 MHz).

In the frequency assignment stage, if a bidder has won Band 42 lot, some consideration should be given to ensuring any Band 43 lots that it acquires are adjacent to it.

The number of lots in the ACMA's proposed scheme is 25 frequency dimensions and 7 geographic dimensions, leading to 175 lots. Vodafone proposes 5 frequency dimensions and around 19 geographic dimensions, leading to either 95 lots taken through to an auction.

Our response is divided into two parts –

Part 1 – Vodafone’s views on the terms of the draft recommendation

Part 2 – Vodafone’s views on the other matters relevant to a price-based allocation of 3.6 GHz band spectrum

Part 1

Vodafone’s views on the terms of the draft recommendation as outlined in Table 5 of the Discussion Paper are set out below:

Element of draft recommendation	ACMA proposal	Vodafone’s views
Licence type	Spectrum licences	We support the ACMA’s proposal to re-allocate the 3.6 GHz band in metropolitan and regional Australia as spectrum licenses. Vodafone prefers the certainty associated with a longer tenure as is associated with a 15 year term of a spectrum license.
Parts of the spectrum	3575–3700 MHz in metropolitan and regional Australia	<p>We support the re-allocation of the entire 125 MHz in metropolitan and regional Australia without any major excisions as initially proposed under Options 4(a) and 4(b) of the Options Paper July 2017.</p> <p>However the relatively small amount of spectrum on offer (i.e. 125 MHz) and that too heavily encumbered will compromise Australia’s prospects as a leading 5G market. We have repeatedly highlighted a view, which is echoed by all major vendors and network operators today, that 5G is expected to be far more spectrum intensive than previous generations of mobile technology</p> <p>The continued disregard by the Government and the ACMA of the 75 MHz of prime metropolitan spectrum in the 3.5 GHz band set aside for NBN purportedly for fixed wireless</p>

		<p>services to cover 80,000 customers on the urban fringe is concerning and inconsistent with the object of maximising the public benefit from the allocation of the spectrum.</p> <p>We are also concerned that the ACMA proposes to use Option 4b and excise the area immediately surrounding the earth station facility at Uralla (HCIS identifier NU7K4) from being re-allocated to enable continued operation of the facility. This would result in deployment restrictions in nearby areas which are expectedly regions of high demand for broadband particularly Armidale and Tamworth. We believe arrangements to support continued operation of earth stations can be achieved through commercial agreement, and consistent with the policies of Government, the ACMA should prefer market-based solutions rather than pursuing regulatory interventions that provide access to spectrum without due consideration of the opportunity cost from doing so.</p> <p>The ACMA further proposes to excise three areas from Area C (near Quirindi, Moree and Roma respectively) to be considered for possible future earth satellite station protection zones as defined by the HCIS identifiers in Attachment D to the Discussion Paper. Exclusion of these three areas from spectrum licensing when there is a distinct possibility that they might not eventuate into a ESPZ if found unviable and will have to be subject to apparatus licensing as a stop gap arrangement would delay the availability of 5G services in these areas. We therefore recommend that these areas continue to be considered as part of the potential spectrum licensed area and also appraised for feasibility as ESPZ. The area found suitable for ESPZ can be dropped out eventually. This will obviate the need for the ESPZ-unviable areas to be apparatus licensed for MBB if they do not get designated as ESPZ.</p>
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Element of draft recommendation	ACMA proposal	Vodafone's views
		<p>The ACMA has not provided evidence to support its excision of cities and ports such as Geraldton from being spectrum licensed or its decision to group major centres like Townsville and Cairns into a broader regional area that stretches all the way to Perth. Both these aspects should be urgently reviewed.</p>
Reallocation periods	<ul style="list-style-type: none"> Two years for the Adelaide, Brisbane, Canberra, Melbourne and Sydney metropolitan areas (Area A) Five years for the Perth metropolitan area (Area B) Seven years for the regional area (Area C) 	<p>Any decision to adopt a re-allocation period beyond the statutory requirement of section 153B of the Radiocommunications Act 1992 is likely to be contrary to the ACMA's highest value use assessment and therefore it will not maximise the public benefit from the allocation and use of the spectrum. The ACMA's proposal of an extended reallocation period could deny major population centres like Albury-Wodonga, Bendigo and Ballarat, Cairns, Toowoomba, Townsville, Rockhampton, Hobart, Launceston etc. access to 5G services for 7 years longer than the rest of Australia.</p> <p>The unusual case of Perth with an extended 5 year reallocation period is regrettable but Vodafone acknowledges the challenges for INMARSAT who will have to relocate its earth station facility from Lansdale at the end of the re-allocation period.</p> <p>In general, we are concerned by the creation of a harmful regulatory precedent that indirectly encourages the use of 'unamortised investment' argument to rationalise inordinately long reallocation periods. Licensees will have an incentive to make investments in long-life assets even if this is not otherwise rational or efficient and then argue for extended transition of apparatus licences. This incentive leads to regulatory processes that become highly susceptible to gaming. For instance, incumbents could make non-efficient investments in long-life assets to profiteer from licensees which need to move into the band through offers to rescind their licences earlier than the extended window.</p>

Element of draft recommendation	ACMA proposal	Vodafone's views
		<p>It is surprising that while on the one hand the ACMA recognises that the 3.6 GHz band has emerged as the pioneer band for 5G deployment in Australia, that 5G services include transformative IoT use cases such as freight tracking, logistics management, industrial automation which can give efficiency and productivity in key sectors of the economy a huge impetus, yet on the other hand the ACMA is justifying the denial of the pioneer 5G spectrum to metro-plus and regional Australia for 7 years through the unprecedented extended reallocation period.</p> <p>We consider the longer than usual re-allocation periods of 5 years for Perth and 7 years for metro-plus and regional areas conferring 'primary rights' on incumbents would erode the value of the spectrum licenses. Given that the tenure of the spectrum licenses is barely 12 years, the encumbered right to use spectrum for 5 or 7 years (i.e. nearly or over half the license term) is highly restrictive and strikes at the very substance of the license.</p> <p>Moreover, there are serious questions over the ACMA's apparent urgency of conducting the auction in Q2 2018-19 given so much has to be done to reallocate the spectrum after it is auctioned. The value in licensing 3.6 GHz spectrum for Perth, metro-plus and regional areas where the net unencumbered period of use is barely 7 or 5 years out of the 12 year term will be substantially lower than if these transition problems were properly addressed.</p>

Element of draft recommendation	ACMA proposal	Vodafone's views
Reallocation deadline	12 months before the end of the two year reallocation period for Area A	<p>As per section 153B (5) of the Radiocommunications Act 1992, a <i>Re-allocation Declaration</i> must specify a re-allocation deadline which must be atleast 12 months before the end of the re-allocation period. Whereas the ACMA has linked the re-allocation deadline for Area B and Area C to the re-allocation period for Area A. Vodafone is of the view that the re-allocation deadline for Area B and C should be 12 months before the end of their 5 year and 7 year re-allocation periods respectively (in the event the ACMA does not apply a uniform 2 year re-allocation period). This modified re-allocation deadline will allow the ACMA sufficient flexibility to determine a separate allocation process for Area B and Area C. This is also appropriate as their vastly different re-allocation periods make them dissimilar to Area A and not in the same category.</p> <p>Vodafone also considers that the ACMA has the flexibility to combine the auctions of 3.6 GHz, the 26 GHz, the 850 MHz expansion and the 1500 MHz bands instead of sequencing them within 14 months of each other. It is vital that the ACMA combines the auction of complementary and substitute spectrum to allow the market to determine a fair value and to make subsequent investment decisions immediately following the conclusion of the auction.</p> <p>In this context, Vodafone recommends a multi-band auction of 3.6 GHz, 26 GHz, 1.5 GHz and 850 MHz-expansion band to boost competition for the spectrum and allow bidders to substitute between bands.</p>

Part 2

Vodafone's preliminary comments on the ACMA's proposals on the other matters relevant to a price-based allocation in the 3.6 GHz band are as set out below:

Other issues	ACMA proposal	Vodafone's views
Licence term	<p>Aligning the expiry of the 3.6 GHz band spectrum licences with the adjacent 3.4 GHz band spectrum licences expiry date of 20 December 2030.</p> <p>Licenses to commence following the allocation.</p> <p>This would result in a licence term of approximately 12 years.</p>	<p>We acknowledge the value in aligning the expiry of 3.6 GHz licenses with the 3.4 GHz licenses for the eventual harmonisation of the 3400-3700 MHz range.</p> <p>The appropriateness of the license term has to be assessed in relation to the effective useable period of the license. With 5 year and 7 year re-allocation periods for a significant portion of the total area to be licensed, the 'effective usable period' of the license remains to be only 7 or 5 years out of the 12 year tenure.</p> <p>Vodafone considers licensing spectrum with long encumbered periods of use as fundamentally at odds with the objective of realising the 5G vision for Australia early. It will create significant inefficiencies for MNOs to deploy 5G in fragmentary manner in parts of a licensed area owing to longer re-allocation period in remaining part of the licensed area. The ACMA should not expect that areas with a significant delay in availability will have 5G equipment deployment immediately after the spectrum becomes available. There could be significant delays to deployment depending on technology and investment cycles.</p>
Allocation methodology	<p>An enhanced simultaneous multi-round ascending (ESMRA)</p>	<p>We find the exposition of the ESMRA in the discussion paper inadequate to comment on the suitability of this auction format. Further, detailed consultation is urgently required on the</p>

Other issues	ACMA proposal	Vodafone's views
	<p>auction. This two-stage auction methodology, comprising a price discovery stage with frequency-generic lots and an assignment stage, would be administratively efficient and give prospective licensees flexibility in securing spectrum suited to their business plans.</p>	<p>auction format and the ACMA should consider the suitability of its preferred format in the context of the combined auction.</p>
Lot configuration	<p>ACMA proposes to divide the spectrum in the 3.6 GHz band in 25 lots, each with 5 MHz bandwidth. This could be accompanied by the use of minimum bid requirements (MBR) feature in the auction.</p>	<p>Vodafone considers 25 x 5 MHz lots unnecessarily complex. We recommend that the spectrum be organised into 5 x 25 MHz lots.</p> <p>We do not have sufficient information at this stage to comment on the minimum bid requirement. We look forward to addressing this as part of a future ACMA consultation.</p>

Other issues	ACMA proposal	Vodafone's views
Geographic areas	<p>Divide the geographic area of metropolitan and regional Australia into seven different areas for the purpose of the auction.</p> <p>The proposed lot areas are defined in Attachment E and displayed in Figure 8.</p> <p>Each metropolitan area in Figure 14 would have two reallocation periods: two years as specified for Area A and five years for Area B, with seven years for the remainder of each metropolitan area. Area C would have a single reallocation period of seven years</p>	<p>Configuring the entire spectrum in the regional area into a single Regional lot is sub-optimal as it discourages expression of regionally heterogeneous demand and interest from regional bidders in acquiring spectrum in the 3.6 GHz band. The proposed configuration creates an uneven playing field for the WISPs as it tends to hamstring their ability to continue their localised operations. Vodafone considers one regional lot to be anti-competitive and emphasizes the need to break it down into smaller lots. In addition, some of the metro lots should be further disaggregated (e.g., Melbourne) for similar reasons. Packaging the metro-plus and regional area spectrum into smaller defined-area lots would enable targeted deployment of services and bidders keen to operate on a broader scale can acquire multiple adjacent lots to cover wider regions or the entire non-metropolitan regional spectrum.</p> <p>A single Regional lot also reveals an underlying misconception that 5G services are predominantly rich communication / entertainment services demanded by retail customers whereas there are other uses like industrial automation, remote control of agricultural and medical processes etc. which present opportunities for small scale regional deployments, which might be particularly relevant for businesses and industries operating in or near major regional centres. To encourage such opportunities, spectrum availability in regional areas should be heterogeneous to support competition, innovation and investment in these areas.</p> <p>Smaller geographical lots are also compatible with small cells which are typical of 5G networks.</p> <p>The ACMA has reasoned that defined-area lots would create a number of risks in the auction –</p> <ul style="list-style-type: none"> • increasing the complexity of the auction

		<ul style="list-style-type: none"> • introducing region-based exposure and fragmentation risk • introduce potential technical inefficiencies associated with licence boundaries <p>Vodafone disagrees with the ACMA that dividing the regional area into several lots would increase the complexity of the auction. In May 2017, the Irish regulator ComReg conducted a successful auction where spectrum in the 3.6 GHz band was offered in 594 lots spread over nine regions (four rural and five urban)⁵. Winning bidders acquired spectrum in rural-only (Imagine Communications), rural+metro (Airspar, Vodafone, Meteor Mobile) as well as nationally (Three) as per their preference. Thus, the auction allowed expression of geographically heterogeneous demand and enabled WISPs too to obtain spectrum rights. Modern auction software for bidders can handle the increase in computational complexity associated with an increase in lots provided the auction is well-defined and maximises the information available to bidders.</p> <p>The creation of smaller lots out of the single Regional lot would not result in fragmentation of spectrum provided the bidders have the opportunity to aggregate the smaller lots into a wider contiguous holding.</p> <p>We do not support a highly disaggregated regional lot configuration. We are mindful of the downside of granular regional license areas in terms of the dead zones at the boundaries. However we consider a lot configuration that is similar to the 3.4 GHz band but avoiding the dead zones in areas of high population density is possible. Creation of defined-area regional lots would enable expression of regionally heterogeneous demand and the concerns relating to the unavoidable dead zones around license area boundary can get addressed through</p>
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Other issues	ACMA proposal	Vodafone's views
		<p>aggregation of multiple lots. This will also ensure that major regional centres will not miss out on the 5G opportunity.</p> <p>Whilst we recognise that the problem of dead zones gets aggravated in TDD in contrast to FDD based technologies, however the risk of scuttling the interest of regional bidders and depriving them of the opportunity to acquire 3.6 GHz band spectrum is worse. The ACMA can avoid the mistakes in the 3.4 GHz lots configuration and define geographic boundaries in a manner that it falls in very low population density areas. Bidders who are concerned by the prospect of 'dead zones' at the boundary can bid for lots across multiple regions to avoid this problem. The ACMA should work with the existing licensees of 3.4 GHz band and identify such concern areas and rectify the geographical lot boundary for the 3.6 GHz licenses. Therefore, without entirely replicating the 3.4 GHz lots, the 3.6 GHz lots can be redesigned to allow regionally disaggregated demand to come into play.</p> <p>The proposed geographic area lot configuration also suffers from another serious drawback i.e. two different reallocation periods apply for the metropolitan lots –</p> <ul style="list-style-type: none"> - 2 years and 7 years in Adelaide, Brisbane, Canberra, Melbourne & Sydney - 5 years and 7 years in Perth <p>This will compound the complexity of deployment and create significant uncertainty for bidders fundamentally undermining the value of spectrum for the prospective bidders.</p> <p>For the reasons explained above, Vodafone does not support a single region-wide.</p>

⁵ ComReg Media Release – 22/05/2017 - Five Winning Bidders in ComReg's 3.6 GHz Band Spectrum Award

