Public Consultation Explanatory Materials:
Draft Australian Code of Practice for the Design, Construction, Survey and Operation of Autonomous & Remotely Operated Vessels
('Australian Code of Practice')

Public consultation runs from 15 November 2021 to 15 December 2021.

We invite you to submit comments via the webform available on the TAS website.

Table of contents

Background on the Code and consultation process

Trusted Autonomous Systems (TAS) has led the development of a draft Australian Code of Practice for the Design, Construction, Survey and Operation of Autonomous & Remotely Operated Vessels ('Australian Code of Practice') over the last year. Development was informed by an analysis of existing, publicly available codes and guidelines for autonomous and remotely operated vessels[1] and significant stakeholder engagement.

Access the **"TAS Report: Analysis of Available Standards and Codes for Autonomous and Remotely Operated Vessels"** here.

The draft Australian Code of Practice is intended to represent best practice and deliver greater certainty to industry by providing voluntary, clear standards that are tailored for common autonomous and remotely operated vessels in Australia.

The draft Australian Code of Practice is now available for public consultation with the intent of ensuring all stakeholders have an opportunity to provide feedback. This will enable refinement of the Code to ensure it is as practical and useful as possible for our unique Australian context.

Who needs to review and comment on this draft Code?

Stakeholders involved in the Australian autonomous vessel ecosystem, including designers, manufacturers, surveyors/third party consultants, operators, customers, regulators, and researchers.

What does the Code cover?

The Australian Code of Practice applies to domestic commercial vessels, but is intended to also be instructive for regulated Australian vessels. It covers the design, construction, survey, and operation of autonomous and remotely operated vessels.

How is the Code meant to be applied?

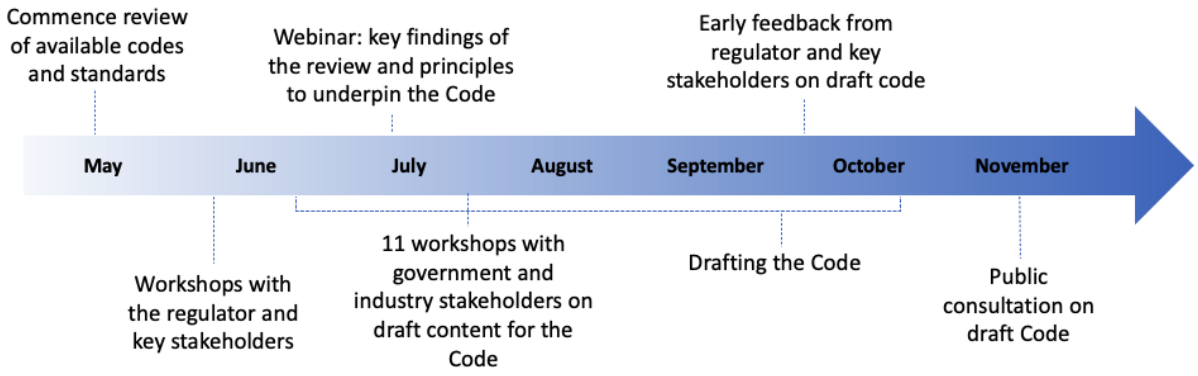
In the short term, the Australian Code of Practice is intended to be applied as follows:

- A reference point for best practice for the design, construction, survey, and operation of autonomous and remotely operated vessels in Australia
- The standard against which to demonstrate compliance when applying to the Australian Maritime Safety Authority (AMSA) to operate via a Specific Exemption or General Exemption

In the medium term, once the Code has been used for 12 months and further refined, it is hoped AMSA may incorporate it into the maritime regulatory framework more formally.

[1] *UK Code of Practice for Maritime Autonomous Surface Ships, the LR Code for Unmanned Marine Systems*, and *DNV GL's Autonomous and Remotely-operated Ships Class Guideline*

What has been the process for the development of the Code?



What does the Australian Maritime Safety Authority (AMSA) think about the Code?

AMSA has been closely consulted throughout the project and has indicated support for the development of the Code. Once completed, AMSA will likely publish the Code and supporting guidance materials on their website and encourage owners/operators to demonstrate compliance with the Code when applying for specific exemptions.

AMSA will monitor use of the Code, and any refinements that occur over the next 12 months and will then consider whether to incorporate it into the maritime regulatory framework in a more formal way.

What will happen after public consultation closes?

After public consultation closes all feedback will be reviewed, and then:

- A Consultation Feedback Report will be prepared
- The Australian Code of Practice will be updated
- Guidance Materials will be finalised
- The updated Australian Code of Practice and accompanying Guidance Materials will be released for use on the TAS website in February 2022. It is expected that this material will also be available on the AMSA website.

Where can I get more information?

To get more information on the Australian Code of Practice project, you can:

- View previous TAS website articles on this project:
  - New TAS project to develop an Australian Code of Practice for the Design, Construction, Survey and Operation of Autonomous and Remotely Operated Vessels in 2021
  - Outcomes of successful webinar on TAS's project to develop an Australian Code of Practice for the Design, Construction, Survey and Operation of Autonomous & Remotely Operated Vessels in 2021
- Email us at info@tasdcrc.com.au

Access the draft **Australian Code of Practice** here.

Information on the Australian Code of Practice

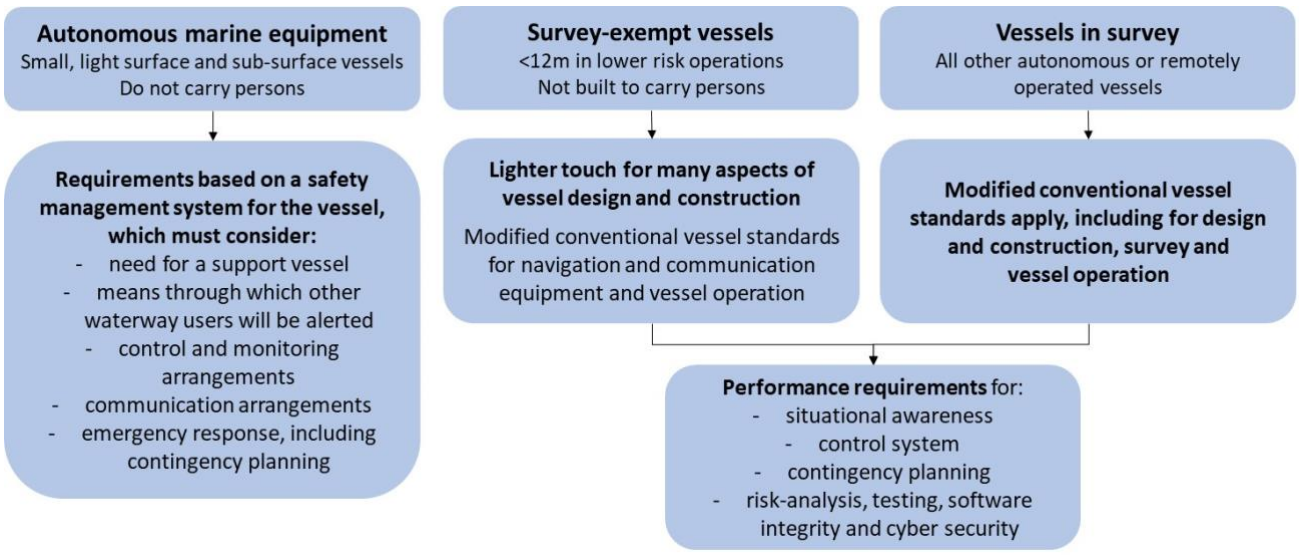
What are the key principles underpinning the Code?

The development of the draft Code of Practice was underpinned by a number of principles. These included:

- The Australian Code of Practice should align with the Australian regulatory framework for conventional domestic vessels. The areas requiring new tailored requirements are: situational awareness; control systems; software integrity and testing; and safe states.
- The operational requirements that apply to conventional vessels in Australia should apply to autonomous and remotely operated vessels, with some differences:
  - the safety management system requirements need to be tailored to autonomous and remote vessel operations;
  - the minimum crew and crew competency requirements need to be modified; and
  - there will be additional requirements for contingency planning and control hierarchies, which should be informed by the content of the three available codes and standards.
- A risk analysis approach, which focuses on the impact of potential failures, should apply to the development and testing of novel systems on the vessel, including the systems for situational awareness and control and all systems which do not meet the requirements of the conventional vessel standards.
- Requirements should be commensurate with the risk posed.

What are the categories and corresponding requirements in the Code?

To ensure that the requirements of the draft Code are tailored to the risks of the vessel, the draft Australian Code of Practice includes three vessel categories: autonomous marine equipment; survey-exempt vessels; and vessels in survey.



What are the requirements for autonomous marine equipment?

For the purposes of the draft Code of Practice, 'autonomous marine equipment' includes small, light and slow vessels. These vessels are likely to be less than 5 metres in length and to operate at speeds of less than 5 knots.

Under the draft Code, the vessel and operational risks of autonomous marine equipment must be managed through a safety management system, which identifies risks and includes procedures to eliminate or minimise those risks so far as reasonably practicable. The safety management system must address:

- the need for a support vessel;
- the means through which other waterways will be alerted as to the presence of the vessel;
- the control and monitoring arrangements for the vessel;
- communication arrangements; and
- emergency response arrangements, including contingency planning.

The draft Code also requires autonomous marine equipment to:

- be collected within a reasonable period if it stops operating;
- not contain hazardous materials that may pose a risk to the environment or third parties if the vessel stops operating; and
- comply with some aspects of COLREGS, such as the lights requirements.

What are the requirements for 'survey-exempt vessels'?

For the purposes of the draft Code of Practice, 'survey-exempt vessels' include low complexity vessels less than 12 metres in length which are not built to carry persons and do not carry dangerous goods, tow other vessels or have an inboard petrol engine.

In line with the requirements for lower risk conventional vessels, under the draft Code basic requirements apply to the construction, flotation / stability, machinery, steering, watertight / weathertight integrity and fire safety aspects of the vessel.

Under the draft Code, modified conventional vessel standards and additional performance requirements apply to the vessel's:

- navigation and situational awareness system;
- control system;
- communications system; and
- operations.

These, and other novel systems on the vessel, must be developed through risk-based analysis.

In addition, the draft Code requires survey-exempt vessels to meet requirements for contingency planning, software integrity, cyber security, testing and third-party review of risk assessments.

What are the requirements for ‘vessels in survey’?

For the purposes of the draft Code of Practice, all vessels that are not ‘autonomous marine equipment’ or ‘survey-exempt’ are ‘vessels in survey’.

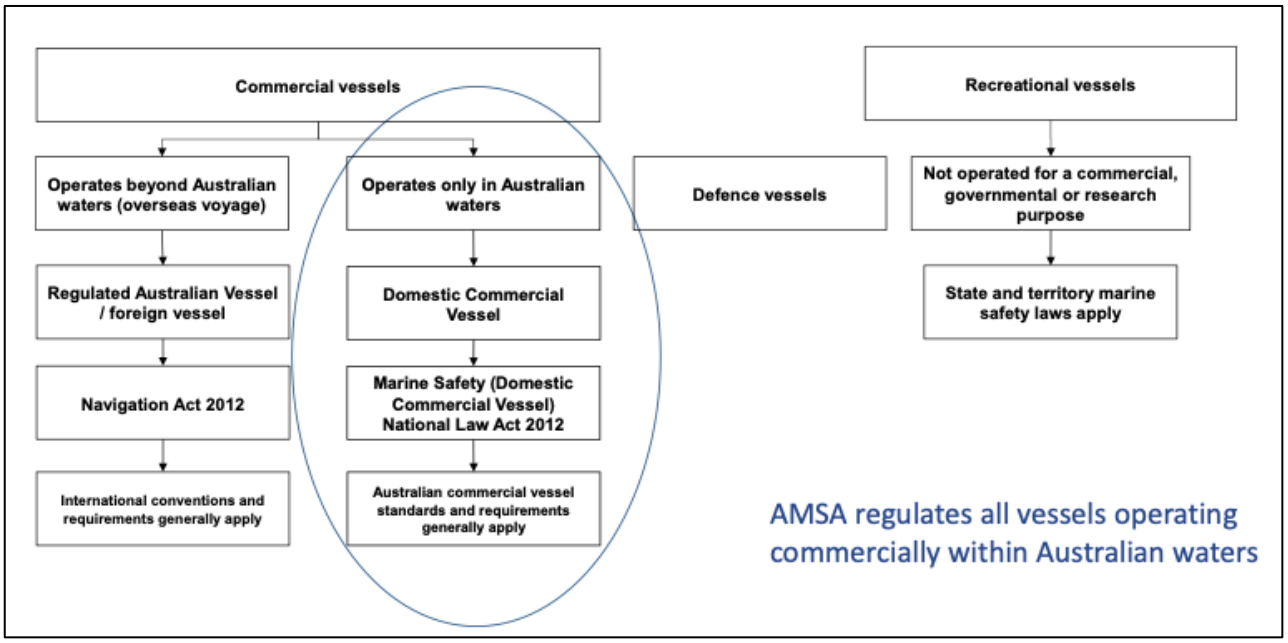
Under the draft Code, modified conventional vessel standards and additional performance requirements apply to all aspects of the vessel, including the vessel’s:

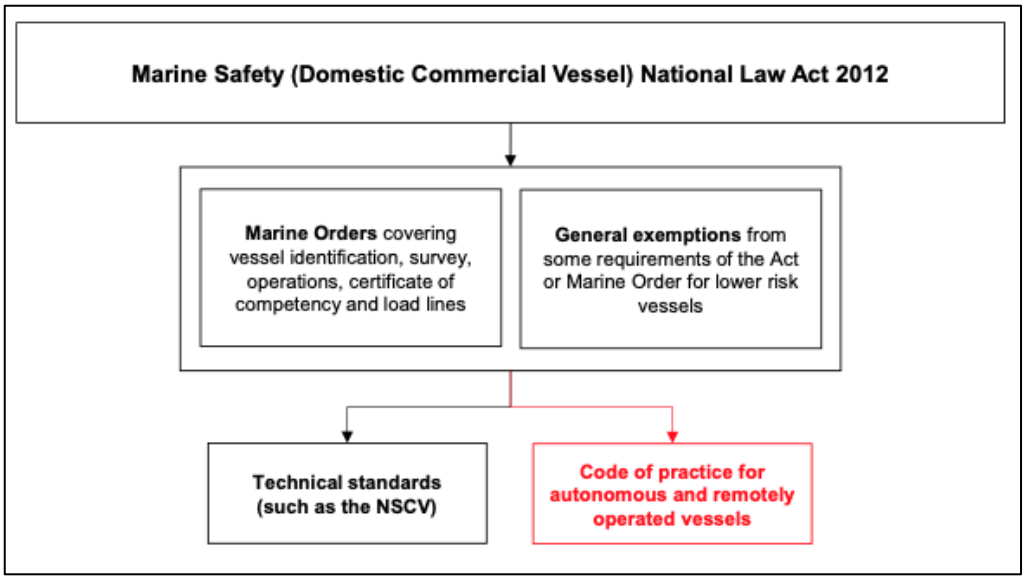
- navigation and situational awareness system;
- control system;
- communications system;
- watertight and weathertight integrity, construction, engineering, stability and auxiliary and anchor systems;
- fire safety system; and
- operations.

All novel systems on the vessel must be developed through risk-based analysis.

In addition, the draft Code requires vessels in survey to meet requirements for contingency planning, software integrity, cyber security, testing, vessel surveys, and third-party review of risk assessments.

Where does the Code sit in the maritime regulatory framework?





What specific questions should feedback be focussed on?

While all feedback on the Australian Code of Practice is welcome, it would be particularly helpful to receive feedback focussed on the following questions:

General questions:

1. Are there any key areas of requirements you think are missing?

2. Do you agree with the three vessel categories and the scope of vessels in each category?

3. Are there any areas of the draft Code where you think the risk does not justify the obligation/s being imposed?

4. Are there any areas of the draft Code where you think the obligation/s being imposed does not adequately address the risk?

5. What sort of guidance materials would be helpful to enable you to understand and use the Australian Code of Practice?

Technical questions (included in the draft Code of Practice):

The following questions are included in boxes in the draft Code of Practice.

Chapter 2: Autonomous Marine Equipment:

1. Would it be appropriate for autonomous marine equipment to display international maritime signal flags to inform other waterway users? If so, which flags?

2. (A) Should the Australian Code of Practice identify lights or flags that should be displayed on the vessel in order to indicate:
    - that the vessel is operating autonomously?
    - that the vessel is being controlled remotely?
    - that the vessel has been disabled or is in a failure mode?

    (B) If so, what lights and/or flags should be specified for each mode?

Chapter 3: Survey-exempt Vessels

3. Should all operators be required to hold a Coxswain 3 certificate at minimum?

4. Is clause 3.1(4)(b) appropriate?

    Clause 3.1(4)(b) states that a vessel which operates beyond 500m below the surface, or beyond expected communication links with the control station or any support vessel, may not come within the 'survey-exempt' category.

    The purpose of this arrangement is to ensure that the risks of a sub-surface vessel operating beyond communication links or beyond specified depths are managed through the higher standards that apply to vessels in survey, and through a survey process, which provides independent verification that the vessel is constructed to the required standard

5. *Table 3: Minimum design, construction, verification and operational requirements for survey-exempt vessels,* Fire equipment
   When should the fire safety requirements apply to battery powered vessels?

6. *Table 3: Minimum design, construction, verification and operational requirements for survey-exempt vessels,* Anchor or station keeping systems:
   (A) Should a standard apply to station keep systems?
   (B) If so, what standard?

7. *Table 4: Design, construction, survey, verification and operational requirements for vessels in survey*, Arrangement, accommodation and personal safety
   Should any other aspects of NSCV Section C1 apply to a surface vessel which is not built to accommodate persons, but which may have persons on board while docked, for example, to secure cargo, carry out maintenance and so on?
   In particular, should any aspects of Chapter 5 (Access, escapes and evacuation) or Chapter 6 (Personal safety) of NSCV Section C1 apply?

Chapter 14: Operations

8. Should all operators be required to hold a Coxswain 3 certificate at minimum?

Annex 1: Diagram of Australian Code of Practice Requirements