

## REGULATION OF SPACE ACTIVITIES: THE AUSTRALIAN APPROACH

### ABSTRACT

The regulation of space is a complex topic, given the several competing regulatory frameworks, approaches and interests that operate across different States. In this regard, international law primarily governs the rights, obligations and behaviours of States, whereas domestic law governs public bodies and regulates the activities of non-government entities subject to a State's jurisdiction. The international and domestic legal frameworks do not always align, and nor do they need to. Each level of regulation has also been created with different interests in mind. Over the past decade the Australian space sector has blossomed, with private startups having been able to firmly establish themselves and carve out a place in the international space economy. However, the activities of non-government entities need to be regulated. This article first describes the current characteristics of the international space sector and then considers two of the regulatory pressure points for space businesses in Australia: the breadth of the laws that apply to space activities, and the positioning of the relevant regulatory bodies. This article concludes that there is a significant lacuna in specific Australian regulatory frameworks for space activities and that the position of the relevant regulatory agency is clouded with uncertainty.

### I INTRODUCTION

Outer space might be described as an unending void — but it is not devoid of regulation. Norms of behaviour began to develop the instant humanity ventured beyond the atmosphere via rockets and artificial satellites. International laws followed quickly thereafter. The first binding treaty governing

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\* Lecturer in Space Law, Jeff Bleich Centre for Democracy and Disruptive Technologies, College of Business, Government and Law, Flinders University. Email: joel.lisk@flinders.edu.au. The author would like to thank Professor Melissa de Zwart for her comments on an early draft of this article. This article is based on elements of a report by Melissa de Zwart and Joel Lisk, titled *Low Earth Orbit, Satellite Constellations and Regulation* (Flinders University, 2022), which was prepared with financial support from Swinburne University of Technology through its Australian Research Council Discovery Project: *Spectrum after Scarcity: Rethinking Radiofrequency Management* (ARC DP150100887).

outer space, the *Outer Space Treaty*,<sup>1</sup> was concluded in 1967, a decade after the former Union of Soviet Socialist Republics ('USSR') placed Sputnik-1 into low earth orbit ('LEO'). While the focus at the time was on State activities — that is, government-funded activities undertaken in the national interest — the private sector understood the opportunities that outer space provided. Over the decades that followed, space activities moved from mere science fiction and aspirational dreams to commercial reality, with outer space activities in the 2010s and 2020s (especially in the United States ('US')) now dominated by the private sector. As with other high-technology sectors, regulation plays an important role in the behaviour of non-government entities. The regulation of private activities in outer space is complicated by the international obligations of States, including the obligation to authorise and supervise non-government entities operating in outer space.<sup>2</sup> It is not uncommon for States to now have regulations that contemplate the activities of private entities in outer space. The format used is typically a licensing framework that places a prohibition on certain conduct accompanied by the ability to seek a licence permitting an entity to engage in the otherwise prohibited conduct. The content and precise obligations within these frameworks can vary significantly across States.<sup>3</sup> These domestic legal frameworks directly affect the private entities that need to comply with them.

In recent years, Australia has seen a rapid build-up in the size and capabilities of its private space sector. This led to amendments to Australia's regulatory framework for private space activities and the creation of an Australian Space Agency. This article will critically engage with the characteristics of the private space sector in Australia, the legislative frameworks that apply to its activities and the positioning of the relevant regulatory authorities. Ultimately, this article will conclude by highlighting risks associated with operational certainty for space-focused businesses in Australia now and into the future. While the Australian law was inspired by efforts in other jurisdictions, the primary legislative instrument, the *Space (Launches and Returns) Act 2018* (Cth) ('*S(L&R)A*'), is narrow and creates a substantive regulatory lacuna not seen in other jurisdictions. Further, this article will also highlight uncertainty associated with the regulatory agency and its deviation from emerging international practices.

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<sup>1</sup> *Treaty on Principles Governing the Activities of the States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, opened for signature 27 January 1967, 610 UNTS 205 (entered into force 10 October 1967) ('*Outer Space Treaty*').

<sup>2</sup> *Ibid* art VI.

<sup>3</sup> For example, the *Laki Avaruustoiminnasta* [tr Finlex, Act on Space Activities] (Finland), No 63 of 2018 and *Regulation of the Space Sector* (United Arab Emirates), Federal Law No 12 of 2019 regulate many of the same activities and use a broadly similar approach, but the details differ.

## II SPACE AND SATELLITES

LEO, a region of outer space, has been heavily utilised by humans (either in person or remotely) since the 1957 launch of Sputnik-1 by the USSR. Moreover, humans have had a continuous physical presence in LEO since 2000 through the occupation of the International Space Station. Broadly, LEO is considered to be the region between the lowest sustainable orbit,<sup>4</sup> and an altitude of approximately 2,000 km above mean sea level.<sup>5</sup> The use of LEO for commercial purposes has rapidly expanded in recent times, aligning with the efforts of participants in the ‘New Space’ economy.<sup>6</sup> Weinzierl described the mode of New Space as seeing high-net-wealth individuals using ‘their wealth to overcome high fixed-cost barriers to entry’ in order to develop new approaches to technology,<sup>7</sup> which effectively opened LEO (and space more generally) to a larger number of businesses and entrepreneurs. These activities have led to a rapid reduction in the costs of reaching space. For example, Weinzierl reported that the estimated cost per kilogram to launch a payload to the International Space Station on the NASA-operated Space Shuttle was USD272,000, but comparative private sector costs were, in 2017, in the range of USD89,000 to USD139,000 per kilogram for services provided by SpaceX and Orbital Sciences Corporation (now a part of Northrop Grumman Space Systems), respectively.<sup>8</sup> A 2017 US Government Accountability Office report cited substantially lower costs for reaching LEO, with SpaceX levying USD2,864 per kilogram for launches on its Falcon 9 launch vehicle compared with USD9,514–USD16,866 per kilogram levied by the established private launch corporation United Launch Alliance for launches on its Atlas V launch vehicle.<sup>9</sup> Thus, the actions of entrepreneurs have revolutionised the ability of entities to venture into LEO. As reported by Scoles with some scepticism, SpaceX CEO and founder Elon Musk touts that the cost to launch payloads on some next generation launch vehicles under development could be as low as USD10 per kilogram.<sup>10</sup>

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<sup>4</sup> The altitude of the lowest sustainable orbit varies according to the speed and nature of the satellite and the atmospheric conditions at a specific point in time. On the basis of these factors, the lowest sustainable orbit has a perigee (lowest point) of ~80 km above mean sea level: Jonathan C McDowell, ‘The Edge of Space: Revisiting the Karman Line’ (2018) 151 *Acta Astronautica* 668, 676.

<sup>5</sup> Inter-Agency Space Debris Coordination Committee, ‘IADC Space Debris Mitigation Guidelines’, Doc No IADC-02-01 Rev 3, June 2021, 8.

<sup>6</sup> Matthew Weinzierl, ‘Space, the Final Economic Frontier’ (2018) 32(2) *Journal of Economic Perspectives* 173, 177.

<sup>7</sup> *Ibid.*

<sup>8</sup> *Ibid.* 181, citing Edgar Zapata, ‘An Assessment of Cost Improvements in the NASA COTS — CRS Program and Implications of Future NASA Missions’ (Conference Paper, AIA Space 2017 Conference, 12 September 2017) 8.

<sup>9</sup> United States Government Accountability Office, *Surplus Missile Motors: Sale Price Drives Potential Effects on DOD and Commercial Launch Providers* (Report No GAO-17-609, August 2017) 30.

<sup>10</sup> Sarah Scoles, ‘Prime Mover’ (2022) 377(6607) *Science* 702, 703.

The reduction in launch costs has been matched by a shift towards smaller and more cost-conscious satellites.<sup>11</sup> Small satellites, unlike their larger counterparts in more distant orbits, are generally designed and manufactured to serve a single specific, and clearly defined purpose. Larger satellites are designed and equipped with the latest technologies to ensure that they have a high capacity and are capable of operating for one or more decades in more distant orbits. The size of these satellites allows the inclusion of large communications arrays, sensors and cameras, and other equipment that simply would not fit on small satellite platforms.<sup>12</sup> Although these large platforms allow the placement of the best and latest technology into orbit, significant costs are associated with these activities (including increased launch, manufacturing, ground technology, transport and insurance costs). Nevertheless, their lifespan and capacity to provide services to up to 43% of the globe from geostationary orbit provides a justification for the initial input costs for their manufacture and deployment.<sup>13</sup> Comparatively, highly advanced sensors and capabilities are still used in small satellites, with the increased reliance on commercial off-the-shelf componentry and technologies resulting in a lower cost profile.

The past decade has seen the emergence of constellations of satellites (multiple satellites working together to deliver a single service) on a new scale. Commonly referred to as ‘mega-constellations’, there are currently constellations being launched that require hundreds to tens of thousands of individual satellites to be deployed before a service can be offered — the most prominent being SpaceX’s Starlink network.<sup>14</sup> Several other mega-constellations are planned by companies including Amazon and Boeing.<sup>15</sup>

In addition to the development of satellite constellations in LEO, other activities are being proposed for space. These include: the promise of in-orbit servicing — where one satellite will provide services such as repair and refuelling to another; active debris removal — where debris and derelict satellites are physically removed from orbit instead of being left to return naturally; space tourism; and in-orbit assembly

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<sup>11</sup> See National Aeronautics and Space Administration, *CubeSat 101: Basic Concepts and Processes for First Time Cube Sat Developers* (Guide, October 2017) 4.

<sup>12</sup> See also Jason Rainbow, ‘Falcon Heavy Sends Jupiter-3 Broadband Giant towards Geostationary Orbit’, *SpaceNews* (online, 29 July 2023) <[spacenews.com/falcon-heavy-sends-jupiter-3-broadband-giant-toward-geostationary-orbit/](https://spacenews.com/falcon-heavy-sends-jupiter-3-broadband-giant-toward-geostationary-orbit/)>.

<sup>13</sup> Davis Wright, Laura Grego and Lisbeth Gronlund, *The Physics of Space Security* (American Academy of Arts and Sciences, 2005) 43.

<sup>14</sup> Andreas Witte, ‘A Tragedy of the Night Sky? International Law as a Regulator for Satellite Megaconstellations’ (2020) 45 *Annals of Air and Space Law* 307, 312–13; Ruth Pritchard-Kelly, ‘WRC-23 on the Horizon: Large Satellite Constellations, ITU Issues and Industry Perspective’ (2023) 48 (Special Issue) *Air and Space Law* 179.

<sup>15</sup> H Austin Simpson, ‘Regulating Science Fiction: The Regulatory Deficiencies in a Rapidly Growing Commercial Space Industry’ (2022) 87(4) *Journal of Air Law and Commerce* 759, 770–1.

and manufacturing activities.<sup>16</sup> These changing and emerging activities have the potential to stress the regulatory frameworks that currently apply to space activities.

### III AUSTRALIA IN SPACE

In recent years, Australia has taken an ambitious approach to increasing its role in the international space economy and enhancing how it can exploit space for civil and military purposes.<sup>17</sup> Australia has not traditionally been considered a ‘space power’ in the international context.<sup>18</sup> Despite this, Australia has a long history of involvement in other States’ space activities.<sup>19</sup> Given Australia’s geography and the volume of unoccupied land mass, it has played host to large receiver and broadcasting ground stations that are essential for conducting space activities, such as the famous use of the Parkes Observatory to assist in receiving and broadcasting television signals from the 1969 Moon landing.<sup>20</sup> More recently, Australia was announced (along with South Africa) as the host of the Square Kilometre Array.<sup>21</sup> Australia also hosts one of the three nodes of the NASA Deep Space Network.<sup>22</sup>

Beyond providing ground services, Australia did play a role in the early space launch sector, with a military testing range near Woomera, South Australia, being a primary hub of activity.<sup>23</sup> In 1967, using technology provided by the US and the United Kingdom (‘UK’), Australia launched its own satellite, WRESAT, into orbit.<sup>24</sup> This accomplishment made Australia the third nation to build and launch a

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<sup>16</sup> See also National Science and Technology Council (US), *In-Space Servicing, Assembly, and Manufacturing National Strategy* (April 2022) <[www.whitehouse.gov/wp-content/uploads/2022/04/04-2022-ISAM-National-Strategy-Final.pdf](http://www.whitehouse.gov/wp-content/uploads/2022/04/04-2022-ISAM-National-Strategy-Final.pdf)>.

<sup>17</sup> See: Namrata Goswami, ‘Setting Australia’s Space Priorities’, *Australian Strategic Policy Institute: The Strategist* (Web Page, 9 February 2023) <[www.aspistrategist.org.au/setting-australias-space-priorities/](http://www.aspistrategist.org.au/setting-australias-space-priorities/)>; Malcolm Davis, ‘Australia Needs to Aim High with Space Strategic Update’, *Australian Strategic Policy Institute: The Strategist* (Web Page, 11 March 2022) <[www.aspistrategist.org.au/australia-needs-to-aim-high-with-space-strategic-update/](http://www.aspistrategist.org.au/australia-needs-to-aim-high-with-space-strategic-update/)>.

<sup>18</sup> Cassandra Steer, ‘Australia as a Space Power: Combining Civil, Defence and Diplomatic Efforts’ (National Security College Policy Options Paper No 19, May 2021) 3.

<sup>19</sup> See ML James, ‘Into Space from Australia: The Early Days’ (Conference Paper, National Conference on Engineering Heritage, 3–5 December 1990) 53–5.

<sup>20</sup> See *ibid* 57.

<sup>21</sup> See ‘Construction Begins on SKA Telescope in Australia and South Africa’, *Department of Industry, Science and Resources* (Web Page, 6 December 2022) <[www.industry.gov.au/news/construction-begins-ska-telescopes-australia-and-south-africa](http://www.industry.gov.au/news/construction-begins-ska-telescopes-australia-and-south-africa)>.

<sup>22</sup> Heather Monaghan, ‘What is the Deep Space Network?’ *National Aeronautics and Space Administration* (Web Page, 30 March 2020) <[www.nasa.gov/directorates/heo/scan/services/networks/deep\\_space\\_network/about](http://www.nasa.gov/directorates/heo/scan/services/networks/deep_space_network/about)>.

<sup>23</sup> See generally James (n 19).

<sup>24</sup> *Ibid* 58.

satellite from its own territory (after the USSR and the US).<sup>25</sup> Woomera also hosted 10 launches undertaken by the European Launcher Development Organisation in 1964–70. All of these activities led to the Woomera range being described at the time as the ‘world’s second most heavily used launch site, after Cape Canaveral’.<sup>26</sup> Despite being a centre of space activity during the 1960s and 1970s, Australia quickly fell out of relevance for the space industry. The late 1990s saw a potential resurgence in the form of interest from launch service providers to use Australia as a base for launching, but the interest never eventuated.<sup>27</sup>

Fast forward to the early 2010s, Australian businesses dived back into the space sector buoyed in part by the significant increase in activity and investment in private space ventures in other Western nations (principally the US). A report commissioned by the Australian Government, which was delivered in 2017 as part of a review of Australia’s space capability, purported to identify 388 companies, 56 education and research organisations and 24 government agencies that had some sort of space capability.<sup>28</sup> On this basis, it was estimated that at the time of the report there were approximately 10,000 full-time equivalent positions in the Australian space industry sector with an associated revenue of between AUD3 billion and AUD4 billion.<sup>29</sup> The *2018 Review of Australia’s Space Industry Capability*, prepared by an Expert Reference Group, set a goal of having an Australian space industry with revenues between AUD10 billion and AUD12 billion by 2030 and to add an additional 10,000 to 20,000 full-time positions to this sector.<sup>30</sup>

Following the establishment of the Australian Space Agency in June 2018, it prepared and released an Australian Civil Space Strategy for 2019–28 in April 2018.<sup>31</sup> While

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<sup>25</sup> Steven Freeland, ‘Sensing a Change? The Re-Launch of Australia’s Space Policy and Some Possible Legal Implications’ (2010) 36(2) *Journal of Space Law* 381, 383–4.

<sup>26</sup> Senate Standing Committee on Economics, Parliament of Australia, *Lost in Space? Setting a New Direction for Australia’s Space Science and Industry Sector* (Report, November 2008) 25 [4.1].

<sup>27</sup> See Joel Lisk and Melissa de Zwart, ‘Watch This Space: The Development of Commercial Space Law in Australia and New Zealand’ (2019) 47(3) *Federal Law Review* 444, 446.

<sup>28</sup> ACIL Allen Consulting, *Australian Space Capability: A Review* (Report to Department of Industry, Innovation and Science, October 2017) 1 <[https://www.space.gov.au/sites/default/files/2023-11/australian\\_space\\_industry\\_capability\\_-\\_a\\_review\\_0.pdf](https://www.space.gov.au/sites/default/files/2023-11/australian_space_industry_capability_-_a_review_0.pdf)>.

<sup>29</sup> *Ibid* 2.

<sup>30</sup> Expert Reference Group, *Review of Australia’s Space Industry Capability* (Report, Commonwealth of Australia, March 2018) 5 <[https://www.space.gov.au/sites/default/files/media-documents/2023-11/review\\_of\\_australias\\_space\\_industry\\_capability\\_-\\_report\\_from\\_the\\_expert\\_reference\\_group.pdf](https://www.space.gov.au/sites/default/files/media-documents/2023-11/review_of_australias_space_industry_capability_-_report_from_the_expert_reference_group.pdf)> (*‘Review of Australia’s Space Industry Capability’*).

<sup>31</sup> Australian Space Agency, *Advancing Space: Australian Civil Space Strategy 2019–2028* (April 2019) <<https://www.space.gov.au/sites/default/files/media-documents/2023-11/Advancing%20Space%20Australian%20Civil%20Space%20Strategy.pdf>>.



this strategy was not reconfirmed following a change of federal government in 2022,<sup>32</sup> it worked to reaffirm Australia's commitment to grow its space sector and set out the Australian Space Agency's mission to focus its work across four themes: international; national; responsible; and inspire.<sup>33</sup> In recent years, the Australian Space Agency has prepared additional policy documents called 'roadmaps' in areas including communications technology, robotics and Earth observation.<sup>34</sup> The purpose of these roadmaps is to publicly plot future actions by this Agency to support the activities of the Australian space sector.

#### IV THE SPACE-SPECIFIC LAWS WE HAVE

The rapid growth of the space sector in Australia (and internationally) poses several questions about the levers that can be used to ensure private entities operate in a responsible and sustainable manner. LEO and beyond is far from a lawless domain. Laws specifically applying to outer space have existed in a clearly binding form since at least 1967, following the entry into force of the *Outer Space Treaty*, and arguably under custom from the moment humanity reached orbit in the 1950s.<sup>35</sup> The introduction of written international law was quickly followed by domestic laws that operate within States, overcoming the limitations inherent in the constitutional arrangements in many States that prevent the direct imposition of international law on non-government entities.<sup>36</sup> Regardless, not all laws apply to space activities, nor are all laws for space relevant to every activity that could possibly take place in LEO and beyond.

##### *A International Law*

International law applicable to space activities is often the most prominent of the laws that expressly consider outer space. International treaties focused on space activities were developed in the 1960s and the 1970s following humanity's race to

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<sup>32</sup> Evidence to Senate Economics Legislation Committee, Parliament of Australia, Canberra, 26 October 2023, 100 (Meghan Quinn).

<sup>33</sup> Australian Space Agency, *Advancing Space: Australian Civil Space Strategy 2019–2028* (n 31) 2.

<sup>34</sup> See, eg: Australian Space Agency, *Communications Technologies and Services Roadmap 2021–2030* (1 December 2020) <<https://www.industry.gov.au/sites/default/files/2024-02/communications-technologies-and-services-roadmap-2021-2030.pdf>>; Australian Space Agency, *Robotics and Automation on Earth and in Space Roadmap 2021–2030* (24 January 2022) <<https://www.industry.gov.au/sites/default/files/2024-02/robotics-and-automation-on-earth-and-in-space-roadmap-2021-2030.pdf>>.

<sup>35</sup> *Outer Space Treaty* (n 1); Francis Lyall and Paul B Larsen, *Space Law: A Treatise* (Routledge, 2<sup>nd</sup> ed, 2018) 38–9, 63–73.

<sup>36</sup> See, eg: *Victoria v Commonwealth* (1996) 187 CLR 416; *Koowarta v Bjelke-Petersen* (1982) 153 CLR 168, 224–5 (Mason J); *United States v Belmont*, 301 US 324, 331 (1937); *United States v Postal*, 589 F 2d 862, 876–7 (5<sup>th</sup> Cir, 1979); *Medellin v Texas*, 552 US 491, 508 (2008).

LEO and the Moon. These laws are principally contained within five multilateral treaties that are binding upon their signatories. The first of these treaties, the *Outer Space Treaty* of 1967, followed a declaration of principles issued by the United Nations General Assembly in 1963, and substantially replicates the content of that declaration.<sup>37</sup> The three treaties that followed the *Outer Space Treaty*, that is, the 1968 *Rescue Agreement*,<sup>38</sup> the 1972 *Liability Convention*,<sup>39</sup> and the 1975 *Registration Convention*,<sup>40</sup> primarily stand as elaborations of the provisions of the *Outer Space Treaty* and the 1963 declaration that preceded it. As at 1 January 2022, there were 112 full parties and 23 signatories to the *Outer Space Treaty*.<sup>41</sup> The rates of adoption for the remaining treaties trend downwards — there are 73 full parties and three signatories to the 1975 *Registration Convention*.<sup>42</sup> The final ‘space treaty’, the 1979 *Moon Agreement*, does not enjoy the same level of acceptance as its counterparts — it has only 17 full parties and a further four signatories, following Saudi Arabia’s withdrawal from this instrument in early 2023.<sup>43</sup> The *Moon Agreement* departs from its predecessors by attempting to introduce new provisions and laws for space activities on the Moon and other (non-Earth) celestial bodies. Some States, although involved in drafting the *Moon Agreement*, have rejected it entirely, with US President Donald Trump signing an executive order in 2020 describing the *Moon Agreement* as not being ‘an effective or necessary instrument to guide nation states regarding the promotion or commercial participation in the long-term exploration, scientific discovery, and use of the Moon, Mars, or other celestial bodies.’<sup>44</sup>

<sup>37</sup> *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*, GA Res 1962 (XVIII), UN Doc A/RES/1962(XVIII) (13 December 1963).

<sup>38</sup> *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space*, opened for signature 22 April 1968, 672 UNTS 119 (entered into force 3 December 1968) (*‘Rescue Agreement’*).

<sup>39</sup> *Convention on International Liability for Damage Caused by Space Objects*, opened for signature 29 March 1972, 961 UNTS 187 (entered into force 1 September 1972) (*‘Liability Convention’*).

<sup>40</sup> *Convention on Registration of Objects Launched into Outer Space*, opened for signature 14 January 1975, 1023 UNTS 15 (entered into force 15 September 1976) (*‘Registration Convention’*).

<sup>41</sup> Legal Subcommittee, Committee on the Peaceful Uses of Outer Space, *Status of International Agreements Relating to Activities in Outer Space as at 1 January 2022*, UN Doc A/AC.105/1260 (19 April 2022), 10 (*‘Status of International Agreements’*).

<sup>42</sup> *Ibid*; Lisk and de Zwart (n 27) 445.

<sup>43</sup> *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, opened for signature 18 December 1979, 1363 UNTS 21 (entered into force 11 July 1984) (*‘Moon Agreement’*); *Status of International Agreements* (n 41); Secretary-General of the United Nations, *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies: Saudi Arabia: Withdrawal*, UN Doc C.N.3.2023.TREATIES-XXIV.2 (Depositary Notification) (5 January 2023).

<sup>44</sup> Exec Order No 13914 ‘Encouraging International Support for the Recovery and Use of Space Resources’ 85 Fed Reg 20381 (6 April 2020).



Recent decades have seen a departure from the creation of traditional-form multi-lateral treaty instruments for materials agreed upon by consensus and adopted by the United Nations General Assembly. These materials are non-binding in nature but provide important contributions to the body of law applicable to space activities overall.<sup>45</sup> The most recent of these, the *Guidelines for the Long-term Sustainability of Outer Space Activities*, clearly sets out a range of concepts inspired by the established space treaty framework and the activities of States. These guidelines, if used into the future, can become subsequent State practice and influence the substantive interpretation and application of the space treaty framework.<sup>46</sup>

Sitting separately from ‘space-focused’ material are the laws and mechanisms associated with the international regulation of spectrum. The International Telecommunications Union (‘ITU’) was originally established to regulate and create standards around the use of emerging (in the late 1800s) communications technologies.<sup>47</sup> Its role has grown and evolved as technology has. As a specialist agency of the United Nations, the ITU enjoys one of the highest levels of State participation. At present, the ITU is constituted under an international convention, and it administers a range of subsidiary instruments.<sup>48</sup> The *Constitution of the International Telecommunications Commission* states, among other matters, that the ITU is tasked with ‘maintain[ing] and extend[ing] international cooperation ... for the improvement and rational use of telecommunications of all kinds’ and in the course of doing this, it shall ‘effect allocation of bands of the radio-frequency’ for ‘space services’ in a way that ‘avoid[s] harmful interference between radio stations of different countries’.<sup>49</sup> Further, the ITU is tasked with coordinating efforts to ‘eliminate harmful interference between radio stations of different countries’ while also improving the use of radiofrequency spectrum.<sup>50</sup> As at the time of writing, with one exception, every member State of the United Nations is a member of the ITU.<sup>51</sup>

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<sup>45</sup> Steven Freeland, ‘The Role of “Soft Law” in Public International Law and Its Relevance to the International Legal Regulation of Outer Space’ in Irmgard Marboe (ed), *Soft Law in Outer Space: The Function of Non-Binding Norms in International Space Law* (Bohlaus Verlag GmbH and Cie, 2012) 9.

<sup>46</sup> Ibid.

<sup>47</sup> Lyall and Larsen (n 35) 189–93.

<sup>48</sup> Ibid 194–5.

<sup>49</sup> *Constitution and Convention of the International Telecommunications Union*, opened for signature 22 December 1992, 1825 UNTS 330 (entered into force 1 July 1994) art 1(1)–(2).

<sup>50</sup> Ibid art 1(2)(b).

<sup>51</sup> The United Nations and ITU both have 193 members. The Republic of Palau is not a member of the ITU, and the Vatican is a member of the ITU but only an observer State within the United Nations. See ‘List of ITU Member States’, *International Telecommunications Union* (Web Page, 2023) <[www.itu.int/en/ITU-R/terrestrial/fmd/Pages/administrations\\_members.aspx](http://www.itu.int/en/ITU-R/terrestrial/fmd/Pages/administrations_members.aspx)>.

## B *Domestic Law for Space — Two Pillars*

Domestic law is generally more specific, targeted and narrow than international law. Australia has a range of laws that can be applied to operators of LEO assets. This Part summarises the two ‘pillars’ of space-related laws in Australia: space and spectrum. Both pillars contain a set of laws that regulate a key component of space activities. The pillar on ‘space’ focuses on launch and return activities — the acts of putting and bringing back something from space — while ‘spectrum’ is a broader area of law that regulates the use of radiofrequency — or in simpler terms, regulates the way things communicate with each other wirelessly.

A State may need or elect to introduce legislation for numerous reasons, such as to achieve public policy objectives, address ‘harms’ (however characterised) or mitigate risks.<sup>52</sup> In the context of outer space, there is the additional need to address international law. For Australia, while international law might not be immediately binding on entities other than the Commonwealth itself,<sup>53</sup> constitutional arrangements and domestic laws are not a reason for the State itself to not be in compliance with international obligations.<sup>54</sup> This gives rise to an additional need for domestic laws.

### 1 *Space-Specific Laws*

There is very little in the way of laws dedicated to the topic of space activities in Australia. The primary instrument on space activities is the *S(L&R)A*. The *S(L&R)A* is narrow in its focus, only applying to launch and return activities, and establishing the mechanisms for the payment of compensation in case of damage by a space object.<sup>55</sup> While described as a 2018 law, the *S(L&R)A* is not a recent instrument, it was earlier known as the *Space Activities Act* between its introduction in 1998 and amendment in 2018.<sup>56</sup>

The *S(L&R)A* has remained largely unchanged in its substance since its introduction in 1998, with amendments in 2001, 2002 and 2018 merely tinkering with the

<sup>52</sup> Arie Freiberg, *Regulation in Australia* (Federation Press, 2017) 61–2.

<sup>53</sup> See above n 36.

<sup>54</sup> *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) art 27; James Crawford, *Brownlie’s Principles of Public International Law* (Oxford University Press, 9<sup>th</sup> ed, 2019) 48, quoting *Free Zones of Upper Savoy and the District of Gex (France v Switzerland) (Judgment)* (1932) PCIJ (ser A/B) No 46, 167, and *Treatment of Polish Nationals and Other Persons of Polish Origin or Speech in the Danzig Territory (Advisory Opinion)* (1932) PCIJ (ser A/B) No 44, 24.

<sup>55</sup> *Space (Launches and Returns) Act 2018* (Cth) s 4 (‘*S(L&R)A*’).

<sup>56</sup> *Space Activities Amendment (Launches and Returns) Act 2018* (Cth) sch 1 cl 3.

operation of certain provisions.<sup>57</sup> At its core, the *S(L&R)A* can be characterised as a traditional licensing regime. The law specifies a range of prohibited activities — including launching a space object from Australia or operating a launch facility.<sup>58</sup> This is supplemented by a permit system that allows individuals, corporations and foreign persons to obtain authorisations to conduct the otherwise unlawful activities.<sup>59</sup> The six classes of authorisation are as follows:

- Australian launch permit: authorising launches from Australia’s geographic jurisdiction.
- Launch facility licence: authorising the operation of a launch facility within Australia.
- High-power rocket permit: authorising the launch of high-power rockets from Australia’s geographic jurisdiction.
- Overseas payload permit: authorising the launch of Australian owned/controlled payloads on launches being conducted outside of Australia.
- Return authorisation: authorising the return of space objects from space to a place within Australia’s geographic jurisdiction.
- Authorisation certificate: authorising an activity to occur without the need for another authorisation category.

It may be apparent from the above, but is necessary to note, that payloads being placed into outer space on vehicles launching from Australia do not require specific authorisation provided the launch itself is licensed.<sup>60</sup>

The *S(L&R)A* is administered by the Minister responsible for the Department of Industry, Science and Resources (‘DISR’).<sup>61</sup> At the time of writing, this is the Minister for Industry and Science (noting that multiple Ministers have responsibility for the DISR).<sup>62</sup> In practice, the *S(L&R)A* is administered by the Australian Space Agency, a non-statutory agency within the DISR that is led by a ‘Head of Agency’.<sup>63</sup>

The use of the *S(L&R)A* has increased in recent years, driven by the emergence of new and innovative Australian businesses attempting to enter the space sector.

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<sup>57</sup> House of Representatives Standing Committee on Industry, Innovation, Science and Resources, Parliament of Australia, *The Now Frontier: Developing Australia’s Space Industry* (Report, November 2021) 95–7 [4.27]–[4.32] (‘*Now Frontier Report*’).

<sup>58</sup> *S(L&R)A* (n 55) ss 10–15A.

<sup>59</sup> *Ibid.*

<sup>60</sup> See *Space (Launches and Returns) (General) Rules 2019* (Cth) s 50 (‘*Space (General) Rules*’).

<sup>61</sup> See Governor-General of the Commonwealth of Australia, *Administrative Arrangements Order* (3 August 2023) pt 11.

<sup>62</sup> *Ibid.*

<sup>63</sup> Australian Space Agency, ‘Regulating Australian Space Activities’, *Department of Industry, Science and Resources* (Web Page) <[www.industry.gov.au/australian-space-agency/regulating-australian-space-activities](http://www.industry.gov.au/australian-space-agency/regulating-australian-space-activities)>.

This increase is reflected in the progressively increasing numbers of licenses being issued by the Minister through the Australian Space Agency.<sup>64</sup>

There are no other Australian laws dedicated specifically to space activities.

## 2 *Spectrum*

Australia has several statutory instruments relevant to the use of radiofrequency spectrum, the primary being the *Radiocommunications Act 1992* (Cth). While this law has always been focused on the use of radiofrequency spectrum in Australia, recent amendments to it have also seen its objects amended to reflect the country's changing technological landscape and have thus been more focused on promoting the 'long-term public interest derived from the use of spectrum' and facilitating the 'efficient planning, allocation and use of the spectrum' for commercial, defence, national security and non-commercial purposes.<sup>65</sup>

The *Radiocommunications Act 1992* (Cth) creates a range of licences that allow non-government entities to utilise radiofrequency spectrum.<sup>66</sup> Each type of licence grants a different bundle of rights to the licence holder. Spectrum licences entitle holders to the exclusive use of the radiofrequency spectrum or a portion of it.<sup>67</sup> These classes of licence have an almost proprietary nature, but can be prohibitively expensive and are normally reserved for terrestrial communications networks (ie mobile phone networks) and broadcasting services (ie television services). This type of licence has not been used by orbital infrastructure operators to provide services. The more relevant licence type, apparatus licences, allows the use of specific transmitters and receivers.<sup>68</sup> This type of licence is more restrictive than a spectrum licence, but is more suited to operations involving satellite infrastructure. This type has several sub-categories, including space licences, space-receive licences, Earth licences and Earth-receive licences, each of which has some relevance to satellite communications activities.<sup>69</sup> Most apparatus licences are issued on a 'no interference' basis,<sup>70</sup> meaning they are more restrictive than spectrum licences, but

<sup>64</sup> See Australian Space Agency, 'Minister Decisions about Space Activities', *Department of Industry, Science and Resources* (Web Page) <[www.industry.gov.au/australian-space-agency/regulating-australian-space-activities/minister-decisions-about-space-activities](http://www.industry.gov.au/australian-space-agency/regulating-australian-space-activities/minister-decisions-about-space-activities)>.

<sup>65</sup> *Radiocommunications Act 1992* (Cth) s 3 ('*Radiocommunications Act*'), as amended by *Radiocommunications Legislation Amendment (Reform and Modernisation) Act 2020* (Cth).

<sup>66</sup> *Radiocommunications Act* (n 65) s 45.

<sup>67</sup> See *ibid* pt 3.2.

<sup>68</sup> *Ibid* pt 3.3.

<sup>69</sup> See *Radiocommunications (Interpretation) Determination 2015* (Cth) sch 1.

<sup>70</sup> 'No interference basis' means that holder of the apparatus licence undertakes to share the use of the radio frequency and take steps to avoid interfering with the activities of others using the same radio frequency: see: *Radiocommunications (Communication with a Space Object) Class Licence 2015* (Cth) s 8(1); Australian Media and Communications Authority, *Apparatus licence fee schedule* (April 2024) 53.

they do not involve the same level of financial investment.<sup>71</sup> Last, class licences are a broad licence type issued by the regulator that allow anyone to use radiofrequency devices that comply with the standards specified in the class licence instrument.<sup>72</sup> As communications with spacecrafts are essential to their operations and usability, businesses in Australia that intend to communicate with their satellites or businesses overseas that wish to deliver orbital services from orbit must obtain a licence (ie an apparatus licence) or comply with the relevant class licence, prior to commencing operations.

The *Radiocommunications Act 1992* (Cth) is administered by the Australian Communications and Media Authority ('ACMA'), a statutory agency established under its own legislative instrument, the *Australian Communications and Media Authority Act 2005* (Cth). The ACMA is also responsible for other legislation, such as the *Telecommunications Act 1997* (Cth), the *Broadcasting Act 1992* (Cth) and the *Spam Act 2001* (Cth).<sup>73</sup>

### C Other Laws

Although outer space may be physically distant from Australia, Australian laws still apply to a broad range of activities irrespective of their location. Australian businesses, if using a corporate structure, are subject to the *Corporations Act 2001* (Cth) that governs their operations and regulates their fundraising activities. The *Income Tax Assessment Acts* of 1936 and 1997 separately specify (in addition to other laws) the taxes applicable to businesses in Australia. The *Patents Act 1990* (Cth), the *Copyright Act 1968* (Cth) and the *Trade Marks Act 1995* (Cth) all play a role in regulating how businesses use and protect intellectual property while engaged in business activities. The *Competition and Consumer Act 2010* (Cth) regulates the manner in which businesses operate within a market with respect to their competitors and customers. The *Defence Trade Controls Act 2012* (Cth) has some effect on the equipment and componentry that can be used as part of a space activity, with restrictions on some space technologies leading to increased regulations.

Some Australian laws do specifically mention space, with an example being the *Personal Property Securities Act 2009* (Cth) that makes an inclusive reference to satellites and other space objects being a form of goods that can have security interests registered against them.<sup>74</sup>

The purpose of setting out these different legal frameworks is to acknowledge that whereas there are laws that clearly relate to space activities (ie launch regulations), there are other laws that affect the conduct of space activities in more discrete

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<sup>71</sup> *Radiocommunications Act* (n 65) ss 107–8.

<sup>72</sup> *Ibid* pt 3.4.

<sup>73</sup> 'Our Role in Compliance and Enforcement', *Australian Communications and Media Authority* (Web Page, 25 March 2021) <[www.acma.gov.au/our-role-compliance-and-enforcement](http://www.acma.gov.au/our-role-compliance-and-enforcement)>.

<sup>74</sup> *Personal Property Securities Act 2009* (Cth) s 10 (definition of 'goods').

ways, whether through limitations on equity fundraising imposed through corporation laws or restrictions on access to technology that can be considered dual use or valuable in military settings. These are not the laws that will immediately come to mind when a person thinks of ‘space’, but they play an essential role in how commercial space activities are undertaken.

#### D *Foreign Domestic Laws*

In addition to Australian laws that may apply to Australian businesses operating in outer space, the laws of other nations play a significant role in how Australian-led space activities are conducted. Australian businesses that seek to operate in other States need to ensure that they are compliant with the full range of laws that might apply to them. Owing to the nature of space activities and the international framework that governs them, it is common to see multiple States exercise some level of jurisdiction and control over these activities.<sup>75</sup> Accordingly, an Australian business wanting to launch a small satellite from New Zealand may be required to comply with Australian laws applicable to launch and radiocommunications, as well as the New Zealand laws on these same matters.<sup>76</sup> This would be in addition to other areas of compliance, such as import and export clearances and other finance or technology-related laws.

Thus, because of the rapid globalisation of space activities, space businesses need to look beyond Australia and into other jurisdictions to fully appreciate the breadth of laws that apply to them.

### V ACTIVITIES CHALLENGING REGULATORY APPROACHES

Regulation plays an important part in the activities undertaken in LEO and beyond. Having appropriate regulatory structures in place is not typically a key priority of entrepreneurs in a technology-driven sector, but requests for the introduction and maintenance of regulatory frameworks have been a consistent theme for the space sector, starting in the US in the early 1980s.<sup>77</sup> The ongoing view has been that without a clear and certain regulatory framework, it is difficult for private sector operators to seek out the investments required to undertake innovative or non-traditional activities using outer space.<sup>78</sup> It is these future planned activities that are now stressing the limits of existing regulatory frameworks. Part V will now consider several of these challenges for the future of the Australian space sector

<sup>75</sup> This arises as a consequence of the *Outer Space Treaty* (n 1) art VIII.

<sup>76</sup> *S(L&R)A* (n 55) s 14; *Outer Space and High-altitude Activities Act 2017* (NZ) s 15.

<sup>77</sup> See *Future Space Programs*, Hearing before the Subcommittee on Space Science and Applications of the Committee on Science and Technology, 97<sup>th</sup> US Congress 104–5 (September 1981) (Testimony by David Hannah Jr, President, Space Services).

<sup>78</sup> See: *ibid*; *The Expendable Launch Vehicle Commercialization Act*, Hearing before the Subcommittee on Space Science and Applications of the Committee on Science and Technology, 98<sup>th</sup> US Congress (18 November 1983, 29 March 1984).



and discuss several of the legal and policy issues that will need to be resolved in the future to fully support the Australian space industry.

### *A Scope of Laws Specifically for Space*

As a consequence of the content of the international treaty framework, Australia is obliged to authorise and continually supervise the activities of non-government entities that take place in outer space.<sup>79</sup> This treaty-level obligation created a requirement to which the Australian Parliament had to respond. The particular performance standard for this obligation is unclear, but minimum standards may require a State to place itself in a position whereby it is aware of the activities undertaken by non-government entities and is capable of enforcing standards of behaviour.<sup>80</sup>

In this context, there is a need to examine the scope of the regulatory frameworks in place in Australia that apply directly to space activities and to confirm their role in authorising and supervising the space activities of non-government entities. As explained in Part IV.B.1, the principal space-specific law currently in force in Australia is the *S(L&R)A*. This instrument captures a narrow range of activities associated with getting ‘space objects’ to and from outer space.

Launch and return activities form an important but minor segment of the larger space industry.<sup>81</sup> The majority of the space industry is focused on developing high-technology capabilities, and the downstream utilisation of space-based assets or space-derived data. This makes the operation of instruments such as the *Radio-communications Act 1992* (Cth) essential from the communications perspective, despite it not speaking to conduct in orbit more generally.

The *S(L&R)A* was originally developed (as the *Space Activities Act 1998*) in direct response to interest from corporations outside of Australia that sought to undertake launch operations from Australian territory.<sup>82</sup> This limitation was acknowledged by the Australian Parliament in 2018 when it changed the name of the *Space Activities Act 1998* to the *S(L&R)A*, noting that the previous name ‘convey[ed] the impression that the legislation address[ed] all space activities undertaken within Australian

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<sup>79</sup> *Outer Space Treaty* (n 1) art VI.

<sup>80</sup> See John Goehring, ‘Properly Speaking, the United States Does Have an International Obligation to Authorize and Supervise Commercial Space Activity’ (2018) 78(1) *Air Force Law Review* 101 (‘Properly Speaking’).

<sup>81</sup> BryceTech, *2019 Global Space Economy at a Glance* (Report, 5 October 2020); World Economic Forum and McKinsey & Company, *Space: The \$1.8 Trillion Opportunity for Global Economic Growth* (Insight Report, April 2024) 44.

<sup>82</sup> Lisk and de Zwart (n 27) 446–47.

territory' which was causing 'unnecessary misunderstandings'.<sup>83</sup> The name change for the law occurred to 'more accurately reflect [the law's] scope'.<sup>84</sup>

The predecessor to what is now the *S(L&R)A* was not developed in isolation. The US, the UK, South Africa, Sweden and Norway had all introduced laws that regulated the activities of their nationals prior to Australia's actions.<sup>85</sup> When the proposed *Space Activities Act* was first introduced to the Australian Parliament in 1998, it closely aligned with the scope of the US *Commercial Space Launch Act* (as amended).<sup>86</sup> This was not a coincidence, considering that Australian politicians in the late 1990s stated that US laws acted as inspiration for much of what is now the *S(L&R)A*.<sup>87</sup> While the *Commercial Space Launch Act* was significant for private enterprise in the US, it was narrow and far from the only instrument that affected non-government space activities.<sup>88</sup> The instrument only regulated launch activities and the operation of launch sites within the US or by US citizens irrespective of their location.<sup>89</sup> This was expanded to include re-entry activities in 1998 in response to what appeared to be legitimate developing commercial capabilities to return spacecraft from orbit.<sup>90</sup> While the US *Commercial Space Launch Act* was not the first domestic law regulating commercial space activities on its introduction in 1984 — that honour goes to Norway with its 1969 *Act on Launching Objects from Norwegian Territory etc. into Outer Space*<sup>91</sup> — it certainly had a profound

<sup>83</sup> Department of Industry, Innovation and Science, *Reform of the Space Activities Act 1998 and Associated Framework* (Legislative Proposals Paper, 24 March 2017) 10 ('*Reform of the Space Activities Act 1998*'); Steven Freeland, *Public Submissions into the Australian Government's Review of the Space Activities Act* (Analysis Report, August 2016) 108.

<sup>84</sup> *Reform of the Space Activities Act 1998* (n 83).

<sup>85</sup> *Lov om oppskyting av gjenstander fra norsk territorium m.m. ut i verdensrommet* [tr Frans von der Dunk and Atle Nikolaisen, Act on Launching Objects from Norwegian Territory etc. into Outer Space] (Norway), No 38 of 1969 ('*1969 Norway Act*'); *Lag (1982:963) om rymdverksamhet* [tr UNOOSA, Law (1982:963) on Space Activities] (Sweden); *Commercial Space Launch Act of 1984*, Public L No 98-575, 98 Stat 3055 (1984); *Outer Space Act 1986* (UK); *Law About Space Activity* (Decree No 5663-1, 1993) (Russia); *Space Affairs Act 1993* (South Africa).

<sup>86</sup> *Commercial Space Launch Act of 1984*, Pub L No 98-575, 98 Stat 3055 (1984).

<sup>87</sup> Commonwealth, *Parliamentary Debates*, Senate, 12 November 1998, 216 (Rod Kemp).

<sup>88</sup> See 'Properly Speaking' (n 80).

<sup>89</sup> *Commercial Space Launch Act of 1984*, Pub L No 98-575, §§6(a)(1)–(2), 98 Stat 3055, 3057 (1984).

<sup>90</sup> *Commercial Space Launch Act of 1998*, Pub L No 105-303, §102, 112 Stat 2843, 2846–53 (1998).

<sup>91</sup> *1969 Norway Act* (n 85); Frans von der Dunk, 'Vikings First in National Space Law: Other Europeans to Follow: The Continuing Story of National Implementation of International Responsibility and Liability' (2001) 44 *Proceedings on the Law of Outer Space* 111.

impact on the commercial space launch sector with its comprehensive consideration of liability, safety and licensing process.

What this background fails to recognise is the wider content of US law relevant to space activities. Before the *Commercial Space Launch Act* passed the US Congress (but in the same year), the *Land Remote-Sensing Commercialization Act of 1984* entered into law.<sup>92</sup> This instrument not only began the process of commercialising the Landsat Earth observation program of the US, but also granted the Secretary of Commerce the authority to license privately operated Earth observation systems. This law was substantially amended in 1992, and responsibility for Earth observation licensing now rests with the National Oceanic and Atmospheric Administration.<sup>93</sup> Even before the regulation of Earth observation satellites, the US had passed the *Communications Satellite Act of 1962*. This instrument, introduced at the dawn of the space age, granted the US Federal Communications Commission (‘FCC’) the authority to regulate communications with satellites ‘as will best service the public interest, convenience and necessity’.<sup>94</sup> Since that initial regulatory authority was granted, the FCC has expanded the body of rules that apply to satellites utilising spectrum to include the consideration of orbital debris, although this principally emerged in the early 2000s.<sup>95</sup> More recently, the FCC has extended the body of regulations it controls relevant to space activities to cover debris mitigation and the design specifications of NGSO satellite systems, and is considering moving into other areas in the future.<sup>96</sup>

These situations depict the manner in which the US — at least by the time the *Space Activities Act* was introduced in 1998 — was regulating launch, return, communications with satellites, and the use of Earth observation systems by private organisations, representing a substantial volume of law for the sector. Considering the FCC’s developments in the early 2000s, the US had a body of law in place that considered the majority of viable non-government in-orbit behaviours. It should be noted that the FCC’s regulations on orbital debris and its proposed extensions into

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<sup>92</sup> *Land Remote-Sensing Commercialization Act of 1984*, Pub L No 98-365, 98 Stat 451 (1984).

<sup>93</sup> See: Steve Mirmina and Caryn Schenewerk, *International Space Law and Space Laws of the United States* (Edward Elgar, 2022) 154–7; *Land Remote Sensing Policy Act of 1992*, Pub L No 102-555, 106 Stat 4163 (1992).

<sup>94</sup> *Communications Satellite Act of 1962*, Pub L No 87-624, §201(c)(7), 76 Stat 419, 422 (1962).

<sup>95</sup> In the Matter of Mitigation of Orbital Debris, Second Report and Order [2004] FCC 04–130.

<sup>96</sup> See 47 CFR pt 25 (2024); In the Matter of Space Innovation; Facilitating Capabilities for In-space Servicing, Assembly, and Manufacturing: Notice of Inquiry [2022] FCC 22–66.

other areas have not been universally accepted, with Congress recently expressing some reservations.<sup>97</sup>

Of course, the US was not the only State that had regulated space. The *Outer Space Act 1986* (UK) sought to regulate three types of activity carried on from the UK or elsewhere: launching or producing the launch of a space object, operating a space object and ‘any activity in outer space’.<sup>98</sup> This was in addition to the body of law applicable to radiocommunications. The law was amended in 2018 to only apply to overseas activities carried out by UK nationals and supplemented with a new, more detailed law — namely, the *Space Industry Act 2018* (UK). These are laws that unambiguously apply to activities because of where they are occurring, not a description of the activity.

A lacuna becomes evident in Australian law when compared to that of the UK: the lack of regulation of in-orbit activities. This gap is common, in part, to the US. Its failure to regulate in-space activities beyond Earth observation and spectrum use is a matter that continues to vex the US Congress. Recent proposals have included concepts associated with ‘mission authorisations’.<sup>99</sup> The ‘mission authorisation’ concept suggests that the US Congress introduce legislation that is not necessarily activity-specific, but will be sufficient to enable the US Government to assess any proposed activity’s compatibility with international obligations and national interests.<sup>100</sup> This would be regulation of the operation of space objects in outer space beyond the current activity-specific regulations. Despite several attempts to introduce laws to address this gap, the US does not have a legislated ‘mission authorisation’ framework.<sup>101</sup>

With the *S(L&R)A* only applying to launch and return activities and the operation of launch facilities in Australia, a large number of space activities performed by Australian nationals are left unregulated, potentially failing to meet the required authorisation and supervision requirements under international law. Despite this, aspects of the law do lend themselves to the regulation of activities conducted in

<sup>97</sup> See Letter from Eddie Bernice Johnson, Frank Lucas, Donald S Beyer Jr, and Brian Babin to Jessica Rosenworcel, 27 September 2022, <<https://democrats-science.house.gov/imo/media/doc/2022%2009%2027%20SST%20Bipartisan%20Letter%20to%20FCC%20on%20Orbital%20Debris%20Mitigation.pdf>>.

<sup>98</sup> *Outer Space Act 1986* (UK) s 1 (as at 18 July 1986).

<sup>99</sup> Executive Office of the President, Office of Science and Technology Policy, ‘Letter Submitted in Fulfillment of a Reporting Requirement Contained in the US Commercial Space Launch Competitiveness Act’ (4 April 2016); Goehring, ‘Properly Speaking’ (n 80) 107.

<sup>100</sup> John Goehring, ‘U.S. Commercial Space Regulation: The Rule of Three’ (2023) 13 *Journal of National Security Law & Policy* 337, 339–41.

<sup>101</sup> Examples of legislative proposals include the following: *American Space Renaissance Act*, HR 4945, 114<sup>th</sup> Congress (2016); *American Space Commerce Free Enterprise Act*, HR 2809, 115<sup>th</sup> Congress (2018); *Space Frontier Act of 2019*, S 919, 116<sup>th</sup> Congress (2019).

space. First, applicants for all licences issued under the *S(L&R)A* are required to satisfy the Minister (the ultimate decision-maker under that law) that there is no reason ‘relevant to the security, defence or international relations of Australia’ that the authorisation should not be granted.<sup>102</sup> There is no temporal aspect to this provision, meaning that the Minister could consider the nature of a payload to be launched and in-orbit activities that will be performed when determining whether to grant a licence. However, given the scope of the law, and legislation’s focus on launch and return, this is an assessment that should only attach to an authorisation application, not the payload’s operation. Further, it is arguable that given the focus of the legislation on launch and return, assessing matters peripheral to this would be beyond the powers of the decision maker under the legislation.<sup>103</sup> Second, the holder of an Australian launch permit is subject to the comprehensive liability provisions of the *S(L&R)A* for any damage by a space object that occurs during the period between launch and 30 days after launch.<sup>104</sup> Liability for an authorised return commences when re-entry manoeuvres begin.<sup>105</sup> This liability period subjects an authorisation holder to a degree of regulation for activities occurring in space in the form of an insurance requirement. This is not a comprehensive form of regulation, merely a regulatory measure that covers the beginning and end of a payload’s ‘life’ in orbit. Third, entities that seek an overseas payload permit must provide the Minister with an undertaking that they will not operate the payload in a manner that will cause Australia to be liable for any damage under the *Liability Convention* or negatively affect the country’s national security.<sup>106</sup> The force of this undertaking is unclear and is not expressly supported by any overt legislative provision.<sup>107</sup> Fourthly, the changes to the *S(L&R)A* in 2018 did create obligations for certain authorisation holders to develop orbital debris mitigation plans as part of the licensing process.<sup>108</sup> Finally, s 60 of the *S(L&R)A* does allow the Minister to request ‘any information’ they may require ‘for the purposes of performing functions or exercising powers’ under the law, potentially allowing for requests for information regarding the whole life cycle of a satellite that could impact on the security, defence or international relations threshold discussed above.<sup>109</sup>

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<sup>102</sup> *S(L&R)A* (n 55) s 28(3)(e).

<sup>103</sup> See: *Minister for Aboriginal Affairs v Peko-Wallsend Ltd* (1986) 162 CLR 24, 39–40 (Mason J); *New England Biolabs Inc v Commissioner of Patents* (2001) 110 FCR 357; *Knight v Wise* [2014] VSC 639, [33] (Emerton J); LexisNexis, Halsbury’s Laws of Australia (online at 12 July 2024) 10 Administrative Law, ‘5 Judicial Review’ [10–13180].

<sup>104</sup> LexisNexis, Halsbury’s Laws of Australia (online at 12 July 2024) 10 Administrative Law, ‘5 Judicial Review’ [10–13180].

<sup>105</sup> *S(L&R)A* (n 55) s 8 (definition of ‘liability period’ para (b)).

<sup>106</sup> *Space (General) Rules* (n 60) s 77(2)(b)).

<sup>107</sup> Melissa de Zwart and Joel Lisk, Submission No 16.1 to the Standing Committee on Industry, Innovation, Science and Resources, *Inquiry into Developing Australia’s Space Industry* (9 April 2021) 18–19 [4.4.2].

<sup>108</sup> *S(L&R)A* (n 55) ss 34(2)–(4), 46G(2)–(4).

<sup>109</sup> *Ibid* s 60.

Acknowledging the first point above, it has been suggested that that assessment criteria in the *S(L&R)A* and subsidiary rules are being or may be utilised to assess aspects of proposed space activities beyond launch and return. For example, in the context of in-orbit operations, the Australian Space Agency has acknowledged that the *S(L&R)A* ‘does not specifically deal with’ these activities, but aspects of the existing law could be used to capture them.<sup>110</sup> Australian Space Agency materials have previously suggested that the ongoing information provision requirements, the debris mitigation plan requirements and insurance considerations all allow the regulator to consider proposed activities beyond the mere launch.<sup>111</sup> Further, the obligations for applicants to provide certain contracts associated with a proposed activity to the regulator has been suggested to include contracts that could relate to ‘in-orbit operations’.<sup>112</sup> This is despite the *Space (General) Rules* only being focused on contracts for ‘the purpose of the [proposed] launch or launches’ (ie contracts for the use or lease of launch facilities and contracts for launch services providers to carry a payload).<sup>113</sup> The inclusion of the contract disclosure requirement in the *Space (General) Rules* was not warmly welcomed by all segments of the Australian industry, with some industry participants raising concerns that an application could be rejected on the basis that a vendor or supplier was ‘unacceptable to the Commonwealth’, or a contract’s terms were not ‘adequate’ in the view of the regulator.<sup>114</sup> In some respects, these concerns (in the context of materials released by the regulator) are valid. While information collection provisions do not give a regulator the right to reject an application on the face of the documents received, the collection of vast volumes of information can enable a rejection on grounds ‘relevant to the security, defence or international relations of Australia’ as this information will be suggestive of operational activities beyond the scope of a mere launch or return and as noted above. The ‘security, defence or international relations of Australia’ threshold does not appear to be temporally limited.<sup>115</sup> Unlike the FCC in the US, the ACMA does not regulate debris or in-space activities through the *Radiocommunications Act 1992* (Cth), and its regulatory authority is restricted to the use of radio frequency.

Placing these matters into a practical example, if an Australian business seeks to launch a satellite from Australia using an Australian-based launch services provider (rocket company), the launch itself will be regulated through an Australian launch permit.<sup>116</sup> The first 30 days in which that satellite is in orbit will be subject to the

<sup>110</sup> Australian Space Agency, Pre-forum Reading: Space Regulation Advisory Collective (SRAC) forum — 11 October 2023 (2023) 1.

<sup>111</sup> *Ibid* 2.

<sup>112</sup> *Ibid*.

<sup>113</sup> *Space (General) Rules* (n 60) ss 58, 80.

<sup>114</sup> See: Myriota, Submission No 166902247 to Australian Space Agency, *Space (Launches and Returns) Act 2018: Consultation on Draft Rules 2019* (2019) 3; Optus, Submission No 1022401485 to Australian Space Agency, *Space (Launches and Returns) Act 2018: Consultation on Draft Rules 2019* (June 2019) 6–7.

<sup>115</sup> *S(L&R)A* (n 55) s 28(3)(e).

<sup>116</sup> *Ibid* s 12.



damage and liability provisions in the *S(L&R)A*.<sup>117</sup> As part of the application process for the launch permit, an undertaking regarding the operation of the satellite will have to be provided to the regulator by the satellite's operator (who is not the holder of the launch permit) through the launch permit applicant.<sup>118</sup> There will also be a requirement to mitigate any debris generated because of the launch and placement of the satellite into orbit.<sup>119</sup> It is also likely that the Minister will impose conditions on the launch permit related to the ongoing provision of information regarding the launch.<sup>120</sup> Although this collection of regulatory requirements appears comprehensive on the face of the content, it is actually highly fragmented.<sup>121</sup> If, for example, a satellite is launched to conduct in-orbit servicing (which means it will dock with another satellite to provide repairs, refuel or perform station-keeping manoeuvres), the launch of the satellite and its eventual removal from orbit will be regulated, but not the operational phase and servicing activities.

The limitations in the *S(L&R)A* regime were noted as part of the final report of the *Inquiry into Developing Australia's Space Industry* ('2020/21 Inquiry'). The report, titled *The Now Frontier: Developing Australia's Space Industry* ('*Now Frontier Report*'), recommended that the laws be 'further reform[ed]' to 'support the growth and competitiveness of the Australian domestic industry, ensure the safe and responsible management of the space environment, [and] are in line with the regulations used by similar space countries.'<sup>122</sup> Responding to the *Now Frontier Report*, the Australian Government agreed to these recommendations but has not made any announcement regarding its implementation.<sup>123</sup>

The most significant disadvantage to this approach is the uncertainty it creates. Where legislation has been clearly established to regulate a particular activity (in this case, launch and return), the use of broad information collection provisions coupled with vague assessment thresholds extend the operation of those laws, which creates regulatory uncertainty. Thus, potential applicants are unable to derive the full scope of a particular licence assessment procedure from the primary law itself. Further uncertainty occurs as a consequence of moving from a highly regulated activity (launch and return) to an area that lacks clear regulation. Although some traditional laws can be used to control conduct (ie a person must not operate a space

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<sup>117</sup> Ibid ss 8 (definition of 'liability period'), 63.

<sup>118</sup> *Space (General) Rules* (n 60) s 50(1)(j).

<sup>119</sup> *S(L&R)A* (n 55) ss 34(2)–(4).

<sup>120</sup> Ibid s 30; *Space (General) Rules* (n 60) pt 3 div 2.

<sup>121</sup> As a communications satellite's principal purpose is to act as a relay for communications, its primary operation would be intimately tied to the content of the *Radiocommunications Act 1992* (Cth).

<sup>122</sup> *Now Frontier Report* (n 57) 109–110 [4.78].

<sup>123</sup> Australian Government, *Australian Government Response to the House of Representatives Standing Committee on Industry, Innovation, Science and Resources Report: The Now Frontier: Developing Australia's Space Industry* (December 2022) 14 ('*Australian Government Response: The Now Frontier*').

object in contravention of the *Criminal Code 1995* (Cth)), this does not necessarily provide operation-specific regulatory clarity.

At present, and for the time that Australia does not have a stable launch capability, the laws of foreign jurisdictions will step in to undertake the role of orbital conduct regulation. For example, Australian businesses seeking to launch their satellites using a Rocket Lab Electron vehicle from New Zealand will be required to seek a ‘payload permit’ under New Zealand law.<sup>124</sup> Unlike Australian law, the *Outer Space and High-altitude Activities Act* does expressly set out conditions related to how a payload is to be operated once in orbit.<sup>125</sup>

Further to the above is the need for clarity on the scope of activities that will be approved. For example, there continue to be moves for commercial and research entities within Australia to manufacture technologies capable of utilising the resources of celestial bodies. These in situ resource exploitation activities sit at the forefront of technological development in the space industry. Australia is in the unique position of being a signatory to the 1979 *Moon Agreement* that arguably prohibits in situ resource exploitation and the US Artemis Accords that expressly provide for the exploitation of these resources.<sup>126</sup> While the issue is currently academic, as technology and proposals for in situ resource exploitation develop, the applicable regulatory environment will need to become certain in its treatment of such activities.<sup>127</sup> The same can be said for activities conducted in LEO, such as human spaceflight, sub-orbital activities, in-orbit proximity and rendezvous activities, and in-space assembly and manufacture. These are all activities that could occur in space, during and after the 30-day liability window, before re-entry and using more than just radiocommunications.

### B *Regulators and Their Oversight*

The ACMA and Australian Space Agency are the most significant regulators when considering the preceding discussion on space-specific regulation. The ACMA was established in 2005 as a successor to the Australian Communications Authority and independently administers the *Radiocommunications Act 1992*.<sup>128</sup> Comparatively, responsibility for the *S(L&R)A* sits with the Minister for Industry and Science

<sup>124</sup> *Outer Space and High-Altitude Activities Act 2017* (NZ) s 15.

<sup>125</sup> *Ibid* s 18(1)(d).

<sup>126</sup> Melissa de Zwart, ‘To the Moon and Beyond: The Artemis Accords and the Evolution of Space Law’ in Melissa de Zwart and Stacey Henderson (eds), *Commercial and Military Uses of Outer Space* (Springer, 2021) 65; Alexander Stirn, ‘Do NASA’s Lunar Exploration Rules Violate Space Law?’ *Scientific America* (online, 12 November 2020) <[www.scientificamerican.com/article/do-nasas-lunar-exploration-rules-violate-space-law/](http://www.scientificamerican.com/article/do-nasas-lunar-exploration-rules-violate-space-law/)>.

<sup>127</sup> While still mostly academic, businesses in Australia are actively considering space resource exploitation activities: see *Now Frontier Report* (n 57) 74–6 [3.99]–[3.105].

<sup>128</sup> Explanatory Memorandum, Australian Communications and Media Authority Bill 2004 (Cth) 1.

and the DISR.<sup>129</sup> While the portfolio responsibilities of Ministers and the departments have changed over time,<sup>130</sup> responsibility for Australia's launch and return laws have remained with Ministers and departments with some responsibility for industry and science. Within the Department, the Space Licensing and Safety Office was established following the passage of the *Space Activities Act 1998*. This Office was responsible for administering the law until the Australian Space Agency was established.

The Australian Government announced in September 2017 that it intended to establish an Australian Space Agency.<sup>131</sup> The Australian Space Agency commenced operations in July 2018, partially taking the place of the Space Licensing and Safety Office. Its work was originally shaped according to recommendations provided by the Expert Reference Group that undertook the *Review of Australia's Space Industry Capability*. The March 2018 report from the *Review of Australia's Space Industry Capability* recommended the establishment of a 'dedicated, ongoing, and whole-of-government statutory agency ... to realise Australia's civil ambitions in space' and that arrangements be made to establish it 'immediately'.<sup>132</sup> The Report recommended that the soon-to-be established agency 'be responsible for civil strategic policy direction setting, international representation, coordination of national civilian activities, and strategies to facilitate the growth of the Australian space industry sector'.<sup>133</sup> Further, the recommendations of the Expert Reference Group included the delegation of management for regulatory approval processes as well as government funding to enable the agency's 'establishment and effective operation'.<sup>134</sup> There had been consistent calls for the establishment of an Australian space agency. The *Review of Australia's Space Industry Capability's* report stated that '[a]lmost all of the submissions to the Review ... emphasised the importance of an Australian space agency'.<sup>135</sup> Similarly, the review of the *Space Activities Act 1998* that accepted public submissions in 2016 also revealed strong support among respondents for an Australian space agency.<sup>136</sup>

The Australian Space Agency has been established with a dual mission — it has been tasked with promoting and encouraging the growth of the Australian space sector and with performing a regulatory role under the *S(L&R)A*.<sup>137</sup> Its founding Charter describes this Agency's regulatory competency as administering the regulation

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<sup>129</sup> All powers in the *S(L&R)A* are exercisable by 'the Minister'.

<sup>130</sup> The Minister originally responsible for the *Space Activities Act 1998* was the Minister for Industry, Science and Tourism.

<sup>131</sup> *Review of Australia's Space Industry Capability* (n 30) 60.

<sup>132</sup> *Ibid* 12.

<sup>133</sup> *Ibid*.

<sup>134</sup> *Ibid* 12–13.

<sup>135</sup> *Ibid* 37.

<sup>136</sup> *Freeland* (n 83) 127–8.

<sup>137</sup> *Now Frontier Report* (n 57) 15–17 [2.25]–[2.32], 105–6 [4.61]–[4.64].

of space activities and delivering on international obligations.<sup>138</sup> Other ‘roles and responsibilities’ for the Australian Space Agency, as set out in its Charter, include providing national policy and strategic advice on the civil space sector, coordinating the domestic civil space sector activities, supporting the growth of Australia’s space industry and the use of space across the broader economy, leading international civil space engagement, and inspiring the Australian community and next generation.<sup>139</sup> The dual mandate and these responsibilities were reaffirmed in a Statement of Expectations from the Minister for Industry, Science and Technology in 2019.<sup>140</sup>

Despite the recommendations from the Expert Reference Group, structurally (and much like the Space Licensing and Safety Office), the Australian Space Agency is a non-statutory agency within the DISR. The first Head of Agency was Dr Megan Clark, the chair of the Expert Reference Group for the *Review of Australia’s Space Industry Capability* that was, in part, responsible for designing the focus of this Agency. The current Head of Agency, Enrico Palermo, was appointed to the role in January 2021.<sup>141</sup> Following the announcement of the Australian Space Agency and in response to the recommendations from the *Review of Australia’s Space Industry Capability*, the Australian Government stated:

The establishment of a statutory basis for the Australian Space Agency will be considered after a review of its operations that will commence within four years of the establishment of the Australian Space Agency.<sup>142</sup>

The *2020/21 Inquiry* received written submissions and heard testimony that touched on the role of the Australian Space Agency and how successful it had been since its inception.<sup>143</sup> Many witnesses and submissions to the *2020/21 Inquiry* highlighted the Australian Space Agency’s dual mandate as both a regulator and promoter of the Australian space industry, and the Government’s long-term plans for the Agency’s structure and underlying basis.<sup>144</sup> There were concerns that the current structure

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<sup>138</sup> Australian Space Agency, *Australian Space Agency Charter* (Australian Government, October 2018) 1.

<sup>139</sup> *Ibid.*

<sup>140</sup> Letter from Karen Andrews, Minister for Industry, Science and Technology to Megan Clark, Australian Space Agency, 2 September 2019.

<sup>141</sup> Karen Andrews and Scott Morrison, ‘New Head of Australian Space Agency Announced’ (Media Release, 13 November 2020) <[www.minister.industry.gov.au/ministers/karenandrews/media-releases/new-head-australian-space-agency-announced](http://www.minister.industry.gov.au/ministers/karenandrews/media-releases/new-head-australian-space-agency-announced)>.

<sup>142</sup> Australian Government, *Response to the Review of Australia’s Space Industry Capability* (14 May 2018) 5 <[www.industry.gov.au/sites/default/files/June%202018/document/extra/australian\\_government\\_response\\_to\\_the\\_review\\_of\\_australias\\_space\\_industry\\_capability.pdf](http://www.industry.gov.au/sites/default/files/June%202018/document/extra/australian_government_response_to_the_review_of_australias_space_industry_capability.pdf)>.

<sup>143</sup> *Now Frontier Report* (n 57) 15–17, 105–8.

<sup>144</sup> *Ibid* 105–6 [4.63].

remained vulnerable to the whims of government and administrative changes that could simply cause the Agency to no longer exist.<sup>145</sup>

In the global context, the Australian Space Agency is not the only regulatory agency to hold a dual role. In the US, the Federal Aviation Administration's Office of Space Transportation is tasked with many of the same responsibilities as the Australian Space Agency, most notably to regulate the commercial space transportation industry in the US and 'encourage, facilitate, and promote commercial space launches and reentries by the private sector'.<sup>146</sup> Similarly, the New Zealand Space Agency (established in 2016) describes itself as the 'lead government agency for space policy, regulation and sector development'.<sup>147</sup> Selected submissions to the *2020/21 Inquiry* made reference to recent actions in the UK to shift space regulatory responsibility from its space agency to the Civil Aviation Authority.<sup>148</sup> The rationale for the relocation of regulatory authority, as expressed in consultation documents released by the UK Government in 2020, was that the separation of regulatory and industry sector promotion was to 'ensure regulation is impartial',<sup>149</sup> given the risk that a regulator holding both roles may have a greater tolerance for risk when they are also involved in facilitating the development and eventual deployment of technology. In many respects, this rationale aligns with the replacement in 1995 of the Australian Civil Aviation Authority with the Civil Aviation Safety Authority and Airservices Australia. The explanatory statement to the legislation giving effect to this change stated that '[s]eparation of the regulatory and service provider functions will ensure that aviation safety regulation is not compromised'.<sup>150</sup> Although the Australian Space Agency does not perform a 'service provider' function akin to the current Airservices Australia, the underlying inference is that regulatory functions should be separated from sector-enabling functions.

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<sup>145</sup> Ibid 105–6 [4.61]–[4.64]. See generally: Space Law Council of Australia and New Zealand, Submission No 14 to House Standing Committee on Industry, Innovation, Science and Resources, *Inquiry into Developing Australia's Space Industry* (January 2021) 7 ('Space Law Council Submission'); Adelaide Law School, The University of Adelaide, Submission No 16 to House Standing Committee on Industry, Innovation, Science and Resources, *Inquiry into Developing Australia's Space Industry* (29 January 2021) 7 (Adelaide Law School Submission); Evidence to House Standing Committee on Industry, Innovation, Science and Resources, Parliament of Australia, Canberra, 20 September 2021, 24 (Chris Deeble, Chief Executive, Northrop Grumman Australia).

<sup>146</sup> Federal Aviation Administration, 'About the Office of Commercial Space Transportation', <[www.faa.gov/about/office\\_org/headquarters\\_offices/ast](http://www.faa.gov/about/office_org/headquarters_offices/ast)>.

<sup>147</sup> New Zealand Space Agency, Ministry of Business, Innovation and Employment, 'New Zealand Space Agency' <[www.mbie.govt.nz/science-and-technology/space/](http://www.mbie.govt.nz/science-and-technology/space/)>.

<sup>148</sup> Space Law Council Submission (n 145); Adelaide Law School Submission (n 145).

<sup>149</sup> Department for Transport, *Unlocking Commercial Spaceflight for the UK: Consultation on Draft Regulations to Implement the Space Industry Act 2018* (2020) 19.

<sup>150</sup> Explanatory Memorandum, Civil Aviation Legislation Amendment Bill 1995 (Cth) 1.

The current Head of Agency for the Australian Space Agency, Enrico Palermo, acknowledged the content of the submissions to the *2020/21 Inquiry*, recognising that there was interest in the Agency becoming a statutory agency and that there were concerns about the dual regulatory role.<sup>151</sup> Palermo's view was that significant work needed to be done to assess the ongoing operational structure of the Agency and its future, but recognised that codifying the Agency in statute would provide 'a sense of permanency to investors in the sector'.<sup>152</sup> The *2020/21 Inquiry's* report included recommendations that the federal government consider:

- Establishing the Australian Space Agency as a statutory authority;
- Separating the Australian Space Agency's industry engagement and regulatory functions;
- The Australian Space Agency's future workforce requirements, including the appointment of more staff with industry and technical experience; and
- Appropriate budgeting and resourcing to ensure that the Australian Space Agency can meet its goals and objectives.<sup>153</sup>

Despite the strong views of industry on the role of the industry regulator and promoter, and bipartisan recommendations from the Parliamentary Committee at the conclusion of the *2020/21 Inquiry*, in the response to the *2020/21 Inquiry*, the Australian Government only 'agree[d] to give consideration' to the recommendations regarding agency structure.<sup>154</sup>

Budget papers released in March 2022 confirmed the Australian Space Agency's funding into the foreseeable future.<sup>155</sup> Subsequent 2022 budget papers released following a change in the federal government in May 2022 did not refer to the Australian Space Agency or the space industry more generally. In the 2023 Budget, the Australian Space Agency's funding was reduced and several grant programs were cancelled.<sup>156</sup> In June 2023, the major 'National Space Mission for Earth Observation' was cancelled, with the Minister for Industry and Science suggesting that the reduction in funding 'placed the Australian Space Agency on a sustainable financial footing'.<sup>157</sup>

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<sup>151</sup> *Now Frontier Report* (n 57) xxi [2.115].

<sup>152</sup> Evidence to House Standing Committee on Industry, Innovation, Science and Resources, Parliament of Australia, Canberra, 20 September 2021, 27 (Enrico Palermo).

<sup>153</sup> *Now Frontier Report* (n 57) 8 [2.115].

<sup>154</sup> *Australian Government Response: The Now Frontier* (n 123) 7.

<sup>155</sup> See: Treasury, *Budget 2022–23: Budget Measures* (29 March 2022) vol 2 127–8; Treasury, *Mid-Year Economic and Fiscal Outlook 2021–22* (2021) 262.

<sup>156</sup> Treasury, *Budget 2023–24: Budget Measures* (9 May 2023) vol 2, 166.

<sup>157</sup> Andrew Greene, 'Labor Axes Morrison Government's Billion Dollar Australian Satellite Program', *ABC News* (online, 29 June 2023) <[www.abc.net.au/news/2023-06-29/labor-axes-morrison-government-satellite-program/102538686](http://www.abc.net.au/news/2023-06-29/labor-axes-morrison-government-satellite-program/102538686)>; Nadia Daly,



The lack of ongoing clarity regarding the role and future of the Australian Space Agency (especially in light of recent budget reductions) creates a degree of uncertainty for the regulated population and the space industry within Australia more broadly. The Agency has acted as the ‘front of house’ for the Australian space sector since its foundation in 2018, but with the industry transitioning from what could be described as a start-up phase through to a growth and maintenance phase, it is crucial to ensure enduring stability for the Australian Space Agency. Significantly, the Agency’s dual mandate will remain an area of concern into the foreseeable future, especially as many of the grants issued in its early years begin to produce technologies that will need regulatory approval.

## VI CONCLUSION

Australia’s approach to regulating space activities, on its face, appears to be comprehensive and complete. There is a specialist space-specific law that governs how a private entity’s assets will get into LEO and beyond, coupled with a range of laws that apply to radiocommunications and private activities more generally, and a regulator that seeks to ensure compliance with laws as well as to promote the sector. Nevertheless, when engaging with the content of these frameworks, practices in other jurisdictions and the practical application of the space-specific law more critically, gaps begin to emerge. Australia appears to have introduced laws for launch and return that were inspired by the US, but did not seek to replicate the full regulatory environment within which space businesses operate in the US. As private entities in Australia start to engage in more ‘in-space’ activities, the gaps in the *S(L&R)A* will start to come to the fore, with the only saviour being the potential use of general information collection provisions coupled with wide-ranging licensing thresholds within the *S(L&R)A* to prevent the launch of space objects that could stretch the boundaries of what are currently seen as ‘acceptable’ by regulators. This situation presents risks associated with regulatory certainty, an essential requirement for businesses when they seek out investment and commence work on projects that require significant expenditure. This regulatory uncertainty is paired with the uncertain position of the space sector’s regulator, with its lack of statutory basis leaving it vulnerable to machinery of government changes and the potential for conflicts of interest to emerge between its regulatory duties and the extensive industry facilitation work. While at present there continue to be investments made into space businesses, these businesses broadly reflect ‘traditional’ space-focused activities (ie launch services and ground services).<sup>158</sup> It is those activities, which

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‘Experts Warn Australia’s Space Industry “In Limbo” after Axing of Key Programs’, *ABC News* (online, 3 August 2023) <[www.abc.net.au/news/2023-08-03/australia-space-industry-cuts-730/102683954](http://www.abc.net.au/news/2023-08-03/australia-space-industry-cuts-730/102683954)>.

<sup>158</sup> Tess Bennet, ‘The Gold Coast’s Answer to SpaceX is Now Worth \$605m’, *Australian Financial Review* (online, 19 February 2024) <[www.afr.com/technology/the-gold-coast-s-answer-to-spacex-is-now-worth-605m-20240214-p5f4xu](http://www.afr.com/technology/the-gold-coast-s-answer-to-spacex-is-now-worth-605m-20240214-p5f4xu)>; Adam Thorn, ‘LeoLabs Secures US\$29m in Funding’, *Space Connect* (online, 14 February 2024) <[www.spaceconnectonline.com.au/situational-awareness/6124-leolabs-secures-us-29m-in-funding](http://www.spaceconnectonline.com.au/situational-awareness/6124-leolabs-secures-us-29m-in-funding)>.

do not cleanly fit within the four corners of the existing legal framework, that are most likely to be negatively impacted by the regulatory lacuna. Together, the gaps in the regulatory framework and the position of the regulator present barriers to the future of the industry — barriers that could be rectified through strong government action coupled with the import of best practices from other States with flourishing space economies.