

OPTUS

Submission in response to
ACMA Consultation Paper

**Implementation of the
Spectrum Pricing Review**

Public Version

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Section 1. EXECUTIVE SUMMARY

- 1.1 Optus welcomes the opportunity to provide feedback to the Australian Communications and Media Authority (ACMA) proposed guidelines and focus areas for change for *Implementation of the Spectrum Pricing Review* (the Consultation).
- 1.2 The Consultation focuses on two key objectives, with respect to the administrative pricing of spectrum assets:
 - (a) Establishing a set of spectrum pricing guidelines; and
 - (b) Prioritising the focus areas to be addressed as part of the overall Spectrum Pricing Review.
- 1.3 In general, Optus considers that the fees for apparatus licences should be based solely on the ACMA's administrative costs, and only where appropriate, an additional component to represent the opportunity cost of the use of the spectrum.

Draft spectrum pricing guidelines

- 1.4 In general, Optus supports the intent of the five high-level guiding principles that the ACMA has identified will apply when considering various administrative pricing options.
- 1.5 These include:
 - (a) Efficient allocation and use of the radiofrequency spectrum;
 - (b) Consistency and simplicity;
 - (c) Flexibility and adaptability to technology change;
 - (d) Transparency in process; and
 - (e) Recovery of the costs of spectrum management.
- 1.6 However, these guiding principles are not unique to administrative-based spectrum and should similarly apply across all spectrum management activities. Optus maintains there is merit in establishing a set of pricing principles for the allocation, pricing and award of all spectrum. In general, the framework should encourage transparency, certainty and consistency regardless of the approach that is taken.
- 1.7 Importantly, spectrum assignment should not be regarded as an opportunity to generate high levels of revenue for the public purse. Ensuring an efficient outcome will provide a better economic outcome by enabling spectrum users to maximise their participation in future innovation and investments.
- 1.8 In addition to pricing, the hierarchy of spectrum licence types remains central to the spectrum licensing framework under the current arrangements. Spectrum licensing arrangements (whether spectrum-, apparatus- or class licenced authorisations) should ensure that the property rights of spectrum licensees are not compromised. Tenure and the ability to use spectrum as purchased is equally important and should be upheld.
- 1.9 We therefore consider it is a timely juncture to reconsider the pricing approach and the incentives these charges play in promoting the efficient use of spectrum.

Addressing the Spectrum Pricing Review

- 1.10 The ACMA has identified six Focus Areas as part of its review of all apparatus licence taxes, including the features of the tax formula and other taxes.
- 1.11 Optus broadly welcomes the review of tax formula, and a general streamlining of the administrative pricing approach to reduce the complexity and lack of price transparency inherent in apparatus licensing. Importantly, this will serve to improve the consistency of pricing approaches across geographic areas and bands.
- 1.12 Optus also acknowledges the synergies that exist across multiple focus areas may make standalone prioritisation of focus areas difficult. There is no simple one-size-fits-all approach. Any changes made, for example to parameters in the tax formula, will also have different implications for different licensees and for users in different locations.
- 1.13 In general, Optus considers Focus Areas 4 and 6 should serve as the initial focus of this review. These would address the immediate pain points of the current apparatus licensing pricing approach. In particular,
 - (a) Focus Area 4 will address the transparency issues and complexity relating to the different geographic locations and specified frequency ranges.
 - (b) Focus Area 6 similarly addresses the transparency issues relating to the calculation of apparatus licence fees. This is intended to support any outcome from updating the parameters in the tax formula.
- 1.14 Consideration should also be given to Focus Area 5 which will address concerns relating to the issue of scientific licences. This licence sub-type serves an important function for operators to testbed new equipment in new frequency uses, and the cost of these licence types should be based on administrative costs to enable spectrum users to better participate in future innovation and investments.

Section 2. DRAFT SPECTRUM PRICING GUIDELINES

- 2.1 In May 2014, the Government announced a review of Australia's spectrum policy and management framework. This was then followed with a Spectrum Pricing Review in May 2017, with the Government endorsing the recommendations in February 2018.
- 2.2 Specifically, the Government supported 11 key recommendations in the Spectrum Pricing Review to build on the existing principles that govern the ACMA's general spectrum management activities and provide further context the ACMA's pricing framework. These include - Efficiency; Cost recovery; Consistency and simplicity; Transparency; and Meeting the Australian Government Charging Framework.
- 2.3 This Consultation focuses on the implementation of three of the 11 recommendations relevant to the ACMA's spectrum management responsibilities. Specifically,
- (a) *Recommendation 1:* The ACMA should publish guidelines on how it approaches its spectrum pricing decisions.
 - (b) *Recommendation 7:* The ACMA should undertake a detailed review of the administrative pricing formula's parameters including density areas, the number of pricing bands and the number of power categories. The ACMA should implement regular updates to the location and band weightings to reflect changes in density, demography and demand.
 - (c) *Recommendation 8:* The ACMA should apply opportunity cost pricing to a greater number of spectrum bands, especially where it is impractical to competitively allocate spectrum. This work should be identified in the ACMA's annual work program. The ACMA should consider more time effective approaches to implement these, and review fees as market conditions change over time.
- 2.4 Optus supports this initial focus on transparency and the review of spectrum pricing for administrative allocations. However, we acknowledge that further work will need to be undertaken to adjust any changes to the legislative and policy environments. We also welcome the view that the ACMA should continue to lead this work.
- 2.5 In particular, Optus supports the intent of the five high-level guiding principles but considers further work is required to ensure these principles remain relevant across the entire spectrum management framework. A focus solely on charges, without the same focus on implementation and incentives for efficient use of spectrum and competition risks undermining the potential benefits that could come from this structural review.
- 2.6 This section discusses:
- (a) Taking into account the current market environment.
 - (b) Policy objectives for spectrum assignment;
 - (c) Role of transparency for spectrum allocations;
 - (d) The role of spectrum pricing; and
 - (e) The draft guiding principles.

Taking into account current market conditions

- 2.7 Telecommunications is now widely regarded as an essential service. As witnessed during the global COVID-19 pandemic, the role of telecommunication networks in supporting ongoing connectivity has been invaluable. It has also supported the ability for individuals to continue to work, learn and socialise remotely; as well as remain 'connected' during challenging times.
- 2.8 Optus submits that spectrum needs to be managed in a manner which reflects this new reality of the mobile communications industry. The ACMA should ensure that spectrum is managed in a way that enables MNOs to continue to provide better coverage and more resilient services, as well as in response to challenges to infrastructure.
- 2.9 The COVID-19 crisis is also a timely reminder for the need for spectrum to be both priced at efficient cost to enable greater acquisition and timely deployment; and to provide the coverage and capacity the Australian public need at home, at work, at school/university, for leisure/entertainment, for retail/commercial and all areas of their lives where they wish to be connected and that they travel to.
- 2.10 The allocation of spectrum, together with the charging for access to spectrum, should reflect the impact it has on the economics of mobile networks – and directly through to the affordability of essential mobile communications services for consumers.
- 2.11 The impact of COVID-19 on mobile will also be pronounced for the foreseeable future. In setting longer term objectives during a period of challenging industry economics, any related spectrum pricing issues should also recognise this challenging backdrop. For example,
- (a) The recent 2019/20 bushfire season has tested the network resilience of mobile operators and has highlighted the community's need and desire for continuous mobile telecommunications before, during and after natural disasters. This new normal will result in increased network costs to improve the resilience of telecommunications infrastructure and to ensure the recovery of services in areas impacted by natural disasters.
 - (b) Mobile Industry revenue and profitability continues to be in decline, with total mobile service revenue falling almost 20% in nominal terms since 2015. Such revenue decline is occurring during a period of prolonged decline in economic activity and an expectation of deployment of new national 5G networks.
 - (c) Spectrum costs continue to increase and account for a greater share of operational network costs. There will also be additional pressure from the two spectrum auctions expected in 2021 and the cost of the renewals of existing spectrum in the future.
 - (i) Australian spectrum prices from auctions have tended to be significantly higher than overseas prices and this has resulted in slower and more limited deployment over the licence term.
 - (ii) The annual price indexation for apparatus licences continue to apply the 'All Groups' CPI instead of the 'Communications' CPI factor. This has resulted in the consistently greater level of price increases being applied to apparatus licence fees in recent years.
 - (d) Licence uncertainty will also be heightened as existing spectrum licences approach their expiry. Existing mobile spectrum licences starting with the 800 MHz and 1800 MHz licences will approach expiry from June 2028, meaning

that spectrum renewal discussions will need to commence in the immediate future.

- (e) Effective management of spectrum and clear property rights have been critical in maintaining connectivity and provision of services to customers. Spectrum licensees' ability to deploy and utilise spectrum assets without need to consider or negotiate third party opportunistic claims or use of spectrum has been crucial to this.

2.12 Telecommunications carriers need to be sustainable and profitable, due to their essential services nature. Therefore, caution should be applied when reviewing apparatus licence costs, as well as spectrum licence costs, to ensure the industry is not seen to be 'gouged' to fill large government deficits at the expense of delivering ongoing benefits to the economy.

Policy objectives for spectrum assignment

Question 1 – Do stakeholders have any views about the status of the ACMA's role in implementing the recommendations of the Spectrum Pricing Review?

Question 2 – Do stakeholders have any views on the legislative and policy environment that may be relevant to the pricing issues outlined in this paper?

2.13 Economically efficient pricing is the pricing of spectrum access rights designed to maximise the benefits from use of scarce spectrum and therefore the value of the total output of goods and services across the economy.

2.14 The social and economic cost of inefficient allocations is often substantial, especially if spectrum is left unused or is underutilised for prolonged periods. As noted by GSMA:

The overriding focus of spectrum policy should be to promote:

- (a) *efficient use of spectrum resources particularly where internationally harmonized;*
- (b) *network investment and innovation;*
- (c) *undistorted competition; and*
- (d) *sustainably high output and low retail prices.¹*

2.15 The beneficial economic impact of mobile services has been widely publicised. For example, in the recent Mobile Nations 2019 report:

*The mobile industry itself makes a significant contribution to the economy. We estimate that the **industry contributes \$22.9 billion to value added**, including \$14.7 billion of indirect activity across the rest of the economy. [...]*

*However, the most significant economic benefit of mobile is in how it contributes to productivity. [...] We estimate **that by 2023 mobile will be worth \$65 billion***

¹ GSMA, The Cost of Spectrum Auction Distortions, Review of spectrum auction policies and economic assessment of the impact of inefficient outcomes, October 2014, p.36

to the Australian economy (in 2016-17 dollars) – 3.1% of GDP. This is equivalent to approximately \$2,500 for every Australian.²

- 2.16 It follows that spectrum assignment should not be regarded as an opportunity to generate high levels of revenue for the public purse. Ensuring an efficient outcome will provide a better economic outcome by enabling spectrum users to participate in future innovation and investments. This should also take into account the current market environment.

Increased transparency on spectrum allocation mechanisms

- 2.17 Spectrum is one of the fundamental inputs into the production of mobile services. There is a direct trade-off between the amount of spectrum allocated to an operator, the cost of deploying network assets, and the available capacity on the network. As such, spectrum is a key driver of competition and efficiency in the mobile market.
- 2.18 Optus maintains there is merit in establishing a set of pricing principles for the allocation, pricing and award of spectrum. In general, the framework should encourage transparency, certainty and consistency regardless of the approach that is taken.
- 2.19 There is no one-size-fits-all approach that suits all spectrum bands today or fits different uses of spectrum bands over time. It is important that transparency be encouraged for each pricing decision. This will also have important implications during the transition and renewal period, with particular regard to continuity of service, price, and investment incentives for existing licensees.
- 2.20 The issuance of spectrum licences should ensure that property rights of spectrum licensees are not compromised, i.e. spectrum licences hold a primary use status above any other licence type. Tenure and ability to use spectrum as purchased should be upheld. The concept of 'equal status' arrangements do not apply insofar that use of an AWL impedes on the operational capability and licence conditions, including s145 requirements, set out for spectrum licences issued and operating within the same spectrum frequency ranges.
- 2.21 Any overlapping licensing arrangements need to be streamlined. However, a careful balance will need to be achieved to ensure there is no double recovery of efficient costs and to ensure adherence to the spectrum pricing principles.

The role of spectrum pricing is to ensure efficient allocation

- 2.22 Spectrum pricing, along with a range of other licensing, planning and technical regulation, serves as a tool to manage spectrum efficiently and effectively. In other words, spectrum pricing serves a specific purpose to ensure that the use of spectrum maximises the public benefit. This is typically referred to as ensuring those parties that value the spectrum the highest should have access to that spectrum.
- 2.23 Spectrum pricing should have no role other than to ensure the efficient allocation and use of spectrum; and to recover the cost of spectrum management.
- 2.24 Pricing, and the method used to ascertain price, has also been largely linked with the spectrum licensing arrangement, and adherence with the licence hierarchy:

² Deloitte Access Economics, Mobile Nation 2019, The 5G Future, prepared for the Australian Mobile Telecommunications Association, April 2019, p.1

- (a) Spectrum licences, where demand exceeds supply, are generally subject to market-based allocation methods, such as auctions. Market based allocations allow the market to determine the opportunity cost of the spectrum. This ensures the scarce resource can be allocated to those parties that value its use the most.
 - (b) Apparatus licences, with shorter defined licence terms and typically issued an annual basis, are generally subject to administrative allocation methods, such as a single ‘tax formula’ or taxation schedule. These licences typically do not have excess demand (and therefore no or little opportunity cost), with pricing reflecting the administrative management cost.
 - (c) Class licences, in general, remain licence fee exempt. For most licences in this category, they are issued on a ‘no interference, no protection’ basis.
- 2.25 The licence hierarchy framework should also be consistent with the pricing approach – as such the licence fees should reflect licence hierarchy and the difference in licence conditions within the same frequency ranges. Spectrum licences are generally issued at a premium with strict licence conditions, while apparatus licences are generally administratively based. Even so, access to apparatus licences are subject to process requirements, such as registration and interference mitigations, before issue. This is what sets them apart from devices deployed under class licensing arrangements. The primacy of these licence types over other licence-fee exempt licences must be maintained.
- 2.26 Issuing a new licence that invalidates the conditions placed on another spectrum user’s existing licence, irrespective of licence type, should not be standard spectrum management practice and introduces retrospective commercial and operational risk to the provision of services to end users.
- 2.27 It follows that the use of price differentiation for different licence types, regardless of allocation method, should not be undermined by rights that are associated with the different licence types. For example, the ability to efficiently use a spectrum licence should not be hindered with a responsibility for protecting devices which have been class licensed with a ‘no interference, no protection’ condition.
- 2.28 While many ‘high value’ bands continue to be subject to market-based allocations, such as auctions, not all market-based allocations will result in the efficient allocation of all available spectrum lots on offer. There may be other external factors that impact on the competitive dynamics of the market-based allocation process.
- 2.29 As such, there remains a role for both market-based and administrative based allocations to continue to operate.

The draft guiding principles

Question 3 – Do stakeholders have comments on the ACMA’s draft spectrum pricing guidelines including the relevant spectrum pricing decisions, guiding principles and process for changing prices?

- 2.30 In general, Optus supports the intent of the five high-level guiding principles that the ACMA has identified will apply when considering various administrative pricing options.
- 2.31 These include:
- (a) Efficient allocation and use of the radiofrequency spectrum;
 - (b) Consistency and simplicity;

- (c) Flexibility and adaptability to technology change;
- (d) Transparency in process; and
- (e) Recovery of the costs of spectrum management.

The guiding principles should apply across all spectrum management activities

- 2.32 Optus is concerned that the guiding principles will be limited in application.
- 2.33 The ACMA currently has the authority to authorise the use of spectrum under the spectrum, apparatus and class licensing arrangements. Of these, only spectrum and apparatus licences are subject to application and the payment of fees.
- 2.34 Many 'high value' bands have been auctioned or are in the process of being auctioned for allocation through spectrum licences. The very nature of spectrum licences and the applications they support means that sharing is not common. It is therefore expected that these bands have a relatively higher cost of acquisition, inclusive of the work required to develop these new spectrum licensing frameworks for the licences being issued.
- 2.35 In contrast, the Act only confers responsibility for spectrum pricing where both the charges and taxes are *administratively* determined by the ACMA. Specifically, in addition to apparatus licences, these also occur in the following circumstances, where:
- (a) New apparatus licence types are being introduced;
 - (b) Apparatus licences are converted into spectrum licences at a pre-determined price (i.e. not subject to market-based allocation, like an auction);
 - (c) Fee-for-service charges and spectrum licence taxes; and
 - (d) Administrative charges relating to the award of spectrum licences (e.g. application fees).
- 2.36 However, most apparatus licence charges continue to be based on the historic apparatus tax formula and the apparatus licence tax schedule which continues to be published on an annual basis.
- 2.37 We therefore consider it is a timely juncture to reconsider the pricing approach and the incentives these charges play in promoting the efficient use of spectrum. These same considerations should also apply to all other spectrum management arrangements.

Administrative allocation of spectrum should adhere to the guiding principles

- 2.38 The use of opportunity cost pricing should be considered when determining the relevant price range for administered-based pricing arrangements.
- 2.39 In general, fees for apparatus licences should be based solely on the ACMA's administrative costs, and only where appropriate, a component to represent the opportunity cost of the use of the spectrum. Where there is no excess demand opportunity cost of use will be zero.
- 2.40 In reviewing the current apparatus licensing arrangements subject to administered pricing arrangements, there are two important considerations to be taken into account:
- (a) First, the current apparatus licence formula has been in place since the mid-1990s; and has not been updated other than for annual indexation and limited price adjustments. However, given much of this spectrum is currently

encumbered, it is also important there are no immediate and substantial price shocks for incumbent licensees.

- (b) Second, administrative processes should also be updated to increase the flexibility for licensees to vary their licensing arrangements. Licensees should be encouraged to utilise their licences efficiently. For example, this would include allowing for variations in spectrum holdings and channel requests (where conditions are met) to optimise any deployments and to limit any instances of double cost recovery by the spectrum manager.

- 2.41 Any changes to the pricing formula will have significant implications (through possible uplift in spectrum costs) for existing apparatus licence holders during the transition to any new (or updated) pricing arrangements. It is also important to note that while the apparatus licensing arrangements appears to have adopted a single universal pricing formula approach, there remained some exceptions. It is likely that these arrangements will continue.
- 2.42 In terms of licence applications, process improvements to the application process should also be considered to streamline timeframes and to promote efficient use of the spectrum. For example, a standardised licence application approach could be considered, with service level agreements on response times and feedback loops. Where exemption applications, such as those based on the same exemption reasoning continuing to be sought for certain licence types (where it does not impact on adjacent licensees), this should warrant consideration for a change to the process or reconsideration of the application parameters.

Section 3. TIMELY REVIEW OF SPECTRUM PRICING

- 3.1 The ACMA has continued to rely on the tax formula as having generally provided a solid base for incentivising the efficient use of spectrum. While we consider that this approach is likely to continue to some extent, we appreciate the timely review of the features of the tax formula and other taxes (to be referred to in the following as ‘focus areas’).
- 3.2 Specifically, the ACMA has identified six focus areas for consideration:
- (a) Focus Area 1: Large bandwidth and multiple (networked devices) requirements
 - (b) Focus Area 2: Sharing and low interference potential devices
 - (c) Focus Area 3: Defined approach to considering changes in taxes and opportunity cost pricing
 - (d) Focus Area 4: Consistency of pricing approach across geographic areas and bands
 - (e) Focus Area 5: New technologies and trials
 - (f) Focus Area 6: Transparency and ease of calculating taxes
- 3.3 These will each be discussed in turn. However, Optus acknowledges the synergies that exist across multiple focus areas may make standalone prioritisation of focus areas difficult. There is no simple one-size-fits-all approach. Any changes made, for example to parameters in the tax formula, will also have different implications for different licensees and for users in different locations.
- 3.4 In general, Optus considers Focus Areas 4 and 6 should serve as the initial focus of this review. These would address the immediate pain points of the current apparatus licensing pricing approach. In particular,
- (a) Focus Area 4 will address the transparency issues and complexity relating to the different geographic locations and specified frequency ranges.
 - (b) Focus Area 6 similarly addresses the transparency issues relating to the calculation of apparatus licence fees. This is intended to support any outcome from updating the parameters in the tax formula.
- 3.5 There has been little change to these parameters since they were set, therefore it is important that the different values of spectrum and the relative spectrum congestion levels across different geographic locations and frequency ranges be updated to reflect the current market environment.
- 3.6 Consideration should also be given to Focus Area 5 which will address concerns relating to the issue of scientific licences. This licence sub-type serves an important function for operators to testbed new equipment in new frequency uses, and the cost of these licence types should be based on administrative costs to enable spectrum users to better participate in future innovation and investments, such as for trial purposes of higher bandwidth 5G technologies.
- 3.7 Optus does not consider the other Focus Areas to be of immediate priority at this stage.
- 3.8 The remainder of this section sets out Optus’ preliminary views on the issues raised in the Consultation Paper.

Review of the tax formula

Question 4 – Does the tax formula generally provide a solid base for incentivising the efficient use of spectrum?

- 3.9 In principle, the tax levied on apparatus licences allows the ACMA to create economic incentives for efficient use of the spectrum. It also encourages licensees to use the minimum amount of bandwidth for their needs, to move to less congested bands, and to surrender licences that are no longer needed.
- 3.10 As acknowledged by the ACMA,
- The apparatus licensing framework is made up of the regulatory instruments, technical planning documents and operational practices that determine how apparatus licences are used and how the apparatus licensing system functions. A recurring issue with the framework has been its complexity and difficulty for users to navigate and understand.*³
- 3.11 The current 'Apparatus Licences' assigned licence tax formula has been in place since the mid-1990s. The output tables published in the annual apparatus licence tax schedule continue to be based on this licence tax formula, yet many of the assumptions and discounts that underpin the formula for calculating fees, hence the resulting tax schedules, remain complex, unclear and non-transparent.
- 3.12 It takes into account five key parameters in the calculation of annual tax, including: Normalisation factor; Bandwidth factor; Power factor; Location weighting; and Adjustment factor. However, the relevance of these parameters is increasingly creating uncertainty from the lack of transparency for licensees.
- 3.13 While the use of the tax formula may have to some extent incentivised the efficient use of spectrum in some bands in the past, this is now largely not the case. There is a question of pricing equitability, particularly across different bands and geographic areas, that fails to consider the usability of the spectrum that has been authorised for use through apparatus licences.
- 3.14 For example, the current use of different weightings by location and bandwidths create unnecessary complexity and reduced transparency over the drivers of cost for what is essentially the administrative recovery of costs for licences issued.
- 3.15 This complexity is also compounded when the same tax formula is compared across different geographic areas. For example, the use of density map areas may no longer necessarily correctly reflect the population density or even locations where apparatus licensed spectrum can be used. The same density map areas are considered across the various frequency ranges, and in some cases the weightings applied can be the same for some location categories but significantly different in others.
- 3.16 Optus welcomes the review of each of these parameters, and a general streamlining of the administrative pricing approach to detangle the complexity and lack of price transparency inherent in apparatus licensing. Importantly, this will serve to improve the consistency of pricing approaches across geographic areas and bands.

³ ACMA, 2019, Five-year spectrum outlook 2019-23: The ACMA's spectrum management work program, September, p.67

Other areas for improvement

Question 5 – Do stakeholders have views on:

- prioritising the features of the tax formula and other taxes by considering different focus areas
- the criteria for prioritising the focus areas
- other matters or focus areas that should be considered as part of the ACMA's work program.

3.17 Optus considers several other features in the apparatus licensing arrangements that warrant investigation. These include:

- (a) Process improvement and SLAs
- (b) Price structure changes

3.18 These issues have each introduced their own challenges into the licensing process for operators and created additional barriers for network operations. We provide several examples below on how it has impacted our business.

Process improvement

3.19 A continued lack of transparency in elements of the licensing process can lead to inefficiencies in the application process, resulting in additional administrative burden and continued delays. The following discusses two examples:

- (a) Exemption applications; and
- (b) Surrender request applications.

3.20 In general, potential apparatus licensees are expected to confirm that any channels or links being sought are currently available, and that any interference issues can be mitigated, prior to application. In many cases, these conform to a general rule such as distance radii with any neighbouring operators.

3.21 There are cases where initial investigation suggests that the location and channels being sought occur at the fringe, this requires the potential apparatus licensee to reconsider their application and instead seek to acquire licences in another band. An example of where this scenario often arises is between the 8 GHz and 11 GHz bands, highlighting a potential complementarity between the bands in terms of use, but in practical terms also highlights a significant difference in propagation and carriage of signals travelled.

3.22 It is Optus' experience that applications for links in the 8 GHz band are occasionally at the fringe and often rejected for failing to meet the minimum 10 metre distance threshold, but following further interference analysis can be deemed to subsequently meet the criteria for an exemption application.

3.23 However the process for seeking an exemption application is not transparent and can be subject to continued delays. The same rigour must be taken for each exemption application, including the need to make individual requests to apply for an exemption for each link, but there is no standard timeframe for such applications to be addressed. The alternative for this has been to seek access to links in the 11 GHz band, which are less ideal but necessary to enable the delivery of the service, even though the licence unit costs are set within the same pricing band.

3.24 Optus currently holds over 4,000 apparatus licences for microwave links, with each individual link currently subject to a separate apparatus licence.

- 3.25 While these allow for the take up and surrendering of licences on an ongoing basis, there are number of features in this process that should be reconsidered.
- (a) Exemption applications could benefit from a prefilled check box for items that are regularly cited as the reason for the application;
 - (b) Timeframes should be provided to operators as guidance of when to expect a response for any application requests;
 - (c) Surrender licence requests could also benefit from greater transparency, including details on the calculation used to derive the refund amount.
- 3.26 Notably, in requesting for an exemption for the purpose of overcoming embargo zone or using out of distance band, approvals must be sought from the ACMA via email, however there does not appear to be any SLA in providing responses. It can take multiple iterations of questions and answers before coming to conclusion. This causes project delays and uncertainties in project timeline.
- 3.27 Surrender licence request applications would also benefit from improved transparency, to allow licensees greater ability to track the status of all current licences and the status of any licences subject to a surrender licence request.

Suggested change to improve transparency and support flexibility

- 3.28 There is currently some uncertainty in the application process for licences in some bands, in particular where after further investigation, the same exemptions are sought and granted on multiple occasions.
- 3.29 Optus considers it would be beneficial if the ACMA could formalise the exemption application process, such as providing a form that reflects the information required, including a prefilled box to indicate whether an exemption is being sought and the primary reason for the exemption; as well as providing an estimate on the SLA response time for the application review.
- 3.30 Where it can be demonstrated that the same exemption explanation has been sought, and granted, within a specified band, there should also be consideration given to review the application criteria – e.g. review of the minimum distance requirement to support technology changes or more efficient uses/deployments in the band ecosystem.
- 3.31 For surrender licence request applications, the current process is based on licensees submitting a licence surrender request to the ACMA via email or online form. The ACMA then responds via email with pdf attachment confirming surrender and refund amount for each licence. However no information is provided to support the calculation used to derive the refund amount, i.e. number of remaining days on licence or the initial annual licence cost paid.
- 3.32 This issue is further complicated given that each fixed microwave link is generally issued as a separate licence, therefore it can be difficult to validate the refund amounts or monitor the ongoing status of all surrender requests.
- 3.33 Optus considers greater transparency could be provided through further automation allowing users to see the surrender status online (i.e. in progress or completed). Users should also be able to self-download their surrender confirmation file, as well full-year refund amount summary table in csv, including breakdown of refund amount.

Price structure changes

- 3.34 For modern microwave technology with higher modulation capability, these now often require less channel width to fulfil link capacity requirements.
- 3.35 In some regions where channels are mostly occupied by a single operator, the assignment profile of channels reflect legacy technologies. Over time, this may lead to inefficient use of the spectrum as newer technology no longer require large channel widths to fulfil link capacity requirements. Incentives should be supported to encourage users to move to more spectrum efficient technology, thereby freeing up underutilised spectrum for other uses or users.

Suggested change to supporting flexibility and adaptability to technology change

- 3.36 To promote consistency and simplicity, one suggestion is to apply licence cost differently across ranges of channel width holdings based on a two-tiered categorisation. For example, for a channel width within a band occupied by single operator between two sites, the simplified cost structure could comprise:
- (a) 1 MHz to 240 MHz = lower unit cost
 - (b) 240 MHz and beyond = higher unit cost
- 3.37 This promotes effective use of channels by using latest technology, rather than occupying excessive channels through continued use of legacy technologies. The intention is to eliminate monopolisation of channel holdings, and to introduce fair competition between operators to provide communication services in the same area.

Prioritising the focus areas

- 3.38 The following sets out Optus' preliminary views on the ACMA's six focus areas.

Focus Area 4: Consistency of pricing approach across geographic areas and bands

- 3.39 Typically, the number of spectrum locations are a function of the different use profiles or service characteristics across different bands. Optus therefore considers the use of spectrum locations or frequency ranges remain appropriate, however notes that frequency range categorisations may vary for different services.

Spectrum locations and frequency ranges

Question 10 – Do current spectrum locations or frequency ranges remain appropriate? If not, what changes should be made and why?

Question 11 – What factors should the ACMA consider in determining new spectrum locations or frequency ranges?

Question 12 – Do the different tax rates associated with different spectrum locations or frequency ranges influence decisions about deploying radiocommunications equipment?

- 3.40 Where the ACMA considers continued use of the tax formula is warranted, Optus considers it is timely that the density areas and the pricing band/spectrum location parameters are reviewed.
- 3.41 In determining new spectrum locations or frequency ranges, the ACMA should also consider:

- (a) Population and population density. Typically, the value of spectrum changes based on population density and the ease of being able to provide services to those populations. It also depends on interference from geographically adjacent spectrum holders and dead zones that can result in spectrum denial and impact on the apparatus licensed spectrum's ability to be used
- (b) Transport corridors and other potential areas for concentrated deployments;
- (c) Use cases and ability to deploy services. For example, there may be instances where licences are acquired over large areas but use of the spectrum may be limited due to exclusion zones, interference with spectrum licensed services, or other reasons.

Categorisation of frequency ranges

- 3.42 Optus notes that this focus area could also include a review of the frequency range categorisations for different services. The ACMA currently refers to up to 13 frequency ranges for the setting of annual licence tax amounts for the different services, as set out in the various Divisions in the annual tax schedules. Geographic location weightings are then applied to derive the different annual licence tax amounts.
- 3.43 This is currently summarised at Figure 1, which show there are some inconsistent step functions that can result in inequitable pricing outcomes.

Figure 1 Frequency ranges and location weightings

Spectrum location	Geographic location				
	Australia-wide	High density	Medium density	Low density	Remote density
30 MHz and below	4.3150	4.3150	4.3150	4.3150	4.3150
>30 to 70 MHz	9.7470	3.8070	2.0250	0.4370	0.2180
>70 to 399.9 MHz	10.0000	4.1040	1.8780	0.4210	0.2100
>399.9 to 403 MHz	10.0000	5.6000	2.5620	0.4370	0.2180
>403 to 520 MHz	10.0000	7.4114	2.5620	0.4370	0.2180
>520 to 960 MHz	10.0000	5.6000	2.5620	0.4370	0.2180
>960 to 2,690 MHz	9.9850	2.2410	1.0360	0.5210	0.2600
>2,690 to 5,000 MHz	9.9740	1.8530	0.7510	0.6220	0.3110
>5.0 to 8.5 GHz	8.4210	1.5570	0.7250	0.3300	0.1600
>8.5 to 14.5 GHz	3.7110	1.3360	0.3160	0.0230	0.0110
>14.5 to 31.3 GHz	3.7110	0.9880	0.2170	0.0230	0.0110
>31.3 to 51.4 GHz	1.0120	0.5390	0.1170	0.0040	0.0020
Above 51.4 GHz	0.1000	0.0100	0.0100	0.0010	0.0010

Source: ACMA

- 3.44 There is certainly a need for simplicity, in particular to ensure efficient allocation and equitable fees and taxes. Consideration for band delineation could move away from the current arbitrary limits, and reflect the technical, environmental or practical aspects of the spectrum. This would also better reflect any band use changes over time.

- 3.45 Optus considers that even where arbitrary limits continue to apply, there could be a reduction in the number of specified frequency ranges with more consistent application of location weightings applied.
- 3.46 For example, in the 5G context, frequency ranges are commonly referred to as: Low band (sub 1-GHz); Mid-band (1-6 GHz) and millimetre wave (above 6 GHz). These groupings largely categorise the frequency ranges by key technical propagation features and likely family of use cases.
- 3.47 In contrast, fixed microwave links are commonly acquired at bandwidths above 5 GHz, with different bands subject to different channel sizes and technical constraints.
- 3.48 Optus considers the band delineations could be simplified to:
- (a) '>5 to 14.5 GHz' for low band cover; and
 - (b) '>14.5 to 31.3 GHz' for high band cover.
- 3.49 In particular, we observe that for bands 14.5 GHz and below, these generally share common propagation and equipment power levels. That is, signals typically travel over 10km; and deployments are typically installed with larger antenna size and higher power transmitter.

Density areas and new pricing constructs

Question 13 – How does the value of spectrum change across geographic locations?

Question 14 – The ACMA also seeks views from stakeholders about:

- should density areas be refined for different services/bands?
- rather than having density areas, do models of congestion (like that used in the 400 MHz work) potentially better reflect demand for services and the value of spectrum? If so, what features would such a model have?
- whether different pricing constructs, such as \$/MHz/Pop for different licence types should be considered?
- whether there should be parity in pricing arrangements between services like commercial broadcasting taxes and open narrowcasting taxes?
- whether there are other services where the ACMA should be considering providing greater parity in pricing?

- 3.50 Optus considers that applying different population density areas could be appropriate on a per-band basis, for the following reasons:
- (a) Higher frequency bands could benefit from smaller defined geographical areas because the higher the frequency, the greater the capacity, the less the propagation.
 - (b) In contrast, lower frequency bands are more suitable for providing coverage over a larger defined geographical area.
- 3.51 However, Optus does not support redefining density areas by different services, as the deployment of services can change. A general principle of spectrum and apparatus licensing is that the licences are technology neutral within the parameters and technical specifications of the licence to ensure relevancy and longevity. Similarly, the use of a congestion model and opportunity cost pricing in this context will increase complexity

and lack of transparency, hence will be unlikely to meet the object of the draft guiding principles.

- 3.52 In terms of other pricing constructs, Optus considers \$/MHz/Pop could be used as a simple metric to measure price across bands for apparatus licences. This approach is already widely used for spectrum pricing across a number of apparatus licence types, including: apparatus licences in some mobile bands and early access licences. This is evident in the way PTS annual tax amounts are derived, i.e. for each relevant band, a separate \$/MHz (paired) or \$/MHz/Pop amount is assigned.
- 3.53 A further complication relates to the population used to derive the apparatus licence fee and the potential for over-recovery of costs. For example, the mobile 2100 MHz apparatus licences are calculated based on an arbitrarily nominated HCIS2 area (9x9 km) as the tax area and only the first site pays. However, for some apparatus licences, use of a HCIS2 area may be too large. While the RALI designates certain frequencies for each operator or other use as preferred assignments, the requirement for apparatus licences to be coordinated means that it is possible to have two different licensees in the same frequency in the same HCIS2 area, hence resulting in the potential for over-recovery of apparatus licence fees to occur.
- 3.54 Optus notes there should also be greater parity in pricing between commercial broadcasting and mobile/fixed spectrum. Currently mobile spectrum is charged at a significant premium and broadcasting spectrum costs are much lower.
- 3.55 Optus has also encountered a potential anomaly in the charging for Earth and Earth Receive licence in bands which are also available for Space Class licensing. These bands are usually for space services only and are not shared with terrestrial services. However, the ACMA still applies the spectrum charge based on density areas (high, medium, low or remote) applicable to the site when in these bands, there is no additional spectrum denial based upon location. Optus believes that a reduced charge should be considered for these cases.
- 3.56 For example, Optus observes that in a recent review of Earth Station licensing, discounts were introduced for Earth stations which were 'closely located' and accessing the same frequencies but maybe pointing at different satellites. These 'separation distances' were set at 500 m for High density, 1 km for Medium density and 2 km for low density locations. These varying separation distance limits based upon the 'density' do not have any technical basis. In practice Earth station antennas using the same frequency can usually be located only tens of metres apart and not suffer interference. Optus therefore suggests that the ACMA review that discount and apply the same discount across all density areas.

Focus Area 6: Transparency and ease of calculating taxes

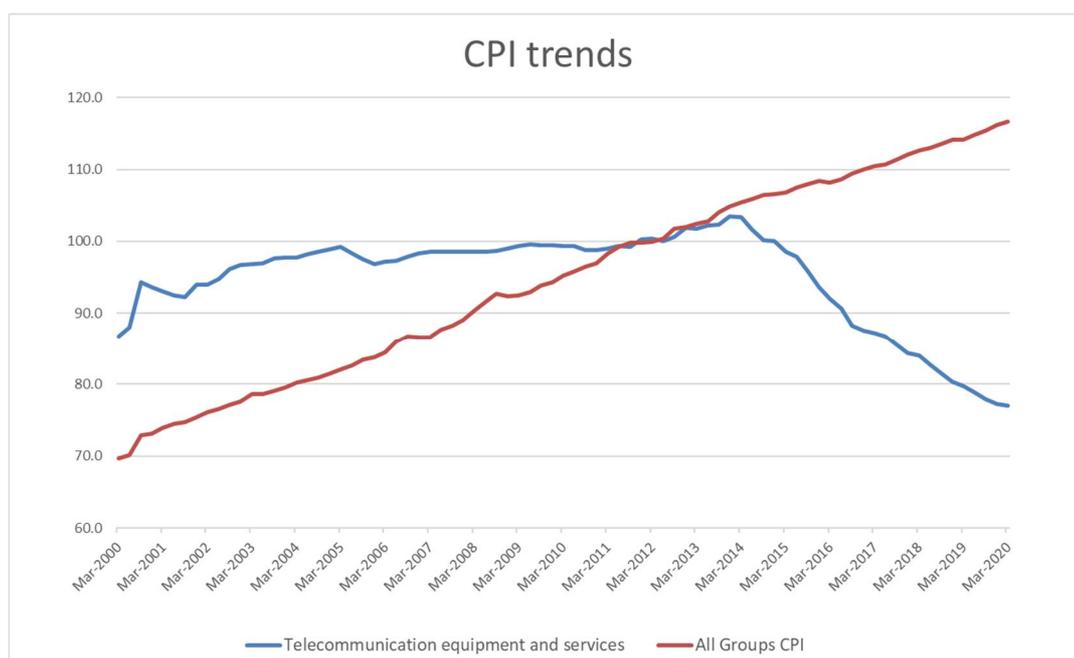
Question 16 – Do these proposals promote transparency and ease in calculating taxes?

- 3.57 In addition to publishing an Apparatus Tax Schedule each year that provides details about the taxes and charges associated with apparatus licences, the ACMA is proposing to develop a new calculator that can be used as a guide for potential licensees.
- 3.58 Optus would welcome the additional transparency that a separate calculator will provide; but notes that clarification and understanding of the pricing approach should continue to take precedent. Potential licensees should have confidence in understanding the key drivers of the costs underpinning the licences being issues.

The role of CPI to update taxes

- 3.59 Optus notes that this focus area could also include a review on the approach to update taxes, in particular the role of CPI or other measures.
- 3.60 Adjustments for inflation are a simple and generally well understood measure and reflect a general increase in prices across society. However, Optus considers that the use of the 'All Groups' CPI should be moderated against the 'Telecommunication equipment and services' CPI before any indexation adjustment is applied.
- 3.61 Figure 2 below further illustrates the widening gap between the All Groups CPI and the Telecommunication equipment and services index.

Figure 2 Annual CPI trends – All Groups vs Telecommunication equipment and services



Source: ABS

- 3.62 Optus considers that the adjustment factor should be revised to reflect the lower CPI value for annual indexation purposes.

Focus Area 5: New technologies and trials

Question 15 – Do stakeholders have views on:

- the current pricing arrangements for scientific-assigned licences for new technologies?
- the proposal for new short-term scientific-assigned licence trials and alternative pricing proposals?

- 3.63 Optus notes that the cost of scientific licences have been an issue for many years. This licence sub-type serves an important function for operators to testbed new equipment in new frequency uses, and the cost of these licence types should not be set too high as to deter the take up of trial licensing being issued on a 'no protection' basis.
- 3.64 The current pricing arrangements for scientific-assigned licence for new technologies should be reconsidered for two reasons: the function it serves; and the lack of commercial return the service brings during the trial period.

- 3.65 First, the issue of scientific-assigned licences provides licensees with the authority to operate within a specified area and bandwidth frequencies for a limited period for trial purposes, with no rights for protection and the mandatory requirement that its use must not cause interference.
- 3.66 Second, a strict criterion that applies to most scientific-assigned licences is the condition that no commercial services can be used on these licences. Therefore there is no revenue to be gained from the delivery of these services, i.e. it is a purely cost driven exercise where each trial conducted may not even be successful.
- 3.67 It follows that the cost of scientific-assigned licences should be reduced to reflect these concerns. For example, the key issue is with trials using high bandwidth services in metro areas (e.g. 5G) since there is no point trialling a small cell in a remote location when the purpose of the trial is to understand the impact on city buildings and roads, and traffic. Similarly, setting high costs can deter or reduce the take up of requisite number of sites for trials by creating additional licensing barriers.

Scientific licences should be based on administrative costs only

- 3.68 In the case of scientific testing licences, there is often no opportunity cost since the licences are temporary in nature, and the licensees are offered no protection from interference and must not cause interference to incumbent users of the band where testing is being conducted. As such, scientific licences should be based on administrative costs only.
- 3.69 The ACMA is also proposing to introduce new pricing arrangements for short term trials (i.e. up to 60 days) to be set at a minimum annual tax amount, with no renewal. Similar to the comments raised above, scientific licences should be based on administrative costs only.

Other Focus Areas being canvassed

- 3.70 While the remaining three Focus Areas being canvassed by the ACMA are of lower priority, we provide some brief comments below.

Focus Area 1: Large bandwidth and multiple (networks devices) requirements

Question 6 – What are the relevant price points to undertake an opportunity cost analysis of taxes for services above 5 GHz? Examples of relevant information may include:

- how prices for products and services have changed over time
- how prices of radiocommunications equipment have changed over time relative to spectrum prices
- comparisons with international auctions results or administrative spectrum prices.

- 3.71 The efficient price of spectrum is its opportunity cost of use, that is, the highest alternative use of spectrum.
- 3.72 While it may be reasonable to apply opportunity cost pricing to a greater number of spectrum bands, especially where it is impractical to competitively allocate spectrum, there will be cases where the opportunity cost is zero. In these cases, the effective value-based charge will be set at zero and any overall cost of administering the spectrum licence will be set at the efficient costs of managing that spectrum.

- 3.73 As evidenced by the CPI, the index numbers for Telecommunication equipment and services have consistently trended below the All Groups CPI since March 2014.⁴ This also highlights that the price trends have been trending down for many years, despite a significant uplift in the value of the services provided to downstream users.
- 3.74 In contrast, direct comparisons with international and domestic spectrum auctions also do not provide the true cost of spectrum over time. For example, some jurisdictions provide short term licences (e.g. trial licences) so that the true spectrum value could be determined before auction. There may also be different pricing arrangements adopted, where auction fees may be lower, but ongoing spectrum costs recovered through other spectrum access charges. In many cases, we have seen a significant premium applied to the allocation and upfront cost of spectrum as a result, and without the equivalent uplift in financial returns.

Question 7 – How can taxes be designed to account for multiple devices? Under what circumstances do stakeholders believe that one tax should relate to many devices and/or there should be ‘discounts’ for multiple devices authorised under one licence?

- 3.75 Optus notes that this question appears to be targeted with the introduction of AWLs, to which we remain unconvinced. As a general principle, all AWLs should require the registration of devices as a default requirement, with any relaxation of this requirement to be considered on a case-by-case basis. The registration of devices will enable the ability for greater coordination and management of potential interference issues with other licensees in the same band and in adjacent areas.
- 3.76 The circumstances for a different pricing arrangement will also vary for different reasons, including the number of devices it is intended to support and whether the multiple devices are all needed to be providing the same service. For example, if the cost of managing the spectrum is related to the number of devices then it should scale with device quantity. Alternatively, if the licence is for a large area and using boundary management then costs are more related to areas rather than devices.
- 3.77 The licence hierarchy framework remains central to the tax design – as such the licence fees need to also reflect licence hierarchy and the difference in licence conditions within the same frequency ranges. Spectrum licences are generally issued at a premium with strict licence conditions, while apparatus licences are generally administratively based. Even so, access to apparatus licences are subject to process requirements, such as registration and interference mitigations, before issue. This is what sets them apart from devices deployed under class licensing arrangements.
- 3.78 As such, the concept of a single tax relating to many devices and/or the use of ‘discounts’ for multiple devices authorised under one licence must at the very minimum require the potential licensee to undertake the same processes as an apparatus licensee. Importantly, that it continues to respect the licence hierarchy of any spectrum licences issued within the same frequency ranges.
- 3.79 There will be risks with offering significant discounts for an area-based apparatus licence for the operation of multiple devices where process requirements such as registration and interference mitigations are not adequately addressed.

⁴ See: Australian Bureau of Statistics, 6401.0 Consumer Price Index, Australia, Table 7. CPI: Group, Sub-Group and Expenditure Class, Weighted Average of Eight Capital Cities.

Focus Area 2: Sharing and low interference potential devices

Question 8 – While the current low power discount provides for a significant reduction in taxes of 90 per cent, the ACMA is interested in considering further incentives to promote the greater sharing of spectrum.

Do the lower potential denial areas of different services provide a case for considering different or additional low power discounts? In responding, please provide:

- examples of these services and the denial characteristics of these services
- the information that may be required for the ACMA to be able to apply a discount
- views on whether such approaches can be applied across different licence types and bands.

3.80 Optus cautions that greater sharing of spectrum should not necessarily mean allowing for the unfettered proliferation of devices and equipment to operate within a band. Being low power may not be enough if there are large numbers of devices. Conversely, a small number of devices may also mean that not much sharing going on.

3.81 Optus also notes the release of the ACMA's outcomes paper on Spectrum Sharing and welcomes the ACMA's position that without any detailed sharing proposals and limited interest in sharing put forward, *"the ACMA does not intend to prioritise the development of a formal, ongoing DSA regime at this time."*⁵

3.82 In particular, there should be no retrospective changes to existing licences from spectrum sharing arrangements that risk undermining the spectrum licensing hierarchy.

Focus Area 3: Defined approach to considering changes in taxes and opportunity cost pricing

Question 9 – Do stakeholders have comments on:

- the proposal to monitor bands for potential changes in taxes and the balance and precision required in monitoring and pricing spectrum?
- the use of inflation to keep apparatus licence taxes contemporary and whether there are alternative approaches?

3.83 In general, fees for apparatus licences should be based solely on the ACMA's administrative costs, and only where appropriate, a component to represent the opportunity cost of the use of the spectrum.

3.84 As previously noted, adjustments for inflation are a simple and generally well understood measure and reflect a general increase in prices across society. As such it would be reasonable to support increases based on the appropriate indexation factor and population, but not opportunity costs.

⁵ ACMA, 2020, New approaches to spectrum sharing: Next Steps, May, p.2