30th September 2021

2021 Regional Telecommunications Review Secretariat
Department of Infrastructure, Transport, Regional Development and Communications
GPO Box 594
CANBERRA ACT 2601
Australia

Dear Sir/Mdm,

RE: REGIONAL TELECOMMUNICATIONS REVIEW 2021

Inmarsat welcomes the opportunity to provide comments to the Regional Telecommunications Independent Review Committee (**the Committee**) in response to its Issues Paper on the Regional Telecommunications Review 2021 (**the Paper**), published on July 2021.

Please find enclosed Inmarsat's response, for your consideration.

If you have any clarifications with respect to this submission, please contact the undersigned. We look forward engaging with the Committee.

Yours sincerely,

Mary Lim
Regulatory and Market Access
Inmarsat Global Limited

<center>**Inmarsat's Response**</center>

1   Inmarsat's solutions and services in Australia

Inmarsat is the owner and operator of a global geostationary orbit (**GSO**) satellite constellations operating in the L-band and Ka-band. Inmarsat's 4th generation satellites (Inmarsat-4) provide mobile satellite service (**MSS**) and Inmarsat's 5th generation satellites (Global Express) provide fixed satellite service (**FSS**) globally, including Australia. Inmarsat in Australia operates in the C-band (3550 – 3700 MHz) for feeder downlink for MSS satellites and C-band (3900 – 4200 MHz) for telemetry, tracking and control (**TT&C**) links to support the satellite services.

Inmarsat has over 40 years' experience in providing secured, reliable and robust solutions across several market sectors including Maritime, Government, Aviation and Enterprise.

Inmarsat Enterprise Solutions

- Inmarsat Enterprise solutions are used across many industries and markets, such as transportation, energy and utilities, mining and construction, maritime, environmental management and agriculture.

- IsatData Pro (**IDP**) is a satellite messaging service which allows transmission of small amounts of data very economically. This makes it ideal for Internet of Things (**IoT**) applications where sensors or other assets are deployed in remote locations. The service can be used as a backup or primary connectivity service and the IDP device will work anywhere in the world within Inmarsat's L-band network.

- IsatData Pro devices are small and have a compact form factor with very low power requirements and are easy to deploy to allow delivery of business-critical event driven data in remote areas.

- Broadband Global Area Network (**BGAN**) is a global, portable voice and broadband connectivity service. BGAN services provide connectivity for both static and mobile applications and a range of rugged, low power terminals are available to suit different applications.

- BGAN M2M is best suited for organisations that manage remote assets and need real-time critical data for IoT and remote control applications.

- Land Express is a broadband solution for higher data requirements where portability is crucial. Land Express services are used by media organisations to transmit video from remote locations as well as AID/NGO organisations where they may be operating in areas with poor infrastructure.

Examples of Inmarsat satellite services to industry

Inmarsat is currently offering MSS and FSS capacity in various industries through the existing operational I-4 and GX satellite constellation.

 a)   Enterprise:

- communications/connectivity for transport, mining, oil and gas, renewable energy, agriculture, media and utilities sectors
- IoT

b) Government:

- eHealth
- emergencies and public safety
- remote weather stations
- state fisheries management

c) Aviation:

- Aviation safety and control
- In-flight connectivity

d) Maritime:

- Maritime safety
- Communications/connectivity and IoT solutions for fishing industry
- Communications/connectivity for passengers

2   Background

In general, there is good coverage in Australia's metropolitan and major population areas, however, the country's remote areas remain disconnected, posing a problem for businesses and organisations operating in these areas, such as mining, oil and gas and transport. Satellite technologies can help to reduce rural isolation, improve access to services and increase business efficiency.

For example, satellite connectivity facilitates activities of the mining industry such as monitoring of works and machinery in the different extraction techniques. The efficiency increased with mobile satellite connectivity is particularly important for geologists in communicating with the laboratory on the samples analysis.

Inmarsat Solutions BV is located at 620 Gnangara Road, Landsdale, WA 6065 and at the Swedish Space Corporation (**SSC**) Tracking Station, North Depot Hill Road, Mingenew, WA 6522. Both locations are operational sites of Inmarsat Global who provide satellite communications and services to Governments and safety services to the Maritime sector across the globe and particularly in the Asia Pacific region.

The services are extensively used by Australians, Australian companies and government organisations for remote and resilient communications, including ships at sea and 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**).

3   Inmarsat response to specific the Committee's questions

Inmarsat responses to the questions specified in the Paper as follows.

> 1.   What telecommunications services are required in regional Australia to meet current and future needs? Are there any things regional communities and businesses need to do, but can't, on their existing services?
>
> 2.   What changes in demand, barriers or challenges need to be addressed when it comes to telecommunications services in regional, rural and remote Australia?

Regional Australia is poorly served by terrestrial networks (e.g. fibre / mobile network) outside of towns and away from major highways. This leads to challenges for individuals and businesses who wish to have similar levels of access to digital connectivity services as their peers in better served areas. This connectivity may be used for domestic purposes, keeping in touch while on the move for personal and safety reasons, business continuity and adoption of IoT, including Smart Industry solutions.

Rural industries such as farming and mining are under pressure to improve efficiency in order to remain competitive while at the same time providing a safe working environment, complying with regulations and ensuring their operations remain socially accepted. Many are moving towards digitisation in order to achieve these goals. The use of digital Ag-Tech solutions in particular is currently limited by the lack of access to reliable connectivity in a high percentage of cases. This means that the Ag-Tech industries cannot grow to their full potential, and also farers can miss out on access to these innovations, which in turn could hamper productivity and efficiency affecting the competitiveness of the industry. Key technologies include automation and monitoring for crop and livestock systems, which save on resource to manually monitor field infrastructure and telemetry and automation systems for machinery which allow efficient operations and precise use of inputs. The mining industry relies on critical communications for a variety of activities including co-ordinating exploration activities and monitoring of critical infrastructure such as tailings dams. Sites are often many miles from the nearest settlement making the erection of terrestrial infrastructure a costly option and satellite provides a scalable method to permanently or temporarily connect infrastructure and people. In addition, satellite is frequently used by freight rail operators in remote areas to enable advanced automation (including driverless trains) and increased safety such as monitoring of level crossings and other remote infrastructure.

Many businesses operating in regional areas could benefit from connectivity to improve their operational efficiency and safety performance using IoT. However, the low population density and vast distances prevent economic investments being made into terrestrial networks to service these demands.

> 3. How have the Government's policies and programs affected telecommunications service outcomes in regional, rural and remote Australia? How can these be improved?

The Government's policies on spectrum allocation/re-allocation will impact the ability of satellite operators to provide much needed telecommunications service in regional, rural and remote Australia.

For example, the Australian Communications and Media Authority (**ACMA**) is proposing that wireless broadband (**WBB**) services co-share with existing FSS in the C-band: 3700 – 3800 MHz range in remote areas; and in the 3800 – 4000 MHz Australia-wide. This change will impact the existing satellite services and the telemetry, tracking and control (**TT&C**) links to support the satellite services.

Inmarsat operates several antennas which are used to receive the feeder downlinks of MSS satellites, for which signals are received in the 3550 – 3700 MHz band. Inmarsat also used C-band for reception of TT&C links which are received in the 3900 – 4200 MHz band. Thus, these WBBs under the Area Wide Licence (**AWL**) will have a negative impact to the existing and future C-band satellite operations.

> 4. How do service reliability issues impact on regional communities and businesses? How do outages, including in natural disasters, impact on communities and businesses?
>
> 5. How might such impacts be addressed to ensure greater reliability? How can the network resilience be addressed in regional areas?

In a connected world where the majority of businesses rely on the internet for an increasing number of applications, outages cause significant problems for businesses. These may include lost revenue, reduced operational efficiency and safety concerns, particularly for remote workers or individuals living on isolated properties. The lack of reliable or cost effective connectivity may also be holding some businesses back from investing in new technology to help improve processes.

These impacts can be addressed through the use of back-up solutions such as satellite communications. Satellite networks can be relied upon during terrestrial outages caused by unreliable networks or natural disasters. Satellite is frequently used in this capacity today, especially for critical infrastructure such as railways and utilities. As rail systems evolve to more autonomous operation and remote management, satellite is often used as a secondary back-up to private or public terrestrial networks, which insulates risk from natural weather events or other issues (such as damage to fibre optic cable from wildlife) and keeps networks running. In the utilities sector, backup satellite connectivity is used on critical smart grid infrastructure such as reclosers and substations to provide back-up connectivity in hard to reach areas where deploying personnel would be challenging and costly.

Services are available to backhaul data from terrestrial mobile networks via satellite as a fail-over when the terrestrial path fails and also to bypass terrestrial networks entirely by providing off-grid connectivity 'hot-spots' for remote locations where connectivity is required but may be

unavailable or unreliable. Inmarsat's L-band network is particularly useful in such cases as the terminals are small, low-powered and rugged and can provide an easily activated fail-over solution in a number of relevant scenarios. These solutions can also be economically used as the primary connectivity method in situations where there is no connectivity at all.

> 6. How did the use of digital services change for regional consumers and businesses during the response to the COVID-19 pandemic? What insights for future service delivery does this provide?

During the COVID-19 pandemic, we have all been limited in our ability to travel both domestically and internationally and in many cases have been confined to the home for long periods. This means that individuals and business have adapted their working and social lives to take advantage of online communication and other applications such as domestic video streaming and web browsing increasing reliance by businesses on automation and AI.

The lockdowns have also meant that businesses relying on site-visits or in-person contact such as consultants to various industries, real estate agents and medical professionals were unable to carry on their normal business. Instead, they have relied heavily on connectivity solutions such as video conferencing or streaming between city offices and remote, regional locations to allow some level of business continuity.

The temporary problems with labour supply and moving people has brought into light the adoption of IoT solutions such as remote monitoring and control of agricultural infrastructure including water monitoring, predictive maintenance for vehicles and other sensor based workflows. These devices are often deployed to very remote areas which have no terrestrial connectivity. In addition, with major disruption to logistics supply chains, the need for basic real-time tracking and condition monitoring (e.g. temperature and humidity) of goods in transit has come in to focus as a way to better manage disruption to logistics. Satellite is often used in this capacity as a technology that has coverage across the multi modal supply chain, on land, sea and air.

In many cases this is hampered by the absence of reliable terrestrial connectivity and this has resulted in increased use of satellite solutions such as Inmarsat's L-band network using portable, hand held or vehicle mounted terminals to provide data backhaul from the regional side.

> 7. What can be done to improve the access and affordability of telecommunications services in regional, rural and remote Indigenous communities?

Inmarsat has no comment on this.

> 8. How can investment in telecommunications infrastructure work with other programs and policies to encourage economic development in regional Australia?
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> 9. What role could innovation, including new models, alternative investors or new ways of doing business, play to encourage investment in regional telecommunications infrastructure? What are the barriers?

Inmarsat has no comment on this.

> 10. To what extent will new technologies enable significant change to the delivery of telecommunications services in regional Australia over the next 5-10 years? Are there any barriers to accessing these technologies?
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> 11. How can Government better support the rapid rollout of and investment in new telecommunications solutions in regional areas?

Inmarsat has no comment on this.

> 12. How can different levels of Government, the telecommunications industry and regional communities better co-ordinate their efforts to improve telecommunications in regional Australia?
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> 13. What changes to Government investment programs are required to ensure they continue to be effective in delivering improved telecommunications?

Access to new satellite Earth station protection zones

ACMA's answer to the concerns raised by Australia's satellite service providers and operators is to relocate satellite Earth stations into remote or regional areas where spectrum costs are lower. While this might satisfy the satellite spectrum cost equation, it does not resolve the capital and operational costs, together with the logistics of human resources to manage and maintain remote satellite earth station sites. The capital costs would include land acquisition, setup of the satellite Earth stations, backhaul and power services. Increased operating costs and resourcing issues to provide engineering maintenance of these sites would be a high risk to the operations.

Inmarsat in partnership with SSC, operates C-band satellite services from Earth Stations in the remote earth station protection zone (**ESPZ**) at Dongara. The current ESPZ limits our footprint and current SSC site has limited power and fibre facilities, thus an additional ESPZ in for example central Australia would provide a good option for our TT&C operation.

> 14. How can regional consumers be better supported to identify, choose and use the best connectivity options for their circumstances, as well as to understand and use their consumer rights?

There is a general lack of knowledge around connectivity options in rural communities. Many people do not have the appropriate skills or access to connectivity experts and are unwilling to invest in solutions as individuals or small businesses until they can see a clear value. Inmarsat is working with a number of industry specific organisations to educate them on the possibilities of satellite communications using our Ka- and L-band networks. Through our Application and Solution Provider programme we are also partnering with technology pioneers to integrate satellite to new applications which make it easier for consumers and businesses to utilise it. If

there were a formal group dedicated to assisting rural communities with connectivity issues it could only be beneficial.

> 15. To what extent is public information on connectivity options, including predictive coverage data and speeds, sufficient to help regional customers make informed decisions? What other information is needed?
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> 16. What other matters should the Committee consider in its review and why are they important?

The Committee should take the spectrum allocation and spectrum needs of the satellite industry into account in its review. Protecting the existing satellite operating frequency bands (e.g. Ka-, C- and L-bands) is important, as it provides spectrum assurance to satellite operators for their current operations and future investments in regional and rural Australia.

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