Inmarsat response to the ACCC consultation

Allocation limits advice for 3.4 – 4.0 GHz band allocation in remote areas

24 September 2021

Inmarsat is pleased to provide comments to the Australia Competition and Consumer Commission (ACCC) on the need for allocation limits for 3.4 – 4.0 GHz band allocation in remote areas.

1. General comment

Inmarsat in partnership with Swedish Space Corporation (SSC), operates C-band satellite services from Earth Stations in the remote earth station protection zone (ESPZ) at Dongara.

Inmarsat also operates C-band links to support its satellite network from the Landsdale Earth Station in Perth. Inmarsat operates several antennas which are used to receive the feeder downlinks of mobile satellite service (MSS) satellites, for which signals are received in the frequency band 3550 – 3700 MHz. The Landsdale Earth Station is also used for reception of telemetry, tracking and control (TT&C) links which are received in the frequency band 3900 – 4200 MHz. The TT&C links support Inmarsat's "Inmarsat-4" and "Global Xpress" series of satellites. New satellites being developed by Inmarsat will continue to use the C-band frequencies, including the "Inmarsat-6" satellites which are planned to be launched in 2022 and expected to be in operation for 15-20 years.

The services are extensively used by Australian citizens, companies and government organisations for remote and resilient communications, including ships at sea and for aircraft. Inmarsat services are heavily used in Australia and elsewhere to support safety-of-life requirements such as the global maritime distress safety system (GMDSS) and aeronautical mobile satellite (route) service (AMS(R)S).

Inmarsat also provides support to other satellite operators by providing telemetry communications in the band 3900 – 4200 MHz, during transfer orbit phase and during regular on-station operations. While the amount of spectrum required for spacecraft TT&C is relatively small, given that TT&C is used for the control and safe operation of the satellite in orbit, it is very important that telemetry signals are received without interruption due to interference. Also, the carrier frequencies used for TT&C vary depending on the satellite design, so the earth station may be required to operate over a large range of frequencies to allow reception of telemetry from a variety of satellites. Therefore, it is important to minimise the impact of the wireless broadband (WBB) deployment to the current and planned satellite operations in Australia. Satellite services and investments in the C-band should not be jeopardised to meet the WBB requirements.

Inmarsat is already facing the need to terminate use of C-band at Landsdale in the band 3600 – 3700 MHz in early 2023, given the decision by the ACMA to make this band available for mobile broadband and to cease protection for incumbent fixed satellite service (FSS) users.

Given the pending termination of Inmarsat's licences to operate in the band below 3700 MHz in Perth, Inmarsat has already taken significant and expensive steps to adapt its operations in Australia to accommodate WBB systems in Australia in that band. Inmarsat has invested in a new earth station location in the Mingenew ESPZ that will pick up the loss of access at Perth for operations below 3700 MHz band.

It is with some dismay to Inmarsat that the band 3900 – 4200 MHz used for TT&C by Inmarsat's network and other operators, is also going to be constrained by ACMA's plans to allow WBB services to operate Australia wide, except in current ESPZs.

2. Inmarsat response to specific ACCC's questions

Inmarsat responses to the questions specified in the consultation paper are as follows.

Q1. What are the likely intended uses of 3.4 – 4.0 GHz band spectrum in remote Australia?

The unique propagation characteristics of C-band satellite systems (due mainly to their lower operating frequency range compared to Ku and Ka band systems) enables reliable backhaul telecommunications services in high rainfall and oceanic areas of Australia and its territories

Inmarsat operates several C-band antennas at Mingenew, which are used to receive the feeder downlinks of MSS satellites, for which signals are received in the band 3550 – 3700 MHz.

Q2. If you intend to acquire the spectrum to deploy wireless services:

(a) In what geographic areas do you intend to use the spectrum?

Currently, Inmarsat use the 3550 – 3700 MHz band in the remote area of the Mingenew ESPZ for its feeder links.

(b) Do you expect your intended use is likely to change in the future? If so, please provide examples of how that might change.

Inmarsat is interested in a proposal that an ESPZ for C-band FSS be located in remote northern SA to support Pacific Ocean coverage requirements.

(c) What do you consider is the optimal allocation of 3.4–4.0 GHz spectrum to support your likely intended uses? What is the minimum allocation necessary?

In view that C-band is still consider important to the satellite industry, the 3.4 – 4.0 GHz should be continue allocated to FSS. The minimum allocation to support the current and future satellite operation is 3900 – 4200 MHz.

(d) Is your demand for the spectrum for current use, or more likely to arise in the future?

New satellites being developed by Inmarsat will continue to use the C-band frequencies, including the "Inmarsat-6" satellites which are planned to be launched in 2022 and expected to be in operation for 15-20 years. To support the growth in Inmarsat's customer use of MSS, it is expected that demand for C-band bandwidth for feeder downlinks will increase.

Q3. Is there likely to be demand for the spectrum from entities that do not propose to use the spectrum but rather, intend to provide access to the spectrum to other users? If so, what is the extent of demand from these entities and in what geographic areas?

Aside from Inmarsat's use of C-band, operators are likely to continue to use C-band satellite services for mining, offshore oil and gas, maritime and disaster response.

Q4. How is demand likely to be impacted by the:

(a) Apparatus licence arrangement;
(b) Likely format of the administrative assignment process; and
(c) licence duration?

ACMA is proposing that WBB services will be licensed in remote areas via Area-Wide Licences (AWLs). AWLs authorise the operation of multiple transmitters in a specified geographic area and frequency range. In remote areas these geographic areas will be significant in size, precluding the operation of future C-band satellite receiver services compared to the current apparatus licensing arrangements. Use of AWLs by WBB is likely to preclude access to licences for C-band satellite services

C-band satellite services are not compatible with WBB services due to the highly sensitive receiving systems. This means that C-band satellite earth stations need to be located significant distances from WBB services to avoid receiving interference.

Longer licence durations for AWLs for WBB will further preclude access to licences for C-band satellite services especially for mining. The licence duration of WBB licences should be reduced if there is no WBB device operating in the licence area.

Q5. What are the relevant downstream markets that are likely to be impacted by the 3.4–4.0 GHz band allocation in remote areas? Please clearly define the geographic dimensions of these markets, the providers of services and the end-users in these markets.

The C-band TT&C links support Inmarsat's MSS satellite operations in L-band which support the critical communication services and future narrowband services such as Internet of Things (IoT) in remote areas. Critical communication services are used by

commercial aircraft in remote areas of Australia through the AMS(R)S, and by shipping in an around Australia for GMDSS and other maritime communications. IoT supports a broad range of industries to enable tracking, monitoring and managing assets, ensuring the safety of their workers, and to improve remote operations.

Q6. Are there any relevant markets in which the services could be provided by different types of network deployment?

The unique propagation characteristics of C-band satellite systems (due mainly to their lower operating frequency range compared to Ku and Ka band systems) enables reliable backhaul telecommunications services in high rainfall and oceanic areas of Australia and its territories.

Q7. Are there any relevant markets which consist of a single, or very small numbers of, end-user(s)?

C-band satellite services for mining, offshore oil and gas and maritime, often service markets with single or small numbers of users.

Q8. Are there likely to be future relevant markets that have not been identified?

IoT via satellite is a developing market. Again, C-band satellite services directly or via feeder links enable these services to be provided in an economical way.

Q9. Do you have any views on the state of competition in the relevant downstream markets discussed by the ACCC?

Access to C-band satellite services, particularly in high rainfall areas is an enabler to profitable and safe operations in the mining and related industries. If C-band satellite services cannot be licensed in these locations the downstream industries cannot operate.

Q10. Are there any other markets that you consider relevant? How would the allocation of spectrum in the 3.4–4.0 GHz band in remote areas impact competition and investment in these markets?

See answer to Q.9

Q11. To what extent, if any, would licence duration impact competition and investment in these markets?

Longer licence durations for AWLs for WBB would further preclude access to licences for C-band satellite services.

Q12. For an industrial end-user in a remote area, are the deployment models substitutable? That is, would wide area wireless broadband be substitutable for local area wireless broadband? Would these services be substitutable for private LTE, or 5G networks?

For reasons given in Q.6, often C-band satellite systems are the only telecommunications services that enables reliable and economic backhaul services.

Q13. Do you consider that substitutable spectrum exists for the 3.4–4.0 GHz band in remote areas to enable the provision of services in the relevant downstream markets? If so, what spectrum do you consider to be a substitute?

In remote areas, due to the low population density, the 3.4 – 4.0 GHz band is not required for WBB. WBB services in remote areas can use other IMT bands including 700, 850, 900, 1800, 2100, 2300 and 2600 MHz. These frequencies provide better propagation characteristics for long distance communications required for low population densities

Q14. **Does the availability of substitutable spectrum differ within the remote area? Are there areas within the remote area, where no substitutable spectrum exists?**

See answer to Q.13.

Q15. Should the ACCC take into account the availability of spectrum in the 1800 MHz band in remote areas when assessing the need for allocation limits? If so, how?

See answer to Q.13.

Q16. Do you consider that there is a risk that a single party may seek to acquire the entire, or majority, of spectrum available in any given areas? Please provide reasons and evidence for your views.

Inmarsat has a concern that mobile network operators, wireless internet service providers and other WBB operators could acquire the majority of the spectrum, excluding satellite operators and service providers from accessing any or sufficient spectrum.

Inmarsat has already faced this in urban areas, with the result of no longer being able to operate in the band 3600-3700 MHz in early 2023.

ACMA already has in place an embargo on issuing new licences for satellite earth stations Australia-wide (Embargo 78) and is advising that existing licences will not automatically

be renewed after the end of September 2022. This is already constraining use of the spectrum for satellite earth stations in order for areas to be available for WBB operators. This could be interpreted as favouring one service over another.

Q17. Do you think that allocation limits are necessary for the 3.4–4.0 GHz band allocation in remote areas? Relevantly, would allocation limits promote competition and encourage investment in the relevant markets?

Refer to Q.16. Inmarsat would support an allocation limit on WBB licences to allow the continued licensing of existing and new FSS services using apparatus licences in remote areas.

Q18. If so, what do you think the appropriate allocation limits should be? Do you think different allocation limits should apply to different geographic areas within the remote area?

The current apparatus licence arrangements should continue and not AWLs for WBB in remote areas.

Q19. How long do you think any allocation limits should apply for?

The length of the licence durations.

Q20. Are there other factors that the ACCC should consider in assessing the possible allocation limits to apply?

No comment.

3. Other comments

Inmarsat would disagree with ACMA's view that "the 3.4–4.0 GHz band … has been internationally harmonised for use by 4G and 5G services". There are numerous and wide variations regarding the particular frequencies planned for use by 4G/5G services in this range, with most countries focussing on only the lower part of this band, e.g. 3400 – 3600 MHz. Demand seems to be almost exclusively in urban areas – not rural or remote areas.

Inmarsat is concerned that ACMA is proposing that WBB services be licensed in the 3.4 – 4.0 GHz band in remote areas when studies have shown that sufficient bandwidth is available in the 700, 850, 900, 1800, 2100, 2300 and 2600 MHz bands.

Inmarsat supports the view that it is “timely for the ACCC to also begin general consideration of the planned allocations across the 3.4 GHz and 3.7 – 4.0 GHz bands (*in regional and metropolitan areas*) given the interrelated nature of these processes.” The ACMA is keen for C-band FSS earth stations to move out of the metro areas to allow WBB to operate in the 3.4

– 4.0 GHz band but is also planning to allocate the 3.4 – 4.0 GHz band in remote areas to WBB via AWL which is not compatible with licensing of C-band FSS earth stations. This will impact the licensing of future FSS earth stations in remote areas, except for current ESPZs.