

# Maritime and Aviation Transport Update

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# Welcome to the third edition of the Maritime and Aviation Transport Update.

In this issue, we focus on current developments in automation and digitisation impacting the Maritime and Aviation Transport industry including:

- how maritime autonomous vehicle (MAV) technology is being tested and deployed in commercial and defence settings, and the regulatory frameworks currently in place
- the scope of insurance coverage and liability issues for autonomous vessels
- the international regulatory environment in relation to maritime autonomous surface ships (MASS) in the context of existing conventions, and
- how drones are shaping the digital transformation of the maritime and shipping industry.

In addition to the feature articles, we discuss recent legal developments, which you may find of interest.

We hope this issue is beneficial to you and we look forward to sharing more in our next edition, available in early 2024. If there are industry-related topics you would like Sparke Helmore to cover in the future, or you have specific maritime, aviation or transport queries, please contact [Michelle Taylor](#) or [Mark Sainsbury](#).



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# THE USE OF DRONES IN THE DIGITAL TRANSFORMATION OF THE MARITIME AND SHIPPING INDUSTRY

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*Author: Special Counsel Marianne Robinson*  
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The advantages of drone technology in port operations are plentiful. Drones enable real-time monitoring of critical areas, enhancing safety by identifying potential hazards and preventing accidents. They also facilitate efficient cargo tracking and inventory management, minimising manual labour and reducing operational costs. Additionally, drones contribute to environmental sustainability by supporting eco-friendly initiatives like monitoring pollution levels and facilitating port cleaning.

Over the last ten years many sectors of the Australian economy have realised that drones have the ability to revolutionise the way things are done. The maritime and shipping industry is no exception. Drones are being deployed in this sector on land, sea and air and the regulation of the different sectors is certainly inconsistent.

The digital transformation of the maritime and shipping industry has many components including the use of robotic process automation, the move to smart ports, and digital ship services for monitoring and maintenance. Both air and underwater drones are playing a role in this process towards a digital industry.

The versatility of drones (also referred to as unmanned aerial vehicles (**UAV**), remotely piloted aerial systems (**RPAS**) and unmanned aerial systems (**UAS**)) has led to their use for everything from patrolling ships on the ocean and defence monitoring to inspections and wash downs of internal confined spaces and as an alternative to dry dock repairs.

## Drone usage

Drones are already being deployed for safety and security reasons including:

- Carrying out search and rescue missions when fitted with infrared or thermal sensors to monitor vessels in distress or in need of help while in open waters.
- Surveying and mapping waterways.
- Monitoring spillages.
- Patrolling ships to identify storm damage or shifting cargo, and to carry out surveys of bridges to ports.
- Security surveillance in ports including to monitor suspicious activities.
- Inspections of confined spaces and spaces that are not easily accessible such as cargo holds and tanks especially in situations where exposure to dangerous gases is a real threat to inspectors.
- Being fitted with underwater cameras, underwater drones conduct underwater hull inspections and inspections of rudder, hull markings, propellers and even hull thickness without the need for a diver or drydocking for damage reports, repairs and maintenance.
- Aerial inspections of tanks without the need to erect scaffolding or staging equipment.
- Wash drones being used to power clean tall structures and tanks.



### Case Study 1 - Shipping inspections

Flyability, a caged drone manufacturer, reports one case study where a remote inspection of six tanks was completed in two days compared to the usual 18 days involving 3-4 rope inspectors. It also reports an inspection of the ballast tank in a 323 metre container ship where the ballast was 15 metres long with two manholes (600mm and 400mm), which usually required 3-4 inspectors using ropes and oxygen monitoring masks but was completed by a single drone pilot in 3 x 10 minutes flights. Flyability advertises drones for cleanliness surveys in cargo holds, engine room inspection after a fire and inspecting the inside of ship to shore large crane structures.



### Case Study 2 - Border patrol

In 2017 the European Maritime Safety Agency (**EMSA**) signed a Euro 67 million civilian maritime drone contract for the use of drones in border patrol, search and rescue, detection of illegal fishing and drug shipments as well as people trafficking. The drones are fitted with streaming videos and sensors that channel directly to a control centre allowing EU member states to make real time intervention decisions

In 2023 Australia announced that it would spend \$1.5 billion to conduct maritime surveillance of its northern approaches, buying more long range drone aircraft and upgrading Poseidon maritime patrol aircraft. A MQ-4C Triton drone aircraft will be based in the Northern Territory and operated by a newly formed squadron in South Australia.



### Case Study 3 - SnotBot drone

A drone is being used to collect the blow (snot) exhaled from whales when they surface to breathe and to send the collected sample to researchers on ships away from the whales themselves.



### Case Study 4 - Search and Rescue Go (SARGO)

An Australian company, Aeromech, has developed a new maritime drone, which can be dropped from a search and rescue aircraft by parachute. The drone carries critical payloads such as a radio, life raft, and supplies, assisting in rescue operations.



### Case Study 5 - Ocean cleaning drone (CDVI)

CDV1 is an all-electric, unmanned surface vehicle (**USV**) that removes marine plastic waste on and just below the water surface in ports, canals, estuaries, and other aquatic environments. It is used for cleaning up plastic waste along quaysides and other hard to reach areas. CDV1 has a self-emptying system that deposits the collected plastic into a 62-litre waste receptacle.



## Regulatory situation – Aerial drones

Many organisations have started using drones because an employee has suggested a specific use and often that individual has used their personal drone to carry out the activity. If you are using or are thinking of using drones in a port, shipping, or maritime setting then it is essential that you have a well thought through UAV strategy that encompasses everything from drone registrations with the Civil Aviation Safety Authority (**CASA**) to pilots, flight mapping and insurance.

Drone usage has a myriad of regulatory, compliance and liability issues to be considered in order to get the maximum usage from the new technology. Laws exist at national, state, and local government levels. For example, in NSW there are laws for using a drone around whales, dolphins, dugongs and seals and a need to comply with the *Biodiversity Conservation Act* (2016) and *Biodiversity Conservation Regulations* (2017).

### Drone registration

All drones, irrespective of weight, must be registered with CASA if flown at or for work. The nature of the work is irrelevant to the registration requirement. A registration levy must be paid for drones weighing more than 500g.

To register a drone, individuals must:

- be 16 or older
- have a digital identity or proof of identity
- have a myCASA account
- have an aviation reference number (**ARN**)
- know the make, model, serial number, weight and type of the drone, and
- download and/or print the certificate of registration from myCASA.

### Drones used for commercial activity

If drones are deployed for any commercial use, then the entity deploying them may itself require registration with CASA.

Individuals using drones for commercial activity must also have **operator accreditation** if flying for business or as part of employment duties.

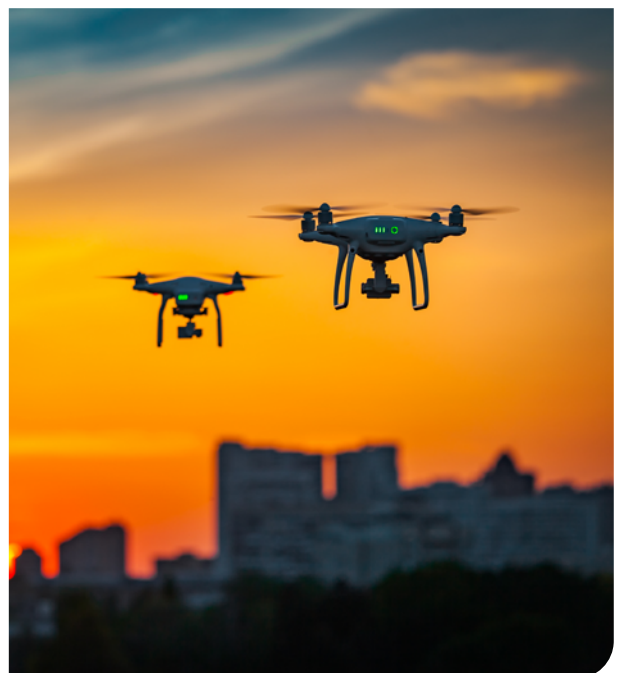
To carry on business as a drone service provider or to use drones commercially, a remotely piloted aircraft operator's certificate (**ReOC**) is required by the operator or the business.

A ReOC permits the business to conduct a range of remotely piloted aircraft (**RPA**) operations—subject to approval—that are not available to other operators such as conducting operations closer than 30 metres to other people or at night.

## What to think about

Here are just a few areas that should be on your checklist if your business is deploying drones to carry out activities.

- Do you have a specific drone strategy?
- Do you have a drone specific risk register and risk assessment?
- Do you know what records you need to keep for drone related deployments?
- Do you have a remotely piloted aircraft operator's certificate?
- Do you have a Chief Remote Pilot?
- Are your drones all registered on the CASA Drone Register?
- Are your operators qualified remote pilots?
- Do you have a maintenance controller?
- Do you have an operational manual specific for drone usage?
- Do you use drones that require out of visual line of sight requiring pilots with qualifications?
- Do you have insurance that might cover damage caused to or by a drone?
- Is your drone usage covered in your WHS management plan?
- How good is your cybersecurity? Could your drone be hacked?



## Regulatory situation - Underwater drones

A range of sub-surface and surface remotely operated and UAV are being used in Australia, with uses including for:

- oceanography
- hydrography
- offshore oil and gas exploration, and
- scientific research.

The Australian Maritime Safety Authority (**AMSA**) regulates these remotely operated and autonomous vessels as:

- Domestic commercial vessels if they are Australian vessels operating domestically.
- Regulated Australian vessels if they are Australian vessels that travel internationally.
- Foreign vessels if they are not Australian vessels but operate in Australian waters.

These vessels are subject to the same regulatory framework as other vessels, including for survey standards and crewing requirements. This is because the very broad definitions of 'vessel' in the *Navigation Act 2012* and the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012*.

When AMSA considers an application for certification as an unmanned and/or autonomous vessel it considers whether risk related issues in terms of the safety of people, other vessels, and the environment have been appropriately addressed by the owner and master.

*Technology is advancing faster than the regulation in this area.*

Issues raised in 2022 by the Australian Association for Uncrewed Systems (**AAUS**) in relation to needed reforms in this area include:

- Uncrewed systems have a different risk profile from crewed vessels. They have new hazards that aren't addressed by existing legislation (such as recharging), and some existing legislation, hazards, and risk control requirements are not applicable (for example, minimum crewing).
- Small, uncrewed vessels deployed from a vessel are treated under the same regulations as a large vessel. This is not appropriate and is causing unnecessary overheads for processing exemptions and certificates for the industry and the regulator.
- There are no licensing or accredited training programs for autonomous systems.
- Existing licensing or accredited training programs are not appropriate for uncrewed vessels as they are heavily focused on the safety of persons onboard the vessel.
- Currently, each uncrewed vessel application is a bespoke process. This needs to be streamlined to enable consistency in the approval processes for new vessels and also cater to changes in configuration for existing vessels (some of which could be software changes).
- There needs to be guidance on what constitutes a change requiring recertification for artificial-intelligence driven vessels. The inflexibility of the current legislation means regulators are unable to adapt to meet the current and evolving needs of the autonomous systems industry. Even simple things such as the definition of a vessel have become blurred when hybrid (air-land-sea) autonomous vessels are under development.

## Liability issues to consider

Airborne drones are aircraft for the purposes of the *Damage by Aircraft Act 1999 (Cth)*, which applies strict liability to commercial drone usage, meaning damage or loss caused by the operator's acts or omissions do not require a third party to prove the operator's fault or negligence.

On water and under water surface drones are considered maritime vessels and the complex issues in relation to the applicable laws in terms of liability have been a topic of discussion for several years now. The liability issues remain unclear.

As with any issue of liability there are insurance issues to consider whether it be for employees, members of the public or other vessels.

## Going forward

Drones are adding a new dimension and if managed properly are providing numerous opportunities that are cost effective and opening up new areas of usage as well as management of existing issues.

However, this exciting area comes with regulatory and compliance issues that need to be identified and managed.

# RITALIN USERS, CLEARED FOR TAKE OFF?

## NAM V CIVIL AVIATION SAFETY AUTHORITY [2023]

Author: Partner Mark Sainsbury & Ava Pearson

On 2 November 2023, the Administrative Appeals Tribunal (**AAT**) remitted a decision made by the Civil Aviation Safety Authority (**CASA**) for reconsideration following CASA's refusal to grant the Applicant (Mr Peter Nam) a medical certificate based on the Applicant using Ritalin to treat his ADHD. The failure to obtain medical clearance prevented Mr Nam from flying.

This AAT decision is in contrast to previous decisions, such as *Healy*, that upheld CASA's refusal to provide an applicant with a medical certificate on the basis of being medicated for ADHD.

### Background

In November 2020, Mr Nam was diagnosed with ADHD (inattentive type) and was subsequently medicated with 40mg of Ritalin per day. Prior to his diagnosis, he had obtained his private and commercial pilot's license. He held a class one medical certificate, which expired in June 2018, and held a class two medical certificate, which was suspended in January 2021 and cancelled in March 2021.

He reapplied for his medical certificates in November 2021 but was refused on the basis that he did not meet the relevant medical standard required in *Civil Aviation Safety Regulation (CASR) 67.180* for reasons concerning the safety of air navigation.

### Decision

For an applicant to satisfy the requirements of a medical certification, the applicant must meet the "relevant medical standard" or if this standard is not reached, CASA must assess the extent to which the applicant failure to meet the standard "*...is not likely to endanger the safety to air navigation.*"

CASA refused Mr Nam's medical certificate on two bases:

1. the applicant did not meet the safety relevant condition criterion, and
2. did not satisfy the medication criterion.

Therefore, the Applicant did not reach the relevant medical standard for reasons concerning the safety of air navigation.

The AAT rejected both of these grounds relied upon by CASA.



### Safety relevant condition criteria

The safety relevant condition criterion within CASR requires an applicant to have no 'safety-relevant condition' that produces any degree of functional incapacity or risk of incapacitation such as abnormalities, disabilities or diseases, injuries or pathological conditions.

CASA's submissions emphasised that the Applicant's ADHD diagnosis itself was not a relevant safety condition, rather the *medication to treat it was a relevant safety condition*.

The AAT rejected CASA's contentions that taking Ritalin is an 'abnormality' because it affects the normal performance of the person taking it. The AAT emphasised that this view would mean that any medication that ameliorates the effects of an abnormality would itself be an abnormality as it affects the normal performance of the person taking the medication.

The AAT acknowledged that whilst Ritalin has a particular psychological consequence, it concluded that the Applicant suffers from ADHD and, conversely, the treatment for that condition is not a condition that the Applicant suffers from.

As such, the treatment for the condition cannot be considered a condition in itself, and therefore the treatment through medication cannot be considered an 'abnormality' in the context of the safety relevant condition criteria.

Further, the AAT went on to say that even if the ADHD diagnosis resulted in a failure to satisfy the safety relevant condition criteria, the failure to meet the relevant medical standards "*...is not likely to endanger the safety of air navigation*" because the applicant's diagnosis was extremely mild, possibly had been misdiagnosed, and he had previously held a pilot's licence.

### Medication criterion

CASA's submissions contended that the Applicant did not satisfy the medication criterion because Mr Nam experienced side effects from his use of Ritalin. CASA made this submission in three parts, all of which were rejected by the AAT.

Firstly, the AAT rejected the contention that the Applicant ought to be considered as suffering from the side effects of Ritalin as it has the *potential to cause side effects for anyone*. The AAT pointed out that the effects on the person concerned must be considered and CASA's submission conflated the actual side effects felt by Mr Nam with the *potential* for or risk of side effects.

Secondly, the AAT did not accept CASA's proposition that it should be inferred that the Applicant suffers from anxiety when using Ritalin and that its use can mask fatigue. Although the Applicant had initial anxiety as a side effect of Ritalin, the AAT was satisfied that this had resolved. Regarding the potential for Ritalin to mask fatigue resulting in users not being aware of their actual level of tiredness, the AAT concluded that the use of Ritalin did not unintentionally mask the Applicant's fatigue, because Mr Nam was aware of his tiredness. Rather, based on the available evidence, the AAT was satisfied that Mr Nam had taken Ritalin once while driving to help him stay alert but was aware of his underlying tiredness at that time.

Thirdly, the AAT rejected the contention that the effect of Ritalin wearing off is a side effect and considered that the nature of the medication was intended to be temporary and it is inevitable that it wears off. The AAT noted that even if CASA had established this as a side effect, it was not convinced by the evidence that this effect would give rise to a substantial or real risk of being unable to fly an aircraft.

### Conclusion

The AAT set aside the decision and remitted it to CASA for reconsideration.

The AAT's careful analysis of Mr Nam's condition and medication and the resulting decision *may* open the door for other applicants who would typically be excluded from obtaining their medical certificate due to being medicated for ADHD to apply or reapply to obtain medical clearance so as to exercise the privileges available under a pilot licence.

# “BODILY INJURY” ONGOING EXAMINATION

## *BT V LAUDAMOTION*

Author: Partner Mark Sainsbury & Ava Pearson

In October 2021 the Court of Justice of the European Union (**CJEU**) handed down a decision expanding the interpretation of “bodily injury” under Article 17(1) of the *Montreal Convention* 1999 (**Montreal Convention**) to include purely psychological injuries.

### Background

The case concerns a flight between London and Vienna where the left engine exploded during take-off. Passengers, including the Applicant (**BT**), were required to evacuate and during evacuation the right engine exploded, hurling BT several metres through the air. The Applicant was diagnosed with post-traumatic stress disorder (**PTSD**).

BT brought an action in the Austrian District Court against the carrier, Laudamotion, for a declaration that the airline was liable under Article 17(1) of the Montreal Convention for treatment costs and Euro 2,500 for pain and suffering plus costs and expenses. Article 17(1) establishes that the carrier is liable for the death or bodily injury of a passenger, which took place on board, or while embarking or disembarking the aircraft. Laudamotion sought to rely on the defence that a purely psychological injury does not fall within the understanding of “bodily injury” under Article 17(1).

The decision was appealed to the Supreme Court of Austria and finally referred to the CJEU for a preliminary ruling. The main question concerned whether the psychological impairment of a passenger constitutes a “bodily injury” within the meaning of Article 17(1) of the Montreal Convention.

## Decision

In determining whether psychological impairment constitutes a “bodily injury”, the CJEU considered interpretation in accordance with Articles 31 and 32 of the *Vienna Convention on the Law of Treaties* (**Vienna Convention**).

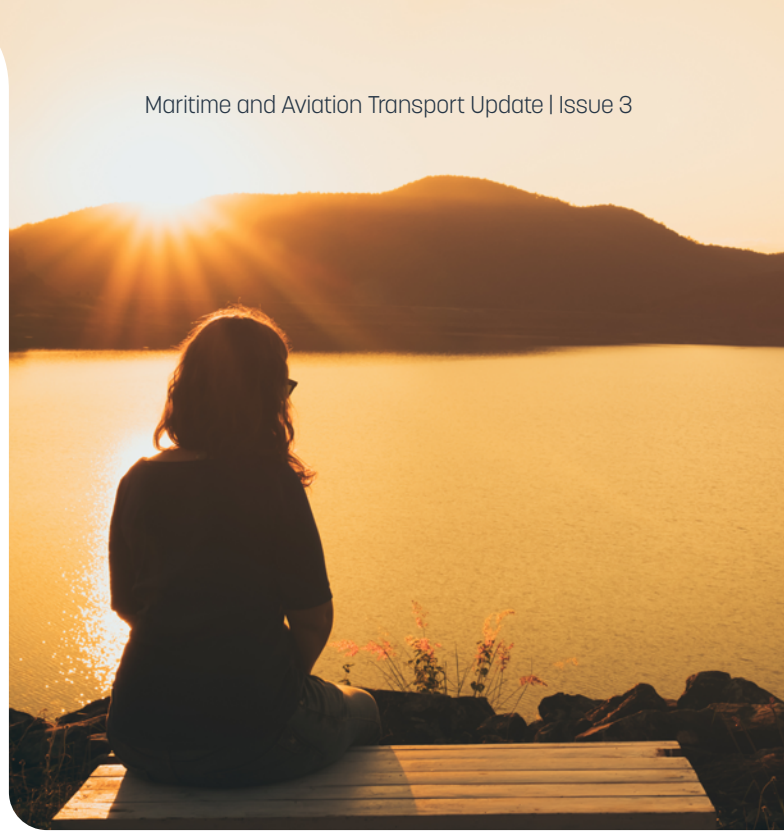
In assessing the intention of the drafters of the treaty, the Court acknowledged that ‘psychological injury’ was not expressly included in the Montreal Convention. However, and somewhat surprisingly, the Court then concluded that the term “bodily injury” cannot be interpreted as excluding psychological injury. In reaching that conclusion, the Court noted that drafters of the Vienna Convention considered that “*damages for psychological injuries can be recovered under certain conditions, that case-law develops in this area, and that it is not envisaged that there will be interferences with that development, which depends on case-law in areas other than international carriage by air.*”

The Court concluded that a carrier may be liable under Article 17(1) of the Montreal Convention for a passenger’s psychological injury only where the passenger can demonstrate that the accident adversely effected their psychological integrity of such gravity that it affected their general state of health and cannot be resolved without medical treatment.

Accordingly, the CJEU essentially set out the following limbs to be satisfied by a prospective claimant:

- i. an “accident” occurred
- ii. the accident caused an adverse psychological condition
- iii. the psychological condition was of sufficient gravity to:
  - a. affect their general state of health, and
  - b. be incapable of resolving without medical treatment.

This conclusion was reached through emphasising the importance of balancing the need for reconciling equitable compensation for passengers and allowing air carriers to protect themselves against fraudulent claims (which the CJEU appears to consider can be achieved by requiring the claimant to satisfy the above limbs).



## Conclusion

Given that the Montreal Convention is ratified and enforced in Australia via the *Civil Aviation (Carriers’ Liability) Act 1959* (Cth) (**CACL Act**), it is reasonable to question whether the CJEU’s decision will have implications in Australia.

Objectively, this decision has no legal binding on Australian courts as it is not an Australian precedent. However, it may add some impetus for Australian courts to reconsider the domestic interpretation of “bodily injury” in Australian case law so as to uphold the principle of equitable compensation enshrined within the Montreal Convention, which the CJEU considered of paramount importance.

An expansion of the scope of “bodily injury” would be in keeping with the general recognition of mental health conditions within broader society, the increased frequency of personal injury claims including a psychological/psychiatric injury (either primary or secondary), and the willingness of the courts in Australia (in other personal injury claims) to recognise such conditions and their impact on plaintiffs and to compensate them accordingly.

In that regard, we have already seen plaintiff lawyers seeking to rely on the CJEU decision in BT to argue that pure psychological injury (typically diagnosed as PTSD) should be compensable under the CACL Act regime.

No doubt all insurers, lawyers, and carriers (and other operators or agents who benefit from the CACL Act regime) will watch with great interest when an Australian court is next asked to consider broadening the definition of “bodily injury” to include pure psychological injury.



# MARITIME AUTOMATION

## AUTONOMOUS VESSELS IN AUSTRALIA

Author: Partner Michelle Taylor  
& Lawyer Sophie Priebbenow

For centuries, stories have abounded of uncrewed ships sighted adrift at sea, a phenomenon so striking it earned the moniker 'ghost ship' or 'phantom ship'. As maritime autonomous vehicle (**MAV**) technology continues to advance, however, it is probable that vessels of this nature will become common at sea and may in time comprise a significant proportion of maritime traffic. MAVs have already been utilised in military surveillance, scientific research (oceanography and hydrography), and transportation, as well as commercial applications (such as offshore oil and gas extraction).<sup>1</sup>

The current landscape of MAV usage in Australia serves as a useful 'case study' of the many beneficial applications of this technology. These applications are far-ranging and employ a combination of surface and submersible vehicles. Wherever or however such vehicles operate, they vary in their level of autonomy, from fully autonomous and capable of independent decision making, to remote-controlled vehicles operated directly by crew at sea or onshore.

The Australian Maritime Safety Authority (**AMSA**) has recently taken important steps to clarify its position on the regulation of MAVs, and is currently developing a short, medium, and long-term approach to the regulation of autonomous domestic commercial vessels as part of its five-year regulatory plan.<sup>2</sup> This approach effectively serves as a roadmap for the process of accommodating MAVs in the National Law regulatory framework. In 2018, moreover, AMSA released its policy on the regulatory treatment of unmanned and/or autonomous vessels in the medium-term, emphasising the regulator's focus on safety and protection of the environment.<sup>3</sup> AMSA's commitment to working alongside industry in developing an approach to regulating autonomous vessels was furthered at the 2019 Australian Autonomous Vessel Forum in Canberra, attended by 135 delegates from the technology, design, science, law, and defence sectors, including the Trusted Autonomous Systems Defence Cooperative Research Centre (**TAS-DCRC**), Austal Ltd (**Austal**), and Woodside Energy (**Woodside**), each of which are key players in the MAV space in Australia.<sup>4</sup>

<sup>1</sup> 'Autonomous Vessels in Australia', Australian Maritime Safety Authority (Web Page, 24 August 2022) <<https://www.amsa.gov.au/vessels-operators/domestic-commercial-vessels/autonomous-vessels-australia>>

<sup>2</sup> 'Regulatory plan – five-year regulatory outlook', Australian Maritime Safety Authority (Web Page, 22 September 2020) <<https://www.amsa.gov.au/about/corporate-publications/regulatory-plan-five-year-regulatory-outlook>>; 'AMSA policy on regulatory treatment of unmanned and/or autonomous vessels', Australian Maritime Safety Authority (Web Page, 4 January 2021) <<https://www.amsa.gov.au/vessels-operators/domestic-commercial-vessels/amsa-policy-regulatory-treatment-unmanned-and/or>>

<sup>3</sup> Australian Maritime Safety Authority, AMSA Policy on Regulatory Treatment of Unmanned and/or Autonomous Vessels (Policy Document, 2018).

<sup>4</sup> 'Autonomous technology taking to the seas', Australian Maritime Safety Authority (Web Page, 27 September 2019) <<https://www.amsa.gov.au/news-community/news-and-media-releases/autonomous-technology-taking-seas>>.



For example, Austal is currently orchestrating a patrol boat autonomy trial in the Pacific region in collaboration with the United States Navy and Royal Australian Navy (**RAN**). The trial is intended as a 'proof-of-concept' demonstration of the applicability of MAVs in defence operations, using Austal's Self-guided Maritime and Remote Technologies (**SMART**) on a decommissioned patrol boat, with the guidance of TAS-DCRC.<sup>5</sup> The Australian Defence Force has demonstrated a keen interest in MAV technology, which has spurred developments in this area. As recently as November 2023, the RAN conducted a two-week trial at Jervis Bay of autonomous technologies above and below the ocean's surface, termed 'Exercise Autonomous Warrior'.<sup>6</sup>

5 Austal Limited, 'Autonomous Ships: Accelerating a 'Smart' Path to Autonomous Capability' (Web Page, accessed 9 November 2023) <<https://www.austal.com/ships/autonomous-ships>>.

6 Autonomous and uncrewed systems tested as part of Exercise Autonomous Warrior', Australian Defence Force (Media Release, 3 November 2023) <<https://www.defence.gov.au/news-events/releases/2023-11-03/autonomous-and-uncrewed-systems-tested-part-exercise-autonomous-warrior>>.

TAS-DCRC has taken the initiative in developing materials relevant to commercial entities working in the development and implementation of MAVs. Following a period of significant engagement and consultation with Australian government, commercial, and defence stakeholders, in April 2022 TAS-DCRC released the first edition of The Australian Code of Practice for the Design, Construction, Survey and Operation of Autonomous and Remotely Operated Vessels (**Code of Practice**).<sup>7</sup> The Code of Practice was developed for MAVs *capable* of operating without any crew onboard, both above and below the surface. The Code of Practice is intended to establish a best practice regulatory standard for the design, construction, survey, and operation of MAVs in Australia, while also providing a voluntary standard against which domestic commercial MAVs can be compared when applying to AMSA for a certificate or other approval to operate in Australian waters, including exemptions from the usual requirements or standards that apply to domestic vessels. Other guidance materials have also been developed by TAS-DCRC in tandem with the Code, including the COLREGs Operator Guidance Framework (for compliance with the Convention on the International Regulations for Preventing Collisions at Sea, 1972), which is intended for use either as an annex to the Code of Practice or standalone.<sup>8</sup>

7 Trusted Autonomous Systems, Australian Code of Practice for the Design, Construction, Survey, and Operation of Autonomous and Remotely Operated Vessels (Code of Practice, 1st Edition, April 2022).

8 Trusted Autonomous Systems, Australian Code of Practice for the Design, Construction, Survey, and Operation of Autonomous and Remotely Operated Vessels – Annex A: COLREGS Guidance Framework (Guidance Framework, 1st Edition, May 2022).

In September 2022, TAS-DCRC held the first major commercial demonstration of MAVs in Australia, hosted at the Australian Institute of Marine Science (**AIMS**) tropical marine technology test range, Reefworks, located near Townsville.<sup>9</sup> This event serves as a further example of the cooperative efforts of Australian government agencies and industry. Ten remote-controlled MAVs were displayed at the event, prior to the 2022 Australian Autonomous Vessel Forum at the same venue. AMSA provided regulatory approval for the event, with representatives of AMSA also attending the Forum. AIMS itself has also been involved in testing MAVs in Australian waters as a method of marine monitoring, particularly in conditions usually considered unsafe for human divers. A larger fleet of these vessels would allow AIMS to collect a considerable amount of data on water temperature and quality, coral cover, and threats to reefs.<sup>10</sup>

9 'Uncrewed boats put to test in Australian first', Australian Institute of Marine Science (Media Release, 28 September 2022) <<https://www.aims.gov.au/information-centre/news-and-stories/uncrewed-boats-put-test-australian-first>>.

10 Autonomous surface vessels (ASVs): Developing safe and effective ASVs for marine monitoring', Australian Institute of Marine Science (Web Page, accessed 9 November 2023) <<https://www.aims.gov.au/research/technology/reefscan/autonomous-surface-vessel>>.

Fugro Australia Pty Ltd has now successfully employed a 12 metre unmanned, remote-operated surface vessel on Woodside's Offshore North West Shelf Project, named the *Fugro Maali*.<sup>11</sup> This project was initiated in 2021 with the support of AMSA and the Pilbara Ports Authority, operating in accordance with a Certificate of Operation and Certificate of Survey issued by AMSA. This project was a significant experiment in that there were no prior industry standards in place, nor any operational model to follow, especially for a vessel of this size.<sup>12</sup> The purpose of the Fugro vessel was to conduct a remote inspection of gas trucklines to comply with Woodside and regulatory requirements. The result was that this project improved safety for staff by reducing offshore hours and produced 97% less CO2 emissions for an inspection vessel navigating approximately 1300 nautical miles.

It is apparent that the 'big picture' of MAV development in Australia is one of rapid growth and innovation that is frequently outcompeting the pace of regulation. However, it is also clear that government agencies such as AMSA and AIMS are engaged with industry concerns and interests and that there is steady communication across these sectors. MAV technology offers new solutions and opportunities in defence, transport, and scientific research, amongst other fields, and will only continue to diversify. The ongoing challenge for Australian regulators, especially AMSA, will be keeping pace with these changes and creating a suitable environment in which this technology can flourish.

11 Fugro Australia Pty Ltd, 'Fugro completes first USV remote inspection for Australia's Woodside' (Web Page, 30 July 2021) <<https://www.fugro.com/news/business-news/2021/fugro-completes-first-usv-remote-inspection-australia-woodside>>.

12 Fugro Australia Pty Ltd, 'Shaping the future of remote and autonomous marine operations' (Web Page, 28 March 2023) <<https://www.fugro.com/news/long-reads/2023/shaping-the-future-of-remote-and-autonomous-marine-operations>>.

## MARITIME AUTOMATION

# INSURANCE ISSUES

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& Lawyer Sophie Priebbenow

Two critical questions arise for marine insurers from the increasing prominence of maritime autonomous vessels (MAVs): the degree to which human error is at fault in a claim (given the varying degrees of autonomy which MAVs exercise), and the ensuing responsibility of manufacturers of MAVs. An autonomous vessel does not equate to an uncrewed vessel, as there may still be crew onboard to assist with input, or who are assisted by autonomous systems. The degree of autonomy question will also lead to questions about the apportionment of blame when accidents occur, as it is probable that MAVs may be controlled to different degrees at different stages of a given voyage or controlled only in an emergency. Some MAVs will operate underwater and others on the surface, which will invoke unique considerations around navigation and the possibility of collisions. In the short- and medium-term, these concerns will be borne predominantly by insurers of small and short voyage vessels, as these are the types of MAVs in the active development and testing stages. Commentators have debated the implications of these issues increasingly in recent years.<sup>1</sup>

1 See, for example, Alan M. Weigel and Thomas H. Belknap Jr., 'Autonomous Vessels: Legal, Regulatory, and Insurance Issues' (2020) 3(3) *Journal of Robotics, Artificial Intelligence and Law* 163; Ling Zhu and Richard W. W. Xing, 'Probing Civil Liability Insurance for Unmanned/Autonomous Merchant Ships' in Pierpaolo Marano and Kyriaki Noussia (eds), *InsurTech: A Legal and Regulatory View* (Springer, 2020); Mayank Suri, 'Autonomous Ships And The Proximate Cause Conundrum – A Maritime and Insurance Law Tango' (2020) 51(2) *Journal of Maritime Law and Commerce* 163.

New risks also arise in respect of MAVs, including cyber security, software problems, and faulty design. These are not entirely novel considerations, but they are likely to be at the forefront of claims in respect of MAVs and increase the insurance industry's exposure due to increased dependence on MAV technology to perform its role, potentially excluding any human involvement beyond the manufacturing stage. Risks of this nature may spur MAV operators to obtain insurance other than marine insurance, for example cybersecurity insurance and product liability insurance. It will be necessary to take these considerations into account when creating specialist policies or adapting existing insurance policies and wording for MAVs. Other considerations include how the duty of disclosure alters with autonomous vessels. Will it become necessary, for instance, to disclose the details of software used to operate the MAV in question, or of operational data?

It is true that some risks will be reduced – the absence of a crew, for example, will reduce claims and risk on account of human error and judgment, including due diligence and negligence issues, as well as personal injury. Many risks for which marine insurance already exists will also remain the same, including collision liability, as well as cargo and pollution liability in certain circumstances. These risks increase with the size of the vessel if the vessel is designed to perform the same functions and carry the same number of passengers or cargo as crewed commercial vessels. Piracy also remains a potential issue, although the risk is most likely to derive from onshore hackers, and there will often be no crew or passengers to take as hostages.

Both the Shipowners' Club and Gard are at the forefront of efforts to evolve and offer insurance cover for MAVs. The Shipowners' Club offers specialist liability insurance for owners and operators of MAVs, providing insurance for 39 MAVs as of 31 December 2022.<sup>2</sup> This policy was developed in the wake of consultation with owners, operators, and manufacturers of MAVs, and is provided on a plain language policy wording, underwritten on an 'all risks' basis. The policy addresses several of the concerns highlighted in this article, including the risk of collision, cyberattack, and pollution. Gard has also begun insuring autonomous vessels, including the research vessel *Mayflower* and the cargo vessel *Yara Birkeland*. Gard provided both the P&I Cover and Hull and Machinery Cover for the latter.<sup>3</sup> Although there are a range of issues with which insurers (and insured owners and operators of MAVs) will have to grapple in the coming years, the insurance industry is adapting to and confronting the challenges ahead.

<sup>2</sup> Shipowners' Club, 'Liability insurance for owners and operators of maritime autonomous vessels' (Web Page, accessed 14 November 2023) <<https://www.shipownersclub.com/our-services/cover-provided/autonomous/>>; Shipowners' Club, Maritime Autonomous Vessel Liability Insurance (Brochure, undated).

<sup>3</sup> Jarle Fosen, 'Another step towards a zero-emission future' (Web Page, 21 December 2020) <<https://www.gard.no/web/updates/content/30906149/another-step-toward-a-zero-emission-future>>; Jarle Fosen, 'One small step for MASS' (Web Page, 26 May 2021) <<https://www.gard.no/web/updates/content/31771486/one-small-step-for-mass>>.



# MARITIME AUTOMATION

## REGULATION

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On an international regulatory level, the International Maritime Organisation (**IMO**) (including the Maritime Safety Committee, or MSC) and Comité Maritime International (**CMI**) have worked extensively to develop potential solutions to the issues posed by maritime autonomous surface ships (**MASS**). The IMO's aim has been to prioritise safety of life at sea, as well as cargo and the vessel itself in the process of developing a regulatory framework for MASS that can keep pace with technological developments.

The CMI established an International Working Group on Unmanned Ships (**IWG**) in 2015, which has since produced a Position Paper as well as a submission to the IMO MSC 99<sup>th</sup> Session regulatory scoping exercise for the use of MASS in May 2018.<sup>1</sup> The purpose of this exercise, which began in 2017, was to analyse existing ship safety treaties to determine how MASS might be regulated and addressed in selected IMO instruments. The IMO considered the relative degree of autonomy exercised by different autonomous vessels, from Degree One (crewed ship with automated processes and decision support) to Degree Four (fully autonomous ship).<sup>2</sup> In its submission,

CMI grouped together the responses it had received from 23 National Maritime Law Associations across the globe to its IWG Questionnaire on Unmanned Ships, which asked how national laws would respond to unmanned shipping in the context of pre-existing IMO conventions. The submission also summarised the IWG's work on IMO conventions, namely SOLAS, MARPOL, COLREGs, STCW, FAL, SAR, SUA, and the Salvage Convention, identifying provisions of these conventions which might require clarification or amendment.<sup>3</sup> Although there are significantly more IMO conventions of relevance, these eight conventions were selected for initial analysis.

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1 Maritime Safety Committee (MSC), 99th session 16-25 May 2018, International Maritime Organization (Media Release, 2018) <<https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MSC-99th-session.aspx>>; Comité Maritime International, CMI International Working Group Position Paper on Unmanned Ships and the International Regulatory Framework (Position Paper, undated).

2 'Autonomous ships: regulatory scoping exercise completed', International Maritime Organization (Media Release, 25 May 2021) <<https://www.imo.org/en/MediaCentre/PressBriefings/pages/MASSRSE2021.aspx>>.

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3 Comité Maritime International, CMI IWG Submission To MSC 99 (Submission Paper, 13 February 2018).





At the IMO MSC 103<sup>rd</sup> Session, the MSC completed its regulatory scoping exercise for the use of MASS. The MSC ultimately determined the optimal way forward was to develop a goal-based MASS instrument, potentially in the form of a 'MASS Code', addressing goals, functional requirements, and corresponding regulations, applicable to all MASS irrespective of autonomy level. MSC invited member states to submit proposals on how to proceed toward a future session of the MSC and published the outcome of the regulatory scoping exercise (including full analysis of treaties).<sup>4</sup> By creating an overarching instrument which applies to MASS, the IMO can avoid the exhaustive task of amending existing conventions and altering the terms or definitions of terms in each, and proceed toward establishing a separate international Code applying specifically to MASS.

The work of IMO and CMI to develop a means of effectively regulating MASS is an ongoing project. Following the outcome of the IMO MSC's regulatory scoping exercise, a joint IMO working group termed the MSC-LEG-FAL Working Group was formed and held its first session in 2022.<sup>5</sup> The Joint Working Group is comprised of MSC, the Legal Committee, and the Facilitation Committee. The second session took place in April 2023 at IMO Headquarters, and the third session was slated to take place in September 2023. The Joint Working Group will be responsible for determining how to address common high-priority safety, legal, and facilitation issues regarding MASS.<sup>6</sup> Currently, the MSC aims to adopt a non-mandatory MASS Code by 2025, which will form the foundation for a *mandatory* goal-based MASS Code, to enter into force on 1 January 2025.<sup>7</sup> It is apparent that the CMI also has a live interest in these issues, and that there will be ongoing opportunities for National Maritime Law Associations, including the Maritime Law Association of Australia and New Zealand (MLAANZ) to contribute to future discussions on the regulation of autonomous vessels.

4 International Maritime Organization, Outcome of the Regulatory Scoping Exercise for the use of Maritime Autonomous Surface Ships (MASS) (Annex, MSC.1/Circ.1638, 3 June 2021).

5 Joint MSC-LEG-FAL Working Group on Maritime Autonomous Surface Ships (MASS)', International Maritime Organization (Media Release, 2022) <<https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/Joint-MSC-LEG-FAL-Working-Group-on-MASS.aspx>>.

6 'Developing a regulatory framework for autonomous shipping', International Maritime Organization (Media Release, 27 April 2023) <<https://www.imo.org/en/MediaCentre/Pages/WhatsNew-1872.aspx>>.

7 Autonomous shipping', International Maritime Organization (Media Release, 2022) <<https://www.imo.org/en/MediaCentre/HotTopics/Pages/Autonomous-shipping.aspx>>.

## About Sparke Helmore

Our national Maritime, Aviation & Transport team is led by Partners Michelle Taylor and Mark Sainsbury who have provided services to the transport sector for over 25 years. Combining dedicated legal and industry specialists, our team offers domestic and international expertise (with a strong focus on the UK and Asia-Pacific) and advises clients on all facets of maritime, aviation and transport law including:

### Shipping

- Major shipping casualties and pollution
- Admiralty litigation
- Marine insurance
- Law reform advice
- International conventions
- Charterparty and sea carriage
- Port services (tug and towage)

### Aviation

- Coverage counsel
- Defence of personal injury, dependency and property damage claims
- Licencing and regulatory issues for pilots and operators
- Defending CASA prosecutions
- Drone regulation

### Transport

- Supply chain disputes
- Freight forwarder service agreements and standard trading conditions
- Defending National Heavy Vehicle Regulator prosecutions (chain of responsibility)
- Complex heavy vehicle claims.

Committed to industry participation, Sparke Helmore is a member of MLAANZ, Shipping Australia and ALAANZ and are thought leaders in this space, contributing to various publications and international conferences. We are also an Associate Member of Shipping Australia Ltd. Michelle Taylor is the immediate past President of the Maritime Law Association of Australia and New Zealand, on the Board of the Australian Maritime Safety Authority, and is an Executive of Australian Maritime and Transport Arbitration Commission. Our Maritime, Aviation and Transport team have also been recognised in a number of legal directories for shipping, including *Legal 500 Asia-Pacific*, *Chambers Asia Pacific Band 2*, *Best Lawyers*, and *Doyle's*.

## Get to know our people



### Spotlight on Sophie Priebbenow, Maritime & Transport Lawyer

A recently admitted lawyer in Sparke Helmore's Maritime & Transport team, Sophie Priebbenow was determined to

pursue a career in law. However, she also retained a love of maritime history fuelled by her studies on the history side of her Laws/History undergraduate degree. This passion culminated in her Honours thesis on disease in the Royal Navy in the 17<sup>th</sup> Century and led to roles in the heritage division of the Australian Maritime Safety Authority, undertaking a desktop review of lighthouse artifacts, and summarising Australian maritime law cases for the National University of Singapore's Centre for Maritime Law.

Maritime law was the perfect "vessel" for Sophie to combine her technical law skills with her passion for the history of rules and conventions in modern shipping. Since joining Sparke Helmore as a paralegal, Sophie has grown into her role as a fully-fledged lawyer, cutting her teeth assisting Michelle Taylor on the high-profile X-Press Pearl matter.

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Ava has recently completed her law degree and is looking forward to being admitted and taking on more aviation work as she has a genuine passion for the industry.