

THE SPACE LAW
REVIEW

Editor
Joanne Wheeler MBE

THE LAWREVIEWS

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REVIEW

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This article was first published in December 2019
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Published in the United Kingdom
by Law Business Research Ltd, London
Meridian House, 34-35 Farringdon Street, London, EC4A 4HL, UK
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www.TheLawReviews.co.uk

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ISBN 978-1-912228-79-9

Printed in Great Britain by
Encompass Print Solutions, Derbyshire
Tel: 0844 2480 112

ACKNOWLEDGEMENTS

The publisher acknowledges and thanks the following for their assistance throughout the preparation of this book:

ALDEN LEGAL LIMITED

ARENDDT & MEDERNACH

BIRD & BIRD

GVW GRAF VON WESTPHALEN

HUDSON GAVIN MARTIN

MORI HAMADA & MATSUMOTO

SHERMAN & HOWARD LLC

VIEIRA DE ALMEIDA

CONTENTS

PREFACE.....	v
<i>Joanne Wheeler MBE</i>	
Chapter 1 EUROPE.....	1
<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 2 INTERNATIONAL TELECOMMUNICATION UNION.....	7
<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 3 INTERNATIONAL TREATIES	12
<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 4 AUSTRALIA.....	21
<i>Thomas Jones and Tom Macken</i>	
Chapter 5 GERMANY.....	36
<i>Grace Nacimiento</i>	
Chapter 6 JAPAN.....	47
<i>Hiroko Yotsumoto and Daiki Ishikawa</i>	
Chapter 7 LUXEMBOURG.....	57
<i>Bob Calmes, Laurent Schummer, Blazej Gladysz and Geoffroy Leclercq</i>	
Chapter 8 NEW ZEALAND.....	66
<i>Simon Martin</i>	
Chapter 9 PORTUGAL.....	78
<i>Magda Cocco, Helena Correia Mendonça and Cristina Melo Miranda</i>	

Contents

Chapter 10	UNITED KINGDOM	90
	<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 11	UNITED STATES	100
	<i>Milton 'Skip' Smith</i>	
Appendix 1	ABOUT THE AUTHORS.....	115
Appendix 2	CONTRIBUTORS' CONTACT DETAILS.....	121

PREFACE

I am honoured to introduce the first edition of *The Space Law Review*.

It seems appropriate to be writing this introduction in 2019, the 50th anniversary of the first human landing on the Moon on 20 July 1969 as part of NASA's Apollo 11 lunar mission. This anniversary has further raised awareness of the value of space activities, whether from a scientific perspective, in a commercial context or simply to inspire the next generations.

I am hugely appreciative of the time and dedication of the lawyers who have contributed to this first edition, and more importantly for embracing space law as a practice area. The importance of *The Space Law Review* will grow each year as the value of space activities increases, further applications of satellite technology are brought into use and the commercial revenues from the industry are recognised. Lawyers will be required to understand the international treaties, how they are enforced and applied in national law and apply such laws, regulations and policies, potentially creatively, to new technologies and business models.

The economic benefits from the space sector are beginning to be recognised by states. The global space economy is expected to be worth £40 billion by 2030. The productivity of the space sector tends to be much larger than national averages.

New and innovative technologies increasingly derive from private commercial activities rather than the more traditional government-funded missions. States are responsible for national activities in outer space and therefore seek to supervise and authorise such activities through national legislation and licensing mechanisms.

New technology such as CubeSats, constellations of thousands of satellites, in-orbit servicing, high-resolution Earth observation data and new small-launcher technology are testing regulatory and insurance frameworks, and offer challenges to regulators that must work very closely with industry, using ideally anticipatory and outcome-focused regulation, to govern such activities. We are seeing new insurance models and financial security concepts being considered by regulators in the granting of launch and operations licences.

Efficient national regulation, which enables innovation effectively, is an increasingly important source of competitive advantage globally. We are witnessing more regulatory forum shopping than ever before in the space industry.

Regulators are required to achieve a balance between:

- a* managing government risk and liability, compliance with international obligations, safety, security and the sustainable use of and access to space; and
- b* encouraging commercialisation, innovation and growth, the benefits to society of new technology and attractiveness to foreign investment.

What is being recognised is that effective national regulation is an enabler to new and innovative satellite technology and the ability to raise finance.

On a personal note, this industry has been my passion for over 27 years. In that time, it has evolved from government-led telecommunications cooperatives to a competitive commercial innovative market, with applications that I would not have imagined in my lifetime. We are now seeing a paradigm shift in technology and opportunities in an industry that is growing with drive and determination; lawyers and regulators need to fully engage with the industry to keep up with it. It is a fascinating industry to engage with.

I thank my professor of space law, the lawyers and clients who supported me over the years, and most of all the contributors again, and hope that readers enjoy this edition and recognise the unique value that the international space industry can bring us on Earth.

Joanne Wheeler MBE

Alden Legal Limited

London

November 2019

AUSTRALIA

*Thomas Jones and Tom Macken*¹

I INTRODUCTION TO THE NATIONAL LEGAL, REGULATORY AND POLICY FRAMEWORK

i Overview of the space industry

Australia has a long and distinguished history as a space-faring nation. Its origins trace back to the middle of the twentieth century when a test launch facility was established in Woomera, South Australia in 1949.² This facility was the base for the launch of the Weapon Research Establishment Satellite (WRESAT 1) in 1967, which was the third launch of its kind to have been successfully completed by any country (following the Soviet Union and the United States).³ Australia was providing launch services to various European countries during this period through its membership of the European Launcher Development Organisation⁴ and was also managing a number of NASA tracking stations, which provided important orbital satellite, space-flight and deep-space tracking network services to the United States' national space agency.⁵ This information was central to the United States' space exploration initiatives, including the Apollo 11 expedition and the Moon landing. Australia's vast land mass and its relative proximity to the equator were well suited to support these early launch activities (and remain a significant advantage).

As well as providing operational and launch services, Australia was also involved in the global space political and regulatory sphere. The strength of its relationship with the United States and the United Kingdom helped it to play an important role in the development of the international legal framework for outer space. It joined as a foundation member of the United Nations Committee on the Peaceful Uses of Outer Space⁶ and was a signatory to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer

1 Thomas Jones is a partner and Tom Macken is an associate at Bird & Bird.

2 Kerrie A Dougherty, *Australia in Space: A History of a Nation's Involvement* (ATF Press, 2017), 12.

3 Cheryl Jones, 'Watch This Empty Space', *The Australian* (31 March 2010), cited in Steven Freeland, 'Australia and International Space Law' in Donald R Rothwell and Emily Crawford (eds), *International Law in Australia* (Thomson Reuters, 2017), 507.

4 Steven Freeland, 'Australia and International Space Law' in Donald R Rothwell and Emily Crawford (eds), *International Law in Australia* (Thomson Reuters, 2017), 508.

5 Dougherty, above n 2, 51.

6 Freeland, above n 4, 508.

Space, including the Moon and Other Celestial Bodies (the Outer Space Treaty) when that treaty entered into force in 1967. It is now one of only 17 states that are signatories to all five of the United Nations (UN) space treaties (see subsection ii).⁷

Despite Australia's promising entry onto the global space stage during the mid-twentieth century, the development of its domestic space industry was hampered from the 1970s onwards because of the 'cycles of engagement and retreat from space activities' that characterised the approach of successive Australian governments.⁸ They failed to grasp the need for, and importance of, formulating any sort of national space policy or promoting a unified national space effort.⁹

This, coupled with a slowdown in the global space race during the 1970s and 1980s and a decline in the British and Australian weapons programmes during this period, left Australia as one of only two member countries of the Organisation for Economic Co-operation and Development without a national space agency and without any form of a targeted space activities domestic legislative framework.

However, things began to change in the 1990s. The development of the global space industry, and the opportunities for commercial launch services to be provided from Australia (which were being actively explored by several overseas companies), prompted the government to reconsider Australia's future role in space.¹⁰ By this time, the concept of space as the exclusive domain of government was being replaced by one that viewed space as an opportunity for commercial exploitation. This was, in large part, driven by the growth in the number of opportunities being presented by satellite-based communications and applications.

As a consequence of this evolving perception, and growing demand for a launch industry in Australia,¹¹ the government introduced legislation that regulated the conduct of space activities on Australian soil. This led to the passing of the Space Activities Act 1998 (Cth) and, later, the Space Activities Regulations 2001 (Cth). In doing so, Australia became only the sixth country in the world to introduce a targeted space activities framework.¹²

ii Regulation

As stated in the explanatory memorandum to the Space Activities Bill 1998 (Cth), the Space Activities Act was introduced to 'reflect in Australian law, Australia's obligations as a signatory to the key United Nations space treaties and to provide a legally certain and predictable environment for the development and operation of Australia's space launch facilities'.¹³

The objects of the Space Activities Act¹⁴ included:

- a* establishing a system for the regulation of space activities carried on either from Australia or by Australian nationals outside Australia;
- b* providing for the payment of adequate compensation for damage caused to persons or property as a result of space activities regulated by this Act; and

7 United Nations Committee on the Peaceful Uses of Outer Space Legal Subcommittee, Status of international agreements relating to activities in outer space as at 1 January 2019, 58th session, UN Doc A/AC.105/C.2/2019/CRP.3 (1 July 2019).

8 Dougherty, above n 2, 139.

9 *ibid.*, 164.

10 Freeland, above n 4, 513.

11 *ibid.*, 514.

12 *ibid.*

13 Explanatory memorandum, Space Activities Bill 1998 (Cth), 4.

14 Space Activities Act 1998 (Cth), s 3.

- c implementing certain of Australia's obligations under the UN space treaties and specified space cooperation agreements.

The third of these objects (point (c), above) related to the international obligations that arise under the five UN treaties to which Australia is a signatory. These treaties include:

- a the Outer Space Treaty;
- b the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched in the Outer Space (1968);
- c the Convention on International Liability for Damage Caused by Space Objects (1972) (the Liability Convention);
- d the Convention on Registration of Objects Launched into Outer Space (1975) (the Registration Convention); and
- e the Agreement Governing the Activities of States on the Moon and other Celestial Bodies (1979).

To ratify these treaties and give them legislative force (which can only be done through an act of the legislature or judiciary under the Constitution of Australia), each of these five treaties was annexed as a Schedule to the Space Activities Act.

The Space Activities Regulations contained details regarding the process, approval and licensing requirements for the following types of space activities contemplated by the Space Activities Act: (1) the operation of a launch facility in Australia; (2) the launch of a space object in Australia; (3) the launch of an Australian space object from a facility located outside Australia; and (4) the return of a space object to a place anywhere in Australia.

Reform of the Space Activities Act and Space Activities Regulations

In October 2015, the government commenced a comprehensive review of Australia's space industry capability (the Space Industry Review), including the Space Activities Act, in light of the dramatic advancements in space-related technologies and applications since the introduction of the legislative framework in 1998. The review considered whether the existing legislative regime struck the appropriate balance between promoting investment and innovation in the domestic space industry, and ensuring Australia met its international obligations for the use of space, including in relation to the mitigation of risk to itself and other nations.

Following extensive public consultation with government, non-government and international stakeholders, legislative proposals were released that proposed significant reforms. Following the consideration of feedback from industry on these reforms, the Space Activities Amendment (Launches and Returns) Bill 2018 (Cth) (the Bill) was introduced into Parliament in June 2018. It sought to amend the Space Activities Act by:

- a broadening the regulatory framework to include arrangements for launches from aircraft in flight and launches of high-power rockets;
- b reducing the barriers to participation in the space industry by streamlining approval processes and insurance requirements for launches and return;
- c introducing safeguards for high-power rocket activities; and
- d increasing non-compliance penalties for damage to people and property.

In August 2018, the Bill passed both houses of Parliament without amendment and received Royal Assent on 31 August 2018. It commenced as the Space (Launches and Returns) Act 2018 (Cth) (the Launches and Returns Act) on 31 August 2019.

Subordinate legislation (the Rules) outlining the information that an applicant will need to provide for different licences and permits, as well as the relevant insurance requirements and conditions, also came into effect on the same date as the Launches and Returns Act.¹⁵ The Space Activities Regulations were repealed upon the commencement of these Rules.

A summary of the operation of this amended regulatory framework, including the Launches and Returns Act and the Rules, is included in Section II.

iii Establishment of the Australian Space Agency

As one of the key pillars of the government's response to the Space Industry Review, it was decided that a national space agency should be established to guide and oversee the growth of Australia's space industry to A\$10–12 billion by 2030.

As a result, the Australian Space Agency (ASA) was formally established on 1 July 2018. It is a non-statutory and whole-of-government entity located within the Department of Industry, Innovation and Science.

The ASA, led by Dr Megan Clark,¹⁶ is vested with the responsibility to transform and grow a globally respected space industry in Australia, by: (1) coordinating and promoting Australia's domestic space sector activities; (2) supporting the growth of Australia's space industry through the promotion of increased industry opportunities; and (3) leading Australia's engagement with other international space agencies and industry players.

The ASA Charter contains a detailed summary of the ASA's purpose, responsibilities and governance structure. A summary of some of the ASA's recent, and ongoing, initiatives is provided in Section IV.

II REGULATION IN PRACTICE

i Licence requirements and application process

Engaging in space activities requires licences, permits and authorisations under the Launches and Returns Act.

15 The Rules are made up of three sets of rules, including the: (1) Space (Launches and Returns) (General) Rules 2019; (2) Space (Launches and Returns) (High Power Rocket) Rules 2019; and (3) Space (Launches and Returns) (Insurance) Rules 2019.

16 Dr Megan Clark AC is a geologist with a BSc (Hons) in geology from the University of Western Australia, Perth, Australia and a PhD in economic geology from Queen's University, Canada. She was previously the chief executive officer of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and has held executive positions at a number of large organisations, including Rio Tinto and BHP Billiton.

Launch facility licence

A launch facility licence is required if a person intends to operate a launch facility¹⁷ in Australia. Importantly, this licence is only required if the objects to be launched are space objects (i.e., those that are being launched to a height that is greater than 100km above mean sea level).¹⁸

To obtain a launch facility licence, an applicant must satisfy the relevant Minister (the Minister) that it:¹⁹

- a* is competent to operate a launch facility;
- b* has obtained all the necessary environmental approvals;
- c* has in place an adequate environmental plan for the construction and operation of the launch facility;
- d* has sufficient funding to construct and operate the launch facility;
- e* has, to the maximum extent reasonably practicable, minimised the risk of the construction and operation of the launch facility causing substantial harm to public health and safety or damage to property;
- f* does not pose a risk to Australia's security, defence or international relations; and
- g* has designed the launch facility to be as effective and safe as reasonably practicable having regard to its purpose.²⁰

The Rules set out the specific information that an applicant needs to provide to satisfy the Minister in relation to these criteria. This includes, for example, basic information about the applicant and the launch facility, facility management plans, organisational structure and personnel details, and technology security plans.²¹ These information requirements must be submitted at the prescribed stage of the application process (there are three stages).

There are also conditions attached to the granting of a launch facility licence. These require licensees to comply with certain record-keeping requirements, notify the Minister of certain changes to their organisational structure and personnel, and operate the facility in accordance with the Launches and Returns Act.²²

Penalties apply where a launch facility is operated without a licence or where a licensee breaches the conditions of its licence.

Launch permit

A launch permit is required if a person intends to launch one or more space objects from a launch facility in Australia, from an Australian aircraft or from a foreign aircraft that is in Australian airspace.²³ A permit can authorise a single launch or a particular series of

17 A 'launch facility' means a facility (whether fixed or mobile) or place specifically designed or constructed as a facility or place from which space objects can be launched, and includes all other facilities at the facility or place that are necessary to conduct a launch (Space (Launches and Returns) Act 2018 (Cth), s 8).

18 A 'space object' means (1) an object the whole or a part of which is to go into or come back from an area beyond a distance of 100km above mean sea level; or (2) any part of such an object, even if the part is to go only some of the way towards or back from an area beyond a distance of 100km above mean sea level (Space (Launches and Returns) Act 2018 (Cth), s 8).

19 Space (Launches and Returns) Act 2018 (Cth), s 18.

20 Space (Launches and Returns) (General) Rules 2019, r 5.

21 Space (Launches and Returns) (General) Rules 2019, rr 11–25.

22 Space (Launches and Returns) (General) Rules 2019, rr 7–9.

23 Space (Launches and Returns) Act 2018 (Cth), s 28.

launches depending on the nature of the payloads being carried.²⁴ The authorisation of multiple launches is a new feature of the Launches and Returns Act, which reflects the goal of promoting investment and innovation by making launches easier.

To obtain a launch permit, a person must satisfy the Minister on the same grounds of competency, risk mitigation, financial standing and national security that apply to launch facility licence applications.²⁵ In addition, the applicant must demonstrate that:²⁶

- a* it has satisfied the required insurance and financial requirements (see below);
- b* the space objects concerned are not, and do not, contain a nuclear weapon or a weapon of mass destruction;
- c* the launch vehicle to be used is as effective and safe as is reasonably practicable having regard to the purpose of the launch;
- d* the flight path for each launch is as effective and safe as is reasonably practicable;
- e* the risk-hazard analysis for each launch and connected return is compliant with the relevant flight safety code; and
- f* adequate planning has been carried out to address the environmental impact of the launch or launches and any connected return.

The Rules set out the specific information that an applicant needs to provide to satisfy the Minister in relation to the above criteria. These are broadly consistent with the information requirements that apply to launch facility licence applications but also include information about the launch, launch vehicle, flight path, flight history or testing, payload information, launch management plan, risk-hazard analysis, flight safety plan, debris mitigation strategy (discussed below) and contractual information.²⁷

Permit holders must provide the Minister with certain information relating to the launches at least two days prior to the launch (but not more than 10 days), including the date and time of the launch, the trajectory of the space object and any change to the payloads to be launched.²⁸

Significant penalties (including criminal sanctions) apply in circumstances where the holder of a launch permit breaches a key condition of the permit. These can be a fine of up to A\$21 million for a business, and a fine of A\$1.155 million or up to 10 years' imprisonment for an individual. A breach of the conditions relating to information requirements can attract a penalty of A\$210,000.

High-power rocket permit

A high-power rocket permit is required if a person intends to launch a high-power rocket from a facility or place (whether fixed or mobile) in Australia. The definition of a high-power rocket, as currently drafted, imports both an impulse and a complexity characteristic: it is one that is propelled by motors with a combined impulse greater than 889,600 Newton seconds or fitted with an active control system.²⁹ This term is not defined in the Launches and Returns Act, and the Rules do not provide any guidance on its proposed operation.

24 Space (Launches and Returns) Act 2018 (Cth), s 28(1).

25 Space (Launches and Returns) Act 2018 (Cth), s 28(3).

26 Space (Launches and Returns) (General) Rules 2019, r 35.

27 Space (Launches and Returns) (General) Rules 2019, rr 43–57.

28 Space (Launches and Returns) (General) Rules 2019, r 37.

29 Space (Launches and Returns) (High Power Rocket) Rules 2019, r 5.

To obtain a high-power rocket permit, a person must satisfy the Minister on the same grounds of competency, risk mitigation, insurance requirements, financial standing and national security that apply to launch permit applications. In addition, it must be demonstrated that the high-power rocket, and the flight path for the launch, is as effective and safe as is reasonably practicable.³⁰

The Rules set out the specific information that an applicant needs to provide to satisfy the Minister in relation to the above criteria. These are broadly consistent with the information requirements that apply to launch permit applications. In addition, applicants are required to provide information about the high-power rocket (including manufacturer details, technical specifications and quality assurance certification), as well as the history of the rocket.³¹

There are also conditions attached to the granting of a high-power rocket permit. These are similar to the conditions attached to launch permits, including the time, date and planned trajectory of any launches, any changes to the assumptions and data used in the risk-hazard analysis, the contents of the launch management plan or flight safety plan, and certain changes to the organisational structure or personnel.³²

Significant penalties apply in circumstances where a high-power rocket permit holder fails to comply with the public health and safety and insurance conditions of the permit. These can be up to a fine of up to A\$21 million for a business, and a fine of A\$1.155 million or up to 10 years' imprisonment for an individual. Breaches of the other permit conditions can attract a penalty of up to A\$210,000.

Overseas payload permit

An overseas payload permit is required if a person intends to launch one or more space objects from a facility (whether fixed or mobile), or a place, outside Australia using a specified launch vehicle. However, permits are only required if an Australian national is a responsible party³³ for the launch.

To obtain an overseas payload permit, a person must satisfy the Minister on similar grounds to those of the other licences and permits under the Launches and Returns Act. These include certain insurance and financial requirements (unless these are not required in the circumstances), risk mitigation and national security grounds, and proof provided by the applicant that the space objects concerned do not contain nuclear weapons or a nuclear power source (unless approval has been obtained). The Rules set out the specific information that an applicant needs to provide.

In some circumstances, applicants will be required to obtain an overseas payload permit in addition to another permit or licence. This would be the case, for example, when a person wishes to launch a payload from an Australian aircraft that is in transit overseas. In this

30 Space (Launches and Returns) (High Power Rocket) Rules 2019, r 6.

31 Space (Launches and Returns) (High Power Rocket) Rules 2019, rr 14–35.

32 Space (Launches and Returns) (High Power Rocket) Rules 2019, r 7.

33 A 'responsible party', for the launch or return of a space object means, broadly, the holder of the permit, licence or authorisation. In any other case, it refers to: (1) the persons who carried out the launch or return of the space object; (2) any person who, at any time during the liability period for the launch or return, owned all or some of any payload forming part of the space object concerned; or (3) any other person specified in the rules. In these circumstances, if the space object was launched from a facility (whether fixed or mobile), or place, outside Australia, or if the space object was returned to a place or area outside Australia, a person is only a responsible party if the person is also an Australian national (Space (Launches and Returns) Act 2018 (Cth), s 8).

situation, the applicant would be required to obtain both an overseas payload permit, to authorise the launch of the payload from a place outside Australia, and an Australian launch permit, to authorise the launch of the payload from the Australian aircraft. Whether this was intended by the legislature is unclear.

Return authorisations

The requirement for a return authorisation is a new feature in the Launches and Returns Act and reflects the much greater number of launches expected in the future.

A return authorisation is required if a person intends to return a space object to a specified place or area in or outside Australia.³⁴ A return authorisation can also authorise a particular series of returns if the Minister considers it appropriate.

Similar considerations that regulate the exercise of the Minister's discretion in relation to the other licences and permits under the Launches and Returns Act also apply to the grant of return authorisations. The Rules also set out the specific information that an applicant needs to provide to satisfy the Minister in relation to this criteria, and are broadly consistent with the information requirements that apply to the other licences and permits.

Authorisation certificate

An authorisation certificate may also be issued by the Minister to any person that intends to conduct launch-related activities that would otherwise be prohibited.

The factors to be considered when assessing applications include: (1) the competency of the person to carry out the proposed conduct; (2) the probability of the Australian government being exposed to liability for damage caused by the conduct; and (3) the probability of the conduct causing substantial harm to public health or safety, or damage to property.

Authorisation certificates will only be granted in circumstances where the conduct could not be more appropriately covered by another type of licence or permit under the Launches and Returns Act. This is likely to be in very limited or unusual circumstances.

Other licence requirements

The following types of licences may also be required, depending on the nature of the activities being conducted and services being supplied by the licensee or permit holder in Australia.

Telecommunications licensing requirements

Under the Telecommunications Act 1997 (Cth), a carrier licence is required where a person owns items of physical network infrastructure known as network units (i.e., physical cable, radio or satellite links) that are used to supply a carriage service³⁵ to the public. If a person intends to use space or satellite infrastructure to provide telecommunications services to customers in Australia, a carrier licence may be required.

Radcommunications licensing requirements

An apparatus licence is required to authorise the use of frequencies for individual space objects or Earth stations, unless the component is covered by an existing class licence. The approach

³⁴ Space (Launches and Returns) Act 2018 (Cth), s 46L.

³⁵ A 'carriage service' means a service for carrying communications by means of guided and/or unguided electromagnetic energy (Telecommunications Act 1997 (Cth), s 7).

that the Australian Communications and Media Authority (ACMA) takes is to separately licence the satellite uplink and downlink components (which require a carrier licence) and the transmitters and receivers on satellites (which require apparatus licences).

A spectrum licence is required to authorise the use of particular frequencies by those with carrier licences. Although spectrum licences are, in theory, available as an alternative to apparatus licences, they are generally reserved by the ACMA for use by terrestrial mobile service providers. This is likely to continue with the increase in the demand for spectrum by these providers to support the deployment of 5G services.

Australia's radiocommunications legislative and policy framework, including the existing licensing regime and approach to the management of spectrum, has been the subject of review by the government since 2014 and is slated for comprehensive reform. The Minister for Communications, Cyber Security and the Arts, Paul Fletcher MP, who was appointed in 2019, has most recently indicated that this reform will take place via amendments to the existing legislation, rather than a complete overhaul of it. This could result in changes (and hopefully simplifications) to the licensing arrangements described above, but fall short of the much-needed reform of the regime more generally.

ii National registration requirements

There is no obligation for licensees or permit holders to register with the ASA in relation to the conduct of their space activities.

However, as required by the Registration Convention, a register of space objects is kept and maintained by the Minister, which contains details of the space objects that are launched into Earth's orbit or beyond under an Australian launch permit, overseas payload permit or authorisation certificate. These details, which are provided by the applicant during the application process (and post launch), include the launch facility, the date of the launch, the space object's basic orbital parameters and general functions, and the names of launching states other than Australia.

iii Insurance requirements

One of the key features of the Launches and Returns Act is a reduction in the specified minimum liability caps for third-party insurance requirements for each authorised launch or return – from A\$750 million to a maximum of A\$100 million. This amendment is designed to comply with the government's liability obligations under the Liability Convention and to promote consistency with the approach to insurance and liability adopted in other jurisdictions.

The Rules,³⁶ which contain the specific details of these insurance requirements, provide that the amount of insurance required is the lower of the specified amount of A\$100 million (except for an overseas payload permit or return authorisation, which specifies an amount of A\$0) or the amount that is calculated according to the maximum probable loss (MPL) methodology. The MPL methodology is published in a document that is available on the Department of Industry, Innovation and Science's website.³⁷

36 Space (Launches and Returns) (Insurance) Rules 2019.

37 <https://www.industry.gov.au/sites/default/files/2019-08/maximum-probable-loss-methodology-for-space-activities.pdf>.

Alternatively, an applicant can satisfy the insurance and financial requirements under the Launches and Returns Act by showing that it has direct financial responsibility for an amount that is not less than those specified amounts. This requires it to demonstrate that it has sufficient available assets or is otherwise able to meet any liability that it may incur in the course of conducting its space activities.

iv Space Debris Mitigation Guidelines

Each application for a launch permit or an overseas payload permit must contain a debris mitigation strategy. This is a new feature of the Launches and Returns Act that reflects Australia's commitment to contribute to international efforts to limit space debris.

The debris mitigation strategies are to be based on internationally recognised guidelines or standards (e.g., the UN Space Debris Mitigation Guidelines) and must describe, for example, the planned measures to minimise the potential for break-ups during operational phases and during the post-mission phase, and the strategies to limit the risk of accidental collisions in orbit.

v National security requirements

Australia's national security is one of the key themes underpinning the operation of the Launches and Returns Act. It is one of the factors that must be taken into account each time the Minister considers a licence, permit or authorisation application (i.e., reasons relevant to Australia's security, defence or international relations).

National security is also one of the grounds upon which the Minister can decide to suspend a licence, permit or authorisation – the other two being breach of a licence or permit condition, or the occurrence of an incident involving the relevant space object. This could have significant ramifications for licence or permit holders in circumstances where an incident occurred in the applicant's home country, or tensions grew between the government of the applicant's home country and the Australian government. In these circumstances, the Minister could suspend the licence, permit or authorisation on national security grounds, and no compensation (including the cost of the investment) would be payable.³⁸ It would also be difficult for applicants to challenge these decisions as the Launches and Returns Act explicitly provides that this discretion rests with the Minister.

vi Safety requirements

A key safety mechanism under the Launches and Returns Act is the Launch Safety Officer (LSO). The LSO is responsible for ensuring that certain processes and procedures are correctly followed in relation to the conduct of space activities to mitigate the risks of injury to persons and damage to property.

The Launches and Returns Act extends the functions and powers of the LSO to cover not only launch activities, but also return activities. It requires the LSO to issue certain notices in respect of launch and return activities, and empowers the LSO to issue written directions to licence and permit holders where appropriate to do so. Penalties apply for a failure to comply with a direction issued by the LSO.

³⁸ Space (Launches and Returns) Act 2018 (Cth), ss 27; 37; 46A; 46K; 46T; 46Y.

vii Monitoring and enforcement requirements

One of the key functions of the LSO is to monitor the compliance of the holder of the licence, permit or authorisation with the terms of the Launches and Returns Act and the conditions of the permit or authorisation. The ASA also has a dedicated team that is responsible for administering the Launches and Returns Act, including the undertaking of compliance and enforcement activities. This division of the ASA – the Regulatory and International Obligations Team – subsumes the role of the former Space Licensing and Safety Office.

Penalties for non-compliance have increased significantly under the Launches and Returns Act (see subsection i, ‘Launch permit’ and ‘High-power rocket permit’).

viii Dispute resolution mechanisms

Review of decisions

If a person wishes to have a decision of the Minister reviewed, an application can be made to the Administrative Appeals Tribunal (AAT). The AAT reviews administrative decisions made under Commonwealth laws on the merits.

The AAT has the power to affirm, vary or set aside and substitute the previous decision in favour of a new decision. It can also remit a decision to the relevant decision maker for reconsideration.

Action for compensation

Any actions for compensation for damage caused by the launch and return of a space object and the launch of high-power rockets are to be heard by the Federal Court and Federal Circuit Court. Any appeal to a decision of these courts would need to be brought before a court of appellate jurisdiction.

III DISTINCTIVE CHARACTERISTICS OF THE NATIONAL FRAMEWORK

Following the commencement of Australia’s new legislative framework, the country now has some of the most business-friendly space laws in the world, including among the key spacefaring nations (e.g., France, the United Kingdom and the United States). It also has the most recently established national space agency – the ASA – responsible for administering the new legislation and delivering on Australia’s space-related international obligations under it.

Some of the key features that underpin the more commercial and forward-looking approach of the new regime under the Launches and Returns Act include:

- a* the arrangements for the launches from aircraft in flight, as well as the launching of high-power rockets;
- b* the streamlined approvals process for obtaining the various licences, permits and authorisations required under the Launches and Returns Act;
- c* the significant reductions in the insurance requirements for each authorised launch or return (from A\$750 million to a maximum of A\$100 million); and
- d* the requirements for a space debris mitigation strategy.

As well as having a new legislative framework, Australia also has a robust policy framework. This comprises the Australian Civil Space Strategy 2019–2028 (discussed in Section IV.ii) and the annual State of Space Report (SOSR). The SOSR documents the government’s activities in civil space for the prior calendar year and groups these activities under four

main themes: policy and regulation; space capability; national interest; and international engagement. It is an important policy document that is designed to provide both industry and government stakeholders with an overview of past and current space-related initiatives, as well as to identify emerging commercial opportunities.

While the ASA will be responsible for overseeing this policy and the strategic direction of Australia's civil space sector, it will adopt a consultative approach in carrying out this objective. The ASA will be informed by the government's Space Coordination Committee, and consult with industry through the Space Industry Leaders Forum, which will include industry representatives, academia, industry associations and other non-government space organisations. This level of engagement with both industry and government stakeholders – another key feature of the national framework – is designed to inform the regulator on key issues and promote interest from both local and overseas industry participants in conducting commercial launch activities from Australia.

IV CURRENT DEVELOPMENTS

The past couple of years have seen Australia reassert itself on the global space stage, and transition from an introspective³⁹ member of the space community to a forward-thinking, action-oriented one. In the past 12 months alone, Australia has introduced a new body of targeted laws and regulations, established a national space agency (the ASA) and formalised a number of cooperative arrangements with various international partners. These are manifestations of a maturing and focused national space policy and demonstrate a clear recognition of the importance of space to Australia's future.

i Launches and Returns Act

As discussed in Section I.ii, the Launches and Returns Act passed both houses of Parliament and came into effect on 31 August 2019. It will result in a number of changes to the existing legislative regime, which are designed to promote participation, investment and innovation in Australia's space industry.

The Rules will support the Act by providing much of the operational detail, including the information that an applicant will need to provide for different licences and permits, as well as the relevant insurance requirements and conditions for certain permits and licences.

The new legislative regime will have important implications for established space industry players and the emerging small satellite and launch industry players, both in Australia and overseas. The reductions in cost and administrative barriers to participation are likely to pave the way for a more open market and create new commercial opportunities for companies looking to continue, or expand, their investments in space-related activities in Australia.

ii ASA

As mentioned in Section I.iii, the ASA was formally established on 1 July 2018 and tasked with the ambitious goal of tripling the value of Australia's space industry to A\$10–12 billion by 2030.

³⁹ Freeland, above n 4, 525.

Since then, the ASA has become an industry-focused regulator, leading Australia's engagement with international space agencies and industry participants, formulating new space strategy and policy to better coordinate Australia's domestic space sector activities and developing new programmes – the International Space Investment Initiative and the Space Infrastructure Fund (see below) – to help grow Australia's space industry.

Engagement with industry and international partners

The ASA has now entered into formal partnerships with a number of counterpart agencies in Canada (the Canadian Space Agency), France (the National Centre for Space Studies), the United Kingdom (the UK Space Agency) and the United Arab Emirates (the UAE Space Agency). The memorandums of understanding that exist between the ASA and these international partners are designed to promote increased collaboration and cooperation between the agencies and help them develop their respective space programmes and capabilities.

The ASA has also been leading Australia's engagement with other industry players, including Airbus Defence and Space SAS, Boeing, Goonhilly, Sital Australia, Lockheed Martin, Nova Systems and, most recently, Myriota. Under the statements of strategic intent with these companies, the parties agree to provide support and collaboration on opportunities for investment and areas of strategic interest and growth. Interestingly, the companies range from start-ups to some of the biggest global space companies.

Advancing space: Australian Civil Space Strategy 2019–2028

In April 2019, the ASA released a 10-year plan to guide the growth and development of Australia's domestic space industry: the Australian Civil Space Strategy 2019–2028 (the Strategy).

The Strategy establishes the following four 'space pillars' to promote the competitiveness of Australia's domestic space industry:

- a* International: opening the door for Australian players to leverage off international partnerships.
- b* National: developing national capability in areas of competitive advantage.
- c* Responsible: guiding the safety of activities to protect Australia's national interest.
- d* Inspire: building the next generation of workers for the industry.

It makes clear that 'meeting Australia's international obligations, and supporting rules-based order, are central to achieving that vision'.⁴⁰

The above-mentioned pillars are to be delivered in three phases: setting the conditions for growth (2018–2019); engaging with opportunity (2019–2021); and delivering success (2021–2028). The activities to be carried out under each of the pillars during these phases are to be guided by the seven National Civil Space Priorities:

- a* position, navigation and timing;
- b* Earth observation;
- c* communications technologies and services;
- d* space situational awareness and debris monitoring;

40 Australian Space Agency (2019), *Advancing Space: Australian Civil Space Strategy 2019–2028*, Canberra: Commonwealth of Australia, April: available at <https://www.space.gov.au>.

- e* leapfrog research and development;
- f* robotics and automation on Earth and in space; and
- g* access to space.

As part of the Strategy, the ASA has committed to report every two years on its progress towards achieving its mandate to triple the value of Australia's space industry. The first report is due in 2021.

New space programmes

International Space Investment Initiative

In the 2018–2019 budget, the government announced the International Space Investment (ISI) initiative, under which it committed to provide A\$15 million over three years from 2019 to 2022 to provide grants to strategic space projects that provide employment and business opportunities for Australians.

Following a period of industry consultation, the ISI initiative was launched by the ASA in October 2019. Application for grants (which are to be between A\$100,000 and A\$4 million) close in December 2019.

Space Infrastructure Fund

In the 2019–2020 budget, the government committed to providing A\$19.5 million for a new Space Infrastructure Fund, which includes A\$6million for a new mission control centre to be established in South Australia to assist with the management of small satellite missions and the development of satellite technology.

The Space Infrastructure Fund will be administered by the ASA and used to support space projects being carried out across the states and territories over the next three years that promote Australia's competitiveness in the global space industry.

V OUTLOOK AND CONCLUSIONS

In 2019, almost 50 years on from the launch of WRESAT 1, Australia is set to reclaim its place as a leading spacefaring nation. With the establishment of the ASA, the introduction of a new targeted space activities framework and improvements to the funding of its space budget, the regulatory and policy settings are finally in place to support the growth of Australia's space sector.

These changes are likely to be of particular importance to the emerging small satellite (CubeSat) and launch industry players looking to take advantage of the reductions in cost and administrative barriers to participation in space. They will also be of interest to existing players in the space industry, particularly those based overseas, that are looking to explore new commercial opportunities presented by the rapid growth in demand for space-based services. This includes those that are required to support the emerging internet of things and 5G ecosystems, such as Earth observation, space situational awareness, mobile backhaul and global connectivity solutions. It also includes future space opportunities that are likely to emerge with the continued growth in the exploration and use of outer space, such as space mining and human space flight.

To support these future space activities, the Strategy (see Section IV.ii) indicates that it is intending to implement a risk management framework before the end of 2020, and to consider and develop the necessary regulatory arrangements between 2021 and 2028.

During this period, the ASA will continue to engage with industry and international partners (including counterpart agencies) to guide its approach to the development of Australia's space regulatory framework.

In 2017, it was estimated that the Australian space sector was producing revenues of around A\$3 billion to A\$4 billion and had an estimated workforce of between 9,500 and 11,500 people.⁴¹ These figures represent a very small fraction of the total value of the space industry, which is estimated to be worth around US\$350 billion, a figure that is expected to grow to over US\$1.1 trillion by 2040.⁴² If Australia is to reach its goal of growing its space industry to A\$10–12 billion and creating up to 20,000 jobs by 2030, the government will need to work closely with industry to ensure that it is maintaining the ideal regulatory and commercial conditions for Australian and foreign businesses to participate and compete in the emerging space industry.

41 Dougherty, above n 2, 177.

42 Morgan Stanley, *Space: Investing in the Final Frontier* (2 July 2019), <<https://www.morganstanley.com/ideas/investing-in-space>>.

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He also has particular expertise in advising clients on access to regulated infrastructure across a range of industries, including telecoms, media, ports, airports, rail, electricity and gas. He is noted for his expertise in third-party access issues, as well as his comprehensive understanding of the Australian Competition and Consumer Commission and its approach to telecoms and access regulation.

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ISBN 978-1-912228-79-9