BRISBANE AIRPORT CORPORATION

Wednesday, 4 May 2022

Australian Communications and Media Authority
Red Building
Benjamin Offices
Chan Street
BELCONNEN ACT 2616

Dear Madam/Sir,

RE: Reallocation Declaration for 3.4Ghz and 3.7Ghz bands – IFC 10/2022

Brisbane Airport Corporation (BAC) welcomes the opportunity to comment on the proposed spectrum reallocation declaration for 3.4Ghz to 3.7Ghz bands ('band reallocation') undertaken by the Australian Communications and Media Authority (ACMA).

At BAC, the health and safety of our team, our passengers and our partners is paramount. We are committed to providing a world class airport that is safe for aviation related activities and promoting a positive safety culture across our aviation operations.

BAC understands the opportunities presented by 5G cellular technology and its role in carrying more than half the world's mobile data traffic by 2026. We also understand that the successful application of 5G requires the need for new, more powerful network technologies and better use of existing spectrum, thus explaining ACMA's proposal to reallocate the 3.7-4.2Ghz band and auction licences in the band 3.7-3.98Ghz.

However, the extension of spectrum to support 5G presents issues with aircraft radio altimeters. Radio altimeters are vital pieces of safety equipment that measure the height of an aircraft to terrain that is immediately below the aircraft. Altimeters are used when operating at low altitude on approach to an airport's runway and are particularly important at night-time or in challenging weather conditions. It is essential that this equipment functions properly and in a manner that ensures the aircraft pilot is receiving accurate real-time information concerning the aircraft's altitude.

BAC seeks to raise concerns around the use of 5G telecommunications systems operating in the 3.7-3.98Ghz range. These systems may cause harmful interference to radar altimeters on civil aircraft, including commercial transport planes, general aviation planes and helicopters – all of which use Brisbane Airport as a key port for operations. In fact, initial investigations into 5G signal interference (3.7-4.2Ghz band) have revealed a major risk that 5G telecommunications systems will cause harmful interference to radar altimeters on all types of civil aircraft.[1]

Interference with altimeters presents a range of inter-related impacts that affect the airport and wider aviation sector, as summarised below:

[1] 'Assessment of C-Band Mobile Telecommunications Interference Impact on Low Range Radar Altimeter Operations', *RTCA Paper No. 274-20*, Radio Technical Commission for Aeronautics, Washington DC, October 2020.

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Impacts

Safety: safety is the number one priority for BAC, given the consequences of poor safety management to the very existence of the aviation industry. The incorrect operation of radio altimeters can affect numerous systems on modern aircraft, including flight guidance and controls; windshear detection; tail strike prevention; auto-throttle; thrust reversers; and aircraft alert/collision avoidance systems. Particularly in challenging weather conditions, the correct operation of radio altimeters is critical, as it provides a crucial layer of safety in the highest risk component of flight: landing.

Commercial: before the COVID 19 Pandemic, Brisbane Airport supported over 30 international airlines travelling to 34 destinations across North Asia, South-East Asia, the Middle East, North America, South Pacific and New Zealand. By supporting international travel, it contributes over $4.3b to the Queensland economy and supports several key economic sectors, including tourism, transport, agriculture, and advanced manufacturing. As Queensland's major international gateway, Brisbane Airport is projected to support over 40m passengers over the next decade, particularly as the major port for the 2032 Olympic and Paralympic Games. The attraction and retention of airlines to Australian destinations (including Brisbane) is a complex commercial undertaking requiring long lead times for both airlines, airports, and government authorities. BAC is aware of instances of major international airlines cancelling flights to airports due to the risks presented by 5G interference to radio altimeters.[2] It is imperative that a similar issue is not repeated here in Australia, given the commercial implications to airports, and by extension, the effects of cancelled services for Australian and international travellers.

Operational: there are several implications for airport operations where radio altimeter operation in aircraft is compromised. For example:

- the ability of an aircraft to operate in low visibility could be restricted. This could see more aircraft being forced to divert from Brisbane to other airports during periods of low visibility due to fog or heavy rain;
- if alternative airports are similarly constrained, pilots may need to return to the place of origin, presenting significant disruption to airline and airport schedules;
- RNP (AR) approach operations could be limited or unavailable. These operations at Brisbane Airport, which use the best available GPS navigation technology, provide four of the eight approach paths to distribute flights over the community. Non availability of these operations would result in greater concentration of overflight and noise, and increase fuel burn and CO2 emissions due to the longer distances required to be flown.

As can be seen from the outline above, the implications of potential 5G signal interference on wider airport operations is significant. Nevertheless, BAC supports the need to enable a wide range of wireless broadband use cases while protecting aviation services. It therefore recommends a range of interim mitigations that could be implemented immediately and with low cost to all parties involved.

Potential Mitigations

Based on international experience, the following interim mitigations could be considered to limit any potential negative impacts presented by the re-allocation of 5G spectrum:

- An exclusion zone is applied where WBB (fixed broadband) base stations cannot be deployed (equivalent to the French and Canadian exclusion zones). No AWL (area wide) transmitter devices can be registered in the exclusion zone.
- Reduce transmitter power in in the vicinity of airports or relocate transmitters in the vicinity of airport flight path approaches (France has adopted this measure);

[2] John Gambrell and David Keonig, January 20, 2022 , 'Airlines cancel some flights after reduced 5G rollout in US', *Associated Press* < https://apnews.com/article/technology-business-dubai-middle-east-united-arab-emirates-bcac403626879062f8d07080f87e5880> accessed 29 April 2022.

- The angle of 5G tower antennas could be tilted downward to reduce potential interference with aircraft equipment (France has also adopted this measure); and

BAC strongly recommends these interim measures until a full investigation of the interaction of 5G spectrum with radio altimeters is completed. Given the importance of safety to the viability of aviation, and in turn, public confidence in aviation regulation, BAC believes that these initial mitigations are fair and reasonable and accord with measures implemented internationally.

BAC further recommends a whole of government approach to addressing the interaction of 5G spectrum with aviation operations (notwithstanding the good work of the Radio Altimeter Co-Ordination Group). To date, the role of key regulators across Infrastructure, Planning, Operations, Aviation Safety and Communications is not clear, particularly at a strategic level. Given the complexity of the issues involved, and the implications of potential interference on the aviation sector, clear roles and responsibilities are required to ensure that government decisions on this matter appropriately balance and address any externalities through the reallocation of spectrum.

If you would like any further information on the contents of this submission, please contact Rishi Wijesoma, Government Policy Lead, on 07 3406 3230 or rishi.wijesoma@bne.com.au. Mr Wijesoma will be pleased to assist.

Yours sincerely

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