



Australian Association for Uncrewed Systems (AAUS)

Response to

**Department of Infrastructure, Transport, Regional Development and Communications
(DITRDC)**

Review of Domestic Commercial Vessel Safety Legislation

March 30, 2022

Background

The **Australian Association for Uncrewed Systems (AAUS)** is pleased to provide a submission to the Government's review of domestic commercial safety vessel safety legislation.

AAUS is Australia's **oldest and largest industry advocacy group** for the uncrewed system industry. AAUS represents drones across all three domains: air, land, and maritime. AAUS' objective is to promote a professional, safe, and commercially viable uncrewed systems industry. AAUS achieves this through its industry advocacy and promotion, education and outreach, and networking activities.

AAUS provides **a single representative voice** for the full breadth of the uncrewed systems industry. AAUS' **3,000 members** span the small-to-large enterprises, manufacturers, licensed and unlicensed operators, training providers, academic institutions, government, and other supporting technical and professional services to the Australian drone industry. **Input from our members** has been used to prepare this submission.

AAUS wishes to support this effective system of safety regulation for vessels review and ensure it includes uncrewed vessels. Our response aims to finally **address problems experienced by the industry**. A comprehensive review will **enable appropriate changes in the regulation** and foster future developments in this nascent industry.

Australia's Maritime Uncrewed System Sector

The uncrewed systems sector within the maritime domain in Australia consists of developers, manufacturers, and operators of Maritime Autonomous Systems (MAS).

Broadly, MAS consists of:

- Uncrewed Underwater Vessels (UUV)/Autonomous Underwater Vehicles (AUV)
- Uncrewed Surface Vessels (USV)
- Remotely Operated Vehicles (ROV)

Currently, MAS are operated in the following applications:

- Defence
- Environmental Monitoring
- Marine Science Research
- Underwater Asset Inspection
- Maritime Security
- Oil & Gas
- Hydrographic survey
- Commercial shipping

Submission Key Points

AAUS commends DITRDC for the review and opportunity to respond. We have consulted with our membership and have identified the following key points that we would like to be considered:

1. The Importance of developing a MAS sector within Australia
2. The current state of regulation from an industry perspective
3. Future development of regulation from an industry perspective

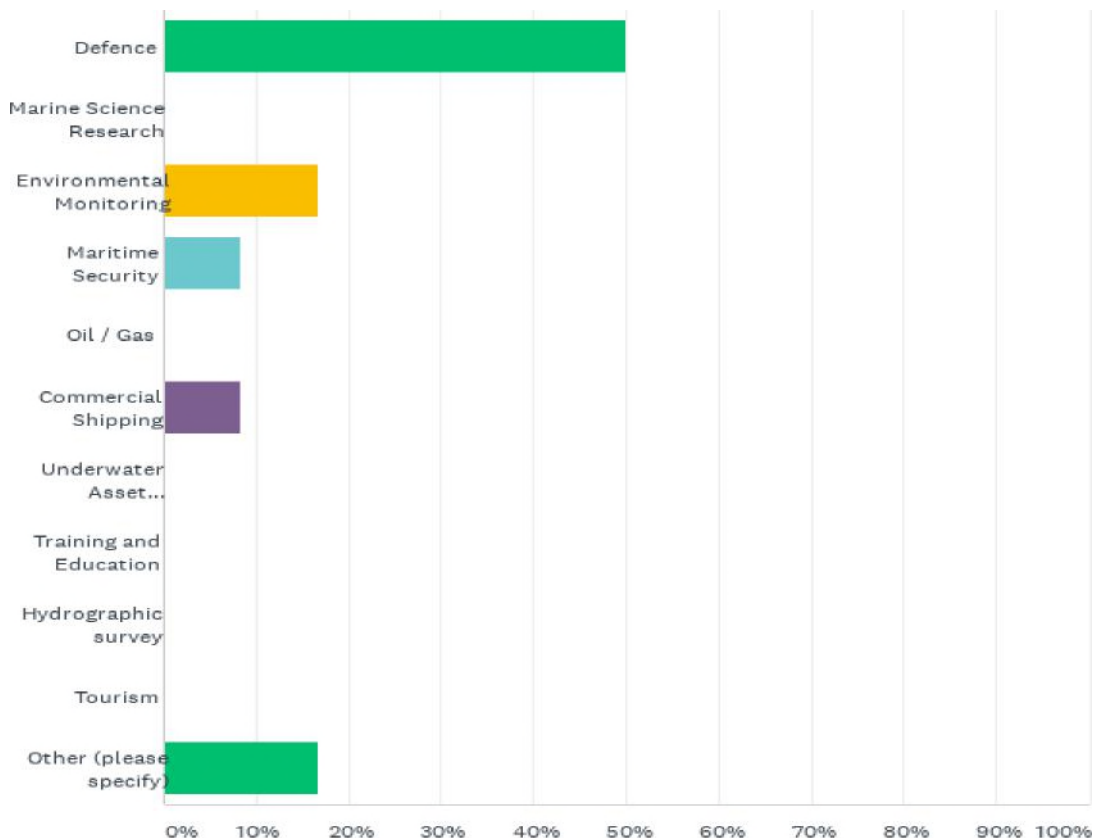
1. The Importance of developing a MAS sector within Australia

- **Description of MAS current growth trajectory**

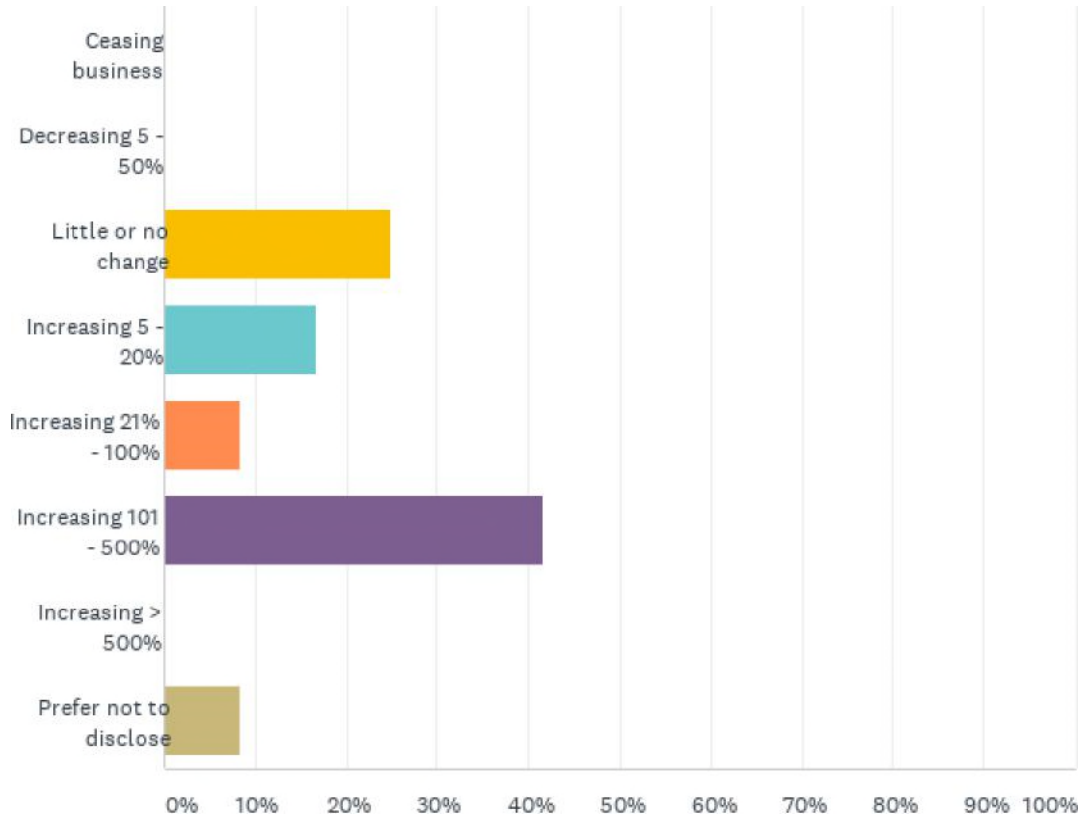
Following a similar trajectory as aerial unmanned systems a decade ago, Australia's uncrewed systems sector is growing exponentially. The Maritime Working Group is one of AAUS' largest working groups and also one of the most diverse (UUV/AUV, USV, ROV). This growing industry is projected to follow the hype curve and become very significant by the turn of the decade. Australia is in a unique position to develop a global industry in autonomous marine vehicles given the current industry capability and the growing requirement for coastal surveillance, monitoring, and protection.

- **Projections on industry growth and value**

AAUS members' most recent survey showcases key applications that were identified as earning the most revenue for MAS operations in 5 years. Without surprise, Defence is believed to become the major driver of revenue followed by Environmental Monitoring, Maritime Security, and Commercial Shipping.

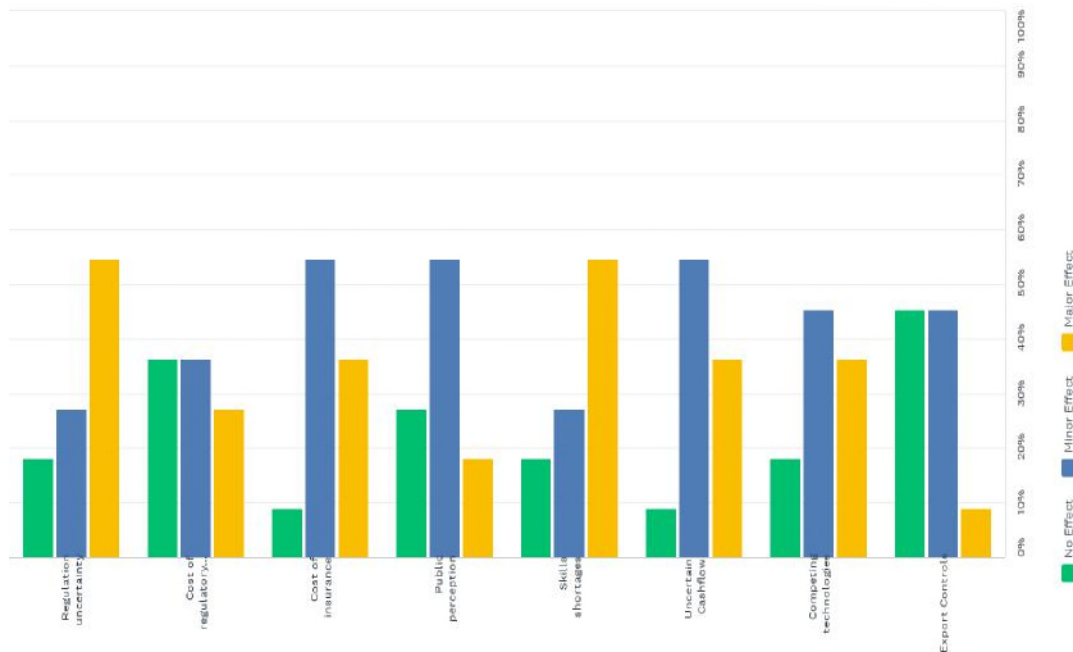


The same survey asked respondents how they saw their MAS business revenue changing in the next 5 years and nearly half of the respondents are expecting an increase between 100 and 500%.



When AAUS members were asked to rate which risks are currently impacting their business in Australia, they highlighted that **Regulation uncertainty and skill shortages were their strongest challenges.**

Cost of insurance, Public perception, cashflow uncertainties, and competing technologies are also believed to slightly challenge our MAS ecosystem.



- **Seeking government support to encourage a nascent industry**

Today, there is an urgent **need for a multi-domain approach to autonomous systems regulation across air, sea, and land domains**. There are many synergies across these domains, yet they require an expertise base in autonomous systems, and the leverage of an interdisciplinary team to completely address.

Our industry has **clear and urgent expectations from the government to step in**. We are seeking the government to support and encourage the growth of an industry with significant potential through **effective, targeted, and flexible, regulatory measures**.

2. The current state of regulation from an industry perspective

● **The current state of the regulation (pros/cons)**

When asked to provide feedback, MAS operators have reported that their experience with current legislation does not really take into account the use of uncrewed vessels. Their valuable experience was summarised in the following table indicating the pros and cons of the current state of regulation:

Existing Regulation Pros	Existing Regulation Cons
<ul style="list-style-type: none"> ● Operators have had positive interactions with AMSA when trying to obtain exemptions. ● Operators have received exemption permits with relative ease. 	<ul style="list-style-type: none"> ● The legislation is currently cumbersome because it applies the standards and rules for primarily the passenger and crew which do not match with uncrewed risk profiles. ● The legislative framework does not manage risks appropriately (Safety Management System for the operation of the vessel and a Vessel Management Plan for asset management). ● The current regulation is not adapted to the specificities of the platform neither in terms of construction nor in operation.

● **Regulatory gaps which need to be addressed**

The current legislation is not fit for the purpose of safely regulating autonomous systems. The following gaps should be addressed in the next iteration of the legislation:

- 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 (e.g. minimum crewing).
- Surveyors and regulators often have minimal experience in autonomous systems, yet current legislation doesn't allow for autonomous systems experts to formally assist in the safe regulation of these systems.

- Small, uncrewed vessels deployed from a vessel are treated with 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.
- Test and evaluation of uncrewed systems under development has no fit-for-purpose pathway through the regulation process. The temporary operations exemption process is valid for 90 days, which is insufficient time for development & acceptance testing for an autonomous system.
- There is no pathway for autonomous vessel swarms (multiple platforms). Yet, autonomous systems are often adopted to enable organisations to efficiently scale their operations through force multiplication.
- 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 too.
- 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.
- Typical requests for information to meet “AMSA requirements” include details of platform construction, control & navigation software development, and the competency framework for the designer. This information will simply not be available for many globally produced systems as it is company proprietary.

3. Future development of regulation from an industry perspective

The industry would like this review to consider the following 4 key aspects which should be translated into changes in future iterations of the legislation:

- **Reducing regulatory risks to incentivise the industry**

The new regulation should reduce the current burden on the industry/regulator. It appears to our members that the legislation should reflect best practices (a risk-based rather than a prescriptive approach). The legislation must take a **risk-based approach** and **enable the regulators to focus their efforts on the higher risk vessels** while having a **more streamlined path for lower risk vessels** (such as small autonomous vehicles).

Test and evaluation for autonomous systems under development (or under accreditation) must be **more streamlined and more cost-effective**. This could be through working with test ranges (e.g. ReefWorks) to set areas where developers are able to safely test their vessels without requiring the full regulatory application process of the current legislation.

- **Adaptation: Principles of future regulations**

AAUS' MAS members and operators have requested that we advocate on their behalf so that the government allows the industry to develop the required codes of practice.

The legislation should be flexible to account for different **operating environments** requiring different risk-mitigation controls, and to enable the adaption of new, safer controls as they are developed (e.g. improved underwater communications systems).

The legislation should be **adaptive** to keep up with the fast-paced evolution of the autonomous systems industry. This requires an **interdisciplinary approach** with autonomous systems industry bodies as well as surveyors, engineers, navigators, operators, and legal experts.

The Legislation must be **fit for the purpose** of autonomous systems, addressing their risks with appropriate controls and standards (e.g. licensing).

We must ensure the government listens to the industry and ensures that regulations are compatible with building the industry and don't hinder it.

- **Learning from International efforts**

Australia, given its encompassing coastline, remote position, and low population, stands to benefit significantly if we invest in and encourage the MAS industry. It has massive potential to **create jobs, serve as a regional hub, and translate this value into export opportunities**.

Legislation must enable the adoption of a risk-managed approach to autonomous systems that enable safe operation while keeping the larger scale, multiple deployments vision for these systems in mind. The learnings of the air domain by being restrictive of Beyond-Visual-Line-Of-Sight (BVLOS) when this is where much of the industry wanted to get to, caused an unnecessary stovepipe and subsequent burden on all sides. This DCV legislation review has the opportunity to take the current vision for the future of autonomous systems in Australia into account in the future regulatory framework for these systems. This has the potential to establish Australia as a leader in the global MAS industry and through this position of power, **attract uncrewed developers to Australia from overseas** as the rest of the world struggles in adapting their legislation to manage these systems.

The regulation should enable the development of a forward-thinking **licensing and accreditation process** that enables Australia to not only **keep pace with international autonomous systems development but become a leader.**

- **Defence MAS**

AAUS' MAS survey has showcased that Defence MAS has the strongest growth potential moving forward. We have seen a significant and exponential increase in defence MAS funding over the past 24 months. Australian operators would like to encourage the government to **fund and support the development of a fit-for-purpose regulatory framework for the MAS ecosystem.**

Defence itself is challenged to acquire, operate and sustain MAS. There is inexperience and varying levels of understanding across Defence so a **fit-for-purpose regulatory framework for the MAS ecosystem** that is consistent across Defence would be a significant contributor to more rapid fielding of operational MAS.

Conclusion

AAUS welcomes the opportunity to represent our membership in the maritime uncrewed systems sector in this response to the **Review of Domestic Commercial Vessel Safety Legislation for the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC)**

We welcome the opportunity to further develop **the Importance of a MAS sector within Australia**. Nevertheless, provided **the current state of regulation from an industry perspective**, and the challenge faced by our operators we strongly believe that the DITRDC should take into consideration the set up of a dedicated MAS regulatory framework in the **future development of the regulation from an industry perspective** to properly enable the MAS sector full potential growth and help Australian MAS industry lead on the international stage.