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29 April 2022

**Spectrum Licensing Policy Section**

Australian Communications and Media Authority

via online submission: [www.acma.gov.au/consultations](http://www.acma.gov.au/consultations)

Dear Sir or Madam,

**Consultation on the Draft Five-Year Spectrum Outlook 2022–27 | IFC 12/2022**

SouthernLaunch.Space Pty Ltd ('Southern Launch') is an Adelaide-based Australian launch services provider whose business operations require the use of spectrum for communication with space objects, communication with objects in airspace, and the operation of range infrastructure.

Southern Launch welcomes the opportunity to comment on the draft Five-Year Spectrum Outlook 2022–2027 ('FYSO'). We broadly support the draft and associated priorities under the 2022–23 annual work program.

Southern Launch encourages the ACMA's response to Australia's rapidly developing satellite communications market and supports the proposed measures to foster a regulatory framework that meets the future spectrum demands of a domestic space industry.

As the FYSO plan identifies, the Australian space sector alone generated \$5.7 billion in 2020. Ensuring that the country can meet these demands will be critical in allowing Australia to expand its share of the global space economy.

However, the FYSO focuses heavily on the role of spectrum use in satellite communications in isolation. Southern Launch recommends that greater attention be given to the role of the domestic launch services that are required to support these new constellations and satellite services.

Currently, the frequencies used by launch vehicles and sub-orbital payloads are not well supported by the Australian Radiofrequency Spectrum Plan ('ARSP'). Launch operators often find licensing solutions through the scientific framework, which presents challenges that hinder long-term commercial activities.

Southern Launch's recommendation that developing a regime that supports Australia's nascent launch service industry is a crucial spectrum management priority for the ACMA.

Southern Launch supports the ACMA's intention to engage with the Australian Space Agency as a member of the Space Coordination Committee. Such collaboration will be a valuable step forward in achieving this goal.

### **The Limitations of Scientific Licensing Solutions**

The FYSO identifies the ACMA's priority of continuing to support trials of innovative space technologies with scientific licenses. Southern Launch welcomes this priority as the scientific framework is required to licence many of Southern Launch's operations.

However, we recommend that the ACMA consider the limitations of this system and the medium to long-term outcomes of scientific licensing for these purposes. Southern Launch understands that scientific licensing is subjected to several standard conditions under the *Licence Conditions (Scientific Licence) Determination 2015* and are often ascribed additional advisory notes.

These conditions present a business risk as the long-term uncertainty they engender serves to disincentivise investment in experimental technologies that would otherwise lead to commercial products or services which would benefit Australians.

Southern Launch understands that scientific licenses are only granted for experimental, and not commercial, purposes. Therefore, it is unreasonable for launch developers to design a vehicle or payload that can be tested under a scientific license but requires a fundamental redesign to accord with the ARSP once it moves from the demo to the commercial development phase.

Additionally, scientific licenses are often limited to a term of one year and are not automatically renewable. A renewal application can require a new technical assessment, the cost of which usually dwarfs the ACMA's own licensing fees. This re-licensing requirement also means that operators relying on scientific licenses maintain a new-

entrant disadvantage in a paradigm that prioritises non-interference with established networks.

Southern Launch understands that scientific licenses offer no protection from interference from other users. This presents a significant risk to launch operations requiring precise timing to ensure safety and compliance with other authorisations. An extraordinary expense would be incurred if launch operations were required to delay while on range due to the risk of being subject to, or causing, interference.

Similar issues are faced internationally. Southern Launch understands that commercial space launch operators in the United States often obtain a grant from the Federal Communications Commission for Special Temporary Authority ('STA') to access the required spectrum for their launches. STA's are granted to provide support 'a temporary, non-recurring service where a regular authorisation is not appropriate.'

Finding solutions to accommodate this use of frequency is therefore of international interest. For example, the FCC's July 2021 report 'Allocation of Spectrum for Non-Federal Space Launch Operations' discusses adding allocation space operations in the 2200-2290 MHz and 420-430 MHz bands.

Southern Launch recommends that the ACMA consider similar reforms and eagerly awaits the opportunity to provide further comment on this matter during the proposed consultation on scientific and non-assigned apparatus licensing arrangement in Q3 2022.

### **Feedback on the Annual Work Program 2022-23**

Southern Launch supports the annual work measures outlined in Part 2 of the FYSO. The measures designed to ensure space operations either receive or maintain allocation within the 13, 40, 46, and 46 GHz bands described in the monitoring stage will be critical to the long-term success of domestic satellite operations.

Southern Launch would welcome the ACMA's suggested regime for the uncoordinated class licence and coordinated earth station use within the 40 GHz band develops. Southern Launch also supports the proposal for two shared 5 MHz bands (2005-2010 MHz and 2195-2200 MHz). As telemetry tracking and control (TT&C) and flight termination systems aboard launch vehicles commonly require S-Band frequency use, allowing allocation for space operations within these bands will assist Australia's growing space launch industry.

Southern Launch acknowledges the ACMA's recognition of competing interests in the 2300–2302 MHz band. Launch vehicle operators considering establishing long term operations in Australia have informed Southern Launch of a necessity to utilities frequency in the broader 2302–2400 MHz band, which currently seems saturated by several spectrum plans.

Finally, noting the naturally remote location of launch sites, allowing space operations to join fixed and mobile WBB services in finding allocation within the 1800 MHz would be recommended.

### **Investigation into Space Launch Frequency Requirements**

Southern Launch recommends that the ACMA identify key spectrum bands commonly targeted by launch vehicles and sub-orbital payloads that can be assessed for future replanning efforts.

The frequencies highlighted in the FYSO, such as the K and Ku bands, are required for satellite operation; however, these frequencies are often unsuitable for the launch vehicles placing these satellites into orbit or conducting sub-orbital tests.

As noted above, launch vehicles commonly target much lower frequencies in well-populated bands. These bands are often subject to broad restrictions, such as Embargo 23 for S-Band, which is frequently requested for TT&C applications, or assigned for Amateur use in the 420–430 MHz range – commonly used for flight termination systems.

The FYSO provides a spectrum planning priority for 2022-23 is facilitating coordination between earth stations and terrestrial services. Reducing the need for extensive coordination via allocating more appropriate frequency bands will proactively assist this effort.

The short duration and isolated geographical location of launch transmissions currently assists launch providers in achieving ad-hoc solutions through scientific licensing and will likely provide a solid basis for achieving a more permanent framework.

### **Pricing**

Southern Launch generally supports the ACMA's continued implementation of pricing reforms under the Spectrum Pricing Review. Of note in the first tranche of reforms is

the introduction of 'systems pricing' for earth stations with multiple antennae and reduced taxes in frequency bands above 8.5 GHz.

Southern Launch looks forward to the release of an apparatus licensing fee calculator which would assist in estimating the likely fees of a launch activity operating a payload and in understanding the underlying pricing arrangement.

Southern Launch also supports the ACMA's intention to reform fees to facilitate new NGSO constellations and recommend that pricing reforms consider the licensing requirements of the associated high cadence launch services that would support these satellites.

Pricing reforms should also consider the fee structure for experimental vehicles, technology demonstrations, and sub-orbital launch services. The nature of experimental or demo launches is such that delays are commonplace. Transmissions during such activities are often once-off and only last for a short period, sometimes less than five minutes. However, operators are required to seek licenses with long expiries to account for any delay to a launch schedule. Ultimately, launch providers must pay licensing fees disproportionate to the level of spectrum denial caused by their use of the bands.

Fees provide an even more significant burden on experimental launches that use out-of-plan frequencies requiring scientific licensing. Limited to one-year validity, scientific licenses require fresh technical assessment for each renewal, which is often much more expensive to commission than ACMA's licensing fees themselves. This is more so the case with experimental launches, as they are even more prone to delay, and the added expenses ultimately stifle Australian innovation.

### **Satellite Service Licensing Arrangements**

Southern Launch supports the continuation of the ACMA's non-interference approach to satellite service filing. Noting that global services are already subject to the International Telecommunication Union ('ITU') processes, establishing additional domestic interventions would present an unnecessary burden and may encourage Australian operators to 'forum shop' for international jurisdictions with less stringent procedures to the detriment of Australia's sovereign space capability.

## **Commercial use of Government and Defence Frequencies**

Southern Launch is keen to support the development of a framework to allow for more streamlined commercial use of frequencies currently allocated for government and defence applications.

Noting the short duration of transmission and often isolated location in which launch activities occur, it is suggested that launch services are a prime candidate for such a program.

## **Licensing and the *Modernisation Act***

Southern Launch commends the ACMA on the steps already taken to implement the *Radiocommunications Legislation Amendment (Reform and Modernisation) Act 2020* (Cth) ('*Modernisation Act*'). Key measures such as increasing the maximum license term for spectrum and apparatus licenses to 20 years will provide commercial parties long-term confidence in Australian investments.

Southern Launch welcomes developments flowing from the March 2021 information paper on radiocommunication licensing and allocation reform, which promises to improve the flexibility of the licensing framework and allow greater external involvement in the spectrum management process.

The measures outlined in the December 2021 consultations on proposed licensing arrangements for 2 GHz narrowband mobile-satellite services, 28 GHz fixed-satellite services, and the 2 GHz Television Outside Broadcast Frequency Band Plan review are positive steps in the right direction and Southern Launch awaits their implementation.

## **Personal Information Subject to Confidentiality on Register**

Southern Launch supports the expansion of confidentiality claims for information recorded on the Register of Radiocommunications as provided under s 152 of the *Radiocommunications Act 1992* (Cth) ('the Act') and proposed to be expanded under s 44 of the *Regulator Performance Omnibus Bill 2022* (Cth).

Details of our customer's frequency requirements are often commercially sensitive, and the protection of this information will ensure Australia remains an attractive jurisdiction for domestic and international parties.

## **Guidance Materials for Launch Licensing**

The FYSO outlines the ACMA intention to provide 'information to assist the growing interest from organisations considering developing experimental satellite systems with short-duration missions.'

Southern Launch recommends that the production of these guidance materials extend to frequency licensing for launch vehicles. Proactive measures such as these would assist in the development of expertise for this form of licensing and ultimately help support the nascent launch industry in Australia become sought after worldwide.

If launch facility operators and launch vehicle developers and operators had access to guidance materials available from the start of a mission's design process, the selection of frequencies which best accord with the ARSP and associated plans would be significantly facilitated. The current practice is often the reverse – that is, launch developers design vehicles first and, with little information knowingly accessible, licensing is sought after the configurations have been implemented in the spacecraft's manufacture. This approach results in a significant administrative burden on both launch providers and the ACMA when ad-hoc scientific licensing solutions and extensive coordination are required.

Southern Launch welcomes the opportunity to enter a dialogue with the ACMA both inside and outside formal consultation periods. Southern Launch acknowledges the positive work of the ACMA's Satellite Coordination team, which facilitates workable licensing solutions for launch operations under the current framework.

Southern Launch suggests that changes to the framework will better support the ACMA's Satellite Coordination team and, thereby, will help the regulatory framework for spectrum use meet the growing demands for launch and satellite operations to occur from Australia.

Sincerely,



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