

Explanatory Statement

Radiocommunications Act 1992

Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018

Issued by the Authority of the Minister for Communications

Purpose

The purpose of this instrument is to require the Australian Communications and Media Authority (ACMA) to impose limits on the aggregate of the parts of the spectrum that will be able to be used by any person, or by certain groups of persons, as a result of the upcoming allocation process for spectrum in the 3.6 GHz band (3575-3700MHz). Spectrum allocation limits can increase competition in both the relevant market generally and the particular allocation processes in which they are applied. The increased competition promotes consumer benefits such as increased innovation, accelerated deployment of mobile services, and greater consumer choice. It can also lead to improved allocative efficiency and prevent any single party or group from monopolising the spectrum at the expense of competition.

The instrument requires the ACMA, in determining procedures to be applied for allocating spectrum in the 3.6 GHz band, to ensure that no person or specified group of persons may use more than an aggregate of 60 MHz of spectrum in each metropolitan area, or an aggregate of 80 MHz in each regional area, in the frequency range 3400-3700 MHz.

Authority

The *Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018* (the Direction) is made by the Minister for Communications under subsection 60(10) of the *Radiocommunications Act 1992* (the Act).

Under section 60 of the Act, the ACMA is required to determine procedures to be applied in allocating spectrum licences under Subdivision B of Division 1 of Part 3.2 of the Act. Section 153L requires spectrum licences to be issued under this Subdivision where the Minister has made a spectrum re-allocation declaration under section 153B of the Act making specified parts of the spectrum subject to re-allocation through the issue of spectrum licences. A spectrum re-allocation declaration initiates the process for re-allocating spectrum in the frequency bands named in the declaration.

Subsection 60(5) of the Act empowers the ACMA to determine procedures under subsection 60(1) that impose limits on the aggregate of the parts of the spectrum that may be used by any one person or specified person, or members of a specified group of persons, as a result of the allocation of spectrum licences under Subdivision B of Part 3.2 of the Act. However, subsection 60(9) of the Act provides that this power to determine limits may only be exercised by the ACMA if it is directed to do so by the Minister under subsection 60(10) of the Act.

Subsection 60(10) of the Act allows the Minister to give written directions to the ACMA in relation to the exercise of its power to determine procedures imposing a limit mentioned in subsection 60(5) of the Act.

Subsection 60(6) of the Act sets out the manner in which limits imposed under subsection 60(5) of the Act may be expressed to apply, including by reference to a specified part of the spectrum, specified area or specified population reach.

This instrument is a legislative instrument for the purposes of the *Legislation Act 2003*. However, this instrument is not subject to disallowance or sunset, as it is a direction by a Minister to a person or body (see item 2 of the table in section 9 and item 3 of the table in section 11 of the *Legislation (Exemptions and Other Matters) Regulation 2015* respectively).

Background

The ACMA intends to re-allocate spectrum in the 3.6 GHz band by auction. In March 2018, the Minister made the *Radiocommunications (Spectrum Re-allocation—3.6 GHz Band for Adelaide and Eastern Metropolitan Australia) Declaration 2018*, the *Radiocommunications (Spectrum Re-allocation—3.6 GHz Band for Perth) Declaration 2018* and the *Radiocommunications (Spectrum Re-allocation—3.6 GHz Band for Regional Australia) Declaration 2018*, which declared spectrum in the 3.6 GHz band as subject to re-allocation by issuing spectrum licences, in order to enable the ACMA to conduct this auction.

Spectrum licensing will facilitate the most efficient use of the spectrum and will provide licensees with the flexibility and security of tenure needed to encourage investment in infrastructure. The ACMA is proposing that all 3.6 GHz spectrum licences have a common expiry date of 13 December 2030, which aligns with the expiry date of other licences in the 3.4 GHz and 3.5 GHz bands.

Demand for spectrum is increasing as the demand for mobile data services continues to increase. Spectrum in the 3.6 GHz band is highly desirable for mobile broadband and has been identified internationally as a pioneer band for 5G technologies. Currently, the 3.6 GHz band is used by a range of incumbents including for fixed wireless and satellite services under apparatus licences. The effect of the reallocation declarations is that the incumbent apparatus licences will be automatically cancelled in the band following a 2 year re-allocation period in Adelaide, Brisbane, Canberra, Melbourne and Sydney, a 5 year re-allocation period in Perth and a 7 year re-allocation period in regional areas, completing the transition to spectrum licensing in the band.

The Minister sought advice from the Australian Competition and Consumer Commission (ACCC) on appropriate allocation limits (also known as competition limits) for the 3.6 GHz auction. The ACCC undertook targeted consultation to assist with its advice and provided its advice to the Minister in May 2018.

After consideration of the ACCC's advice, the Minister has decided to direct the ACMA to impose allocation limits that will apply to the allocation of spectrum licences in the 3.6 GHz band to ensure that no person or specified group of persons will be able to use, under spectrum licences and PTS licences for PMTS Class B services, more than an aggregate of 60 MHz of the 3400-3700 MHz frequency range in each metropolitan area, and an aggregate of 80 MHz of that range in each regional area.

Allocation limits of 60 MHz in metropolitan areas and 80 MHz in regional areas are intended to prevent monopolisation of the spectrum, enhance competitive tension at auction and reduce the possibility of unsold spectrum following the auction. They will also meet the Government's policy objectives of encouraging a competitive market for the benefit of

consumers, supporting the efficient allocation and use of spectrum, encouraging secondary trading of spectrum, supporting the development of 5G networks in Australia, and encouraging investment in infrastructure, including in regional Australia.

Regulation Impact Statement

A Regulation Impact Statement (RIS) has been completed and is at Attachment A. The Office of Best Practice Regulation has certified that the RIS is compliant with Australian Government RIS requirements (ID number 23860).

Notes on Sections

Section 1 – Name of instrument

Section 1 provides that the instrument is the *Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018* (the Direction).

Section 2 – Commencement

Section 2 provides for the commencement of the Direction. The Direction will commence on the day after it is registered on the Federal Register of Legislation.

Section 3 – Authority

Section 3 provides that the Direction is made under subsection 60(10) of the *Radiocommunications Act 1992*.

Section 4 – Interpretation

Subsection 4(1) defines terms used in the Direction.

3.6 GHz band is defined to mean the part of the spectrum from 3575-3700 MHz. The term is used in section 5 to specify that the limits required to be imposed by the Direction must apply to the allocation of spectrum licences in the 3.6 GHz band in accordance with a relevant re-allocation direction.

ACMA is defined to mean the Australian Communications and Media Authority.

Act is defined to mean the *Radiocommunications Act 1992*.

associate is defined to mean:

- a. in relation to a person that is a body corporate:
 - i. a director or secretary of the body;
 - ii. a related body corporate;
 - iii. a director or secretary of a related body corporate;
 - iv. an individual who holds at least 15% of the issued shares in, or 15% of the voting power in, the body corporate;
- b. in relation to a person that is an individual:
 - i. their spouse
 - ii. their de facto partner (within the meaning of the *Acts Interpretation Act 1901*);

- iii. a body corporate in which the individual controls at least 15% of the issued shares, or holds at least 15% of the voting power;
 - iv. a body corporate of which the individual is a director or secretary;
 - v. a body corporate in that is a related body corporate in relation to a body corporate of which the individual is a director or secretary;
- c. in relation to any person (the **first person**) (i.e. whether the person is a body corporate or an individual)—any other person (other than the Commonwealth when represented by the ACMA) who is party to a relevant agreement with the first person that either or both:
- i. is for use by one party to the agreement of spectrum licenced to another party to the agreement under a spectrum licence for a part of the spectrum referred to in a relevant re-allocation declaration;
 - ii. relates to the acquisition of a spectrum licence for a part of the spectrum referred to in a relevant re-allocation declaration.

The definition is used in the definition of ‘specified group of persons’, which provides that a person and all their associates will be taken to be one ‘specified group of persons’ to whom the allocation limits will apply. The purpose of the definition is to ensure that a person cannot seek to circumvent the effect of allocation limits by having another person or body they have a close connection to, a high degree of control or influence over, or a commercial agreement with, to apply for a spectrum licence on their behalf in order to circumvent the allocation limits.

carrier is defined to have the same meaning as in the *Telecommunications Act 1997*. The term is used in the definitions of relevant agreement and roaming services agreement.

designated area is defined to mean a metropolitan area or a regional area. These terms have a meaning set out in section 6 of the Direction.

Hierarchical Cell Identification Scheme or HCIS is defined to mean the Hierarchical Cell Identification Scheme used as part of the Australian Spectrum Map Grid 2012 (ASMG) document published by the ACMA on its website, as the document existed as the time the Direction was made. The ASMG is a system used by the ACMA to define geographic areas for radiocommunications licensing. HCIS codes are used in section 6 of the Direction in order to identify the metropolitan and regional areas to which limits apply under section 5, as well as associated areas for licences which entitle a person to use spectrum at a specified location rather than in a specified area (i.e. apparatus licences) (see subsection 5(4)).

metropolitan area is defined to have the meaning given in section 6 of the Direction.

PMTS Class B is defined to have the meaning given in the *Radiocommunications (Interpretation) Determination 2015* (the Interpretation Determination). The Interpretation Determination is an instrument made by the ACMA that defines a number of terms used in instruments made under the Act.

PTS licence is defined to have the meaning given in the Interpretation Determination.

public mobile telecommunications service is defined to have the same meaning as in the *Telecommunications Act 1997*. The term is used in the definition of roaming services agreement.

regional area is defined to have the meaning given in section 6 of the Direction.

related body corporate is defined to have the same meaning as in the *Corporations Act 2001*.

relevant agreement is defined to mean an agreement, arrangement or understanding, whether formal or informal (or a combination of the two), written or oral (or a combination of the two), and whether or not having legal or equitable force or based on legal or equitable rights. However, the definition excludes roaming services agreements or an agreement between carriers provided for by or under the *Telecommunications Act 1997* or Part XIC of the *Competition and Consumer Act 2010*. The term *relevant agreement* is used in the definition of associate, as outlined above.

relevant band is defined to mean the part of the spectrum from 3400 MHz to 3700 MHz. The term is used in section 5 to identify the frequency range to which the ACMA must apply the specified allocation limits.

relevant re-allocation declaration is defined to mean any of the following:

- (a) the *Radiocommunications (Spectrum Re-allocation—3.6 GHz Band for Adelaide and Eastern Metropolitan Australia) Declaration 2018*.
- (b) the *Radiocommunications (Spectrum Re-allocation—3.6 GHz Band for Perth) Declaration 2018*.
- (c) the *Radiocommunications (Spectrum Re-allocation—3.6 GHz Band for Regional Australia) Declaration 2018*.

These declarations have been made by the Minister under s 153B of the Act to require the ACMA to commence a process of re-allocating the 3.6 GHz band for spectrum licensing in Adelaide and eastern metropolitan Australia, Perth and regional Australia respectively.

roaming services agreement is defined to mean an agreement between two or more carriers for the principal purpose of enabling the supply of public mobile telecommunications services by one of those carriers in geographic locations where another of those carriers' public mobile telecommunications services are not available. Roaming services agreements are carved-out from the definition of relevant agreement, as described above.

specified group of persons is defined to mean either a person and all associates of that person, or (subject to subsection 4(3) which provides certain exclusions) any two or more groups referred to in paragraph (a) that have at least one member in common.

The ACMA will be required to limit the amount of spectrum any person or specified group of persons may use as a result of the allocation of spectrum licences in accordance with section 5.

use, in relation to a part of the spectrum, is defined to include use by operating a radiocommunications device in accordance with a PTS licence for a PMTS Class B service, but not to include the operation of a radiocommunications device in accordance with any other apparatus licence. This is to ensure that the use of the spectrum by operators with apparatus licences of this type in the 3400-3700 MHz frequency band is taken into account in applying the allocation limits specified in this instrument. This is because this particular type of apparatus licence can be used to deliver similar services over a wide area to those which can be delivered under a spectrum licence in a similar manner, unlike other apparatus

licences which are not to be taken into account in assessing a person or specified group of persons' existing spectrum holdings.

The note to this subsection draws the reader's attention to the fact that a number of terms in the direction are defined in the Act, including radiocommunications device; spectrum; spectrum licence; and, apparatus licence.

Subsection 4(2) provides that the lower number in a reference to part of the spectrum is not included in that part of the spectrum for the purposes of the Direction, while the higher number is included. This is to prevent frequency band overlap.

Subsection 4(3) provides a limited exclusion from the definition of specified group of persons, by providing that an individual is taken not to be a member in common between two or more groups that are comprised of a person (*relevant person*) and the associates of that relevant person where all of the following apply:

- a. the individual is providing services as a company secretary of one or more related bodies corporate of the relevant person in each of the groups;
- b. the individual is not providing those services as an employee of or direct contractor to any of those related bodies corporate, but as an employee of or contractor to a person that is not in any of the groups and has been engaged by each of those related bodies corporate to provide the services of a company secretary;
- c. the individual is not a director of any of those relevant persons or related bodies corporate; and
- d. each of those related bodies corporate is incorporated outside Australia.

The criteria specified are intended to ensure that individuals are taken not to be members in common between groups in certain circumstances where they are genuinely at arms-length from the related bodies corporate. This is intended to address the fact that some related bodies corporate (i.e. associates) of persons who are likely to be interested in acquiring spectrum licences in the relevant band engage third parties (e.g. law firms or other professional services firms) to act as company secretaries. For example, a related body corporate that operates in a different jurisdiction to a parent company may engage a local firm with particular expertise in that jurisdiction. In some instances, a related body corporate of two separate persons may engage the same third party to provide secretarial services. Without this exemption, those two persons and their associates would be taken to be a single specified group of persons for the purposes of the allocation limits. This could unduly restrict the ability of those persons to access spectrum due to a remote connection to another person with relevant existing spectrum holdings (potentially a competitor) and go beyond the purpose of the allocation limits.

Section 5 – Direction

Section 5 directs the ACMA to determine procedures under subsection 60(1) of the Act for allocation of 3.6 GHz spectrum to ensure that no person or specified group of persons may be allocated licences for that spectrum that would enable them to use more than 60 MHz of spectrum in the 3400-3700 frequency range in a metropolitan area and/or 80 MHz of the spectrum in the 3400-3700 frequency range in a regional area.

Subsection 5(1) directs the ACMA to determine allocation procedures under subsection 60(1) of the Act that impose limits on the aggregate of the parts of the spectrum that may be

used by a person or specified group of persons as a result of the allocation of spectrum licences under Subdivision B of Division 1 of Part 3.2 of the Act, in accordance with the requirements set out in section 5.

Subsection 5(2) sets out the limits that must be applied and the manner in which they are to be applied with reference to specified areas in which they are to apply.

Paragraph 5(2)(a) provides that the limits imposed must apply to the allocation of spectrum licences in the 3.6 GHz band that is enabled by a relevant re-allocation declaration.

Paragraph 5(2)(b) provides that the limits imposed must apply to the relevant band in each designated area. This is intended to make clear that the ACMA must impose limits on the aggregate of the parts of the spectrum that any person or specified group of persons may use in the relevant band (i.e. 3400-3700 MHz) as a result of the allocation of spectrum licences in the 3.6 GHz band (i.e. 3575-3700 MHz). The 3.4 GHz band is a close substitute for the 3.6 GHz band, particularly in relation to international 5G standards and the deployment of 5G technologies and networks in Australia. Therefore it is appropriate to take into account holdings across the broader band.

Paragraph 5(2)(c) provides that the limits imposed must ensure that no person or specified group of persons may, as a result of the allocation of a spectrum licence that is enabled by a relevant re-allocation declaration, use more than an aggregate of 60 MHz of the relevant band in each metropolitan area, and an aggregate of 80 MHz of the relevant band in each regional area. To ensure this objective is met, the Direction imposes the limits on both persons and specified groups of persons (see the definition of ‘specified group of persons’ in subsection 4(1), and subsection 4(3)).

Metropolitan consumers in Australia experience competitive offerings from all mobile network operators (MNOs) and many mobile virtual network operators (MVNOs). An allocation limit of 60 MHz in each metropolitan area provides the opportunity for all eligible operators to compete to acquire sufficient spectrum for a viable, competitive 5G network. Further, a 60 MHz allocation limit will lead to aggregate demand for the spectrum being auctioned, which in turn leads to increased competitive tension at auction and ensures the spectrum moves to its highest value use.

An allocation limit of 80 MHz in each regional area would also allow for efficient allocation of spectrum. An 80 MHz limit provides opportunity for all eligible operators to compete to acquire enough spectrum to develop robust 5G networks in regional areas and allows those carriers with existing regional holdings to expand their capacity in regional areas.

The limits are intended to be applied so that they take into account the aggregate of all of the parts of the spectrum that a person is entitled to use in the relevant band in a designated area, whether or not they are entitled to use each of those parts at the same location in that designated area. For example, if:

- a person held one spectrum licence, the area for which aligned with a designated area, and which entitled the person to use the parts of the spectrum from 3400-3420 MHz and 3460-3480 MHz, then the limits would apply as though the person were already entitled to use 40 MHz of the relevant band in the designated area;
- a person held one spectrum licence, part of the area for which overlapped with a part of a designated area, and which entitled the person to use the parts of the spectrum

from 3400-3420 MHz and 3460-3480 MHz in the part of the spectrum licence area overlapping with the part of the designated area—the limits would apply as though the person were already entitled to use 40 MHz of the relevant band in the whole of the designated area;

- a person held one PTS apparatus licence for PMTS Class B services that entitled them to use the part of the spectrum from 3400-3420 MHz at a particular location in the designated area, the limits would apply as though the person were already entitled to use 20 MHz of the relevant band in the designated area ;
- a person held:
 - two spectrum licences (licence A and licence B), part of the areas for which partly overlapped with both the designated area and with each other (i.e. part of the area of licences A and B and the designated area was shared between all three areas), and which respectively entitled the person to use the parts of the spectrum from 3400-3420 MHz and 3420-3440 MHz; and
 - a third spectrum licence (C) part of the area for which overlapped with part of a designated area, but did not overlap with any part of the areas of licences A and B, and which entitled the person to use the part of the spectrum from 3440-3460 MHz;

the limits would apply as though the person were already entitled to use 60 MHz of the relevant band in the designated area.

However, for the purposes of calculating existing spectrum holdings in the relevant band in the designated area, holdings in different areas under the same licence or under different licences which entitle the person to use the same part of the spectrum are only intended to be counted once. For example if a person had two licences (A and B) which respectively entitled the person to use the parts of the spectrum from 3420 MHz – 3440 MHz and 3420 MHz – 3450 MHz at different locations or within different parts of a designated area, then the limits would apply as though the person was entitled to use 30 MHz of the relevant band in the designated area (i.e. 3420 MHz – 3450 MHz).

Paragraph 5(2)(d) provides that where, immediately prior to any allocation of a spectrum licence that is enabled by a relevant spectrum re-allocation declaration, a person or specified group of persons is entitled to use one or more parts of the spectrum in the 3400-3700 MHz frequency range in a designated area (subparagraph 5(2)(d)(i)), and the aggregate of those parts of the spectrum is not, when expressed in MHz, a whole number that is a multiple of 5 (subparagraph 5(2)(d)(ii)), the limits must apply as though that number were rounded down to the nearest whole number that is a multiple of 5.

For example, if a person or specified group of persons is entitled to use an aggregate amount of 24 MHz of spectrum in the 3400-3700 MHz frequency range in a metropolitan area, the applicant's holdings would be rounded down to 20 MHz for the purposes of determining spectrum holdings for allocation limits in that area.

Paragraph 5(2)(e) provides that where, immediately prior to any allocation of a spectrum licence that is enabled by a relevant spectrum re-allocation declaration, a person or specified group of persons is entitled to use a part of the spectrum in the 3400-3700 MHz frequency range within one or more parts of a regional area (but not the entire regional area) (subparagraph 5(2)(e)(i)), and the aggregate population of those parts of the regional area is insignificant (subparagraph 5(2)(e)(ii)), the limits are to apply as though the person or specified group of persons is not entitled to use that part of the spectrum in those parts of the regional area. That is, these existing holdings are not to be taken into account for the

purposes of applying the allocation limits to a person or specified group of persons in relation to that regional area.

Subsection 5(3) specifies that the population of one or more parts of a regional area is insignificant if, and only if, the population of those parts of the regional area is less than 15% of the total regional area determined in accordance with the HCIS –List of Population Data document published by the ACMA on its website.

Subsection 5(4) provides that, for the purposes of paragraph 5(2)(e), to the extent that a licence entitles a person to use a part of the spectrum in the relevant band at a one or more specified locations (rather than within a specified area), the part of the regional area for each location is so much of the ‘associated area’ for the location as is within the regional area. This is intended to ensure that paragraph 5(2)(e) operates effectively in relation to the use of spectrum under relevant apparatus licences, which entitle a person to use parts of the spectrum at specified locations rather than within a specified area. ‘Associated area’ has the meaning given at subsection 6(3).

The intention of paragraph 5(2)(e) and subsections 5(3) and (4) is that a person’s existing entitlement to use a part of the spectrum in the 3400-3700 MHz frequency range in one or more parts of a regional area should be considered insignificant and should not impact on that person’s ability to acquire additional spectrum in the wider regional area where they have a reach to less than 15 per cent of the total population of the regional area in that particular part of the spectrum.

For example, if:

- an person were entitled to use the part of the spectrum from 3400-3420 MHz under a spectrum licence; and
- the licence area for that licence were the town of Busselton, WA; and
- the town of Busselton were a within a regional area for the purposes of the Direction; and
- the population of Busselton were 7% of the total population of the regional area in which it lies;

then the person’s spectrum holdings in that part of the spectrum Busselton would not be intended to be taken into account when determining spectrum holdings for allocation limits in that regional area. If the population of Busselton was equal to or greater than 15% of the population of the regional area, then the applicant’s holdings in Busselton would be taken into account.

Also, if, for example:

- a person was entitled to use the part of the spectrum from 3400-3420 MHz under a spectrum licence; and
- the licence areas in which that licence entitled the person to use that part of the spectrum were the towns of Ballarat and Bendigo; and
- the towns of Ballarat and Bendigo were within a regional area for the purposes of the Direction; and
- the population of Ballarat was 10% of the total population of the regional area in which it lies, and the population of Bendigo was also 10% of the total population of that regional area;

the person's spectrum holdings in that part of the spectrum in Ballarat and Bendigo would be intended to be taken into account when determining spectrum holdings for allocation limits in the regional area, as the aggregate population of Ballarat and Bendigo would be 20% of the total population of the regional area (i.e. 15% or greater). This would also be the case even if the person was entitled to use the same part of the spectrum in Ballarat and Bendigo under two different licences.

Also, if, for example:

- a person was entitled to use the part of the spectrum from 3400-3420 MHz at the location of Mount Canobolas, Orange under a PTS apparatus licence for Class B services;
- Mount Canobolas is within a regional area for the purposes of the Direction;
- the part of the associated area for Mount Canobolas (ascertained in accordance with subsection 6(3)) that is within that regional area has a population of 3% of the total population of the regional area;

then the person's spectrum holdings in that part of the spectrum in that part of the associated area that is within the regional area would not be intended to be taken into account when determining spectrum holdings for allocation limits in that regional area.

Further, if, for example:

- a person was entitled to use the part of the spectrum from 3400-3420 MHz under a spectrum licence; and
- the licence area overlapped partly with the metropolitan area of Melbourne and also an adjacent regional area for the purposes of the Direction; and
- the population of the part of the licence area which overlaps with the regional area has a population less than 15% of the total population of that regional area;

then the person's spectrum holdings in that part of the regional area would not be intended to be taken into account for the purposes of applying the limits to the applicant in relation to that regional area. However, as paragraph 5(2)(e) only operates in relation to regional areas, the person's spectrum holdings in the part of the metropolitan area of Melbourne would be taken into account for the purposes of applying the limits to that person in relation to that metropolitan area, regardless of the percentage of the total population of Melbourne that their licence area corresponded with.

Similarly, if:

- a person was entitled to use a part of the spectrum under a licence in an area that overlapped partly with two regional areas (area A and area B); and
- the population of the part of area A in which the person was entitled to use that part of the spectrum was 7% of the total population of area A; and
- the population of the part of area B in which the person was entitled to use that part of the spectrum was 20% of the total population of area B;

then the person's spectrum holdings would be intended to be taken into account for the purposes of applying the limits in area B, but not area A.

Section 6 – Meaning of metropolitan area and regional area

Section 6 sets out the meaning of the terms ‘metropolitan area’ and ‘regional area’ for the purposes of the direction. The section does this by specifying areas (described using HCIS identifiers). Each of these areas will be subject to the allocation limits to be imposed in accordance with this Direction. These areas reflect the advice that the ACMA has provided to the Department in light of responses to its public consultation. The ACMA expects to formally agree the geographic boundaries of the lots when the marketing plan for the auction is made and registered on the Federal Register of Legislation.

Subsection 6(1) provides that metropolitan area means an area referred to in column 1 of the table included in the subsection, to be ascertained as the composite of the areas, described using identifiers from the HCIS, set out in column 2 of that table. The effect is that the Direction requires limits to be applied to Adelaide, Brisbane, Canberra, Melbourne, Perth and Sydney. Each of these areas is comprised of a series of smaller areas described by reference to HCIS identifiers listed in the table in that subsection; accordingly, the names of these areas are indicative only and may include or omit areas which, on an ordinary construction, would be beyond or within the cities after which they were named.

Subsection 6(2) provides that regional area means an area referred to in column 1 of the table included in the subsection, to be ascertained as the composite of the areas, described using identifiers from the HCIS, set out in column 2 of that table. The effect is that the Direction requires limits to be applied to North Queensland, Central Queensland, Regional Northern NSW/Southern Queensland, Regional Victoria, Regional Southern/Western NSW, Tasmania, Regional South Australia and Regional Western Australia. The names of these areas are indicative only; each of these named areas is comprised by reference to the series of HCIS identifiers listed in the table in that subsection.

Subsection 6(3) provides that the associated area for a location means the associated area referred to in column 1 of the table included in the subsection, to be ascertained as the composite of the areas set out in column 2 of the table, which are described using identifiers from the HCIS. The intent of this definition is to ensure that, where a licence entitles the person to use spectrum at a specified location rather than in a specified area, the ‘part’ of a regional area in which the person is entitled to use spectrum can be identified for the purposes of calculating whether the person is entitled to use spectrum in parts of a regional area with less than 15% of the total population of the regional area (see paragraph 5(2)(e) and subsections 5(3) and (4)).

REGULATION IMPACT STATEMENT

Allocation limits for the 3.6 GHz spectrum auction

Introduction

This Regulation Impact Statement (RIS) has been prepared by the Commonwealth Department of Communications and the Arts.¹ The purpose of this RIS is to assist the Minister for Communications, Senator the Hon Mitch Fifield (the Minister) to decide if allocation limits should be imposed for the auction of spectrum in the 3575-3700 MHz frequency range (the 3.6 GHz band) and if so, what those limits should be. A decision would be made under subsection 60(10) of the *Radiocommunications Act 1992* (the Act).

Spectrum in the 3.4-3.8 GHz frequency range has been identified internationally as a pioneer band for the development and deployment of 5G technologies. 5G is the next (fifth) generation of mobile telecommunications technology and although still in its infancy, is expected to deliver unprecedented data speeds to and from mobile devices with near-zero latency. 5G technology is predicted to enable the delivery of services such as driverless cars, smart farming, the Internet of Things, and remote healthcare.

Early 5G mobile broadband services are likely to be an evolution from existing 4G mobile broadband technology, much like 4G was an evolution of 3G. 5G networks will initially compete with 4G networks until most, if not all, mobile broadband services migrate to 5G networks. It is expected that carriers will continue to operate 4G networks in parallel with 5G networks.

Australia will be one of the first countries to auction spectrum in the 3.4-3.8 GHz frequency range. On 8 March 2018, the Minister issued declarations to re-allocate 125 MHz of spectrum in the 3.6 GHz band for spectrum licensing in preparation for an auction of spectrum that is planned to commence in October 2018. The Minister's decision reflected a recommendation from the Australian Communications and Media Authority (ACMA) following public consultation by the ACMA. Although the ACMA has not yet made the auction instruments, it is intending to auction the 125 MHz of spectrum in 25 x 5 MHz lots. Auctioning the spectrum in 5 MHz lots allows for more flexibility for bidders to acquire the amount of spectrum that want compared with auctioning the spectrum in larger lots of 25 MHz, for example. The ACMA will sell the spectrum using an Enhanced Simultaneous Multi-Round Ascending auction format. This is a three-stage auction methodology, comprising:

1. a **primary** stage, which is a clock auction for frequency-generic lots;
2. a **secondary** stage, if required, for the sale of lots which were not purchased in the primary stage; and
3. an **assignment** stage, for assignment of lots to the specific frequencies within the band.²

An ESMRA auction format allows bidding on generic lots within each region and provides an assignment stage to allocate the spectrum won in a contiguous block of that bandwidth. It

¹ Some portions of this RIS have been redacted because they contain commercial in confidence material.

² For more information the proposed auction structure please see:

<https://www.acma.gov.au/theACMA/spectrum-tune-up-3-6-ghz-band-auction-system>

reduces the fragmentation risk associated with the Simultaneous Multi-Round Ascending (SMRA) format, where each lot is bid on separately and contiguity within the region is not guaranteed.

This RIS has been developed in accordance with the Australian Government Guide to Regulation, March 2014, issued by the Office of Best Practice Regulation (OBPR) in the Department of the Prime Minister and Cabinet, and in consultation with the OBPR. Relevant guidance notes issued by the OBPR have also been taken into account.

What is the problem being solved?

This RIS considers whether the Minister should direct the ACMA to impose allocation limits for the auction of 125 MHz of spectrum in the 3.6 GHz band and if so, what those allocation limits should be. Spectrum is a valuable and finite resource. This is the first auction of spectrum for 5G technology in Australia, and 125 MHz is not enough to satisfy the spectrum requests of every mobile network operator (MNO) seeking to roll out a 5G network in the short term. The allocation also represents a new supply of spectrum that could be used for 4G/LTE services. This is particularly pertinent for the new entrant in the Australian mobiles market. There is a theoretical incentive for one or two MNOs to acquire the maximum amount of spectrum possible at the auction in order to prevent competitors from acquiring spectrum.

MNOs that are unable to acquire sufficient 3.6 GHz spectrum at the auction could be disadvantaged in terms of their ability to deploy a 5G network contemporaneously with their competitors. This could result in one or two MNOs having first mover advantage in the 5G market and the remaining MNOs being unable to compete on 5G services initially. If only a small number of MNOs are able to offer 5G services, it could negatively impact consumers in terms of service, quality and price for 5G services and fail to maximise overall public benefits.

Why is Government action needed?

The Government supports a competitive mobile telecommunications market. The decision to re-allocate the 3.6 GHz band for spectrum licensing and to conduct an auction has been completed. Hence this is not a question of whether the Government should auction the band, but rather what allocation limits, if any, should be used to ensure that the spectrum being sold moves to its most efficient use.

In considering how the problem should be solved, the Department has had regard to the Government's communications policy objectives, which are outlined in the following table.

Objective	Description
Competitive market outcomes	The Government seeks to ensure that spectrum auctions result in competitive market outcomes. The <i>Telecommunications Act 1997</i> , read together with the <i>Competition and Consumer Act 2010</i> , promotes the long-term interests of end users of carriage services and the efficiency and international competitiveness of the Australian telecommunications industry.

Objective	Description
Efficient allocation and use of spectrum	<p>The objects of the <i>Radiocommunications Act 1992</i> provide that the overall public benefit derived from the use of spectrum should be maximized by ensuring the most efficient allocation and use of the spectrum.</p> <p>Allowing the market to determine the price of spectrum through an auction process promotes allocative efficiency. However markets can be adversely affected by auctions. Allocation limits can be an effective tool to ensure that auctions do not adversely affect future competition in downstream markets.</p>
Encouraging secondary trading	<p>The Government supports secondary spectrum trading amongst commercial entities. Spectrum trading allows spectrum to be transferred to, and used by, the user who values it most. Over time, this should ensure that more spectrum is employed in the use that brings the greatest benefit to the economy. This ensures the most efficient allocation and use of the spectrum and provides a regulatory environment that maximizes opportunities for the Australian communications industry.</p>
Supporting 5G networks	<p>The Government supports the deployment of 5G technologies, including by making relevant spectrum available in a timely manner. Spectrum in the 3.4-3.8 GHz frequency range has been recognized internationally as a pioneer band for 5G technologies.</p> <p>This aligns with the policy directions paper <i>5G – enabling the future economy</i>, which was released by the Minister on 12 October 2017. The paper outlines the activities the Government will undertake to support the development of 5G, including making spectrum available in a timely manner.</p>
Investment in infrastructure	<p>The Government supports continued investment in mobile and fixed broadband infrastructure and networks, including in regional Australia. Operators of mobile networks now cover between 96 and 99 per cent of the Australian population. Auctioning spectrum in the 3.6 GHz band will allow operators to continue to conduct trials and roll out the next wave of mobile developments including 5G. Long term network investment will assist with reducing connectivity divides between regional and metropolitan Australia.</p>

Under section 60 of the Act, the Minister has the power to direct the ACMA to develop procedures to impose allocation limits on the sale of spectrum. In making such a decision, the objects of the Act are relevant. Relevantly, one of these is providing for the management of the radiofrequency spectrum in order to support the communications policy objectives of the Commonwealth Government (subsection 3(f) of the Act). At the time of making the re-allocation declarations, the Minister sought advice from the Australian Competition and Consumer Commission (ACCC) about whether the Minister should direct the ACMA regarding allocation limits for the 3.6 GHz auction, and if so, what the ACCC

considers those limits should be. The ACCC conducted targeted stakeholder consultations, and provided its advice to the Minister on 4 May 2018.

The ACCC advised that allocation limits would be necessary for the allocation to:

- Prevent NBN Co from trying to acquire spectrum that could be used by MNOs to provide 5G wireless services in competition with broadband services over the NBN, and
- Ensure that the new entrant TPG has an opportunity to acquire sufficient spectrum to compete with the incumbents.

The Department assesses that allocation limits on the sale of spectrum are the most suitable option for mitigating the risk of carriers monopolising the 3.6 GHz spectrum. Allocation limits work by placing a cap on the amount of spectrum carriers can acquire in an auction. For example, an allocation limit of 100 MHz in an auction of 250 MHz of spectrum would mean that no carrier is allowed to acquire spectrum at the auction which would result in its holdings exceeding 100 MHz in that band.

Absent allocation limits, there is a real risk that a larger, well-resourced bidder may acquire all or most of the available spectrum, thereby excluding other bidders from accessing spectrum. This would have a consequential detrimental impact on consumers through a diminution of competition in the market.

Accounting for existing spectrum holdings

Allocation limits used in previous spectrum auctions have only taken into account carriers' existing spectrum holdings in the specific band being auctioned. For example, in the 700 MHz residual lots auction in 2017, limits of 2 x 20 MHz were applied specifically in the 700 MHz band. As a result Telstra Corporation Limited (Telstra) was precluded from bidding because it already held 2 x 20 MHz in that band. In the case of the 3.6 GHz auction, the ACCC recommended existing spectrum holdings in bands that are a close substitute for the 3.6 GHz band should be taken into account when determining how allocation limits should be applied.

There are several existing spectrum bands that could, in time, be used for 5G, including spectrum in the 1-6 GHz frequency range and spectrum in the frequency range above 24 GHz (mmWave spectrum). However at present, spectrum holdings in the 1800 MHz, 2 GHz, 2.3 GHz, and 2.5 GHz bands are not a close substitute for the 3.6 GHz band for several reasons. Development of 5G technical standards are focussed on the 3.4-3.7 GHz frequency range and on time division duplex (TDD) technical specifications. Current spectrum holdings in the 1800 MHz, 2 GHz, 2.3 GHz and 2.5 GHz bands are in a frequency division duplex (FDD) configuration, which is not compatible with a TDD configuration. The ACMA would need to re-plan FDD-configured bands to a TDD configuration to meet 5G standards, or alternatively wait until such a time that 5G standards have evolved to include FDD configurations before these bands can be repurposed for 5G. Further, spectrum holdings below 2.5 GHz are thought to be less feasible for certain technical benefits that 5G is expected to enable (for example multiple input multiple output, or MIMO, applications).

The 3.4-3.5 GHz frequency range is the closest substitute for the 3.6 GHz band and can provide the same benefits in terms of 5G technology as the 3.6 GHz band. In its advice to the Minister, the ACCC recommended that existing spectrum licence holdings in the 3.4-3.5 GHz frequency range should be taken into account when determining allocation limits for the auction. The Department agrees with the ACCC's recommendation. There are several carriers with existing spectrum holdings in the 3.4-3.5 GHz frequency range including NBN Co Limited (nbn), Singtel Optus Limited (Optus) and Telstra.

nbn has holdings in the 3.4-3.5 GHz band which it uses to deliver its fixed wireless services. It has spectrum licensed holdings in the 3.4 GHz band in outer metropolitan and regional areas and 60 MHz of 3.4 GHz apparatus licenced spectrum in metropolitan and outer metropolitan areas (in addition to this there is 15 MHz of 3.4 GHz band spectrum currently not licenced to nbn that is used as guard bands). Combined, nbn has access to between 65-160 MHz of spectrum in the 3.4-3.5 GHz band across Australia.

nbn's apparatus licenced holdings in the 3.4 GHz band are Public Telecommunications Service (PTS) licences for public mobile telecommunications Class B services (PMTS Class B), meaning they are wide area licences that can be used to deploy similar services to spectrum licences. For this reason the Department assesses that this type of apparatus licence should be taken into account when determining how much additional spectrum a bidder can acquire at auction.

nbn's holdings are a relevant consideration because while not all MNOs have indicated an intention to offer fixed wireless services, the spectrum on offer is suitable for those services and if they did so, the MNO's would be operating in the same market as nbn.

Optus has holdings in the 3.4 GHz band in all metropolitan areas. It has a cumulative total of 100 MHz in Sydney and Melbourne³ and at least 65 MHz in other metropolitan areas. The Department agrees with the ACCC that Optus' current spectrum licence holdings in the 3.4 GHz band are sufficient for it to deploy a 5G network in metropolitan areas and should be taken into account when determining how the allocation limits should be applied.

Telstra currently has 3.4 GHz band holdings in some metropolitan areas and regional centres. It does not hold any 3.4 GHz spectrum in the Sydney and Melbourne metropolitan areas. The Department agrees with the ACCC that Telstra's spectrum licence holdings in the 3.4 GHz band should be taken into account when determining how allocation limits should be applied.

Competition measures and market structure

When Governments regulate markets to deliver pro-competitive outcomes, they can consider imposing ex ante or ex post obligations. Ex ante obligations are imposed when a Government wishes to preclude particular market structures or deliver a particular market

³ Optus' holdings in the 3.4 GHz band in Sydney and Melbourne metropolitan areas are in two non-contiguous blocks of 67.5 MHz and 32.5 MHz.

structure – for example, Governments may wish to ensure there are a certain number of participants in a market, and therefore impose spectrum competition limits designed to achieve this. Ex post obligations respond to the actions of players in a market. They can be used to address anti-competitive conduct by those market players, but they cannot be used to change the structure of the market.

Ex post telecommunications-specific competition laws are set out in Part XIB of the *Competition and Consumer Act 2010*. Telecommunications providers are also subject to the general proscription on misuse of market power in section 46 of that Act. Part XIB provides that a carrier or a carriage service provider (CSP) engages in anti-competitive conduct if the carrier or CSP has a substantial degree of power in a telecommunications market and takes advantage of that power in that or any other market with the effect, or likely effect, of substantially lessening competition in that or any other telecommunications market. Part XIC sets out a telecommunications access regime; under this regime, the ACCC has powers to regulate specific wholesale services and determine terms and conditions of supply for those services.

These powers can be used to promote competition, but they cannot be used to reset the structure of a market. For example, if the Government decided that there could only be one or two mobile broadband providers and did not set spectrum limits, Part XIC could be used to force those providers to supply specific services on a wholesale basis, and Part XIB could be used to discourage practices that substantially lessen competition. In particular, they do not tend to address the incentives that telecommunications providers have to favour their own operations over those of wholesale customers who may also be their competitors, and they cannot be used to force providers to give up spectrum to competitors. There is therefore the danger that the companies that control the spectrum may be able to limit the effectiveness of competition. As a result, the use of ex ante measures, such as spectrum competition limits, are more appropriate to deliver a market structure that promotes greater competition and, thereby, consumer welfare.

What policy options are being considered?

There are three options being considered. Options under consideration are as follows:

- **Option 1: Do nothing:** No allocation limits would be imposed for the auction. This would minimise government intervention in the operation of the auction, however this would create a risk that carriers could try and monopolise the available spectrum in order to limit competitors' ability to compete in the emerging 5G market. The ACCC did not support this option as it considers the option risks nbn defensively acquiring spectrum to prevent competition from MNOs and increases the risk that a fourth or hypothetical fifth market entrant will not be able to acquire spectrum.

- **Option 2: Impose allocation limits across the 3.4-3.7 GHz band of 45 MHz in Sydney and Melbourne metropolitan areas⁴ and 60 MHz in other metropolitan areas and regional areas⁵:** This option addresses the issues raised by option 1 (imposing no allocation limits in the auction), that is, the risk of nbn acquiring spectrum that could be used by MNOs to compete in the fixed wireless market and to ensure that the new entrant TPG has the opportunity to acquire sufficient spectrum to compete in the market. These limits would guarantee that all carriers who are eligible to bid in the Sydney and Melbourne metropolitan areas would be able to acquire spectrum in those areas. This option is consistent with the ACCC's advice to the Minister.
- **Option 3: Impose allocation limits across the 3.4-3.7 GHz band of 60 MHz in metropolitan areas and 80 MHz in regional areas:** This option also addresses the issues raised by imposing no allocation limits in the auction and provides opportunity for all eligible carriers to compete to acquire spectrum in the auction.

Who is affected and what is the impact?

Compliance costs

None of the options under consideration involve increased compliance costs for auction participants compared to previous spectrum auctions (for example, the multiband residual lots auction conducted in late 2017, the 700 MHz residual lots auction conducted in April 2017, and the regional 1800 MHz auction conducted from November 2015 to February 2016). Further, organisations are not required to participate in the auction - they are free to choose whether to participate in the auction and, if they participate, the nature and extent of their participation.

Business impacts

Competition settings are just one of many variables which are relevant to assessing the business impacts of setting, or not setting, allocation limits for the 3.6 GHz spectrum auction. For example, the outcomes of any auction are difficult to predict, and the Government does not have access to sensitive commercial information about bidders' private valuations of the spectrum, or their precise plans to utilise the spectrum to deploy services. A failure to acquire sufficient spectrum may necessitate additional investment in network infrastructure and technology to meet growing capacity demands.

Costs to government

Competition settings are just one of many variables that are likely to impact the revenue generated by the auction – other factors include reserve prices (which are yet to be set by

⁴ Metropolitan area has the meaning given in section 6 of the Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018.

⁵ Regional area has the meaning given in section 6 of the Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018.

the ACMA), each bidder's own valuation of the spectrum, and other commercial and market considerations.

What is the likely net benefit of each option?

Option 1: Do nothing

No allocation limits for the auction would have a net cost rather than a net benefit. No limits would not address the incentive for carriers to monopolise the spectrum. In an unrestricted auction, the spectrum for sale is not always allocated to its highest value use. This is because bidders have incentives to prevent competitors from acquiring spectrum in order to undermine competition in the downstream markets. The ACCC and the Department agree that allocation limits should be applied, in order to mitigate the risk of a monopoly or duopoly in the Australian mobile telecommunications market.

No allocation limits could also have the effect of reducing competition in the auction if one carrier outbids the other carriers for the entire amount of spectrum available. This would reduce competition and possibly reduce government revenue from the sale.

Likewise, if one or two carriers acquire large amounts of spectrum, and the remaining amount of spectrum is not enough to run a commercially viable 5G network, there is a risk that the remaining spectrum could be unsold and lie fallow, producing neither revenue, nor productivity benefits for Australia.

Option 2: Allocation limits across the 3.4-3.7 GHz band of 45 MHz in Sydney and Melbourne metropolitan areas and 60 MHz in other metropolitan areas and regional areas

The allocation limits would apply across the 3.4-3.7 GHz frequency range to ensure that holdings in these adjacent spectrum bands that are also suitable for early 5G deployment (for example the substantial holdings of Optus and nbn, and smaller holdings of Telstra), are taken into account in assessing how much spectrum each operator may acquire at auction. The limits would apply in metropolitan and regional areas to promote competition among carriers in both regional and metropolitan areas.

According to the ACCC, these limits seek to balance the promotion of competition by ensuring that the new entrant, TPG, has the opportunity to acquire sufficient spectrum in order to have a strong entry into the mobiles market, with the additional benefit to consumers of all MNOs having the ability to deploy 5G networks in the short-term. The limits support the development of 5G networks in Australia, and are consistent with MNOs' submissions to the ACCC that 40 MHz is the minimum amount of spectrum required to deploy a 5G network.

The limits also take into account the fact that spectrum is a scarce resource and that access to spectrum is a barrier to entry due to its high cost to acquire, and the incentives of incumbents to acquire more than they need. The recommended limits would ensure that a key barrier to entry for the new entrant TPG is removed, as the limits enable it to acquire sufficient spectrum to facilitate a strong entry into the mobiles market and to compete effectively with incumbents in the short and longer term, thus promoting competition in relevant markets.

A table showing what each carrier could acquire if these limits were imposed is at

Attachment A.

- nbn would be unable to acquire spectrum in all metropolitan and regional areas due to its significant existing spectrum holdings in the 3.4 GHz band.
- Optus would be unable to acquire spectrum in all metropolitan areas due to its significant existing spectrum holdings in the 3.4 GHz band in those areas. It would be able to acquire up to 60 MHz in all regional areas except regional Western Australia, where its existing spectrum holdings in the 3.4 GHz band mean it would be unable to bid there.
- VHA and TPG would be able to acquire up to 45 MHz in Sydney and Melbourne metropolitan areas and up to 60 MHz in all other metropolitan and all regional areas as neither carrier has existing spectrum holdings in the 3.4-3.7 GHz frequency range.
- Telstra would be able to acquire up to 45 MHz in the Sydney and Melbourne metropolitan areas and between 25 – 35 MHz in other metropolitan areas due to its existing spectrum holdings in the 3.4 GHz band. It would be able to acquire between 25 – 60 MHz in regional areas due to its existing holdings in the 3.4 GHz band in some regional centres.

Option 3: Allocation limits across the 3.4-3.7 GHz band of 60 MHz in metropolitan areas and 80 MHz in regional areas

These allocation limits address the same key issues as the limits proposed in option 2. The limits would apply across the 3.4-3.7 GHz range to ensure that holdings in relevant adjacent spectrum bands are taken into account. They would apply in metropolitan and regional areas to promote competition in both markets and provide opportunity for TPG to acquire sufficient spectrum to facilitate an entry into the 5G market and to compete effectively with the incumbents in the short and longer term.

The Department assesses the allocation limits in option 3 to have additional benefits to those in option 2. By allowing bidders to bid on larger amounts of spectrum in each area, the limits would increase aggregate demand for the 125 MHz of spectrum for sale at auction, thus increasing competitive tension and reducing the risk of unsold lots. Competitive tension also increases the likelihood that the spectrum will be won by the participant who values the spectrum the most, and is therefore most likely to put the spectrum to efficient use, to the benefit of consumers, being a key policy objective of the Government and object of the Act.

A table showing what each carrier could acquire if these limits were imposed is at

Attachment B.

- nbn would be unable to acquire spectrum in all metropolitan and regional areas except for regional Western Australia due to its significant existing spectrum holdings in the 3.4 GHz band.
- Optus would be unable to acquire spectrum in all metropolitan areas due to its significant existing spectrum holdings in the 3.4 GHz band in those areas. It would be able to acquire up to 80 MHz in all regional areas except regional Western Australia,

where its existing spectrum holdings in the 3.4 GHz band mean it would be able to acquire up to 15 MHz.

- VHA and TPG would be able to acquire up to 60 MHz in all metropolitan areas and up to 80 MHz in all regional areas as neither carrier has existing spectrum holdings in the 3.4-3.7 GHz frequency range.
- Telstra would be able to acquire up to 60 MHz in the Sydney and Melbourne metropolitan areas and between 25 – 35 MHz in other metropolitan areas due to its existing spectrum holdings in the 3.4 GHz band. It would be able to acquire between 45 – 80 MHz in regional areas due to its existing holdings in the 3.4 GHz band in some regional centres.

Who will you consult?

The ACCC undertook targeted stakeholder consultation with a range of stakeholders including TPG Telecom (TPG), Optus, Telstra, Vodafone Hutchison Australia (VHA) and nbn. The ACCC requested feedback from these stakeholders on a range of issues including:

- the likely intended uses of 3.6 GHz spectrum;
- the optimal allocation of 3.6 GHz spectrum for the likely intended uses;
- when a service using the 3.6 GHz spectrum could be provided;
- if any substitutes exist for the likely intended uses of the 3.6 GHz spectrum and the extent to which these are full-effective substitutes;
- what the likely effects would be if carriers were unable to acquire 3.6 GHz spectrum;
- what the relevant downstream markets for the purposes of the ACCC's analysis are;
- whether allocation limits would promote competition in those downstream markets;
- to what extent the relevant downstream markets could be considered to be competitive;
- how the state of competition differs in metropolitan and regional areas of Australia;
- whether allocation limits are necessary for the 3.6 GHz spectrum auction;
- what appropriate allocation limits for the auction would be;
- whether the allocation limits should apply to all bidders;
- whether existing spectrum holdings should be considered in an assessment of allocation limits;
- the frequency bands that should be considered in determining the effect of allocation limits;
- what factors the ACCC should consider in its consideration of existing spectrum holdings when assessing possible allocation limits; and
- any other factors the ACCC should consider in its assessment of possible allocation limits.

The key issues noted by stakeholders were as follows:

- **Minimum requirement for 5G network:** [REDACTED]

- **Optimal amount for 5G network:** [REDACTED]
- **Preferred allocation limits:** All carriers who made submissions to the ACCC's consultation process stated that allocation limits should be used for the auction.

What is the best option from those you have considered?

Option 3 (allocation limits of 60 MHz in metropolitan areas and 80 MHz in regional areas) is the preferred option in this case.

Option 1 (no allocation limits) meets none of the government's communications policy objectives and could result in a monopoly or duopoly being created in the Australian mobile telecommunications market. If no allocation limits are imposed on the auction, there is a strong likelihood that one or two carriers would acquire the majority of the available spectrum and dominate the market, resulting in anti-competitive outcomes for consumers. This would be contrary to the government's communications policy objective of encouraging competitive market outcomes.

No allocation limits would also be contrary to the efficient allocation and use of spectrum. Carriers with large existing spectrum holdings and access to finance may have a strong incentive to bid aggressively in the auction to acquire the maximum amount of spectrum available. Doing so could prevent a fourth or hypothetical fifth player from entering the market and would be likely to preserve the larger carriers' hold on the market. Smaller entrants who anticipate this outcome may choose not to participate in the auction and avoid participation costs. A lower number of auction participants could mean that the auction ends near the reserve price – which could be well below the competitive price and means that the spectrum is not freely moving towards its most highly valued use.

If one or two carriers acquire the majority of the 3.6 GHz spectrum, there is no incentive for them to engage in secondary spectrum trading or third party access arrangements with MNOs that don't have 5G spectrum. Additionally, if only one or two carriers have the capacity to deploy 5G networks, there would likely be less competition between those carriers and therefore less incentive to develop competitive 5G networks and invest in infrastructure, particularly in regional areas.

Option 2 (limits of 45 MHz in metropolitan Sydney and Melbourne and 60 MHz in all other areas) addresses some of the government's communications policy objectives. In its advice,

the ACCC placed a strong emphasis on the importance of a fourth carrier entering the market. The limits in option 2 are designed to ensure that Optus and nbn are prevented from bidding and that TPG obtains spectrum sufficient to compete with relevant markets. It has the benefit to consumers of ensuring that all MNOs have sufficient spectrum to deploy 5G networks in the short-term. Guaranteeing that all carriers are able to access sufficient spectrum for a 5G network promotes competitive market outcomes.

The Department assesses that the limits proposed in option 2 would not support the efficient allocation and use of the spectrum in the Sydney and Melbourne metropolitan areas as well as option 3. Allocative efficiency in an auction is constrained when allocation limits result in a scenario where supply is equal to or exceeds demand. In the case of the 125 MHz of 3.6 GHz spectrum to be auctioned, limits of 45 MHz in the Sydney and Melbourne metropolitan areas means the likely three eligible bidders (Telstra, TPG and VHA) are able to purchase almost equal amounts of spectrum. This would result in a lack of competitive tension in the auction, particularly in the Sydney and Melbourne metropolitan areas where aggregate demand would only be slightly greater than aggregate supply.

The limits proposed in option 2 partially support the deployment of 5G networks by ensuring that more carriers are able to acquire sufficient spectrum to deploy viable 5G networks. However, current 3GPP deployment standards for the 3.4-3.7 GHz bands stipulate that 5G networks must be deployed on bandwidths of 100 MHz, 90 MHz, 80 MHz, 70 MHz, 60 MHz, 50 MHz, 40 MHz, 30 MHz, 20 MHz, 15 MHz and 10 MHz. Allocation limits of 45 MHz in Sydney and Melbourne metropolitan areas are not consistent with the deployment standards set by 3GPP. It is feasible that three MNOs could acquire 40 MHz of spectrum to roll out basic 5G networks, leaving a 5 MHz lot unsold. Unsold lots are a further indication that spectrum is not being allocated efficiently.

In submissions to the ACCC's consultation process, a number of MNOs stated that 40 MHz was the minimum amount of spectrum that could be used to deliver 5G services. Capping bidders at 45 MHz could hamper MNOs' abilities to deploy networks that maximise the benefits of 5G technologies. A higher limit would facilitate the market being able to compete for and price spectrum in a way that it considers supportive of the deployment of robust 5G networks.

The limits proposed in option 2 partially support the Government's policy objective of encouraging investment in infrastructure by ensuring that more MNOs are likely to be able to deploy 5G networks. Metropolitan consumers experience competitive offerings from all MNOs and many mobile virtual network operators (MVNOs). However, the regional communications market in Australia remains dominated by two MNOs with substantial spectrum holdings and infrastructure to deliver services to regional Australians. Allocation limits in regional Australia should reflect the fact that there are likely to be only two or three bidders vying for 3.6 GHz spectrum in regional areas at auction. They also need to take into account that the geographic lots for existing holdings are different (and often smaller) than the geographic lots proposed for the 3.6 GHz auction. Despite a potentially smaller pool of participants in the auction in regional areas, allocation limits are required to prevent large carriers from acquiring all of the 3.6 GHz spectrum being sold and blocking smaller carriers

from competing in those areas. Encouraging all carriers, including the smaller ones, to invest in networks and infrastructure in regional areas is a policy objective of the Government to promote a competitive communications market for Australians and businesses outside metropolitan areas. Allocation limits provide smaller carriers with the opportunity to compete with larger carriers who may already have established networks. Allocation limits of 60 MHz in regional areas risk MNOs having spectrum holdings that are too low to roll out productive 5G networks, particularly outside of regional centres.

A table showing how the allocation limits proposed in option 2 would impact on aggregate demand is at **Attachment A**.

Option 3 is consistent with all of the Government's communications policy objectives. The limits proposed in option 3 also ensure that more carriers have the opportunity to acquire sufficient 3.6 GHz spectrum to deploy a viable 5G network and that those carriers with substantial existing holdings in bands that are a close substitute for the 3.6 GHz band are precluded from participating in the auction in those areas.

These limits allow for more efficient allocation of spectrum at auction. Raising the limit in the Sydney and Melbourne metropolitan areas and regional areas would lead to increased aggregate demand for the spectrum being auctioned, which in turn leads to increased competitive tension at auction. This provides more scope for price discovery and increases the likelihood of allocative efficiency.

These limits would not preclude a fourth or hypothetical fifth carrier from participating in the auction, and provide opportunity for smaller carriers such as TPG and VHA to acquire up to 60 MHz of spectrum in all metropolitan areas and up to 80 MHz in all regional areas.

[REDACTED]

Allocation limits of 60 MHz in the Sydney and Melbourne metropolitan areas would also align with 3GPP deployment standards for 5G networks. Increasing the limit to 60 MHz in the Sydney and Melbourne metropolitan areas would provide the opportunity for MNOs to acquire sufficient spectrum to deploy a 60 MHz 5G network, potentially enabling services of a higher quality than a 40 MHz 5G network.

Increasing the allocation limits to 80 MHz in regional areas recognises that the metropolitan and regional telecommunications markets are different and therefore warrant different allocation limits. The Department assesses that there are still likely to be only two or three bidders vying for 3.6 GHz regional spectrum under this option. However, limits of 80 MHz would allow the MNOs who are already active in the regional telecommunications market to deploy 80 MHz 5G networks in regional centres and deploy at least 40 MHz 5G networks in regional areas. It would also provide all MNOs without existing holdings in regional areas the opportunity to deploy a 5G network of up to 80 MHz. This is consistent with the Government's objective of encouraging investment in infrastructure in regional areas,

including by smaller carriers, and providing regional Australians with access to high quality 5G networks.

How will you implement and evaluate your chosen option?

The Minister's decision regarding allocation limits will be implemented through a direction to the ACMA under section 60 of the *Radiocommunications Act 1992*, and then incorporated into the allocation procedures ACMA is developing for the upcoming 3.6 GHz spectrum auction.

The Department monitors access to and cost of telecommunications services as part of its business as usual functions and will monitor the same in the emerging 5G market. The telecommunications sector has seen an average drop of 7.1% in prices paid for post-paid mobile services over four years⁶, a range of differentiated products and service available to consumers and an increased number of providers in the market. The Department assesses that the application of allocation limits has supported these positive results, and note that it is not aware of any negative consequences due to the implementation of allocation limits in previous spectrum auctions.

In the case of the 3.6 GHz auction, the Department will evaluate the impacts of the allocation limits by analysing:

- the impacts of the auction on the relevant markets;
- the number of unsold lots at the conclusion of the auction;
- whether smaller players were able to acquire spectrum at the auction; and
- whether carriers acquired enough spectrum to deploy viable 5G networks.

For example, in the 700 MHz residual lots auction in 2017, allocation limits allowed smaller carriers TPG and VHA to acquire spectrum and provided the opportunity for TPG to enter the market as a fourth carrier. The Department assesses those allocation limits as successful and fit for purpose.

Furthermore, the Department and the ACMA are in regular contact with the stakeholders who are likely to be affected by the allocation limits, and will take up opportunities to seek feedback and incorporate lessons learned into future spectrum allocation decisions. The Department and the ACMA also hold data on the total holdings of spectrum and will continue to monitor to ensure no individual provider gains excessive advantages that could lead to an abuse of market power.

The ACCC already monitors the competition of the telecommunications sector through its annual telecommunications report⁷. The report examines the market power of the industry and the price paid by consumers, two aspects of allocation limits seek to improve. Although

⁶ Australian Competition and Consumer Commission (ACCC), *Competition and price changes in telecommunications services in Australia 2016-17*, page viii.

⁷ The most recent version is the Competition and price changes in telecommunications services in Australia 2016-17 report, which was published February 2018.

it is difficult to assess the effects of allocation limits alone, the ACCC is well placed to monitor the overall competition of the industry. Furthermore, given the wealth of information already provided to the ACCC, no further information would be necessary to assess the impacts.

Under section 50 of the *Competition and Consumer Act 2010* (CCA), the ACCC has the power to intervene in the issue of spectrum licences if it believes that issuing the licences will have the effect or likely effect of substantially lessening competition in the relevant market.

Conclusion

The 3.6 GHz spectrum auction will be the first auction of spectrum in Australia that has been specifically identified as useful for the development and deployment of 5G technology. The potential applications of 5G will promote Australia's continued technological innovation and contribute to economic growth. The 5G vision foresees near zero latency and unprecedented data speeds to and from mobile devices. This will have implications for technologies such as the Internet of Things, driverless cars, augmented and virtual reality, remote medical procedures and smart manufacturing.

Spectrum is critical infrastructure for Australia's current and future communications and 5G technology will require substantial amounts of spectrum. As the 3.6 GHz auction is only selling 125 MHz of spectrum there is an incentive for participants to prevent competitors from acquiring enough spectrum to deploy 5G networks or to restrict the new entrant from acquiring spectrum. This could result in anticompetitive outcomes in the mobile market as a small number of MNOs control the price and output in the market, leading to poor outcomes for consumers in terms of price, service and choice.

This RIS has considered a range of options to address this issue.

Limits on the amount of spectrum a participant in the auction can acquire are an effective means of preventing one or two participants from monopolising the spectrum on offer. Limits of 45 MHz in Sydney and Melbourne metropolitan areas and 60 MHz in all other areas provide a competition focussed approach to allocation limits. However the Department recommends limits of 60 MHz in metropolitan areas and 80 MHz in regional areas. These limits take a broader view to supporting the Government's communications policy objectives and promoting competitive tension in the auction.

The recommended limits do not represent a new cost for the industry or consumers. It is an option familiar to the industry as a result of their participation in previous spectrum auctions and is therefore likely to be accepted by auction participants.

Attachment A – Impact of allocation limits proposed in option 2

Geographic lots		Existing holdings (3.4GHz-3.7GHz) (MHz)					Amount of spectrum carriers could acquire (MHz)					Aggregate Demand	Aggregate Supply
Name	Category	VHA	Telstra	TPG	Optus	NBN	VHA	Telstra	TPG	Optus	NBN		
Sydney	Metro	0	0	0	100	60	45	45	45	0	0	135	125
Melbourne	Metro	0	0	0	100	60	45	45	45	0	0	135	125
Brisbane	Metro	0	32.5	0	67.5	60	60	30	60	0	0	150	125
Adelaide	Metro	0	28	0	72	60	60	35	60	0	0	155	125
Perth	Metro	0	35	0	65	60	60	25	60	0	0	145	125
Canberra	Metro	0	32.5	0	65	60	60	30	60	0	0	150	125
North QLD	Regional	0	35	0	0	97.5	60	25	60	60	0	205	125
Central QLD	Regional	0	35	0	0	100	60	25	60	60	0	205	125
South QLD	Regional	0	32.5	0	2.5	157.5	60	30	60	60	0	210	125
Western NSW	Regional	0	0	0	3.5	160	60	60	60	60	0	240	125
VIC	Regional	0	35	0	0	157.5	60	25	60	60	0	205	125
TAS	Regional	0	28	0	0	100	60	35	60	60	0	215	125
SA	Regional	0	0	0	0	125	60	60	60	60	0	240	125
WA	Regional	0	0	0	65	60	60	60	60	0	0	180	125

Attachment B – Impact of allocation limits proposed in option 3

Geographic lots		Existing holdings (3.4GHz-3.7GHz) (MHz)					Amount of spectrum carriers could acquire (MHz)					Aggregate Demand	Aggregate Supply
Name	Category	VHA	Telstra	TPG	Optus	NBN	VHA	Telstra	TPG	Optus	NBN		
Sydney	Metro	0	0	0	100	60	60	60	60	0	0	180	125
Melbourne	Metro	0	0	0	100	60	60	60	60	0	0	180	125
Brisbane	Metro	0	32.5	0	67.5	60	60	30	60	0	0	150	125
Adelaide	Metro	0	28	0	72	60	60	35	60	0	0	155	125
Perth	Metro	0	35	0	65	60	60	25	60	0	0	145	125
Canberra	Metro	0	32.5	0	65	60	60	30	60	0	0	150	125
North QLD	Regional	0	35	0	0	97.5	80	45	80	80	0	285	125
Central QLD	Regional	0	35	0	0	100	80	45	80	80	0	285	125
South QLD	Regional	0	32.5	0	2.5	157.5	80	50	80	80	0	290	125
Western NSW	Regional	0	0	0	3.5	160	80	80	80	80	0	320	125
VIC	Regional	0	35	0	0	157.5	80	45	80	80	0	285	125
TAS	Regional	0	28	0	0	100	80	55	80	80	0	295	125
SA	Regional	0	0	0	0	125	80	80	80	80	0	320	125
WA	Regional	0	0	0	65	60	80	80	80	15	20	275	125