OPTUS

Submission in response to ACMA Consultation Paper

Proposed area-wide apparatus licence

Public Version

August 2019

EXECUTIVE SUMMARY

1. Optus welcomes the Australian Communications and Media Authority (ACMA) consultation paper for the introduction of a new apparatus licence type to facilitate a suitable licensing option for 'small-area' multi-device deployments.

2. The proposed area-wide apparatus licence (AWL) type is intended to encompass two new licence types: a new transmitter licence type, and a new receiver licence type.

3. Optus considers the creation of a more flexible licence-type that falls within the existing apparatus and spectrum licensing arrangements could be a welcome addition. However a fine balance is required to ensure that the new arrangements consider the potential impacts on both direct and indirect consequences to licensees (adjacent in both frequency and geography) over the long term.

4. In many cases, the additional flexibility may better facilitate emerging needs in the short-term, however it could also lead to longer-term implications regarding spectrum rights. For example, it could entrench a framework that adds additional complexity if, and when, the spectrum is to be reassigned in the form of spectrum licences.

5. Importantly, the ACMA states that it's *"use of AWLs in any given band on a regular basis will be contingent upon an analysis of the suitability of the licence type for the band,"*[1] however it has already been flagged that the AWL licence type may be considered in some parts of the 26 GHz band. It is unclear upon which criteria or what basis the suggested use of AWLs has been made for this band.

6. The consultation paper is significantly lacking in detail on several matters, including, but not limited to:

   (a) Applicability and overarching framework for the AWL licence type design;

   (b) Assessment criteria for the applicability of AWLs to a given band or use type;

   (c) Principles for determining geographic boundaries;

   (d) Tenure, renewal rights and pricing implications;

   (e) Monitoring and enforcement of potential interference issues.

7. Optus considers these issues need to be further explored. Absent further clarification, this new licence type should not be introduced in its current form.

8. Optus also considers merit in adopting a more principles-driven approach which will better deliver the more efficient outcome. There is no "one size fits all" approach to the use of AWLs, therefore navigating the fine balance required to implement this new licence type needs to be supported with a general understanding of the operability of the new licence type within the overall licensing framework.

9. The ACMA should establish the overarching framework for the AWL licence design, including the general principles each AWL licence type should adhere to – such as:

   (a) Mandatory registration requirement, especially where coordination may be required;

[1] ACMA, Proposed area-wide apparatus licence, Consultation Paper, June 2019, p.8

(b) Minimum information maintained by licensees outside the RRL should be the minimum required for RRL device registration, regardless of whether a device is registration-exempt;

(c) Renewal rights and conditions to be established at the time of licence issue;

(d) Principles for determining geographic areas;

(e) Principles for interference management; and

(f) General process to apply for the AWL licences.

10. Optus contends that the ACMA should engage in one more round of industry consultation before making any determination on the introduction of AWLs. To proceed to this step based on a single round of consultation for such a fundamental change to the licencing framework seems ill-advised, given the lack of detail provided in this consultation paper.

THE AWL CONCEPT NEEDS FURTHER DEVELOPMENT

11. The Consultation Paper discusses the concept of a new area-wide apparatus licensing arrangement to be introduced, which will be supported under a framework that supports area-wide, broad applications and scalable attributes. Importantly, it will be a flexible licensing arrangement that can be applied to any frequency band and is intended that the ACMA will consult prior to issuing an AWL type in a new frequency band.

12. In general, Optus supports the concept for the introduction of a more flexible licensing arrangement but is concerned that the implementation aspect for the introduction of the new AWL type has not been adequately addressed. This is also in direct contrast to the ACMA's previous acknowledgement that in exploring the design of a spectrum space apparatus licence, *"Such a spectrum space apparatus licence would provide analogous technical and operational flexibility to a spectrum licence."*[2]

13. In particular, it has been made clear that the purpose of this consultation has only been focused on establishing an amended apparatus licence type – that is, a high-level concept with no specific details. However, all the important licence considerations have been deferred to future consultations on the technical, geographic and economic aspects. This is intended to occur before a new frequency band is opened to the AWL type. Optus is concerned that without basic principles established in the overarching AWL LCD – where different assessment criteria and outcomes may arise in the establishment of AWL types in different frequency bands – these important licence considerations and the operation of the current licensing framework may be undermined and new myriad of complex licence interactions arising as an unintended consequence.

14. Optus submits a fine balance is required to ensure that the new arrangements consider the potential impacts on both direct and indirect consequences to licensees (adjacent in both frequency and geography) over the long term. Further consultation is needed for introduction of the AWL in its current form.

Description of the AWL concept

15. The area-wide apparatus licence (AWL) concept has been designed to improve the flexibility of the apparatus licensing framework. The AWL intends to introduce flexibility by authorising the operation of multiple radiocommunication devices operates within smaller defined geographical areas and specified frequencies (and no longer just a 'site-coordinated licence'). However it is unclear how the new AWL framework will operate and on what basis the ACMA will assess the suitability of the licence type to be issued in a frequency band.

16. Optus is concerned that the proposed licence flexibility attributes may undermine the existing apparatus licensing framework. In effect, the proposed AWL arrangements could be described as the operation of a class licensing arrangement (such as multiple device, limited coordination and interference protection, no device registration) within the loose structure of an apparatus licensing arrangement (such as limited tenure, subject to licence fee).

17. The Consultation Paper also appears to contradict its AWL description in some parts, for example;

    (a) The key attributes have been described to be area-wide, broad application, and scalable – but operate *"within smaller defined geographical areas and specified*

[2] ACMA, Five-year spectrum outlook 2019-23, Consultation Draft, April 2019, p.64

frequencies than those typically authorised by spectrum licences."[3] There is no guidance provided on the means and metrics by which the new licence type will treat the potential permutations of licence areas and frequency assignments that may eventuate.

(b) *"The intended purpose of a receiver licence is to provide receivers protection from interference through coordination and registration"*[4] – however it is also noted that AWLs will not require coordination of devices prior to issue of the licence and similarly not require registration of devices prior to the device being operated.[5] This issue is also complicated where there is no default requirement to register transmitter devices, it is unclear on what basis the protection from interference will be managed and enforced.

(c) Coordination and registration are not required in all cases, however *"the AWL LCD will require licensees to provide information about radiocommunications devices operated under the licence upon written request"*[6] – but even with a limitation on the information that can be requested (that is, location and maximum total radiated power for all area-wide stations operated under the licence), the ACMA notes that *"Even where the technical and economic assessment process identifies an interference rationale for device registration, it is expected that 'low power' devices will not be required to be registered."*[7]

(d) The proposed AWL LCD does not specify any specific conditions for use, other than the 'lax' requirement to provide information on the location of area-wide stations. Instead, it appears to rely on the inference from the definition that 'area-wide licence' means an apparatus licence, and hence the conditions applicable in the Apparatus LCD could also apply in some form. This is not clear.

(e) The proposed changes to the RRL Determination further cement the loss of detailed information as a default requirement for the AWL type. The key objective of the RRL Register is to maintain a register of certain details about licences and certain technical information about licensed transmitters and receivers. The inclusion of this information is also important to minimise potential interference and facilitate the coordination of services to promote spectrum use.

(f) The scalable attribute of the proposed licence type, which enables its use for different-sized geographic areas and bandwidths has the potential to increase the number of geographic boundaries and frequency combinations in which other licensees (including any adjacent geographic and/or frequency bandwidth licensees, regardless of their current licence type) may need to consider in their planned or current deployments and technical planning.

18. Optus welcomes further consultation to understand the implications of the new AWL type and what this will have on the overall spectrum licensing framework.

---

[3] ACMA, Proposed area-wide apparatus licence, Consultation Paper, June 2019, p.6

[4] ACMA, Proposed area-wide apparatus licence, Consultation Paper, June 2019, p.7

[5] ACMA, Proposed area-wide apparatus licence, Consultation Paper, June 2019, p.9

[6] ACMA, Proposed area-wide apparatus licence, Consultation Paper, June 2019, p.9

[7] ACMA, Proposed area-wide apparatus licence, Consultation Paper, June 2019, p.9

19. As a minimum, the requirement for the registration of transmitters and receivers within an AWL area should be required once the devices become active in an AWL area. The AWL type should therefore operate more like a spectrum licence than a class licence, as this would afford greater flexibility to licensees in terms of certainty of access and ease of deployment.

Licence conditions and technical planning

20. Optus is concerned the proposed AWL LCD does not adequately capture the common conditions that would apply to the issue of an AWL, irrespective of the frequency band in which it will be issued.

21. The Consultation Paper currently notes (but does not require) that each AWL issued by the ACMA *may* include conditions which specify:

    (a) The frequencies in which radiocommunications devices are authorised to operate;

    (b) The geographical area in which radiocommunications devices may be operated;

    (c) The maximum Equivalent Isotropically Radiated Power (EIRP) or Total Radiated Power (TRP) levels for radiocommunications devices operated under the licence;

    (d) The maximum signal level at the boundary/edge of the licence area; and

    (e) Any other conditions relating to the operation of radiocommunications devices under the licences.[8]

22. However, the proposed AWL LCD only sets the single licence condition that information in section 7 on location of area-wide stations be provided. Even so, the information that can be requested is limited to just location of all area-wide stations (with no specifics on detail to be provided) operating on the day the request is made; and the maximum TRP for each such area-wide station.

23. Optus submits that the information required to be supplied on request for unregistered wide-area station is not sufficient to allow adjacent licensees (including geographic and/or frequency adjacent licence holders) to conduct coordination of services for these stations. It is therefore unclear to whom a request would be addressed and what information would therefore be provided if such a request is made.

Ofcom approach provides some interesting insights

24. By way of comparison, Ofcom has recently introduced a new licensing arrangement that also seeks to facilitate the enablement of wireless innovation through local licensing. The decision also sets out a clear objective, that is,

> *We want to support innovation and enable new uses of spectrum, and we recognise there is growing interest in the use of mobile technology, including 5G, to develop solutions to meet local wireless connectivity needs. To ensure that lack of access to the radio spectrum does not prevent innovation, we are*

[8] ACMA, Proposed area-wide apparatus licence, Consultation Paper, June 2019, p.8

introducing a new licensing approach to provide localised access to spectrum bands that can support mobile technology.[9]

25. In particular, the decision sets out the candidate bands in which the new 'shared access licence' arrangements could apply – 3.8-4.2 GHz, 1800 MHz shared spectrum, and 2300 MHz shared spectrum bands; as well as the 24.35-26.5 GHz band for indoor-only deployment. Importantly, Ofcom notes that *"People can apply to Ofcom for coordinated access (this ensures they won't cause interference) to these bands on a first come, first served basis and will pay a licence fee that reflects Ofcom's cost of issuing the licence."*[10]

26. Ofcom also states upfront some expectations for the take-up of these new licensing arrangements, including accurate record-keeping requirements and licence conditions of use (i.e. no spectrum hoarding). Ofcom has also published a guidance document alongside its decision statement to support people wishing to apply for a licence.[11]

27. Optus submits there are several important differences the Ofcom approach offers, compared to proposed ACMA approach, including the establishment of a high-level framework for the licensing arrangement and the onus on coordination as a condition of licence issue. There will be no restrictions on eligibility for licences, however the protection criteria used to coordinate with existing services will remain.

28. Finally, while Optus does not support the Ofcom approach in its entirety, there are still several considerations that applied in the Australian context could guide the development of the AWL framework. These observations are further discussed below.

PRINCIPLES-BASED FRAMEWORK FOR THE AWL

29. In general, Optus supports the concept for the introduction of a more flexible licensing arrangement but is concerned that the implementation aspect for the introduction of the new AWL type has not been adequately addressed.

30. Optus considers that a framework should first be established setting out the overarching assessment criteria that enables an AWL to be issued in a specific spectrum band, which would apply irrespective of the band in which AWL may be issued.

31. For example, guidance on the assessment criteria should be provided upfront, including:

    (a) Applicability and overarching framework for the AWL licence type design and potential candidate bands in which AWL licensing could be considered

    (b) The overall planning arrangements that apply to each candidate band, including principles for determining the geographic boundaries that could be considered

[9] Ofcom, Enabling wireless innovation through local licensing, Shared access to spectrum supporting mobile technology, Statement, 25 July 2019, p.1

[10] Ofcom, Enabling wireless innovation through local licensing, Shared access to spectrum supporting mobile technology, Statement, 25 July 2019, p.1

[11] See: Ofcom, Shared Access Licence, Guidance Document, 25 July 2019

(c) The technical planning considerations that would apply, process in which these technical conditions would be agreed and how they would flow through the relevant instruments

(d) Monitoring and enforcement of potential interference issues, particularly given the default position of no registration being proposed.

(e) Tenure, renewal rights and pricing implications.

32. As such, Optus considers the creation of a more flexible licence-type that falls within the existing apparatus and spectrum licensing arrangements is a welcome addition.

33. However, the distinct lack of detail on the implementation aspect and how these issues will be addressed is creating industry concern over the risk of unintended consequences that may arise from the AWL arrangements. Optus therefore considers a principles-driven approach will better deliver the more efficient outcome.

Licence design and candidate bands for AWL arrangements

34. The ACMA has noted that it intends to adopt AWL arrangements as the preferred authorisation arrangement for the use of spectrum in the 26 GHz band in areas outside the large population centres. However, there is limited information available on the specifics of the AWL licence design that is being considered for this band, for example, consideration for high power base stations as well as small cells.

35. If further discussion is not conducted until the AWL arrangement is introduced, Optus is concerned that the ACMA will subsequently use the 26 GHz mmWave consultation to lock in the framework for future AWL assessments in more encumbered bands. While Optus agrees with the flexibility intent that the AWL arrangements could provide, this is not the appropriate order of events and some minimum framework is required. The ACMA proposal, in its current form, is incomplete in its specification and does not seem to be suitable for use by MNOs (e.g. in the 26 GHz band) and particularly with its proposed lack of registration requirement (i.e. a significant change will be required).

36. The ACMA should establish the overarching framework for the AWL licence design, including the general principles each AWL licence type should adhere to – such as:

(a) Mandatory registration requirement;

(b) Minimum information maintained by licensees outside the RRL should be the minimum required for RRL device registration, regardless of whether a device is registration-exempt;

(c) Renewal rights and conditions to be established at the time of licence issue;

(d) Principles for determining geographic areas;

(e) Principles for interference management; and

(f) General process to apply for the AWL licences.

37. One important consideration to be resolved upfront should be the question: what is the licensing arrangement seeking to achieve and what is the ACMA's role in facilitating and managing this arrangement?

38. The ACMA's approach only offers an edict of achieving licence flexibility. This is in direct contrast to the Ofcom approach, which is solving for a different problem, i.e. enabling the temporary use of undeployed mobile network spectrum. In doing so, Ofcom is also

taking a highly active role in coordinating and managing this form of spectrum use. Optus considers that the ACMA will need to be similarly very active in facilitating for any use of the AWL arrangements.

Device coordination and registration

39. Optus does not agree that the starting presumption for AWL licence types should be a no device registration requirement, with all deferment of the registration requirement to be established during the course of the technical and economic assessment on the applicability of the AWL construct in a new specific band.

40. Instead a more conservative approach that would assume that registration is needed unless it can be demonstrated that it would be unnecessary or unduly burdensome for any particular use type or licensee should be required. The benefits would be two-fold.

    (a) First, it would better protect the rights of licence holders; and

    (b) Second, it would ensure the robustness and operability of the current interference management framework can be maintained.

41. There is a basic condition in the Apparatus LCD that requires all licensees to register any transmitters deployed in an area. In doing so, licensees will undertake the necessary due diligence to check for any other transmitters and receivers that have been deployed to assess their level of protection and to undertake necessary interference mitigation activities. The removal of the default requirement to register transmitters will lead to a behavioural change by potential licensees to undertake the necessary checks to ensure that any planned deployments do not impact on other users – that is, if there is no register of devices (or requirement to register devices), then it may not be immediately evident whether other devices have been deployed in an area (or adjacent area).

42. A key function of the Register of Radiocommunications Licences (RRL), and the information to be included in the RRL, is:

> *for the purposes of mitigating the potential of interference between radiocommunications services, facilitating the coordination of radiocommunications services and assisting the ACMA in the performance of its regulatory functions related to managing the radiofrequency spectrum.*[12]

43. It therefore follows that the deployment of devices under AWL type licences may also mask potential spectrum use and interference issues. There appears to be no requirement for device registration, reporting, or coordination between users for devices deployed. This means that the devices deployed may not be able to be monitored, with limited ability for the regulator to proactively oversee, regulate and mitigate spectrum issues as they arise. Having no registration requirements facilitates may promote take up but can lead to inefficient use if the spectrum also needs to be used by other licence types with a higher value of use that have registered to get more protection

44. The loss of immediately accessible transmitter and receiver information, such as that contained in the RRL, may lead to delays in dealing with potential interference issues between licensees. Due to unknown location of interfering devices (as a consequence of no registration), traditional interference analyses for the protection of a device authorised to be operated under the licence is in general not possible.

[12] See: Radiocommunications (Register of Radiocommunications Licences) Determination 2017, Explanatory Statement, F2017L01069ES

45. As a result, the ability to request and obtain information on devices operating under an AWL arrangement is greatly diminished – unless there is a condition in the AWL LCD or 'a condition in the licence stating that the Register must contain those details.' In its current form, the proposed AWL LCD does not require the AWL licensee to provide or maintain this information, nor does it specify the information requirements where a request for information is sought (such as, the requirements for the location information). By way of comparison, the RRL LCD currently specifies the level of detail required when information on the location of sites where a device is located is sought.

46. The starting assumption should therefore be a requirement for device registration within the AWL geographic area, or at the very minimum once it becomes active.

47. Optus also notes that ACMA already has flexibility in its current licensing arrangements to set special conditions in the issue of apparatus licences to exempt devices or class of devices from the need for registration.

Geographic boundaries

48. Optus notes that limited detail has been provided on the size (or potential size) of geographic areas. For example, the Consultation Paper only refers to the scalable attribute of the AWL type which suggest that licence areas can be issued for smaller geographic areas and frequencies than currently exist today. However, there is no definition of what could constitute a 'small area' or even reference to the standard spectrum trading units (STU) often used to describe the small unit of spectrum space that a spectrum licence can be divided into.[13]

49. Geographic area should be defined at a planning level – but it is unclear who determines who is responsible for determining this boundary. At a principles level, the geographic area should not be defined so small that it neglects the general physics of RF signals, but more importantly it should avoid defining arbitrary boundaries which risk slicing a regional town in half.

Interference management

50. The operation of a robust framework to manage and resolve any issues of interference is fundamental to the spectrum licensing framework. This has been supported by a firm understanding and expectation among existing licensees that coordination requirements must be met before devices are activated.

51. The imposition of boundary conditions does not mitigate the separate need to address interference management activities. The management of interference should not simply be conflated with the defining of boundaries for AWLs but must encompass an approach that ensures the risk of interference is properly assessed, understood and managed prior to issue of the AWL and deployment. This assessment criteria remains unknown.

52. Licence boundary conditions and registration requirements should not be confused or conflated with interference management: they are different things.

[13] The geographic area of an STU is equal to a cell of the ACMA's spectrum map grid, this is an area 5 minutes by 5 minutes of arc (approximately 9x9 km). The frequency bandwidth of an STU is set at 1 Hz for all spectrum licence bands. See: https://www.acma.gov.au/Home/Industry/Spectrum/Radiocomms-licensing/Spectrum-licences/spectrum_21

(a) Interference is not limited to the extent of a device's coverage or service area and can propagate for many kilometres beyond the nominal boundary of the device registration or useful coverage limits.

(b) TDD and FDD interference mechanisms differ, with TDD primarily exhibiting BTS-to-BTS interference and FDD deployments suffering interference between the BTS and UE (or vice-versa).

53. There is no "one size fits all" approach to the use of AWLs. Principles are needed upon which the licence applicability is determined, including, but not limited to;

(a) Frequency band(s) and propagation characteristics;

(b) Band configuration (TDD or FDD);

(c) Whether the band is encumbered or unencumbered;

(d) Likely use cases and deployment scenarios; and

(e) Device bandwidth, power, mobility and proximity to other licensees.

54. This directly contrasts with the Ofcom approach, which adopts a more coordinated approach to address potential interference issues. For example,

(a) Ofcom will actively manage the interference issues – e.g. Initial Assessment, Engagement with Mobile Operator, Consultation regarding provisional decisions

(b) No registration but Licensee to keep records and provide all required information to Ofcom as required for Ofcom to investigate interference issues – this may include commercially sensitive information.

55. It follows that without more detail regarding the decisions on technical requirements and constraints, boundary creation and management principles, registration and protection priorities and existing licensee interworking it is very difficult to articulate whether the use of an AWL would be favourable compared with currently available licence types.

Pricing and licence issue process

56. Absent further information, it has been assumed that the general apparatus licensing arrangements that currently apply will likely continue, including:

(a) Licence tenure is currently limited to five years (section 103(3) of the Act). Optus notes that the new Ofcom licence types are limited to 3 years with no renewal;

(b) The ability to determine a price-based issue process (section 106(1) of the Act) and any associated requirements relating with this process;

(c) Licence renewal process (section 130 of the Act)

57. However, as discussed throughout this submission, the ACMA has effectively deferred all decisions on the technical, geographic and economic aspects of the licence implementation to future consultations.