

NATIONAL MARINE SAFETY COMMITTEE

DRAFT

Final Regulatory Impact Statement

National Standard for Commercial Vessels

Part C Section 1 – Arrangement,
Accommodation and Personal Safety

July 2012

EXECUTIVE SUMMARY

Under the auspices of an Intergovernmental Agreement and the Australian Transport Council, the National Marine Safety Committee (NMSC) has progressively developed a comprehensive, cohesive standard for domestic commercial vessels: the National Standard for Commercial Vessels (NSCV).

The sections of the NSCV have progressively replaced the Uniform Shipping Laws (USL) Code, which has been the basis of standards for domestic vessels since the late 1970s. This Regulatory Impact Statement (RIS) considers one of the final pieces of the NSCV – Part C, Section 1, Arrangement, Accommodation and Personal Safety.

Part C, Section 1 of the NSCV covers aspects of vessel design and construction that are vitally important to the health, safety and wellbeing of passengers and crew. Its objective is to control risks to persons on a vessel by highlighting key aspects relevant to the arrangement of a vessel at the vessel design stage. It is applicable to all new vessels, existing vessels being surveyed for the first time, and vessels upgrading in survey. It is also influenced considerably by international standards and agreements, as well as the requirements of domestic legislation.

The review of arrangement, accommodation and personal safety aspects of the USL Code is designed to address various issues with marine safety standards and administration in Australia. These include commercial vessel incidents, different standards for fishing and other non-passenger vessels, disparities with current national and international standards, ratification of the Maritime Labour Convention (MLC) 2006, changes in human factors and technology, inconsistencies with other domestic legislation, the prescriptive nature of USL Code requirements and a lack of clarity about those requirements.

This RIS outlines how the above issues are proposed to be addressed and presents three options for doing this: (1) maintaining the Status Quo; (2) adopting existing external standards; or (3) adopting the proposed standard - the NSCV Part C, Section 1. The impacts of each option are analysed in this RIS, including impacts on competition and small business. All options were considered in terms of their potential costs and benefits, as well as their possibility of meeting the intended objectives of the proposal.

The NMSC estimates that up to 1,300 commercial vessels each year in Australia may be impacted by the proposed standard. For the majority of vessels, costs are expected to remain relatively neutral as more onerous requirements in one area are offset by increased flexibility in others.

Larger vessels, particularly those carrying many passengers or over 35 metres in length and engaged in voyages of longer duration, are likely to face higher construction costs as a result of the standard. However, the vast majority of these vessels would be required to comply with the design and construction

requirements that will have the greatest cost impact even if the proposed standard was not introduced.

For large passenger vessels, the changes in requirements that will impose the greatest costs already apply to the vessels under national Disability Discrimination legislation and standards. Their inclusion in the proposed standard should reduce compliance costs by ensuring that boat designers and builders are aware of the requirements from the outset of the design and construction of a vessel.

Only a small number of vessels over 35 metres with crew accommodation enter the fleet each year. The majority of these vessels will be in class, and as such may comply with class society rules and/or the requirements of Navigation Act Marine Orders in lieu of the proposed standard. In addition, Australia has an obligation to review its accommodation and arrangement standards in light of the terms of the recently ratified Maritime Labour Convention (the MLC). Maintaining the existing requirements for large, offshore vessels, would be a breach of Australia's obligations under the MLC.

For the majority of vessels entering the domestic commercial vessel fleet (ie those under 35 metres and carrying 35 passengers or less) the changes resulting from the proposed standard are unlikely to increase either the total weight or total size of the vessel by a significant amount, and thus are unlikely to have a significant cost impact. In addition, the requirements of the standard may be factored into vessel designs in a way which optimises outcomes. The Reference Group for the proposed standard agreed that, overall, the cost impact of the proposed standard on the majority of the fleet would be neutral.

In addition, costs associated with meeting the requirements of the standard for vessel design and construction may be offset by the improved performance-based focus of the standard, which means that there are more options available to designers and builders and greater potential for competition and innovation.

The NMSC conducted extensive stakeholder consultation in the development of the proposed standard. This included workshops around Australia and the release of an Issues Paper to relevant stakeholders, including marine authorities and the general public. A Reference Group was established to consider some 680 comments on the Issues paper and 377 comments on the proposed standard and this RIS.

Stakeholder comments supported the proposition that the impact of the proposed standard would be low for small vessels, but high for large vessels, particularly passenger vessels over 35 metres in length on longer voyages. However, there remained considerable disagreement among stakeholders and within the Reference Group regarding the extent of the impact of the proposed standard on the cost of constructing larger vessels. Due to this, and the inherent limitations of data and difficulties in quantifying the specific costs and benefits of the proposed

standard, the overall impact of the standard has not been quantified. However, the scope of the potential costs and benefits of the proposed standard has been outlined in this RIS.

Overall, stakeholder comments supported the introduction of the proposed standard. The majority of comments suggested changes to elements of the proposed standard, rather than opposition to the proposed standard as a whole. However, a minority of stakeholders indicated preference for the status quo (i.e. the USL Code) on the basis that this was familiar and therefore easier to interpret and apply.

The proposed standard was amended to address the issues raised by stakeholders. Other clarification amendments were also made to the standard as a result of comments received during the consultation. The key changes between the consultation draft and final draft standard are outlined in this RIS.

This RIS concludes that the proposed standard - NSCV Part C, Section 1 - is the only option that meets the objectives of this proposal. In particular, it addresses the deficiencies of the USL Code, introduces greater flexibility and efficiency, delivers safety and social benefits and satisfies relevant national and international obligations.

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1. INTRODUCTION

1.1. Intergovernmental response to marine safety

In November 1997, an Intergovernmental Agreement Establishing a National Marine Safety Regulatory Regime (IGA) was signed by the Prime Minister, State Premiers and the Chief Minister of the Northern Territory.

The IGA included the establishment of the National Marine Safety Committee (NMSC) as part of a strategic response to a report on national marine safety undertaken for the Australian Transport Group by Thompson Clarke. This report identified a number of deficiencies in the administration of marine safety by States and the Northern Territory, including the lack of consistency between the jurisdictions in the application and administration of standards for commercial vessels.

The NMSC consists of an independent Chair and CEOs from the Commonwealth, States and the Northern Territory Marine Safety Authorities, and is supported by a secretariat. The mission of the NMSC is:¹

“to improve marine safety in Australia, for the benefit of the community and the maritime industry by facilitating and supporting a co-operative and coordinated approach to the efficient and effective administration of marine safety within the Australian Federation, comprised of the Commonwealth, States and Territory Governments”.

The NMSC’s strategic priorities are governed by the principles identified in the IGA. The IGA states that its goals will be achieved by ensuring that:²

“standards for vessels and marine personnel and infrastructure are established adopted and implemented in a timely and consistent or uniform manner throughout Australia ...

...legislation and marine safety standards comply with the “Principles and Guidelines for National Standards Setting Bodies and Regulatory Action by Ministerial Councils and Standards Setting Bodies” endorsed by the Council of Australian Governments.”

1.2. Regulatory impact assessment of new standards

Regulatory actions or standards produced by the NMSC are endorsed by the Ministerial Council (formally the Australian Transport Council (ATC), now the Standing Council on Transport and Infrastructure (SCOTI) and then implemented by the Commonwealth, States and Territories around Australia.

As such, and as identified in the IGA, the standards produced by the NMSC are subject to the *COAG Principles and Guidelines for National Standard Setting and*

¹ http://www.nmsc.gov.au/nmsc_and_you/index.php?MID=11&COMID=1&CID=11

² IGA, recitals

Regulatory Action by Ministerial Councils and Standard-Setting Bodies (COAG Guidelines). This requires the Ministers being assured that a regulatory assessment process has been adequately completed prior to a Ministerial Council adopting a standard.³

The Office of Best Practice Regulation (OBPR) approves Regulatory Impact Statements (RISs) for both public consultation and decision making based on compliance with *COAG Best Practice Regulation - A Guide for Ministerial Councils and National Standard Setting Bodies*, October 2007.

1.3. Replacing the USL Code with the NSCV

The Uniform Shipping Laws (USL) Code has been the basis of standards for domestic vessels since the late 1970s. The current USL Code contains provisions relevant to arrangement, accommodation and personal safety in Subsection 5E Construction – Passengers, Passenger Accommodation, Guard Rails And Bulwarks; Subsection 5F – Structural Fire Protection; Section 7 – Load Lines; Section 9 – Engineering, Section 13 – Miscellaneous Equipment; and Section 18 – Hire and Drive.

The USL Code was originally developed from the international requirements applicable to ships (Safety of Life at Sea (SOLAS))⁴ and from the US Code of Federal Regulations (CFR) 46⁵ requirements for domestic vessels in the USA. Since it was printed in 1979, the USL Code has been amended in 1981, 1984, 1989, 1993, 1996 and 1997.

In accordance with the objectives of the IGA, a broader review of the USL Code was commenced in 1998. The new standard, which has now largely replaced the USL Code, is the National Standard for Commercial Vessels (NSCV). The proposed standard was developed through a review of the arrangement, accommodation and personal safety aspects of the USL Code, and is one of the last aspects of the review to be completed, as shown in Table 1.

Table 1 — Status of Change from USL Code to NSCV

Uniform Shipping Law (USL)	National Standard for Commercial Vessels (NSCV)	Status
New	Part A Safety Obligations	Approved by ATC in 2002
Section 1	Part B General Requirements	Approved by ATC in 2002
	Part C Design and Construction	

³ Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standard-Setting Bodies, amended by COAG June 2004

⁴ International Maritime Organization [International Convention for the Safety of Life at Sea](#) (SOLAS), 1974

⁵ US National Archives & Records Administration, [Code of Federal Regulations 46 Shipping](#)

Uniform Shipping Law (USL)	National Standard for Commercial Vessels (NSCV)	Status
Section 5 Subsection F, E, Section 6, Section 7 and Section 18	Section 1 Arrangement, Accommodation & Personal Safety	Subject of this RIS
Section 5 Subsection C & D Section 7	Section 2 Watertight & Weathertight Integrity	Approved by ATC in 2010
Section 5 Subsection A, B, G, H, K, L, M	Section 3 Construction	Approved by ATC in 2008
Section 5 Subsection F, Section 11	Section 4 Fire Safety	Approved by ATC in 2004
Section 9, New Subsection for LPG for engines	Section 5 Engineering	Approved by ATC in 2002
Section 8, Subsection A, B, C, Section 5, Subsection C	Section 6 Stability Subsection A Intact Stability Criteria Subsection B Buoyancy and Stability Subsection C Stability Tests	Approved by ATC in 2008 Approved by ATC in 2010 Approved by ATC in 2008
Section 10, 12, 13, 16	Section 7 Safety Equipment Subsection A Safety Equipment Subsection B Com Equipment Subsection C Nav Equipment Subsection D Anchoring Systems	Approved by ATC in 2004 Approved by ATC in 2008 Approved by ATC in 2008 Approved by ATC in 2008
Sections 2, 3	Part D Crew Competencies	Approved by ATC in 2002
Section 15	Part E Operational Practices	Approved by ATC in 2004

Uniform Shipping Law (USL)	National Standard for Commercial Vessels (NSCV)	Status
	Part F Special Vessels	
New	Section 1 Fast Craft Subsection A General Requirements Subsection B Category F1 Subsection C Category F2 Subsection D Category F3	Approved by ATC in 2002 Approved by ATC in 2002 Approved by ATC in 2007 Future Development
Section 18	Section 2 Leisure Craft	Approved by ATC in 2010
New	Section 3 Novel Vessels	Future development
New	Section 4 Special Purpose	Development started

The review of the arrangement, accommodation and personal safety requirements of the USL Code was necessary in order address the strategic actions specified in the National Marine Safety Strategy,⁶ including to:

- Meet technological changes in the design, construction and operation of vessels;
- Incorporate a more performance-based framework that better matches the safety requirements for the vessel to the level of risk;
- Address problems of application or interpretation of the current USL Code;
- Address safety issues that may not be adequately addressed in the current USL Code;
- Take account of public benefit when determining safety requirements;
- Provide for more flexibility; and
- Remove redundant and obsolete provisions.

1.4. The proposed standard – NSCV Part C Section 1

NSCV Part C Section 1, Arrangement, Accommodation and Personal Safety covers:

⁶ National Marine Safety Strategy 1998

- ▶ Operating stations: field of vision, layout, design and operating station layout;
- ▶ Arrangements for provision of navigation systems: masts, signals, navigation lights, side lights, stern light, all-round light;
- ▶ Accommodation spaces: crew accommodation, passenger accommodation, facilities for sick and injured persons, crew mess facilities, galley and food storage, sanitary facilities, crew cloak and laundry facilities, and potable water;
- ▶ Access, escapes and evacuation: escape from spaces, evacuation paths, doors and hatches, passageways, handrails, stairways, ramps and ladders and safety information; and
- ▶ Personal Safety: protection from the elements, bulwarks and guard rails, hazardous plant, safe movement on board, and access to and from the vessel.

The requirements contained in the proposed standard have been influenced considerably by international standards and agreements, specifically SOLAS and the Maritime Labour Convention 2006 (MLC)⁷ (which Australia has now ratified). Australia has an obligation to review its requirements to ensure they implement or align with the MLC. The proposed standard delivers this review. The aspects of the proposed standard that are driven by international standards or agreements are detailed in the following table.

Table 2 — Changes driven by international standards and agreements

Clause	Change (as compared to USL Code requirement)	Relevant international standard
2.11 (Operating stations, visibility and steering) Visibility from the operating station	Limits on the arrangement of obstructions to vision from the operating station including raised fore decks on vessels	Safety of Life at Sea Convention (SOLAS) Chapter V
3. Arrangements for the provision of Navigation Signals	International Regulations for Preventing Collisions at Sea, 1972 (COLREGS) requirements apply	COLREGS
4 (Accommodation) Crew accommodation – overview	Increased requirements for crew accommodation on passenger and cargo	MLC 2006 applies in full to passenger and cargo vessels over or equal to

⁷ Maritime Labour Convention Regulation Impact Statement

Clause	Change (as compared to USL Code requirement)	Relevant international standard
	vessels Detailed in following lines	3000 GT MLC 2006 applies in part to passenger and cargo vessels < 3000GT MLC 2006 applies in part to passenger and cargo vessels < 35 m Work in Fishing convention (WIFC 2007) applies to all other vessels engaged in longer voyages that are not subject to MLC 2006
4.8.1 (Accommodation) Head room	For vessels 35 m or over, minimum required headroom increases from 1.9 m (USL Code) to 1.98 m	MLC 2006 ILO C133 WIFC 2007
4.8.3 (Accommodation) Ventilation	Mechanical ventilation required for vessels on voyages > 36 hours.	WIFC 2007
4.10 (Accommodation) Crew accommodation, Maximum number of persons per sleeping room	Requirements increased for vessels on journeys over 72 hours from a maximum 6 to a maximum of 4 crew per sleeping room.	MLC 2006 WIFC 2007
4.10.7 (Accommodation) Crew accommodation, Floor Area	Increase in floor area required	MLC 2006 WIFC 2007
4.10.8 (Accommodation) Crew accommodation - Sleeping berths	For vessels up to 35m minimum size of sleeping berths (crew) is increased from 1900 x 680 to 1900 x 700 For vessels over 35m minimum size of sleeping	MLC 2006 WIFC 2007

Clause	Change (as compared to USL Code requirement)	Relevant international standard
	berths (crew) is increased from 1900 x 680 to 1980 x 700	
4.12 (Accommodation) Facilities for sick and injured persons	Dedicated sick bay area required for vessels on journeys over 72 hours Dedicated sick bay facilities required for class A vessels over 35m.	MLC 2006 WIFC 2007
5.9 (Access, Escapes and Evacuation) Obstructions to be avoided	Restrictions regarding arrangements of furniture and floor coverings that could block escape or evacuation routes should the vessel heel.	IMO standards
5.10.2.5 (Access, Escapes and Evacuation) Control Spaces	Requires provision of alternative escapes for control spaces which are likely to be occupied in an emergency	International Maritime Organisation (IMO) standards
5.11 (Access, Escapes and Evacuation) Evacuation paths	For vessels with assembly stations, reduction in the required width of passageways	IMO standards
5.14 (Access, Escapes and Evacuation) Handrails	New requirements for strength of handrail.	IMO standards
5.15.3.7 (Access, Escapes and Evacuation) Stairways—Construction	Minimum structural standard for stairways. Not previously stated in the USL code.	IMO standards
5.15.4 (Access, Escapes and Evacuation) Details of ladders including step ladders	Updated requirements	IMO standards
5.16.2 (Access, Escapes and Evacuation) Marking	Formalises requirements applied administratively	IMO standards

Clause	Change (as compared to USL Code requirement)	Relevant international standard
of escape and evacuation routes	for exit signs in passenger spaces of vessels.	

Similarly, the requirements of Australian occupational health and safety (OH&S) legislation and disability discrimination legislation have influenced the proposed standard with respect to vessel construction. These requirements are compulsory and are incorporated into the proposed standard. These changes are detailed in Table 3 below.

Table 3 — Changes driven by disability discrimination and OH&S legislation

Clause	Requirement	Relevant international standard
4.11.4 (Accommodation) Access for persons with disabilities	Applies to Class 1 passenger ferries carrying 36 passengers or more and pre-booked passenger services carrying 100 passengers or more Access for persons with a disability including width for doorways, corridors and passages, priority seating, allocated spaces for wheelchairs, accessible sleeping berths and suitable sanitary facilities	Disability discrimination legislation The <i>Disability Standards for Accessible Public Transport 2002</i> apply to conveyances used to provide public transport services, as well as supporting premises and infrastructure 'Conveyances' include 'ferries', but not charter boats (including water taxis)
6.11.4 (Access, Escapes and Evacuation) Minimum height of bulwarks and guard rails	Minimum height requirement of 1000 mm on vessels of over 16 m in length.	OH&S legislation OHS requirements apply to all workplaces
4.8.6 and 6.14 Noise and vibration levels	Specified maximum allowable noise and vibration levels	OH&S legislation OHS requirements apply to all workplaces

Beyond implementing international agreements and aligning domestic commercial vessel standards with other domestic laws, the proposed standard also covers aspects of vessel design and construction that are vitally important to the health, safety and wellbeing of passengers and crew.

For example, the arrangement of the operating station is important for safe navigation, while the size of openings on railings and the height of bulwarks impact on the safety of persons on board the vessel. Similarly, access within and to and from the vessel are vital elements of safety, particularly arrangements for escape and evacuation in times of an emergency.

The size of cabins, number of persons allocated to cabins and their fit out, sanitary facilities, access for persons with disabilities, and the provision of sick bays, impact on a range of social issues, as well as minimising the risk of fatigue for the crew.

Finally, the proposed standard is a vital final piece to the broader review of the USL Code. It is the last major construction section of the NSCV to be completed.

1.5. Performance-based nature of the NSCV

The USL Code, including those requirements relating to arrangement, accommodation and personal safety, is a prescriptive standard in that it sets out requirements that must be adhered to by a designer, builder, operator and owner.

The NSCV, on the other hand, is performance-based. It contains required outcomes that can be met either through:

- Deemed-to-satisfy solutions contained within the standard: The benefit of adopting a deemed-to-satisfy solution is that there is no onus on the applicant to prove compliance with the corresponding performance standard. The convenience of this option comes at a cost in that flexibility in the solution is limited; or
- Equivalent solutions: These are solutions proposed by the applicant that achieve the required outcomes by means other than that which is deemed-to-satisfy. An equivalent solution must be “proven to satisfy” the required outcomes, either directly or by showing its performance is at least equivalent to that of the deemed-to-satisfy solution.

The benefit of the performance-based nature of the NSCV is that it greatly increases the options available for achieving the required outcome. This allows for innovation and the adoption of new technology, while still providing prescriptive alternatives for designers, builders, owners and operators who wish to utilise them.

There may be costs involved for designers, builders and owners in proving that a proposal for an equivalent solution can achieve equivalent safety. However, this

performance-based approach is preferable to an exemption-based approach, whereby an exemption is the only means of avoiding a prescriptive requirement (as is the case under the USL Code). The exemption-based approach has the potential to result in a reduction to safety whereas equivalence ensures that the minimum safety standards are maintained. The NSCV, through the equivalent solution mechanism, provides a common way of assessing alternatives to the prescriptive solution. This ensures that safety is preserved and alternative solutions can be uniformly assessed by jurisdictions.

The NSCV's performance framework was assessed in the *Regulatory Impact Statement for Part B: General Requirements* and approved by the ATC in 2002.

1.6. Application of the NSCV and the proposed standard

In the absence of legislation to the contrary (which would be the subject of a separate RIS), the standards contained within the NSCV (including, if approved, the proposed standard) are applicable to new vessels, existing vessels being surveyed for the first time, and vessels upgrading survey (that is, exposure to higher risks if it were not for additional safety measures being applied).

For most of these vessels, compliance is verified by an independent initial survey. Surveyors look at both deemed-to-satisfy solutions specified within the NSCV and any equivalent solutions proposed by a vessel designer/builder or operator.

After a vessel has been in service, periodic surveys (usually once a year, every second year or when convenient due to operational considerations) are undertaken by marine authorities (except in Queensland) to ensure that the vessel is maintained and its operators address various equipment and safety issues.

The NMSC Guidelines "*The Application of the Combined USL/NSCV 2008 to Existing Vessels that are Upgraded or Altered*" (July 2008) explain when a modification or alteration constitutes an upgrade, and how the NSCV applies to the alteration or upgrade. Under the Guidelines, where modifications or alterations are accompanied by an 'upgrade in service' (i.e. where there is a change in the service category or class of the vessel and the change will, in some way, subject the vessel or persons on the vessel to an increase in risk), this will result in a review of the standards applied to the vessel and the possible application of the NSCV requirements. However, when this occurs, it is not expected that older vessels will need to make retrospective construction changes to enable them to fully comply with the Standard.

The Guidelines are generic to the application of the NSCV and will continue to be applied upon commencement of the new *Marine Safety (Domestic Commercial Vessel) National Law Act 2012*.

2. STATEMENT OF THE PROBLEM

2.1. Overview

The review of the USL Code, and in particular of the arrangement, accommodation and personal safety aspects of the USL Code, is designed to address a number of problems with marine safety standards and administration in Australia.

In summary, these problems relate to:

- **Commercial vessel incidents:** Developing safety initiatives, including risk-based standards, was a strategic action endorsed by the ATC in its National Marine Safety Strategy aim of reducing incidents;⁸
- **Different standards for fishing vessels:** The current USL Code contains different standards for fishing and other non-passenger vessels, while the level of fatalities on fishing vessels remains significantly higher than on other non-passenger vessels;
- **Lack of alignment with current national and international standards:** The USL Code was developed in the 1970s. It was based on international standards that have since been updated and applies international and Australian standards that are out-of-date or which no longer exist. Developing standards based on recognised and approved national and international standards for the design and construction of vessels was a strategic action endorsed by the ATC in its National Marine Safety Strategy;⁹
- **Ratification of the Maritime Labour Convention 2006:** The MLC 2006, which has now been ratified by Australia,¹⁰ applies to certain passenger and cargo vessels above 200GT, including those operating only in domestic waters. The current requirements for accommodation, arrangement and personal safety contained in the USL Code are inconsistent with the MLC;
- **Out of step with current circumstances:** People and technology have changed since the arrangement, accommodation and personal safety requirements of the USL Code were developed;
- **Prescriptive nature of current requirements:** The USL Code is out of step with modern performance-based safety regulation. Introducing performance-based standards as an alternative to prescriptive requirements was another strategic action endorsed by the ATC in its National Marine Safety Strategy;¹¹

⁸ National Marine Safety Strategy 1998

⁹ National Marine Safety Strategy 1998

¹⁰ Australia signed an accord in May 2011 committing it to ratification: http://www.ilo.org/global/standards/maritime-labour-convention/WCMS_155179/lang--en/index.htm

¹¹ National Marine Safety Strategy 1998

- ▶ **Inconsistencies with other legislation:** Maritime-specific legislation is not the only law that affects commercial vessel construction and operation. Inconsistencies in the USL Code with occupational health and safety (OH&S) and disability discrimination legislation can impose costs on designers, builders, owners and operators down the track;
- ▶ **Lack of clarity as to requirements:** A lack of clarity as to some of the requirements contained in the USL Code has led to different interpretations around Australia and inconsistencies between jurisdictions in requirements for arrangement, accommodation and personal safety; and
- ▶ **Piecemeal presentation of requirements:** The current USL Code contains provisions relevant to arrangement, accommodation and personal safety in many different sections, leading to inconsistencies and confusion.

Each of these issues is explored in more detailed below.

2.2. Commercial vessel incidents

2.2.1. Data limitations

There are a number of difficulties associated with marine incident data. Firstly, the data collected includes only *reported* incidents. As a result, incident data provides only a partial picture of the level and type of marine incidents.

Secondly, marine incident data will be skewed if an incident occurs that involves a large passenger vessel. One such incident can escalate fatality and personal injury figures. Conversely, if large passenger vessels are not involved in an incident, the figures may appear low over the relevant period. In either case, the data may not represent the real risk of an incident occurring in the future.

Despite these limitations, the data analysed in this RIS is the best available data. It is the only data that reflects the current standard of the Australian domestic commercial vessel fleet and Australian conditions.

2.2.2. Reported marine incidents

Between 2005 and 2008 there were 2,760 *reported* marine incidents involving commercial vessels. Table 4 presents the breakdown of incident types for this period.

The 2005 – 2008 data referenced in this RIS is data on domestic commercial vessel incidents in Australia. In other words, it is data is on the very group of vessels affected by the proposed standard. This dataset began to be collated by the National Marine Safety Committee in 2005. Although data after 2008 has been collected, it has not yet been analysed by the National Marine Safety Committee and as such has not been referenced in this RIS.

Other datasets have not been used as they are not directed at the same set of vessels affected by the proposed standard. In addition, there are problems associated with attempting to combine or compare different datasets.

Table 4 — Reported Commercial Vessel Incidents in Australia 2005-2008, by Incident Types¹²

Incident Types	Reported incidents					
	2005	2006	2007	2008	Total	Total %
All types of Collision	290	268	289	266	1113	40
Grounding unintentional	97	127	112	83	419	15.2
Structural failure	37	33	39	21	130	4.7
Falls within vessel	33	27	42	28	130	4.7
Other onboard incident	33	37	22	28	120	4.3
Unclassified	25	27	25	41	118	4.3
Person overboard	20	30	20	33	103	3.7
Fire	22	21	29	23	95	3.4
Sinking	28	23	24	17	89	3.2
Swamping	19	27	21	18	85	3.1
Other incident caused by an operating vessel	13	14	16	8	84	3.0

¹² Source: Commercial Vessel Incidents in Australia 2005 – 2008, NMSC 2009, Table 10

Incident Types	Reported incidents					
	2005	2006	2007	2008	Total	Total %
Capsizing	9	23	16	17	65	2.4
Hit by propeller or vessel	5	12	21	18	56	2.0
Onboard crushing or pinching	13	14	16	8	51	1.8
Flooding	6	13	8	7	34	1.2
Diving incident	16	4	8	0	28	1.0
Loss or presumed loss of a vessel	2	3	1	6	12	0.5
Skiing incident	3	5	4	0	12	0.5
Grounding intentional	0	2	2	6	10	0.4
Parasailing, explosion & loss of stability	3	1	1	1	6	0.2
Total	676	720	710	654	2760	100

40 percent of all reported commercial vessel incidents involved some form of a collision (see yellow shading in the table). Collision may be associated with poor visibility from the operating station, one of the aspects of the USL Code that has been reviewed as part of the proposed standard.

Visibility can also be a factor in grounding incidents (see orange shading in the table). Sighting the hazard is a last chance opportunity to avoid the hazard (and the grounding), should an error in navigation have been made. This also applies to some other incident types such as injuries caused by being hit by a propeller

or a vessel, onboard crushing or pinching, skiing incidents, intentional grounding and parasailing incidents (also orange shading in table). The extent to which improved visibility would have allowed the incident to be avoided depends upon the root cause of the incident and whether sighting the hazard could have resulted in avoidance.

Falls within a vessel, other onboard incidents and persons overboard account for another 13 percent of incidents (see blue shading in the table). The arrangement and personal safety aspects of the USL Code, which have been reviewed as part of the proposed standard, affect the likelihood of falls on the vessel and the chance of persons falling overboard.

Arrangement and personal safety standards can also shape the consequences of fire, collision, grounding, explosion, sinking, swamping and capsizing (see yellow, orange and pink shading in the table) by increasing the chances of survival (for example, through the provision of effective escape routes).

In other words, a variety of common vessel incidents may be impacted or their effects mitigated by the arrangement, accommodation and personal safety aspects of the vessel – those aspects that have been reviewed as part of the proposed standard.

2.2.3. Commercial vessel losses

Between 1992 and 2009, 120 Australian commercial vessels were lost (sunk or otherwise destroyed), as shown in Table 5. This is an average of six per year.

Table 5 — Analysis of 120 Australian Commercial Vessel Losses from 1992 to 2009¹³

Incident Consequences	Number of Vessels lost	Per cent of total vessel losses
Foundered	59	49
Wrecked	25	21
Burnt or Explosion	18	15
Collision	10	8
Lost or Missing (cause unknown)	8	7
Total	120	100

Rarely does a single factor cause an incident, or a vessel to be lost. Contributing factors relate to the circumstances or behaviour that best describe the major reason(s) for the occurrence of a marine incident.

¹³ Register of Australian and New Zealand Ships and Boats compiled by Mori Flapan & NMSC Database.

Factors that contributed to the occurrence of incidents are classified into three broad groups: human, environmental and material. Within each of these, there are more specific categories that provide further detail (for example, a lack of maintenance is a specific human factor).

Results presented in Table 6 show environmental factors contributed to 29.6 percent, human factors contributed to 52.9 percent and material factors contributed to 17.5 percent of commercial vessel incidents. Nine percent of incidents were due to factors which were unknown.

Table 6 — Contributing Factors to Occurrences of Commercial Vessel Incidents in Australia 2005-2008¹⁴

Contributing Factors	Records	Percentage to all Factors
Wind/sea state	594	14.1
Other environmental factor	191	4.5
Floating or submerged object	138	3.3
Tidal conditions	115	2.7
Restricted visibility	94	2.2
Environmental: Wash	82	1.9
Bar conditions	33	0.8
Environmental Total	1247	29.6
Error of Judgment	607	14.4
Other human factor	603	14.3
Failure to keep a proper lookout	254	6.0
Human: Inexperience	243	5.8
Human: Navigational error	230	5.5

¹⁴ Source: Commercial Vessel Incidents in Australia 2005 – 2008, NMSC 2009, Table 11

Contributing Factors	Records	Percentage to all Factors
Human: Excessive speed	85	2.0
Lack of maintenance	72	1.7
Human: Insecure mooring	57	1.4
Alcohol or Drugs	43	1.0
Human: Fatigue	15	0.4
Human: Lack of fuel	13	0.3
Human: Overloading	8	0.2
Human Total	2230	52.9
Other material factor	307	7.3
Equipment – Machinery	244	5.8
Equipment - Hull failure	77	1.8
Equipment – Electrical	50	1.2
Equipment – Navigation	38	0.9
Inadequate stability	20	0.5
Material Total	736	17.5
Grand Total	4213	100

Standards for arrangement, accommodation and personal safety contain measures aimed at reducing the likelihood of an incident by addressing these contributing factors. For example, the layout of operating stations, and distractions (light and noise) nearby the operating station, impact on the likelihood of human error causing an incident.

Research conducted on behalf of the NMSC found that the main incidents contributing to fishermen's deaths were: person overboard, sinking of the vessel, capsize and being trapped within/under the vessel. The main factors contributing to these incidents were hazardous conditions, errors of judgment, unsafe work practices and failure to wear a Personal Floatation Device (PFD).¹⁵

Human error can be caused by a number of factors, including the health and wellbeing of the crew — in particular fatigue. Minimum standards for accommodation can affect fatigue and thus can impact on the skills and alertness of the crew.

Standards for arrangement, accommodation and personal safety establish measures that reduce the consequences of the contributing factors (such as the consequences of poor weather or human error) – by setting minimum requirements for railing height and for the protection of crew moving about the vessel.

In addition, minimum standards for accommodation and sanitary arrangements may also help to reduce the likelihood of social risks, such as alcohol and drug abuse, which has been linked to incidents caused by human error. A study undertaken by DnV¹⁶ indicated that fatalities on ships could be classified into three types: ship fatalities (arising from involvement of the vessel in an incident) 25 percent, workplace fatalities (arising from accidents not involving the vessel being in an incident) 25 percent and social fatalities (arising from suicide, homicide and drug abuse) 50 percent. It was suggested that MLC accommodation standards would impact safety in two ways:

- ▶ By reducing the incident of social fatalities and injuries; and
- ▶ By improving social conditions on board, as there was a correlation between decent living and working conditions and safety.

2.3. Differences in standards applied to fishing vessels

2.3.1. Fishing vessels are overrepresented in terms of fatalities

Fishing vessels are over represented in terms of fatalities. Table 7 shows that fatalities involving fishing vessels amount to 44.7 percent of the total while they represent only 32.9 percent of the total fleet.

¹⁵ Flapan, Mori. [Fishing vessel safety - A new approach.](#) Ausmarine East 2003

¹⁶ DnV Technical Report. Social Factors and Human Performance on Ship Operation. 28 July 1995.

Table 7 — Proportion of fatalities in fishing vessels relative to the size of fleet Australia 2005-2008¹⁷

Vessel Type	Fatalities		Fleet
	Number	% of total	% of total
Fishing	21	44.7%	32.9%
Non-Fishing	26	55.3%	68.1%
Total	47	100%	100%

Between 2005 and 2008, among the factors that contributed to fatalities, only fishing vessels recorded wind and sea state as a significant factor.¹⁸ This indicates that fishing vessels tend to continue operating in conditions that might cause operations to cease on other vessel types. Crew on fishing vessels are also more likely to be on deck in those conditions. Hence, injury rates from wind and sea state factors on fishing vessels are much higher than on passenger (Class 1) or non-passenger (Class 2) vessels.

2.3.2. Yet standards for fishing vessels are lower

A means of addressing the high fatality rate is through reviewing the standards that apply to fishing vessels. To this end, there are currently differences in safety requirements for fishing as opposed to other commercial vessels.

Until recently, the dangers associated with fishing were seen as (and accepted as) an inevitable risk of being involved in such an industry. One of the strategic actions endorsed by the ATC in its National Marine Safety Strategy¹⁹ was the development of broad safety initiatives that reflect relative risk, based on an assessment of an incident and other safety data.

Artificial distinctions between types of vessels that cannot be justified on the basis of safety outcomes is also out of step with the modern performance-based approach to safety regulation. Furthermore, there are increasing numbers of vessels with dual certification; i.e. Class 3 and Class 2 survey. It is unreasonable that a Class 3B crayfishing boat meets such low standards that it must be upgraded in its safety standards to operate in Class 2C when the operations in Class 3B are hundreds of miles from a safe haven and are subject to higher risks than Class 2C.

¹⁷ Source: Commercial Vessel Incidents in Australia 2005 – 2008, NMSC 2009, Figure 7

¹⁸ National Marine Safety Committee. Commercial Vessel Incidents in Australia 2005-2008. Sydney. Nov 2009.

¹⁹ National Marine Safety Strategy 1998

While fatality rates in the fishing industry have been improving over the long term,²⁰ there is still more that needs to be done to achieve parity in safety with other forms of seafaring.

2.4. Out of step with international standards

During the last 30 years since the development of the USL Code, there have been significant revisions to arrangement, accommodation and personal safety standards adopted for vessels around the world.

As a result of these developments, some of the requirements in the USL Code no longer align with relevant national and international standards. Visibility from the operating station provides a clear example of this. The USL Code requires:

Section 9, Clause 21.4: The steering arrangement shall be such that the operator has a clear view ahead in the normal steering position.

This Clause has no quantifiable criteria and has been interpreted very widely with some modern commercial vessels having significant visual obstructions. In recent years, IMO has revised SOLAS Chapter V to specifically address the need for good field of vision from the helm.²¹ Internationally, small craft standards such as the American Boat and Yacht Council (ABYC) Rule H1 include quantifiable criteria for visibility.

Since the development of the USL Code, there have been new international standards for vessel types that were not accommodated in the USL Code – for example, high speed craft, Ro-Ro ships and even recreational boats. Although vessels of this nature have been successfully built to the USL Code, it needs to be reviewed in the context of these developments to determine whether the requirements for these vessel types are adequate and appropriate. For example, relevant small craft standards applicable to recreational craft now have the potential to act as the lower benchmark applicable to simple and small commercial vessels.

2.5. Ratification of the Maritime Labour Convention 2006

The USL Code crew accommodation standards drew heavily on MLC conventions for crew accommodation of the day. Since then, the MLC Conventions have been revised and updated on a number of occasions.

The most recent, the MLC 2006, significantly increases requirements for crew accommodation on passenger and cargo vessels. Under the terms of the MLC, it applies to certain passenger and cargo vessels, including those operating only in domestic waters. Now that the MLC has been ratified, Australia must implement these requirements. The current requirements for accommodation, arrangement

²⁰ Flapan, Mori. [Fishing vessel safety - A new approach](#). Ausmarine East 2003

²¹ IMO MSC/Circular.982 - Guidelines on Ergonomic Criteria for Bridge Equipment and Layout - (adopted on 20 December 2000) - Annex - Guidelines on Ergonomic Criteria for Bridge Equipment and Layout

and personal safety contained in the USL Code are inconsistent with the MLC 2006.

The prescriptive provisions of the MLC apply to the entire commercial vessel fleet, except:

- ships which navigate exclusively in inland waters or waters within, or closely adjacent to, sheltered waters (Article II(1)(i)); and
- fishing vessels (Article II(4)).

Article II(6) of the MLC also allows the competent authority (in this case, the Australian Government) to exclude ships of less than 200 gross tonnage not engaged in international voyages. As outlined in the *Maritime Labour Convention Regulation Impact Statement*, the Australian Government intends to rely on this exemption.²² As a result, the MLC only applies to domestic commercial vessels 200 gross tons or over regardless of whether they are making international voyages or not.

In addition, under the MLC jurisdictions may exempt vessels under 3000 gross tonnage from a number of the prescriptive provisions of the MLC, including those which would have the greatest impact on the arrangement and accommodation of a vessel. As such, the requirements of the MLC should be seen as compulsory for a very small portion of the domestic commercial vessel fleet – i.e. only a very small portion of the fleet that is within the application of the NSCV.

However, the MLC also requires jurisdictions to consider the MLC in the development of requirements for the remainder of the fleet. As such, the existing requirements of the USL Code need to be reconsidered in light of the new MLC requirements in order for Australia to meet its obligations under the MLC. Maintaining the existing requirements, or reducing the MLC requirements significantly for large, offshore vessels, would be a breach of Australia's obligations under the MLC.

2.6. Out of step with modern technology, practise and circumstance

The present requirements of the USL Code need to be updated to accommodate the wide variations in the design and operations of domestic vessels and changes in approach by government and industry. Advances in technology have given rise to new or alternative solutions to managing risks.

In addition, the last 30 years has been a period of significant change in the standards applicable for personal protection worldwide. Increases in community expectations for safety impact on the standards relevant to commercial vessels

²² Prepared by the Commonwealth Department of Education, Employment and Workplace Relations, http://ris.finance.gov.au/files/2011/01/Maritime_Labour_Convention_RIS.pdf

and the USL Code needs to be reviewed to account for changing community expectations.

Just as fundamentally, there have been significant changes in the demographics of the population arising from:

- people getting larger and heavier;
- a larger proportion of the population being classified as elderly; and
- increased mobility of persons with disabilities.

These changes have rendered a number of the requirements of the USL Code inadequate. For example, the USL Code specifies a minimum height of 1.9 m for all vessels. This aligns with an international standard (the ILO C92) that dates from 1949.

In the 61 years since, the average size (height and weight) of the population has significantly increased, providing an impetus for reviewing the 1.9m headroom requirements.²³

2.7. Prescriptive rather than performance based

The present USL Code provisions for arrangement, accommodation and personal safety are in a prescriptive technical form that does not meet the modern requirements for marine safety standards that are endorsed by the Ministerial Council, industry, and marine authorities.

The preferred framework for standards requires that performance is specified in terms of required outcomes (i.e. safety outcomes), with prescriptive technical standards (deemed-to-satisfy solutions) specified to meet those required outcomes, with the option of providing an alternative equivalent solution.

Being a prescriptive standard, the USL Code concentrates on specifying the solution without referring to the safety outcome that is to be achieved. Thus the safety outcomes intended by specific clauses are sometimes unclear and subject to different interpretations, especially when considering exemptions and equivalents. Thus, while exemptions from the prescriptive requirements of the USL Code are often granted, there is no clear and transparent process for doing so, and an application for an exemption may result in different outcomes depending on the jurisdiction and the decision-maker. A clear process for assessing equivalent solutions ensures that safety standards are maintained and creates a level playing field for industry.

²³ There are a large number of reports on height and weight trends. See, for example, Tomkinson, G., Clark, A and Blanchonette, Peter. Body Size Changes of Royal Australian Air Force Aircrew: 1971 – 2005. Defence Science and Technology Organisation. University of South Australia. DSTO-TR-2339. p.19

2.8. Inconsistent with other laws

Maritime-specific legislation is not the only law that affects commercial vessel construction and operation. Inconsistencies in the USL Code with occupational health and safety (OH&S) and disability discrimination legislation can mean greater costs for the designer, builder, owner and operator down the track.

These laws – particularly OH&S and disability discrimination – have changed significantly over the past 30 years. One of the strategic actions endorsed by the ATC in its National Marine Safety Strategy²⁴ was to incorporate OH&S principles into design and construction standards. In addition, the disability standards for accessible public transport were formulated under the *Disability Discrimination Act 1992* and came into operation on 23 October 2002. Although they apply to ferries, the USL Code remains inconsistent with the disability standards.

2.9. Lack of clarity and consistency in application

Some of the current USL Code provisions relevant to arrangement, accommodation and personal safety lack clarity. As a result, jurisdictions have had to apply additional or alternative requirements administratively, which adds cost for both the administrators and for designers, builders, operators and owners.

An example of this can be seen in the lack of requirements for the provision of alternative escapes for control spaces that are likely to be occupied in an emergency. Alternative escapes ensure that control spaces don't have to be abandoned prematurely in an emergency. This weakness in the USL Code is evidenced by the fact that some authorities have applied the requirement administratively to vessels.

A lack of clarity and omissions within the standard has led to inconsistencies in application. For example, there is no clear indication in the USL Code for when a seagoing vessel should have protection for persons on board. As a result, the requirements for protection vary amongst the States and Northern Territory.

2.10. Piecemeal presentation of requirements

The piecemeal presentation of requirements does not facilitate a holistic performance-based overview of risk control measures. The current USL Code contains provisions relevant to arrangement, accommodation and personal safety in Subsection 5E Construction – Passengers, Passenger Accommodation, Guard Rails And Bulwarks; Subsection 5F – Structural Fire Protection; Section 7 – Load Lines; Section 9 – Engineering, Section 13 – Miscellaneous Equipment; and Section 18 – Hire and Drive.

²⁴ National Marine Safety Strategy 1998

The presentation of requirements in separate documents without a graded risk approach inhibits a proper comprehension of the function and grading of requirements. For example, intermediate rails for passenger vessel guardrails in Section 5E are spaced at 230 mm while intermediate rails on hire and drive vessels in Section 18 are spaced at 250 mm, each without reference to the other criteria or explanation for the change.

3. OBJECTIVES

The objective of an arrangement, accommodation and personal safety standard is to control risks to persons on a vessel by highlighting key aspects relevant to the arrangement of a vessel that are best identified in the early stages of a vessel's design.

The objective of the review of the existing standard for arrangement, accommodation and personal safety – the USL Code – and the development of the NSCV Part C Section 1, is to address the problems outlined in Chapter 2 by:

- Reviewing the USL Code requirements in light of learnings from commercial vessel incidents over the past 30 years;
- Creating an environment for persons on board a vessel that reflects current community expectations for safety;
- Providing a consistent and auditable benchmark for determining initial and ongoing compliance of a vessel to the standard;
- Providing a performance-based framework that supports innovation through equivalence;
- Reflecting advances in technology and scientific understanding;
- Providing a standard that can easily be implemented by marine authorities on a consistent basis;
- Maintaining a level of compatibility with the existing provisions in the USL Code so as to avoid unnecessary conflicts;
- Better taking into account the particular nature and area of operations of each individual vessel;
- Creating greater alignment with international standards and implementing international obligations;
- Alerting vessel designers, builders, owners and operators to their safety obligations under OH&S and disability discrimination laws;
- Removing flaws in the standard, including errors and omissions, that created ambiguities or unacceptably high risks; and
- Addressing changes in the size and shape of the population.

4. STATEMENT OF OPTIONS

4.1. Overview

The proposed standard is the National Standard for Commercial Vessels (NSCV) Part C Design and Construction Section 1 Arrangement, Accommodation and Personal Safety. It was prepared as part of the review of the USL Code. The proposed standard replaces portions of Subsections 5E 5F and Sections 6, 7, 13 and 18 of the USL Code.

A number of options are considered in this RIS for the maintenance of commercial vessel safety through a standard on arrangement, accommodation and personal safety. These options are:

- ▶ Option 1 - Status Quo (USL Code Sections 5E, 5F, 6, 7, 13 and 18);
- ▶ Option 2 - Adopt External Standards; and
- ▶ Option 3 - The Proposed Standard, the NSCV Part C Section 1.

4.2. Option 1: Status Quo based on the USL Code

This option would see the retention of the requirements of the USL Code for arrangement, accommodation and personal safety.

Although, under this option, nothing is done to effect changes to the USL Code regarding requirements for arrangement, accommodation and personal safety of commercial vessels in Australia, the requirements of other laws would still apply on top – or instead of – some of the requirements of the USL Code.

In particular, Australia has recently ratified the MLC. The major requirements of the MLC relating to arrangement, accommodation and personal safety, and their application, are shown in the following table.

Table 8 — MLC requirements

MLC Requirement	Applies to
Minimum headroom of 2.03 metres. The MLC allows this to be reduced where 'reasonable'	Applies to all commercial vessels, except: <ul style="list-style-type: none"> ▶ ships which navigate exclusively in inland waters or waters within, or closely adjacent to, sheltered waters; ▶ fishing vessels; ▶ vessels less than 200 gross tonnage not engaged in international voyages.
Increase in minimum crew accommodation floor area to 4.5sqm (single room), 7.5sqm (2 person room)	

In addition, under the status quo, the requirements of Australian disability discrimination standards apply to the vessels through anti-discrimination legislation. The major requirements of disability discrimination standards for transport (relating to arrangement, accommodation and personal safety) and their application are shown in the following table.

Table 9 — Requirements of disability discrimination legislation

Requirement	Applies to
Access for persons with a disability including width for doorways, corridors and passengers, priority seating, allocated spaces for wheelchairs, accessible sleeping berths and suitable sanitary facilities	Conveyances used to provide public transport services, as well as supporting premises and infrastructure 'Conveyances' include 'ferries', but not charter boats. Water taxis are specifically identified as a 'charter boat'

4.3. Option 2 - Adopt External Standards

Option 2 means Australia would adopt one or more of the various standards currently in use internationally or in other countries for their domestic usage.

There are numerous national and international standards that are relevant to the content of the proposed standard, including:

- ▶ **American Boat and Yacht Council standards:** ABYC standards for recreational vessels cover the smaller end of the fleet. However, these standards conflict with those of SOLAS in certain respects. For example, SOLAS requires visibility forward of a minimum two vessel lengths while ABYC requires minimum of four.
- ▶ **MLC 2006:** The MLC provides a standard for accommodation on seagoing vessels of greater than 200GT. As such, it does not provide solutions for sheltered water vessels, fishing vessels or for the numerous small seagoing vessels. Nor does the MLC cover passenger accommodation.
- ▶ **International Standards Organisation:** ISO small craft standards also pertain to the smaller fleet and cover vessel arrangement. However, there are concerns with applying the ISO standards to the commercial fleet, in particular regarding the requirements for the minimum size of an escape.
- ▶ **Australian standards:** Various Australian standards specify different requirements for stairs, ladders and gradients, as well as personal safety.
- ▶ **UK Marine and Coastguard Agency Code for Small Commercial vessels and Pilot vessels:** MGN280 provides personal safety standards for smaller ships, but is limited to non-passenger vessels and vessels less than 24 metres in length.

As illustrated above, none of the international or Australian standards covering accommodation, arrangement and personal safety provide a comprehensive standard for the entire Australian domestic commercial vessel fleet.

4.4. Option 3 - The proposed standard, NSCV Part C Section 1

4.4.1. Overview

The proposed standard was developed through a review of the arrangement, accommodation and personal safety sections of the USL Code.

It draws upon the content of many of the relevant national and international standards specified in Option 2, but contains a unified comprehensive set of requirements. The proposed standard, like the USL Code, has been developed to apply specifically to the Australian domestic commercial vessel fleet, and contains a range of requirements that are suited to all the different vessel types.

The content of the draft standard is illustrated by the list of Chapters:

- Chapter 1 Preliminary
- Chapter 2 Operating stations
- Chapter 3 Arrangements for provision of navigation signals
- Chapter 4 Accommodation spaces
- Chapter 5 Access, escapes and evacuation
- Chapter 6 Personal safety
- Annex A Excerpt from the COLREGS – International regulations for preventing collisions at sea, 1972
- Annex B Methodology for determining the minimum required aggregate width of doors, stairways, corridors and ramps serving a space
- Annex C Guidance on the safety of plant located on deck of a vessel

The following sections highlight the more significant aspects of the draft standard. The differences between the proposed standard, the NSCV Part C Section 1, and the USL Code, are detailed in Annex A to this RIS.

4.4.2. Required outcomes

As discussed above, a performance-based framework is utilised in the proposed standard. Under this framework, required outcomes are listed in each chapter that establish the safety outcomes for arrangement, accommodation and personal safety on the vessel.

The proposed required outcomes are:

Operating Stations

PERCEPTION AND SITUATIONAL AWARENESS

A vessel must be arranged to ensure that the person operating the vessel has sufficient information to identify navigational hazards, assess the risks and take appropriate measures to control those risks in both normal and abnormal conditions of operation.

COMPLIANCE WITH COLLISION REGULATIONS

A vessel must be arranged to facilitate the person operating the vessel being able to comply at all times with their obligations under the Collision Rules.

HUMAN FACTORS

A vessel must be arranged to eliminate or reduce to acceptable levels the risk of operator error or fatigue arising due to the design and arrangement of the operating station.

Arrangements for Provision of Navigation Signals

COLLISION AVOIDANCE

A vessel must be provided with means to inform other vessels of its location, nature, size, course and status so as to facilitate avoidance of collision or contact.

Accommodation Spaces

MINIMUM CLEAR HEIGHT BETWEEN DECKS

Protection from head and neck injury

The space between deck and deck head on a vessel must be sufficient for persons to avoid head or neck injury arising from unexpected physical contact with the deckhead, deck beams or other items that project below the deckhead.

Facilitation of rapid movement

The space between deck and deck head on a vessel must be sufficient to facilitate the rapid movement of persons along escape and evacuation routes in the event of an emergency.

PASSENGER ACCOMMODATION

Protection from excessive motions

A vessel must be arranged to reduce the risks to persons of excessive vessel motions.

EXAMPLES of excessive motions: Rolling and pitching in large seas, large accelerations from extreme manoeuvres.

Prevention of fatigue

A vessel must be arranged to eliminate or reduce to acceptable levels the risks associated with fatigue of passengers.

EXAMPLES of risks of fatigue: Passengers becoming unstable after standing for extended periods, passengers sitting on bulwark rails as a place to rest

Crew access

Spaces containing passengers must be provided with sufficient space to allow rapid access by crew members to any location within the space, as might be required for safety purposes.

Escape from hazards within a space

Sufficient free space must be provided to allow passengers to quickly move away from the immediate vicinity of hazards that might develop within the space.

Safe movement of persons

Sufficient free space must be provided to allow the movement of passengers without undue physical contact with others in the space.

BERTHED ACCOMMODATION

Prevention of fatigue

A vessel must be arranged to provide an environment that facilitates the rest and sleep of crew members and passengers so as to prevent the build-up of fatigue.

Disease and other risks to health

Accommodation on a vessel must be arranged to facilitate the prevention of the spread of disease and to minimize other risks to health.

Sufficient personal space

Sufficient free personal space must be provided in sleeping accommodation to minimise interference that may compromise the harmony between persons on board the vessel.

Provision for social harmony

Where crew are expected to live on board for extended periods, accommodation must be arranged to maintain social harmony on board.

NOTES:

1. There are studies that indicate a significant proportion of crew fatalities on vessels arise from suicide, homicide and drug abuse.
2. MLC 2006 indicates that social harmony is enhanced by mutual respect, fairness, privacy, a sense of community, rest, recreation and absence of discomfort.

SANITARY ARRANGEMENTS

Protection of persons from hazardous behaviour

A vessel must be provided with appropriate and sufficient toilet facilities so that persons on board can access them without engaging in hazardous behaviour (e.g. such as leaning over rails and bulwarks, or being exposed to the force of the sea)

Promotion of hygienic behaviour

Sufficient and appropriate toilet and washing facilities must be provided on board a vessel to promote and facilitate hygienic behaviour.

Sanitary arrangements must be arranged to protect the privacy of individuals using them, to the extent necessary to promote their use.

Prevention of growth and transmission of micro-organisms

Human wastes on board a vessel must be collected, transported and disposed in a manner that protects the health of persons and prevents the transmission of disease.

Sanitary arrangements must be arranged to facilitate regular and effective cleaning to avoid the build up of unsanitary substances and promote sanitary device use.

Access, Escapes and Evacuation

ESCAPE FROM HAZARDS WITHIN SPACES ON THE VESSEL

Enclosed spaces on a vessel must be provided with escape routes of sufficient number and size to effectively eliminate or reduce to acceptable levels the consequences of persons on board the vessel being exposed to hazards such as fire, smoke, and flooding.

REDUNDANCY IN ESCAPES

Alternative escape routes must be provided to control the risks of entrapment arising from the blocking of a single escape having regard to the magnitude of risks that would arise should the escape route be blocked; i.e., the likelihood and consequences of exposure to hazards.

FACILITATE MOVEMENT FOR EVACUATION

The vessel must be designed and constructed to facilitate in times of emergency the orderly and timely movement of persons to places of assembly and to disembarkation points for evacuation into survival craft

FACILITATE MOVEMENT BETWEEN DECKS

Means of access between different deck levels on the vessel must be designed and constructed to facilitate the rapid movement of persons in an emergency and to avoid tripping hazards.

ACCOMMODATE THE NEEDS OF A LARGE PROPORTION OF THE POPULATION

Means of escape must be designed to accommodate not less than 95 percentile range of potential users, assuming users are wearing a lifejacket of the type required to be provided on board the vessel.

NOTES:

1. For ferries and other vessels engaged in operations for the general public, this may require characteristics capable of accommodating the disabled, including persons in wheel chairs.
2. For manual inflatable lifejackets, the assumption may be limited to taking into account the wearing of such life jackets in their uninflated state.

Personal Safety

PROTECTION OF PERSONS FROM THE ELEMENTS

Protection from the sea

A vessel must be arranged to eliminate or reduce to acceptable levels the risk to persons from being physically injured due to exposure to seas that might come onto the deck of the vessel.

Protection from the weather

A vessel must be arranged to minimise the adverse health and fatigue effects on persons that arise from being exposed for extended periods to extremes of weather.

NOTE: Extremes of weather include rain, spray, wind, heat, cold and sunshine.

BULWARKS AND GUARD RAILS

Prevention of persons falling overboard including falling over a bulwark or guard rail

A vessel must be provided with arrangements that eliminate or reduce to acceptable levels the risk of persons falling overboard taking into account the competence and physical characteristics of the persons.

Prevention of persons falling from heights on a vessel including falling over a bulwark or guard rail

A vessel must be provided with arrangements that prevent persons from falling from elevated locations on the vessel taking into account the competence and physical characteristics of the persons.

Prevention of persons falling by passing through a bulwark or guard rail

The arrangements must be capable of retaining a person lying on the deck from falling (either overboard or from elevated locations) due to seas on deck, excessive deck angles or excessive accelerations.

PROTECTION FROM MACHINERY

Means must be provided to eliminate or reduce to acceptable levels the risks to persons from hazards arising from machinery operating on the vessel.

NOTES:

Hazards include contact with or exposure to high or low temperatures, contact with moving parts or energized electrical components, exposure to high sound levels, exposure to spaces containing low levels of oxygen or unacceptable levels of toxic substances.

Specific requirements relevant to a number of these hazards are contained in NSCV Part C Section 5—Engineering.

PROTECTION FROM SLIP AND FALL HAZARDS

A vessel must be provided with measures to eliminate or reduce to acceptable levels the risks associated with fall and slip hazards.

PROTECTION FROM HEARING DAMAGE

A vessel must be provided with measures to eliminate or reduce to acceptable levels the risk of hearing damage.

SAFE ACCESS TO AND FROM THE VESSEL

Access between a vessel and wharf, pier or landing

Safe means must be provided for persons boarding or disembarking from the vessel to a wharf (or other intended shoreside location) taking into account variations in wharf height, tidal range and movement of the vessel due to waves, wind or current, and the nature of the surfaces onto which persons are likely to require access.

Access between a vessel and another vessel

Where transfer of persons from one vessel to another vessel is likely or envisaged, safe means for affecting such transfer must be provided.

NOTE: Such operations may include embarking and disembarking a pilot, or transfer of persons to tender vessels.

Means of access to be appropriate

The means of access must be safe taking into account the needs of not less than 95 percent of the range of physical dimensions and capabilities of persons likely to use the vessel.

RECOVERY OF PERSONS THAT FALL OVERBOARD

A vessel must be provided with means to enable a person who has fallen overboard to be recovered on board without being exposed to additional risks that would be unacceptable.

NOTE: Unacceptable risks include close proximity to propellers, rescuers falling off the vessel while attempting recovery, rescuers having to jump into the water to effect recovery and injury due to lifting while undertaking recovery.

4.4.3. Deemed-to-satisfy solutions

The required outcomes establish the overall framework for the application of deemed-to-satisfy solutions. A graded approach is used to match the specified requirements against the vessel's level of risk. The key risk parameters used to establish relative risks are operational and the use of the vessel (for example, different requirements apply to passenger vessels as opposed to non-passenger vessels).

In developing the deemed-to-satisfy solutions, the standard draws on a large range of diverse national and international standards. The following list provides an overview of how existing international standards have been drawn on and incorporated into the proposed standard.

- **MLC 2006:** MLC increased the requirements for crew and passenger accommodation. Australia ratified the MLC 2006 on the basis of the *Maritime Labour Convention Regulation Impact Statement*²⁵ which stated that Australian ratification would ensure decent working and living conditions for seafarers on both Australian and foreign vessels; reinforce Australia's reputation as a respected port state; and maintain the competitiveness of Australian-flagged ships. The provisions of the MLC have been applied to certain vessels as required by the MLC. Where the application of the MLC is discretionary under the MLC standard, its requirements have been considered as part of the development of appropriate requirements in the proposed standard. This meets Australia's obligation to review its existing requirements in light of the MLC.
- **IMO standards:** IMO standards for ladders, marking of escape and evacuation routes, minimum height of bulwarks and guard rails, protection from hazardous plant, stairway construction, guardrails, and special purpose or working decks have been incorporated into the proposed standard as deemed-to-satisfy requirements for certain vessels.
- **SOLAS Chapter V:** Chapter V requirements for field of vision from the operating compartment have been incorporated into the proposed standard as deemed-to-satisfy requirements for certain vessels.

²⁵ Prepared by the Commonwealth Department of Education, Employment and Workplace Relations

- ▶ **Collision regulations:** The IMO COLREGS requirements for navigation lights have been incorporated in the standard as deemed-to-satisfy requirements for certain vessels.
- ▶ **American Boat and Yacht Council standards:** ABYC standards for operating stations, guardrails and special purpose or working decks, have been incorporated in the proposal standard as deemed-to-satisfy requirements for certain vessels.
- ▶ **International Sailing Federation standards:** ISAF specifications for special purpose decks and special working decks have been incorporated in the proposed standard as deemed-to-satisfy requirements for certain vessels.
- ▶ **Building Council of Australia:** BCA specifications for special purpose decks, special working decks, bulwarks and guard rails, have been incorporated into the proposed standard as deemed-to-satisfy requirements for certain vessels.
- ▶ **International Code of Safety for High-Speed Craft:** HSC Code requirements for assembly stations, bulwarks and guard rails, have been incorporated into the proposed standard as deemed-to-satisfy requirements for certain vessels.
- ▶ **US Code of Federal Regulations:** US Code requirements for guardrails have been incorporated into the proposed standard as deemed-to-satisfy requirements for certain vessels.
- ▶ **Marine Orders:** Marine Order standards for access to and from the vessel, gangways and cargo access ramps have been incorporated into the proposed standard as deemed-to-satisfy requirements for certain vessels.
- ▶ **Australian Standards:** Referenced Australian standards include *AS 1657—Fixed platforms, walkways, stairways and ladders — Design, construction and installation*; *AS/NZS 2080—Safety Glass for Land Vehicles*; *AS 2227—Yachting harnesses and lines – conventional lines*; *HB 197:1999 An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials*.
- ▶ **American Bureau Of Shipping:** Includes reference to *Guidance Notes for the Application of Ergonomics to Marine Systems* and *Guidance Notes on Ergonomic Design of Navigation Bridges (Publication #119)*.
- ▶ **Commonwealth Disability Standards for Accessible Public Transport:** Formulated under the *Disability Discrimination Act 1992*, the Transport Standard has guided the proposed requirements for doorways, stairs, seating, sanitary facilities and accommodation for passenger vessels, such as ferries.
- ▶ **Fire Safety Systems Code:** The FSSC has influenced the proposed requirements.

- ▶ **International Standards Organization:** ISO standards, including *ISO 15085 — Small craft — Man-overboard prevention and recovery*, have been applied or incorporated into the proposed standard.
- ▶ **National Occupational Health & Safety Commission:** The *National Standard for Plant* has been incorporated into the proposed standard.

Many of these standards (such as the ISO standards on stairways) are incorporated into the NSCV, while others are cross referenced.

There is a tension between direct reference to standards and incorporation of elements of standards. Direct reference has the advantage that it does not become out of date when the source standard is revised. However, it has the disadvantage of being cumbersome and also not necessarily being fully comprehensive or appropriate across the range of commercial vessels.

The NSCV (including the proposed standard) makes direct reference in certain circumstances where appropriate, such as MLC or SOLAS Chapter V. NSCV Part B Clause 1.6 provides that any documented referenced in the NSCV should be considered as the latest revision of the document, including amendments. Hence amendments and revisions are automatically picked up where a standard is directly referenced keeping the provisions up to date.

Where it would be more convenient or effective, the NSCV incorporates portions of a standard. There are also difficulties associated with incorporating only aspects of a standard associated with ensuring that the overarching intent of that standard has remained intact. All due care has been taken in developing the NSCV to avoid these issues.

5. IMPACT ANALYSIS

5.1. Scope of vessels impacted

The NMSC estimates that up to 1,300 commercial vessels each year in Australia may be impacted by the proposed standard, including newly constructed vessels that require survey, vessels upgrading in survey, and vessels entering survey for the first time for various reasons.

These are distributed over all vessel classes and areas of operation and include fast craft. This estimate is at the higher side and considered a maximum, based on information supplied by marine authorities of the various jurisdictions to the NMSC.

An indicative break-down of the estimated new vessels entering the fleet each year by vessel class and operational area, and by vessel length is contained in the following tables.

Table 10 — Indicative number of vessels impacted per year by class and operational area²⁶

Vessel operational area	Estimated number of new vessels each year within scope of the proposed standard		
	Passenger	Trading	Fishing
A	1	1	3
B	30	22	331
C	34	197	184
D	47	152	42
E	110	136	11
Total	222	508	571

Table 11 — Indicative number of vessels impacted per year by length²⁷

Length	Estimated number of new vessels each year within scope of the proposed standard
≤7.5m	502
>7.5m ≤ 13m	333
>13m < 35m	451
≥35m	13

²⁶ NMSC, Final RIS NSCV Part C Section 6B, Buoyancy and Stability after Flooding.

²⁷ NMSC, Final RIS NSCV Part C Section 3, Construction.

5.2. Impacts of Option 1 – Status Quo

5.2.1. Benefits of the Status Quo

The Status Quo is the easiest option to be adopted as it is already in force. The continuation of this option means no changes in the existing requirements and no additional compliance costs will be incurred.

The major benefit of Option 1 is its familiarity. The current standards have largely been reasonably effective in terms of safety outcomes, even if the administration has not been the most efficient. The ad-hoc systems to cope with the deficiencies of the current standards are already in place and a significant advantage of the option is that it avoids the need for change with the short-term disruptions that brings. However, in relative terms, the benefits to be derived from Option 1 are comparatively lower than those of Options 2 and 3.

5.2.2. Costs of the Status Quo

As already stated in Chapter 2 of this RIS, the present requirements of the USL Code have some deficiencies. If they remain, there will be cost implications to society in the long run.

In addition, the obligations on vessels and operators contained in disability discrimination legislation apply under the status quo. Thus, even under the status quo, operators incur costs beyond what is required by the USL Code. As these requirements are not identified in the USL Code, operators may incur additional compliance costs associated with identifying and interpreting the requirements of the disability discrimination legislation.

Finally, under the terms of the MLC, Australia must review the existing requirements of the USL Code in relation to accommodation, arrangement and personal safety. Maintaining the existing requirements, or reducing the MLC requirements significantly for large, offshore vessels, would be a breach of Australia's obligations under the MLC.

As such, if the status quo requirements of the USL Code are maintained, Australia will be in breach of its international obligations, as Australia will not have reviewed the requirements for the remainder of the fleet in light of the MLC. According to the RIS on the Ratification of the MLC²⁸, ratification of the MLC provided a number of benefits to Australia. For example, it ensures decent working and living conditions for seafarers on both Australian and foreign vessels, reinforces Australia's reputation as a respected port State in the international maritime community and allows Australia to take a leadership role in encouraging and supporting developing nations in the region to become

²⁸ Prepared by the Commonwealth Department of Education, Employment and Workplace Relations, http://ris.finance.gov.au/files/2011/01/Maritime_Labour_Convention_RIS.pdf

compliant with the MLC. If Australia fails to comply with the requirements of the MLC, the benefits of ratification of the convention identified in the RIS on the Ratification of the MLC will be lost.

Considering the main benefits and costs of the status quo, retaining the USL Code in its existing form is not a preferred option.

5.3. Impacts of Option 2 – Adopt External Standards

While there are a range of external standards that could be adopted in place of the USL Code, there is no single, comprehensive standard that could be applied to the Australian domestic fleet.

Attempting to cover the field by adopting a “patchwork quilt” approach (i.e. applying elements of the various relevant international and national standards) is fraught with difficulties, as:

- ▶ The standards often conflict with one another. For example, many of the standards contain different requirements for the slope and geometry of stairs, and arrangements permitted by some standards are prohibited by others. Such ambiguities can result in uncertainty as to the appropriate performance benchmark. The means by which these conflicts are resolved would have to be placed in a document that would itself be a standard;
- ▶ The cost of obtaining the various standards would be excessive;
- ▶ Understanding and applying multiple standards would make application of requirements cumbersome;
- ▶ Gaps would remain in requirements that are not covered by the various standards, which would need to be filled by additional standards. For example, standards for emergency escapes through bulkheads are not addressed by any of these international options; and
- ▶ The standards have been developed for a particular purpose and do not provide for the special challenges encountered on board smaller domestic vessels.

In addition, a number of the international standards conflict with current practice under the USL Code. A change in criterion for the maximum allowable angle of a stairway may have significant impact on existing designs, resulting in far greater costs than the proposed standard.

Finally, the majority of national and international standards are not framed to facilitate a performance-based approach. Required outcomes and the elements that form deemed-to-satisfy solutions would therefore not be clearly defined, and would have to be super-imposed by the NMSC.

Although these international standards provide a valuable reference to acceptable solutions for the vessels they cover, direct adoption of the external standards is not the preferred option.

5.4. Impacts of Option 3 – The Proposed Standard

This section of the RIS contains a discussion of the overall expected benefits and costs of Option 3. A detailed review of the differences between the proposed standard and the USL Code is contained in Annex A.

5.4.1. Benefits of Option 3

Much of the content of the proposal has been derived from existing standards. These standards have come from a wide variety of sources. They have been developed by practitioners from around the globe. Each standard effectively represents the outcome of a process utilising a mixture of quantitative analysis, qualitative assessment and expert judgement. The major purpose of this draft standard has not been so much to invent new standards, but to adapt and grade standards from relevant sources to provide a single comprehensive and coherent unified standard to meet the needs of the domestic commercial vessel industry in a manner consistent with the performance-based structure.

Option 3 should deliver the following benefits:

- A. Improvements to safety (reduced cost of fatalities, injuries and lost vessels);
- B. Increased flexibility of design choices (through the performance based nature of the standard);
- C. Requirements that are better matched to the specific needs of the vessels, resulting in a focus of the risk control measures on the areas of highest risk;
- D. Social benefits (improvements in living conditions for crew, reducing health impacts and vessel incidents, and improved access to public transport);
- E. More efficient administration (due to improved clarity); and
- F. Alignment with other relevant national and international standards already or soon to be embedded in Australian law.

A summary of the potential benefits is contained in the following table. Each of these expected benefits is discussed in more detail in the following sections.

Table 12 — Summary of benefits of the proposed standard

Requirement	Potential impact
A. Safety benefits	
Quantifiable criteria for vision from the operating station	Improved field of vision, which may reduce the number of incidents resulting from collisions with

Requirement	Potential impact
	other vessels and fixed objects (which represent 40 percent of total reported vessel incidents)
Alignment of standards for fishing vessels with standards for other commercial vessels	Reducing the probability of fatality on fishing vessels to that which is equal to other commercial vessels, subject to differences in the conditions in which the vessels operate.
Improvements in escape routes, including increased height between decks and increased width of corridors for higher risk vessels	Reduce time taken to evacuate a vessel. Reflects changing physical dimensions and mobility of persons
B. Increased flexibility of design choices	
Ability to build to an equivalent solution	Efficiency in vessel design resulting from the flexibility accorded to vessel designers.
C. Requirements matched to the needs of the vessel	
For vessels with assembly stations, reduction in the required width of passageways	Scaled requirements, reduced costs
Reduction in width of passageways other than corridors	Scaled requirements, reduced costs
Differentiation in requirements for steps on stairs for high capacity escapes and those for low capacity escapes	Scaled requirements, reduced costs
New gangway requirements that are better suited to smaller passenger vessels	Scaled requirements, reduced costs
Greater acceptance of gangplanks in lieu of gangways	Scaled requirements, reduced costs
D. Social benefits	
Increases in the amount of headroom	Sufficient headroom is important to mitigate the likelihood of head, neck and back injuries
New criteria for ventilation, temperature control and noise in	Reduced likelihood of crew fatigue and hence reduced likelihood of crew error

Requirement	Potential impact
accommodation for voyages greater than 36 hours	
Changes to the maximum number of occupants in sleeping accommodation for crew	Reduced likelihood of crew fatigue and hence reduced likelihood of crew error
Provision of facilities for the sick or sick's bays for crew (depending on vessel size and journey length)	Supports the health of the crew
Greater access for persons with reduced mobility, including accessible berths and sanitary facilities, doorways and corridors suitable for wheelchair access and priority seating	Supports equal access to services for elements of the community
E. More standardised administration	
A clearer set of requirements, particularly for issuing equivalent solutions	The present lack of clarity has led to inconsistencies and different interpretation and application of the requirements. Greater clarity lowers compliance costs by reducing the need for extensive interpretation by naval architects, builders and surveyors, and reduces the frequency of error
F. Alignment with other requirements	
Alignment with OH&S and anti-discrimination laws	Reduces compliance costs by alerting vessel designers, builders, owners and operators to their obligations under these laws and ensures that the requirements are factored into vessel design and construction from the outset
Alignment with the MLC	Meets Australia's obligations under the MLC, which ensures decent working and living conditions for seafarers on both Australian and foreign vessels; reinforces Australia's reputation as a respected port state; and maintains the competitiveness of Australian-flagged ships.

A. Safety benefits

The following are a few of the changes that are expected to have significant safety benefits. An indication of the scope of the potential safety benefits from a monetary perspective is contained in section 5.5.

Field of vision from the operating station

As outlined in Chapter 2, collisions with other vessels and with fixed objects are the most frequently recorded commercial vessel incident over the years 2005 to 2008 (representing 40 percent of total reported vessel incidents). While visibility from the operating station may be just one factor in a chain of events, facilitating the observation of potentially hazardous situations may reduce the likelihood (and perhaps also the consequences) of collision.

The proposed standard represents a significant change from the USL Code by introducing quantifiable criteria for vision from the operating station.

Aligning standards for fishing vessels

Measures contained in the proposed standard align the fishing sector with the non-passenger sector to achieve a consistent performance-based structure in the standard. The standard aligns requirements for fishing vessels with those for other commercial vessels, therefore reducing the probability of fatality on fishing vessels to that which is equal to other commercial vessels, subject to the different conditions in which the vessels operate. The standard still incorporates sufficient flexibility to accommodate special needs of fishing vessels and other workboats by proactively specifying measures that would in any case be likely to comply with occupational health and safety obligations.

The principle of equal treatment for equal risk lies at the core of the performance-based approach. These measures are likely to contribute to reducing the disproportionately high fatalities associated with the fishing sector, as indicated by Table 7 in Chapter 2.

Reducing the impact of an incident

Other requirements contained in the standard will prevent an incident becoming an accident and an accident resulting in a catastrophe. Vessel accidents are rarely investigated to the depth necessary to pinpoint the exact chain of events, let alone identify quantitatively the impact of subtle changes in the factors that lead to each event. However, a qualitative approach can be taken on the basis that improvements in escape routes will be a factor that can help all passengers and crew evacuate within a short period, reducing the likelihood of drowning. With changes to the physical dimensions and mobility of persons, some of the changes are needed just to keep par with previous safety outcomes (e.g. the height between decks and the width of corridors in passenger vessels). Such

improvements, targeted to vessels of higher risk, have a reasonable likelihood of providing a significant if not measurable benefit.

Indirect cost savings associated with improved safety

As a result of the safety improvements outlined above, cost savings can be expected as a result of:

- Avoided and/or reduced costs of search and rescue;
- Reduced risk of fatalities;
- Reduced risk of serious injuries;
- Reduced property losses;
- Avoided costs of investigating marine incidents; and
- Reduced interruption to business arising from accidents.

B. Increased flexibility of design choices

The arrangement, accommodation and personal safety standard is expected to result in relatively lower costs in the long term because the design of the vessel will be more efficient due to the performance based structure of the deemed-to-satisfy requirements.

The standard has flexibility that gives the designer a measure of control to choose the parameters that will allow the most appropriate deemed-to-satisfy solution. This option is expected to result in better solutions to achieve outcomes, with subsequent savings of time and money.

For example, a vessel that has stairs designed to a recognised overseas standard that does not meet the deemed-to-satisfy requirement would likely be accepted as an equivalent solution provided that standard is appropriate to the application.

The new options are expected to result in increased competition between suppliers of vessels and equipment. There may be increased competition by suppliers to meet quality assurance requirements and testing certification. There may also be increased competition to demonstrate that new designs and equipment comply with the proposed standard.

While proving the equivalency of an alternative solution may involve some costs for operators, the equivalent solution option is preferable to an exemption mechanism (such as obtaining exemptions from the requirements of the USL Code, as currently occurs). The equivalent solution mechanism provides a common way of assessing alternative solutions that ensures safety is preserved and creates a level playing field for all operators.

C. Requirements better matched to the specific needs of the vessels

The draft standard contains performance based requirements that take into account various factors that affect the inherent risks of a vessel. As the requirements are more scaled, the costs become more proportionate to the risk involved.

As a result, in a number of areas the requirements are proposed to be relaxed in the proposed standard compared to the USL Code. These include:

- ▶ Evacuation paths: For vessels with assembly stations, reduction in the required width of passageways compared to the USL Code.
- ▶ Minimum width of passageways other than corridors: Reduction in current requirements where the passageway is not a thoroughfare for escape or evacuation (380 – 700 mm rather than 600 - 750 mm).
- ▶ Passageways that serve only as a means for occasional access: Passageways for the purposes of inspection or maintenance may be less in width than other passageways.
- ▶ Step dimensions: Differentiation in requirements for steps on stairs for high capacity escapes and those for low capacity escapes. The latter would have increased flexibility.
- ▶ Gangways: New gangway requirements that are better suited to smaller passenger vessels.
- ▶ Gangplanks: For vessels where full gangways may be impractical, gangplanks would be accepted in some circumstances. This increases flexibility and reduces construction costs.

D. Social benefits

The proposed standard will provide a diverse range of health and well-being benefits, with consequential safety benefits, not only to crew but also for passengers.

Crew

A large number of measures within the standard will improve conditions for the crew. Examples of such measures include:

- ▶ Increases in the amount of headroom. This will maintain parity with previous requirements to a similar proportion of persons for which the accommodation is fit for habitation. Sufficient headroom is important to mitigate the likelihood of head, neck and back injuries;
- ▶ New criteria for ventilation, temperature control and noise in accommodation for voyages greater than 36 hours. These will reduce the likelihood of crew fatigue and hence reduce the likelihood of crew error;

- ▶ Changes to the maximum number of occupants in sleeping accommodation will reduce the likelihood of crew fatigue; and
- ▶ Provision of facilities for the sick or sick bays (depending on vessel size) on journeys over 72 hours, will also support the health of the crew.

These provisions have been proposed to apply in a graded approach to remove any unnecessary burden on vessels for which the journey is such that the benefit would not warrant the cost of specific measures.

Passengers

- ▶ Increases in the amount of required headroom to redress the loss of headroom arising from demographic changes. Not only is this important for avoiding head, neck and back injury, but it also facilitates rapid escape and evacuation; and
- ▶ Provisions that accommodate community expectations for persons with reduced mobility, including accessible berths and sanitary facilities, doorways and corridors suitable for wheelchair access and priority seating.

E. More standardised administration

At present there is a lack of clarity and a level of omissions that can lead to inconsistencies and different interpretation and application of the USL Code requirements. A lack of clarity leads to ad-hoc interpretation, negotiation and the need to exercise discretion to avoid having to apply the current standards where they might be considered inappropriate or technologically superseded. A revised standard that accommodates the latest thinking should avoid what can be a time-consuming and frustrating process. Furthermore, it will avoid variations in the exercise of discretion that cause variations in the application of the requirements and provide barriers to mutual recognition.

A clearer set of requirements should contribute to lower costs by increasing transparency for compliance and reducing the need for extensive interpretation by naval architects, builders and surveyors. This should reduce the frequency of error and avoid the need to rework solutions to comply. Reduced costs that are savings constitute the benefits to be derived.

Greater efficiency is also expected to result from faster training of vessel crews and staff at marine authorities because the standard will be easier to interpret and understand. These efficiencies can be measured in terms of cost savings that constitute benefits to the community.

F. Alignment with other requirements

Alignment with OH&S and anti-discrimination laws and the MLC 2006 alerts vessel designers, builders, owners and operators to their obligations under these laws. This reduces compliance costs, as these requirements are factored into vessel design and construction from the outset.

5.4.2. Costs of Option 3 – new vessels

The cost impact of the proposed standard is extremely difficult to identify. It is a technical standard that gives guidance and directives on design and construction of commercial vessels in Australia. The requirements may have indirect effects, such as altering the aesthetic appearance of a vessel or changing the utility of a deck space for a given activity, which may have a broader impact on the vessel.

For the vast majority of vessels to which the standard would apply (new vessels), we cannot determine the impact of the requirements until each vessel has been designed to meet the new standard. This is because the requirements could have far-reaching consequences. For example, a change in headroom requirements may result in a larger vessel being built, leading to different equipment requirements, tonnage and harbour fees. However, this will not necessarily be the case, and whether or not the costs of the construction and subsequent operation of the vessel increase as a result of the proposed standard (and to what extent they increase) will depend on the individual vessel and design.

In addition, greater emphasis on performance outcomes in the proposed standards, rather than the prescriptive solutions of the status quo, should provide designers with the opportunity to better optimise their designs for their intended functions while still maintaining required levels of safety. The flexibility incorporated into the approach should enable designers to maximise the benefits in ways that may not be immediately apparent at this stage. This is one of the objectives of incorporating a more performance-based approach into the standard.

Option 3 may impose additional or increased costs in the following areas:

- A. Vessel design and construction;
- B. Survey;
- C. Preparing the standard;
- D. Transition.

A summary of the potential significant additional or increased costs is contained in the table below, with each of the cost areas considered in more detail below. An analysis of the impact of each section of the proposed standard is contained at Appendix A of this RIS.

Table 13 — Summary of potential significant additional or increased costs

Requirement	Potential impact
A. Vessel Design and Construction	
Crew accommodation –	Likely to increase the depth of the vessel or height of

Requirement	Potential impact
increased minimum headroom for vessels over 35 metres	the superstructure. Consequential changes to equipment numbers, anchor and chain requirements, tonnage and harbour fees
Crew accommodation – increased floor area per person for vessels over 35 metres	Likely to increase the depth of the vessel or height of the superstructure. Consequential changes to equipment numbers, anchor and chain requirements, tonnage and harbour fees
Crew accommodation – increased sleeping berth size for vessels over 35 metres	Likely to increase the depth of the vessel or height of the superstructure. Consequential changes to equipment numbers, anchor and chain requirements, tonnage and harbour fees
Access, priority seating and sanitary facilities for large passenger vessels	May reduce seating available for other passengers. May increase the depth of the vessel or height of the superstructure. Consequential changes to equipment numbers, anchor and chain requirements, tonnage and harbour fees
Quantifiable criteria for the field of vision from the operating station	Consequential impacts on the arrangement of the vessel
B. Survey costs	
More comprehensive requirements	<p>As the standard is more comprehensive, it requires a higher degree of vessel assessment by the surveyor, and greater detail will need to be recorded on both the vessel file and the certificate of survey</p> <p>Marine authorities may need to purchase a sound level meter and either train surveyors in its use or contract a qualified person to take sound level readings at a cost to the owner</p> <p>Designer or applicant will likely be required to provide additional information, drawings and calculations</p>
C. Costs associated with equivalent solutions	
Ability to apply for equivalent solutions	Marine authorities are likely to incur some costs in the course of approving equivalent solutions under the proposed standard, while designers, builders and owners may incur costs in applying for and proving an equivalent solution
E. Transition costs	

Requirement	Potential impact
New requirements	At a one-off cost to jurisdictions of \$10,000 to develop, the “Standards Assistant” would facilitate accurate and rapid application of the standard to a design by both applicants and assessors

A. Impacts on vessel design and construction

The most important impacts on vessel design and construction of the proposed standard are highlighted below, together with the other costs of the standard in terms of development and implementation. A more complete overview of the differences between the proposed standard and the USL Code is contained in Annex A.

The vessel design and construction costs identified in this section are considered in more detail in Section 5.5 below.

Crew accommodation

MLC 2006 significantly increases requirements for crew accommodation on passenger and cargo vessels. The NSCV applies the MLC 2006 to relevant vessels (as prescribed by the terms of the MLC) and revises the crew accommodation requirements for other vessels in light of the MLC standard (without actually applying the MLC to these vessels).

Key proposed changes to crew accommodation include:

- ▶ Increased minimum headroom required:
 - For vessels 35 metres or over, the minimum required headroom increases from 1.9 metres (USL Code) to 1.98 metres in accordance with ILO C133. This is less than the MLC 2006 requirement of 2.03 metres.
 - For vessels < 35 metres, the 1.9 metre requirement is maintained.

Local encroachments into the headroom are permitted in certain circumstances. This greater flexibility was added following public consultation on the proposed standard.

- ▶ Increased minimum floor area per person:
 - For vessels over 35 metres on journeys over 36 hours, the increase in floor area required is 50 percent.
 - For vessels under 35 metres on journeys over 36 hours, increases in floor area of 10 – 20 percent per person are required, but this can be reduced provided communal areas account for the

difference. This greater flexibility was added following public consultation on the proposed standard.

- ▶ Increased minimum size of sleeping berths:
 - For vessels up to 35 metres, the minimum size is increased to 1900 x 700.
 - For vessels 35 metres and over, the minimum size is increased to 1980 x 700.

There are indirect effects that can arise from these changes. They could adversely impact on characteristics such as stability, deck area, vessel configuration, bollard pull on tugs, cargo capacity, and so on. For example, an increase in headroom will likely increase the depth of the vessel or height of the superstructure, and as such, will be a major cost driver. This will also lead to consequential changes, such as to equipment numbers, anchor and chain requirements, tonnage and harbour fees.

However, as the requirements impact the vessel at the design stage, it is impossible to identify the cost of the requirements across the fleet, as the cost will be vessel-specific and will depend on how the designer addresses the requirements.

The key principle behind the draft standard is to limit the impacts to vessels for which the benefits will likely be manifest. The graded approach based on length of voyage provides a quantifiable threshold for application that supplements the discretionary clauses in the MLC 2006 applicable to vessels less than 3000GT. In reality, the grading also tends to eliminate those vessels for which application of the requirements would present the greatest burden (i.e. smaller vessels and vessels carrying large numbers of crew to service day passengers).

In short, the additional requirements could present a large cost impact on a small proportion of the fleet, namely vessels over 35 metres with berthed crew accommodation. The extent of this cost impact is considered in section 5.5 below.

Access, priority seating and sanitary facilities

In the draft standard it was proposed that Class 1 vessels carrying 32 passengers or more would be required to provide access for persons with a disability. This includes:

- ▶ Increased width for doorways and corridors;
- ▶ Priority seating;
- ▶ Allocated spaces for wheelchairs;
- ▶ Accessible sleeping berths;
- ▶ Accessible sanitary facilities; and

- ▶ Sick bay facilities for vessels on journeys over 72 hours, including a dedicated sick bay area for class A vessels over 35 metres.

Following public consultation, these requirements were limited to applying to ferries carrying more than 36 passengers and pre-booked services carrying more than 100 passengers.

The requirements of the proposed standard align with disability discrimination laws, particularly the Transport Standards for Persons with Disabilities, and may exceed the requirements of international standards, such as SOLAS.

Stakeholders have indicated that costs are likely to increase as a result of these requirements. One stakeholder suggested that the cost increases could be \$100,000s per vessel, and more the larger the vessel.

However, other stakeholders also suggested that some of these additional costs may be counterbalanced with increased patronage from persons with a disability, as well as their carers and family members travelling with them.

In addition, these requirements would apply to the vessels even if the proposed standard was not introduced, under Disability Discrimination laws. This is considered in more detail in section 5.5 below.

Protection from the elements

Open decks accommodating persons for extended periods of time are proposed to be specifically required to provide some protection from the elements, which may increase construction costs. Previously, requirements were applied administratively, differing between individual jurisdictions. There was no consistent policy and no transparency of requirement. The proposal attempts to reflect a middle ground between existing administrative requirements.

Increased height of bulwarks and guard rails

In addition, there is proposed to be a minimum standard height requirement of 1000 mm for bulwarks and guard rails on some vessels that could previously adopt a lower guard-rail height. The new requirement reflects modern OH&S obligations. While this may increase construction costs, the proposal provides increased flexibility to accommodate a wide variety of vessel functions and operator needs including game fishing, paraflying, pilotage and line fishing. Reduced bulwark and guard rail height is available as an option subject to additional safety measures. The additional safety measure arguably should already be provided to meet OH&S obligations.

Stakeholders indicated that changes to guard rail heights would not have an impact on costs, as the majority of the cost of guard rails was in their manufacture.

In addition, following public consultation on the draft standard, the criteria for bulwarks and guard rails was simplified to two options: one for vessels

≤ 16 metres and one for those > 16 metres. Also following public consultation, bulwarks and guardrails were made mandatory on special purpose and work decks.

Changes to requirements for field of vision from the operating station

Wheelhouses may be required to be raised in height potentially impacting the stability and thereby the earning capacity of the vessel. Quantifying the impact of this requirement on vessel design and construction is extremely difficult. As the requirements of the standard are addressed at the design phase, vessel designs will be altered to accommodate the new requirements.

Control spaces

Requires provision of alternative escapes for control spaces which are likely to be occupied in an emergency. As a result, at least one operating compartment window may have to be openable or breakable for escape with some sort of route to safety. The cost of meeting this requirement will not be significant.

Prohibition on escapes leading into the same high fire risk space

New limits on the location of escapes to ensure that they achieve safety outcomes. This limits the location of escapes and may require provision of protected escape tunnels. However, it will largely affect only vessels having ro-ro decks above the machinery space. In addition, quantifying the impact of this requirement on vessel design and construction is extremely difficult. The requirement will be addressed at the design phase and its impact will vary from vessel to vessel.

B. Survey costs

Stakeholders submitted that the costs for marine authorities associated with surveying the vessel are likely to increase. As the standard is more comprehensive, it requires a higher degree of vessel assessment by the surveyor, and greater detail will need to be recorded on both the vessel file and the certificate of survey. One stakeholder submitted that the surveyor's time in assessing and approving vessel design documentation could be doubled compared to assessment and approval under the USL Code. In addition, marine authorities may need to purchase a sound level meter and either train surveyors in its use or contract a qualified person to take sound level readings at a cost to the owner. However, the same stakeholder suggested that counter-balancing these increased costs would be improved vessel designs.

Stakeholders also submitted that there are likely to be additional costs for the owner associated with vessel survey. The designer or applicant will likely be required to provide additional information, drawings and calculations, which one stakeholder suggested would likely impose substantial additional costs on builders and designers seeking to satisfy the sound level criteria of the proposed

standard. These costs will ultimately be passed-on to owners – one stakeholder submitted that administration costs for owners could increase by 30 percent.

It is noted that, under Part C of the NSCV, the deemed-to-satisfy requirement for vessels over 35 metres is that the vessel is in class. As such, the proposed standard is unlikely to impact on survey costs for vessels over 35 metres.

C. Costs associated with equivalent solutions

The marine authorities are likely to incur some costs in the course of approving equivalent solutions under the proposed standard, while designers, builders and owners may incur costs in applying for and proving an equivalent solution. However, the costs of proving an alternative solution to be equivalent will be borne by the applicant. In addition, costs to the authority in assessing the equivalent solution are likely to be offset, in the longer term, to some extent by:

- ▶ the reduction of costs of administering a standard that currently needs to be frequently interpreted and adapted to specific vessels;
- ▶ the reduction of costs of considering, issuing and managing exemptions; and
- ▶ relatively lower costs for ship builders as non-localised equivalent solutions gain mutual recognition on a national basis and the greater certainty in requirements will help in planning.

D. Cost of preparing the standard

There are costs incurred in developing the standard. These costs include the direct cost of the NMSC preparing the standard and in-kind contributions by professionals from industry groups and jurisdictions who are voluntarily involved in developing the standard. The direct costs to be incurred are the costs involved in drafting the standard, promoting the standard to engender public comment and organising reference group meetings to discuss submissions from the public. However, these are one-off costs that are offset by the benefits that flow from having an up-to-date performance based standard applicable to vessels over the forthcoming decade and more. These costs are very small in proportion to the overall cost of each vessel and negligible when compared to the potential benefits of the proposed standard. When completed, the standard will be electronically published and no significant printing cost will be associated with it.

E. Transition costs

The transition costs associated with introducing the proposed standard are almost zero as many of the requirements in the standard are the same or similar as those in the present USL Code or are already being applied by industry.

Application of the proposed standard would be facilitated by the development of computer design tools, such as the standards assistants developed for some other NSCV standards. At a one-off cost to jurisdictions of \$10,000 to develop

the “Standards Assistant”, this would facilitate accurate and rapid application of the standard to a design by both applicants and assessors. Such a tool would reduce the cost of design considerably compared to current methods.

Stakeholders are very knowledgeable about the present USL Code. However, the performance-based structure of the draft mirrors that contained in other sections of the NSCV currently being applied to commercial vessels. Furthermore, a number of stakeholders will have already been exposed to the proposed standard through having contributed to its development over several years in the Reference Group. These stakeholders include marine authorities, vessel designers, builders and operators, equipment suppliers and ship owners.

This standard will be used primarily by vessel designers, vessel builders, equipment manufacturers, equipment suppliers and marine authorities.

5.4.3. Costs of Option 3 – existing vessels

The standard also applies to existing vessels being surveyed for the first time, and vessels upgrading survey. It may be applied to other existing vessels in high risk circumstances, but this is uncommon. The number of existing vessels that will be subject to the standard is extremely difficult to estimate.

However, for existing vessels, the costs associated with complying to any standard to which they were not built may be significant, be it the current standard (the USL Code) or the proposed standard. Whether to acquire an existing vessel at a reduced price and upgrade it to meet relevant standards or build a new vessel is a business decision that is largely driven by the cost of the new vessel. Hence, the total cost of a new vessel is still the relevant benchmark even for existing vessels entering survey for the first time or upgrading survey.

If the proposed standard were not introduced, existing vessels entering survey for the first time would still be required to meet the relevant requirements of the prevailing standard – the USL Code. Upgrading a vessel that was never built to a commercial vessel standard (and may not have been built to any recognised standard) to meet the requirements of the USL Code may indeed be a prohibitive cost. However, the idea of imposing a standard is to eliminate substandard vessels.

The impact of the proposed standard on these vessels is only an incremental impact – the difference between upgrading to the requirements of the USL Code and upgrading to the proposed standard. However, as with new vessels, the greater emphasis on performance outcomes in the proposed standard, rather than the prescriptive solutions of the USL Code, may reduce costs for existing vessels being surveyed for the first time or upgrading in survey.

The exact nature of the incremental impact is impossible to identify, as it will be determined on a vessel-by-vessel basis. Some existing vessels entering survey for the first time may have been in commercial service overseas. These may already be subject to standards higher than the current USL Code and are likely

to be similar to those in the draft standard. For these vessels, the cost relative to a new vessel may reduce.

A decision of whether to upgrade an existing vessel or to place an existing vessel into survey for the first time will be based on cost. Where it is more cost effective, a new vessel will be built. Where savings are to be made, an existing vessel will be considered.

5.5. Option 3 - Benefit-Cost Assessment

5.5.1. Objective of the BCA

The objective of a Benefit-Cost-Assessment (BCA) is to supplement the qualitative information on the impact of a proposed standard with economic data (monetised benefits and costs) where available to further support decision-making. The BCA compares the situation of no regulatory change (i.e. Option 1 – the USL Code) with the implementation of the proposed standard (i.e. Option 3 – the proposed standard).

However, both the costs and benefits of the proposed standard are extremely difficult to monetise. As the standard is addressed at the design phase, vessel design will be altered to accommodate the new requirements. Whether or not the costs of the construction and subsequent operation increase as a result of the proposed standard will depend on the individual vessel and design. Potential impacts of the proposed standard on the aesthetic appearance of a vessel, or its deck space, may be circumvented by changes to the design of the vessel.

In addition, while the standard may impose some increased costs associated with vessel design and construction, these may be offset by cost reductions associated with greater flexibility.

Similarly, the benefits of the proposed standard are also difficult to quantify. Vessel incidents can rarely be attributed to a single cause. Even where an incident was in part caused by restricted vision, for example, there is no clear evidence regarding the degree to which the standard will reduce the risk and improve safety outcomes. During the consultation phase, a few stakeholders commented on the difficulty of assigning a percentage reduction in risk as a result of the standard.

Other benefits of the proposed standard are equally difficult to quantify. For example, increased flexibility of design choices will determine what innovations will be achieved under a performance based regime. This can also lead to cost savings and productivity improvements.

Given these constraints, a complete BCA and benefit-cost-ratio (BCR) would ultimately be based on estimates that may not in any way reflect the actual implications of the proposed standard. To avoid misleading decision-makers and

the public, a complete BCA or a BCR has not been produced for the proposed standard.

However, in the following sections we provide an indication of the potential scope of impact of the proposed standard.

5.5.2. Potential costs

As outlined in section 5.4.2 above, the key costs of the standard are potential impacts on the costs of the design and construction of commercial vessels. However, as also emphasised above, quantifying the overall impact on vessel design and construction is extremely difficult. Despite these difficulties, this section attempts to investigate in more detail the scope of the potential costs of the proposed standard.

A summary of the potential cost impact is shown in the following table.

Table 14 — Summary of potential costs

Cost area	Potential cost impact
A. Vessel Design and Construction	
<ul style="list-style-type: none"> ▶ Increased minimum headroom for vessels over 35 metres ▶ Increased floor area per person for crew for vessels over 35 metres ▶ Increased sleeping berth size for crew for vessels over 35 metres ▶ Access, priority seating and sanitary facilities for large passenger vessels ▶ Quantifiable criteria for the field of vision from the operating station 	<p>For certain vessels over 35 metres with berthed crew accommodation, the cost impact is estimated at \$500,000 - \$1,000,000 per vessel. Assuming 4.5 vessels within this category enter the fleet each year, the cost impact is \$2,250,000 - \$4,500,000 annually.</p> <p>However, a large proportion of vessels over 35 metres would either comply with SOLAS (and the MLC), or meet class society requirements, and would not be subject to the proposed standard.</p> <p>In addition, Australia has an obligation to review the current requirements for accommodation in line with the MLC 2006. These changes meet Australia's international obligations.</p> <p>The access, priority seating and sanitary facility requirements would apply under the status quo.</p> <p>For vessels under 35 metres, the changes are less significant. Consultation on this issue suggested that the cost impact for vessels under 35 metres is neutral.</p> <p>Maximum annual cost of \$2,250,000 - \$4,500,000</p>
B. Survey costs	
More comprehensive requirements	<p>Marine authorities may need to purchase a sound level meter and train surveyors in its use</p> <p>Sound level metres cost around \$500. It is assumed</p>

Cost area	Potential cost impact
	that three per jurisdiction will be required, plus an allowance for training surveyors in their use. One off cost of \$20,000
C. Costs associated with equivalent solutions	
Ability to apply for equivalent solutions	Although there are costs associated with equivalent solutions, it is a discretionary option that adds flexibility to the arrangements. The current process for negotiating exemptions also entails costs. Cost neutral
D. Costs of preparing the standard	
Developing and consulting on the standard	One-off costs, already incurred Cost neutral
E. Transition costs	
New requirements	Standards assistant may be purchased by jurisdictions at a one-off cost of \$10,000 to develop. However, the standards assistant has been / will be purchased to assist with the other construction sections of the NSCV. One off cost of \$10,000 (\$10,000 by 7 jurisdictions divided by the 7 sections of the NSCV Part C) One off cost of \$10,000

Potential increase in construction costs for vessels over 35 metres

The changes to head room requirements and access for persons with disabilities resulting from the proposed standard will have the greatest impact on costs.

These changes primarily impact vessels over 35 metres in length with berthed crew accommodation. The changes are:

- ▶ increased minimum required headroom for vessels over 35 metres, from 1.9 metres to 1.98 metres;
- ▶ 50 percent increased minimum floor area per person for vessels over 35 metres on journeys over 36 hours (for crew only);
- ▶ for vessels 35 metres and over, increased minimum size of sleeping berths from 1900 x 680 to 1980 x 700 (for crew only);

- ▶ requirements to provide protection from the elements on exposed decks;
- ▶ increased minimum height for bulwarks and guard rails;
- ▶ changes to the requirements for field of vision from the operating station; and
- ▶ new limits on the location of escapes.

According to NMSC data, of the 1,300 vessels affected by the standard each year, approximately 13 of these vessels are over 35 metres in length.²⁹ It is noted that this estimate is on the high side as it is based on a 10 percent turnover of the fleet. Given the struggling fishing sector and the impact of the high Australian dollar on the tourism sector, the vessel turnover rate may have reduced to around 8 percent. However, the 10 percent figure is utilised given the current activity in the mining and offshore gas industry in the north and west of Australia. However, of the over 35 metre fleet, only a proportion of these vessels have crew accommodation and thus would be subject to the requirements of the proposed standard outlined above. The State and Northern Territory marine authorities provided estimates of the number of over 35 metres vessels with berthed crew accommodation in their fleet now, and which, on average, enter the fleet each year. This information is provided in the following table.

Table 15 — Vessels over 35 metres with berthed crew accommodation

Jurisdiction	Vessels over 35 metres in fleet with berthed crew accommodation	Estimated vessels over 35 metres with berthed crew accommodation entering the fleet each year
NSW	6	.5
NT	43	2
QLD	6	.5
SA	2	0
TAS	1	0
VIC	6	.5
WA	13	1
Total	73	4.5

²⁹ NMSC, Final RIS NSCV Part C Section 6B, Buoyancy and Stability After Flooding

The Consultation version of this RIS contained an indicative estimate of 1 per cent cost increase per vessel as a result of the requirements, and sought comment on the estimated cost impact. Some stakeholders indicated that the increased costs for vessels over 35 metres with berthed crew accommodation associated with the head room and floor area requirements of the proposed standard were unlikely to be ameliorated by vessel design. In addition, it was submitted that, costs for these vessels could increase by as much as 5 – 10 percent per vessel.

Assuming that the average 35 metre vessel costs \$10 million to construct,³⁰ the average cost increase per vessel is \$500,000 - \$1,000,000. If all 4.5 vessels entering the fleet each year within the scope of the proposed standard were affected by the requirements, the total cost per year increase resulting from the proposed standard is \$2,250,000 - \$4,500,000.

However, this annual cost impact assumes that the vessels would otherwise meet the minimum requirements contained in the USL Code. This is highly unlikely to be the case as:

- ▶ many vessels over 35 metres, including those operating domestically, elect to meet international standards in order to improve the resale value of the vessel;
- ▶ under Part C Section 3 of the NSCV, the deemed to satisfy survey requirement for vessels over 35 metres is class society certification. Class societies will generally apply Marine Order accommodation requirements to the vessels (and not the proposed standard), or the class societies' own rules will be accepted as an equivalent solution to the NSCV C1 criteria. As such, an over 35 metre vessel may not be required to comply with the proposed standard; and
- ▶ operators may elect to have vessels that exceed minimum standards in order to attract crew or meet OH&S requirements.

In addition, Australia has an obligation to review the existing requirements in line with the MLC. Maintaining the existing requirements, or reducing the MLC requirements significantly for large, offshore vessels, would not meet Australia's obligations under the MLC.

For these reasons the cost impact of \$2,250,000 - \$4,500,000 on vessels over 35 metres must be seen as the upper end of the spectrum and unlikely to be achieved in reality.

Impact on other vessels

For non-passenger and passenger vessels under 35 metres, some of the changes that could increase construction costs for these vessels are:

³⁰ NMSC, Final RIS NSCV Part C Section 3, Construction

- ▶ for vessels up to 35 metres, increased minimum size of sleeping berths from 1900 x 680 to 1900 x 700 (for crew only); and
- ▶ for vessels under 35 metres on journeys over 36 hours, 10 – 20 percent increased minimum floor area per person, but this can be reduced provided communal areas account for the difference.

However, these (and other changes resulting from the proposed standard) are unlikely to increase either total weight or total size of the vessel by a significant amount. These potential costs could also be ameliorated over time as the requirements of the standard become factored into vessel designs in a way which optimises outcomes.

In addition, while the standard may impose some increased costs associated with vessel design and construction, these may be offset by cost reductions associated with greater flexibility.

The Consultation version of this RIS contained an indicative estimate of 1 per cent cost increase per vessel as a result of the requirements, and sought comment on the estimated cost impact. No comments were received in regards to vessels under 35 metres.

However, the Reference Group, which included as members commercial boat builders and naval architects (see Chapter 7), discussed the likely cost impact for vessels under 35 metres. The Reference Group agreed that, overall, the cost impact for these vessels would be neutral. One member of the Reference Group submitted that, for vessels below 35 metres, increasing headroom may have a very limited impact on the costs of the vessel and may not be noticed. As such, for vessels under 35 metres, although the impact of the standard on construction costs will vary from vessel to vessel, it is assumed that the standard will, overall, be cost neutral.

Impact of the access requirements on large passenger vessels

For passenger ferries carrying 36 passengers or more and pre-booked passenger services carrying 100 passengers or more, the proposed standard requires the vessels to provide access for persons with disabilities, including minimum requirements for the width of doorways, corridors and passages, priority seating, allocated spaces for wheelchairs, accessible sleeping berths and suitable sanitary facilities.

However, these requirements apply to all conveyances used to provide public transport services (except charter boats and water taxis) under disability discrimination legislation and standards. In fact, the disability discrimination standards apply to the existing fleet also, and as such have a far broader reach than the proposed standard.

Given that these requirements apply under the status quo, the cost impact of the requirements for the purposes of this RIS is neutral.

5.5.3. Potential benefits

A major benefit to be derived from the proposed standard is that its requirements are specified to mitigate the likelihood of a vessel colliding, reduce the impact or consequence of an incident, and align the standard for fishing vessels with that of other non-passenger commercial vessels, as outlined in the following table. This will lower the risk of incidents, serious injuries, fatalities, vessel loss and damage, as well as result in cost savings from avoiding and/or reducing the cost of search and rescue and avoiding the cost of investigating marine incidents.

Table 16 — Summary of potential safety benefits

Requirement	Potential impact
Quantifiable criteria for vision from the operating station	Improved field of vision, which may reduce the number of incidents resulting from collisions with other vessels and fixed objects (which represent 40 percent of total reported vessel incidents)
Alignment of standards for fishing vessels with standards for other commercial vessels	Reducing the probability of fatality on fishing vessels to that which is equal to other commercial vessels, subject to differences in the conditions in which the vessels operate.
Improvements in escape routes, including increased height between decks and increased width of corridors for higher risk vessels	Reduce time taken to evacuate a vessel. Reflects changing physical dimensions and mobility of persons

However, the actual degree of reduction in risk is difficult to identify:

- There are many reasons an incident occurs – generally, no single specific cause can be identified, or there is insufficient information, capacity and time to pin point and include in data collected the sequence of events that led to the incident. The majority of incidents go without investigation and the results of investigations may not be publicly available, depending upon the investigating body and the purpose of the investigation. As such, estimating the impact the proposed standard will have on the risk of an incident in the future can be a broad estimate at best;
- Although NMSC incident data is the best national dataset covering domestic commercial vessel incidents, it remains a limited picture of *reported* incidents. Jurisdictions have different reporting requirements – hence an incident type reported in one jurisdiction may not be reported in another. As a result, the data provides only a partial picture of the level and type of marine incidents. In addition, the data may not include small commercial vessels of less than 10

metres, and is likely to be a conservative estimate of the number of vessels lost each year;

- Many of the impacts of the proposed standard will relate to 'social factors', which may not be reflected in the figures. For example, overdose, homicide or suicide on a vessel will not have been captured in the data, but the proposed standard may have a positive impact on these 'incidents'; and
- The incident data is skewed by the very nature of marine incidents. One accident involving a large passenger vessel could see an enormous spike in fatality and injury rates, which is not reflective of the nature of the risk. Conversely, the lack of passenger vessel incidents could produce low fatality and personal injury figures that are equally problematic. While marine incidents are expected to occur, their extent in terms of fatalities, serious injuries, vessel loss and damages are very difficult to predict. As such, even identifying the real risk of a future incident based on quantitative methods is an almost impossible task. In their absence, qualitative assessment and expert judgement have to be relied upon.

As such, we can only comment on the scope of potential benefits from a reduction in fatalities, injuries and vessel loss or damage. The following figures provide an indication of potential benefits and may not be achieved in reality.

The scope of potential benefits include:

- Reduced fatalities. On average, 12 people die each year in Australian marine incidents³¹, at a cost of around \$42 million annually.³² This means that a reduction in fatalities could provide a potential benefit of around \$3.5 million per year for each life saved.
- Reduced serious injuries. On average, 43 people each year are seriously injured in Australian marine incidents³³. The cost of these injuries is around \$21.2 million annually³⁴. This means that a reduction in serious injuries could provide a potential benefit of around \$493,000 per year for each serious injury avoided.
- Reduced minor injuries. On average, 153 people each year suffer minor injuries in Australian marine incidents³⁵, at a cost of \$3 million annually³⁶. This means that a reduction in minor injuries could provide a potential benefit of around \$19,600 per year for each minor injury avoided.
- Reduced vessel losses. On average, 6 vessels are lost each year in Australian marine incidents³⁷, at a cost of approximately \$12 million in

³¹ Commercial Vessel Incidents in Australia 2005-2008, NMSC 2009.

³² OBPR resource cost of fatality (2007 figures)

³³ Commercial Vessel Incidents in Australia 2005-2008, NMSC 2009.

³⁴ AustRoads, national average 2008.

³⁵ Commercial Vessel Incidents in Australia 2005-2008, NMSC 2009.

³⁶ AustRoads, national average 2008.

³⁷ Register of Australian and New Zealand Ships and Boats (compiled by Mori Flanagan and NMSC).

passenger vessels, \$2 million in non-passenger vessels and \$6 million in fishing vessels annually³⁸. This means that a reduction in vessel losses could provide a potential benefit of around \$2 million per year for each passenger vessel saved, around \$330,000 per year for each non-passenger vessel saved, and around \$1 million per year for each fishing vessel saved.

In addition, there are also social and safety benefits for maritime workers and vessel passengers. In this regard, it is estimated that:

- ▶ Approximately 4,300 maritime workers in Australia each year will potentially benefit from improvements to safety onboard vessels, improvements in crew living conditions and reduced health impacts and vessel incidents.³⁹
- ▶ Approximately 925,000 vessel passenger trips each year in Australia will potentially benefit from improvements to safety onboard vessels and improved access to public transport.⁴⁰

5.6. Overall assessment of impacts

All the options were considered in terms of their potential costs and benefits and their possibility of meeting the intended objectives of the proposal.

Based on the impact analysis contained in the RIS, neither Option 1 (maintaining the status quo) or Option 2 (adopting external standards) will effectively meet the objectives of the proposal.

The proposed standard is the only option that addresses the problems with the current arrangements. It is expected to better meet all of the objectives of the proposal.

³⁸ Based on average estimated new build cost for passenger (class 1) vessels, non-passenger (class 2) vessels and fishing (class 3) vessels, Estimates provided by GHD Meyrick and agreed by NMSC (January 2011).

³⁹ Recent work completed by KPMG for the NMSC identified that there are currently around 96,000 valid certificates of competency in Australia. Given that there are around 29,000 vessels in the total fleet, this means there would be around 4,300 workers who may operate on the 1,300 vessels that may be affected by the proposed standard each year.

⁴⁰ According to the BTRE *Transport Statistics 2007*, there were 20.8 million domestic passenger trips by sea in 2004-05 around Australia. Given that there are around 6,300 passenger vessels in the total fleet, this means there would be around 925,000 passenger trips on the 280 passenger vessels that may be affected by the proposed standard each year.

6. COMPETITION ASSESSMENT

6.1. COAG Principles

The COAG National Competition Principles Agreement states that regulations with significant net costs or benefits to the community should be assessed to determine that a proposal is the most effective form of government intervention to achieve a desired objective.

The impact of the standard on competition should be considered as part of an evaluation of the effectiveness of the proposal relative to the alternatives. The policy also requires that the benefits of any proposed legislation should outweigh implementation costs and that any restrictions on competition imposed by the legislation should be no more limiting than is necessary to achieve the objective.

Uniform national adoption of the standard for arrangement, accommodation and personal safety will ensure the minimum required safety standards are applied consistently and fairly to all stakeholders. This will ensure competitive neutrality between these businesses. Although these businesses will continue to incur the routine costs associated with design and construction, these ongoing costs are unlikely to restrict market competition, market entry or product and service innovation.

For the majority of smaller vessels, costs will be expected to remain relatively neutral as increases due to a greater focus in one area (say field of vision from the helm) will be offset by increased flexibility regarding other measures (say rail heights, fitting of toilets, gangplanks, etc.).

Larger vessels carrying many persons or engaged in voyages of longer duration are more likely to be impacted by the reforms already adopted nationally and internationally by standards such as MLC 2006, SOLAS Chapter V and Transport Standards for Persons with Disabilities. While the costs for vessels affected by these international and local laws may be significant, they do not result from the proposed standard. Thus, the standard itself minimises the costs for these vessels by pre-empting the application of the legal requirements.

Design and build costs of all vessels should, in the long term, benefit from the availability of comprehensive deemed-to-satisfy solutions, the improved performance-based focus of the requirements and the large increase in options available. While costs of initial survey may increase, as submitted by some stakeholders, these are one-off costs and it is highly unlikely that the requirements will be unsustainable for existing small businesses or act as a barrier for businesses planning to expand or to enter the maritime industry.

The proposed standard also allows for the structured recognition of innovation providing the potential for increased competition as businesses, designers and builders have an opportunity to take advantage of the much wider options available through the Required Outcomes via equivalent solutions.

6.2. Small Business

The regulatory assessment guidelines for national standards require that the likely impacts on small business be identified, especially where regulatory compliance costs could have a disproportionate impact on small business.

Small business is not expected to be unfairly disadvantaged by the proposed standard because it is an improved version of the present requirements. There is improvement in safety, risks associated with incidents are lowered and small business will benefit.

It is very difficult to determine accurately the exact portion of the new commercial vessels fleet that are likely to be operated by small businesses as there is no reliable information available. However, 95.1 percent of the new vessels constructed each year on average are 24 metres or less in length. The greater proportion of these are operated by small businesses, though there are also some large businesses that operate fleets of small vessels (e.g. in the pearl farm and aquaculture industries).

About 4.9 percent of new vessels are greater than 24 metres in length and are more likely to be owned or operated by large organisations. These large vessels are quite expensive and are built for larger scale operations.

In terms of designing new vessels, the great majority of vessel design businesses would most likely have less than twenty employees and should be considered as small businesses. These small businesses are likely to benefit from the proposed standard, especially in terms of its performance basis and availability of equivalent solutions.

Stakeholders suggested through the public comment process that designers (and ultimately vessel owners) will incur greater costs through the design approval and survey processes. However, many of these costs should be already incurred to meet safety obligations of OH&S, disability standards or to provide attractive conditions for crew or passengers. The main difference is that the NSCV will proactively verify that a minimum required standard has been achieved. An operator that currently discharges their obligations under other legislation, such as OH&S, would likely bear a significantly smaller cost increase under the new standard than one that fails to do so.

These costs would result from the need to provide additional documentation (such as drawings and calculations) and from the process of obtaining approval to an equivalent solution. Equivalent solutions are optional and are effectively a business decision. However, as the number of equivalent solutions approved increases over time, the process should become more streamlined.

In terms of manufacturing new vessels, both small businesses and large businesses will participate. The two categories of businesses would both enjoy the previously identified benefits.

The proposed standard will be beneficial to small businesses because its requirements are much more likely to better meet modern technological and operational needs of the industry. It will also require less interpretation and reworking in order to achieve acceptance by the marine authority. Small businesses can be disadvantaged by having a more limited network, influence, corporate knowledge and resources to effectively propose and pursue the adaptation of old standards to modern vessels. An improved standard that is more applicable and transparent is likely to provide improved equity in the market place for small business at all levels: designers, builders and operators.

7. CONSULTATION

7.1. Public consultation on issues paper

7.1.1. Notice to have your say

In March 2009, an NMSC “Have Your Say” notice was issued to relevant stakeholders, including marine authorities and the public, seeking comment on the Issues Paper for Arrangement, Accommodation and Personal Safety for commercial vessels in Australia. The Issues Paper was available electronically on the NMSC website or in hard copy from the NMSC Secretariat.

All public comments received were referred to the Reference Group for Arrangement, Accommodation and Personal safety for consideration in developing the draft Standard.

7.1.2. Media release for issues paper

A Media Release was issued on 18 March 2009 advising the public that the NMSC had released the Issues Paper on Arrangement, Accommodation and Personal Safety for public comment. The Issues Paper was available for comment from 17 March to 1 June 2009.

The Media Release was sent to marine industry newsletters, web sites and magazines. Coverage was gained on the Boating Oz website. It was also published by the NMSC Safety Lines, the Australian Naval Architect and Aus Marine magazine.

The Issues Paper was likely to have been mentioned in other publications and the newsletters of state and territory marine safety agencies and marine associations. The Issues Paper was not advertised in the metro press because this publicity normally happens when the subsequent draft standard is released for public comment.

7.1.3. Public comments on issues paper

The NMSC received about 680 comments from 8 organisations on the Issues paper. The comments largely dealt with technical details associated with the application of the ILO Convention, bulwarks and guardrails, escape and evacuation routes and minimum deck height and area.

The organisations included:

- Quicksilver Connections Ltd
- Peninsula Searoad Transport
- WA Department for Planning and Infrastructure
- Marine Safety Victoria

- ▶ One2three Naval Architects
- ▶ Aluminium Boats Australia
- ▶ Aurora Marine Design
- ▶ Tasmanian Seafood Industry Council

Public comment on the Issues Paper formed the basis for the first draft of the standard that was then further developed by the reference group (discussed below). Owing to the comprehensive nature of the Issues Paper, the public comment received was sufficient to allow the reference group to gain good insight into the industry's views.

One major area of dissent concerned the adoption of MLC 2006. The feedback from the Issues Paper was that the NSCV should not incorporate provisions from MLC 2006. However, the draft was formulated to implement subsequent government policy on the adoption of MLC 2006. The draft standard proposed a compromise – suitable modification of the application of MLC 2006 to limit the negative impact on the smaller end of the industry.

Another area of dissent concerned the application of standards for access by persons with disabilities. Some comments indicated that the legislation should be referenced but that the standard need not be consistent with the legislation. Others, however, were concerned that the NSCV would be specifying requirements inconsistent with the relevant legislation. A compromise was reached with input from the Australian Human Rights Commission and this is reflected in the proposal.

7.2. Reference group consultation and development of draft standard

The NMSC set up a Reference Group to assist with the development of the standard, including consideration of the public comments received on the Issues Paper. The Reference Group was made up of people experienced in the design and operation of commercial vessels built to the USL Code, or who have experience with other standards that address arrangement, accommodation and personal safety.

The Reference Group met twice by teleconference in August 2009 to consider the 680 comments received from the public and make recommendations regarding preparation of the draft Standard and draft RIS. Table 17 shows the Reference Group representatives and organisations.

Table 17 — Reference Group Representatives and Organisations

Representative	Organisation
Eddie Seymour	Australian Maritime Union
Adam Brancher	SA Dept of Transport, Energy & Infrastructure
Gwyn Alway	Marine and Safety Tasmania
James Mallows	Australian Institute of Marine & Power Engineers
Terry Hewitt	MG Kailis Group
Tony Armstrong	Australian Shipbuilders Association
Warwick Fairweather	Commercial Vessels Association of NSW
Graham Taylor	TaylorTech
Mark McLellan	Marine Safety Victoria
Glen Seeley	Australian Maritime Safety Authority

The first draft Standard was emailed to the members of the Reference Group on 23 June 2010 with a request that members:

1. Confirm whether they believed it to be a fair interpretation of their understanding of the outcome of the meeting.
2. Indicate whether there were any major issues that should prevent the draft being released for public comment in its current form;
3. Comment on the content, either to make corrections or improvements, or suggestions for questions to be raised within the draft that is released for public comment for stakeholders to answer; and
4. Bring up their views on some new issues identified by the NMSC Project Manager.

A meeting was held with the Reference Group on 22 July 2010 to consider and respond to the new issues identified by the NMSC Secretariat Project Manager. All the issues the Reference Group responded to dealt with technical details associated with the application of MLC 2006 to arrangement, accommodation and personal safety on the vessel and performance criteria. The proposed standard was revised to reflect recommendations of the Reference Group.

The names and organisations of the updated Reference Group are listed in Table 18.

Table 18 — Reference Group Representatives and Organisations

Representative	Organisation
Terry Hewitt	MG Kailis Group
Adam Brancher	Dept. of Transport, Energy & Infrastructure – SA
Ben Burns	SVITZER Australia Pty Ltd
Tommy Ericson	Maritime Safety Queensland
Warwick Fairweather	Commercial Vessels Association of NSW
Peter Keyes	Marine and Safety Tasmania (MAST)
Paul MacGillivray	Australian Maritime Safety Authority
James Mallows	Australian Institute of Marine & Power Engineers
Shankar Ramanathan	NSW Maritime
Glen Seeley	Australian Maritime Safety Authority
Rob Tulk	One2Three Naval Architects
Tony Armstrong	Australian Shipbuilders Association
Paul Garrett	Maritime Union of Australia
Graham Taylor	Taylortech
Mark McLellan	Marine Safety Victoria
Prue Mooney [observer]	Department of Education, Employment and Workplace Relations

The NMSC Secretariat Project Manager had additional extensive consultation while preparing the draft Standard (via phone and email) with various members of the Reference Group between 24 June 2010 and 15 February 2011.

The input from the reference group, both at the standard development stage and on the draft standard, resulted in many changes. This included the incorporation of provisions for lighting, temperature control, noise and vibration in accommodation spaces, and requirements for console layout in the operating compartment. Where there were dissenting views or concerns, specific questions were highlighted for public comment in the proposed standards. This process of consultation was used to resolve all issues and to revise the draft Standard so it could be released for public comment.

7.3. Consultation and public comment on the draft standard and RIS

The draft standard and RIS were issued for comment from 9 March to 11 May 2011. Interested persons could access a hard copy of the draft standard, and once approved by the OBPR, the draft RIS, from the NMSC Secretariat or the NMSC website.

A media release was sent to the maritime authorities and to well-read boating magazines, and was reproduced in some of these publications. It was also published in the NMSC newsletter (Tech e-news) in March 2011, foreshadowing the release of the draft standard, RIS and forthcoming workshops. The workshops were held in Sydney, Perth and Brisbane (two workshops in Brisbane), attracting a total of 47 participants.

Information sought from stakeholders focussed on the technical requirements of the standard and the likely impact of these requirements on the costs of designing and building vessels.

The NMSC invited stakeholders to submit written comments via its website using the form provided in either electronic or hard copy. In addition, notes were taken on feedback received during the consultation process and at the workshops.

A summary of feedback from the workshops, together with written feedback from 19 contributors (listed in Annex B), were considered by the Reference Group over four meetings in June and August. The names and organisations of the updated Reference Group are listed in Table 19.

Table 19 — Reference Group Representatives and Organisations

Representative	Organisation
Graham Taylor	Taylortech (Chairperson)
Tony Armstrong	Australian Shipbuilders Assoc
Adam Brancher	SA Dept of Transport, Energy & Infrastructure

Representative	Organisation
Terry Hewitt	MG Kailis Group
Michael Hunn	Maritime and Safety Tasmania
Peter Keyes	Maritime and Safety Tasmania
David Lugg	Dept of Transport, WA
Robert Maher	Dept of Transport, WA
Doug Matchett	Maritime Safety Queensland
Mark McLellan	Transport Safety Victoria – Maritime Safety
Denis Mole	Sydney Ferries
Graeme Mugavin	NSW Maritime
Glen Seeley	Australian Maritime Safety Authority
Rob Tulk	One2Three Naval Architects
Sander Vries	Lloyds Register
Terry Ehret	NMSC Secretariat
Guy Anderson (observer)	Australian Maritime Safety Authority
Phil Rokic (observer)	Australian Maritime Safety Authority
Patrick Dodgson (observer)	Australian Maritime Safety Authority
Mori Flapan (observer)	Private individual
Maaike Vanderkooi (observer – RIS)	Vanderkooi Consulting
David Mason (observer)	Australian Human Rights Commission

A total of 377 comments were received from stakeholders on the draft standard and RIS. The comments covered the majority of the requirements contained in the draft standard, including:

- ▶ editorial issues, such as duplications within the draft standard, a lack of clarity of the intent of requirements and difficulties in understanding the draft standard;
- ▶ definitions, including duplications with Part B of the NSCV and the clarity of the meaning of various defined terms;
- ▶ scope of the standard, including whether it should include requirements for vessels over 45 metres in length and its implications for existing vessels;
- ▶ the subjectivity of some of the required outcomes;
- ▶ inconsistencies between passenger number cut-offs for requirements; and
- ▶ the proposed application and content of criteria for:
 - field of vision;
 - the arrangement of navigation signals;
 - accommodation levels;
 - temperature control;
 - noise and vibration levels;
 - headroom;
 - evacuation paths and plans;
 - number of persons to be seated;
 - width of seating and clearance between rows;
 - access for persons with disabilities;
 - sanitary facilities;
 - potable water;
 - stairways and ladders;
 - protection from seas;
 - bulwarks, guardrails and additional protections;
 - special purpose decks;
 - gangways, gangplanks and ladders; and
 - guidance for lifting gear.

Overall, the comments supported the introduction of the proposed standard. The majority of comments suggested changes to elements of the proposed standard, rather than opposition to the proposed standard as a whole. However, a minority of stakeholders indicated preference for the status quo (i.e. the USL Code) on the basis that it was familiar and therefore easier to interpret and apply.

Stakeholders also commented on the likely impacts of the draft standard. Generally, these indicated that the impact of the standard on small vessels would be low, but the impact on large passenger vessels would be high. However, there was considerable disagreement among stakeholders and within the Reference Group regarding the extent of the impact on the cost of constructing vessels. Combined with the inherent limitations and difficulties in quantifying the specific costs and benefits of the proposed standard, no overall quantification of these impacts has been included in this Decision RIS. Rather, the scope of potential costs and benefits has been considered.

Reference Group consideration of the comments resulted in various changes to the draft standard, which is set out in detail in Annex C. Some of the more significant changes that were made as a result of consultation include:

- simplification of the specifications for the location of the operating positions, and a reduction in some field of vision requirements to reduce the impact on smaller vessels and on sailing vessels;
- greater flexibility regarding the use of tinted material on windows;
- reduction in outcomes required for the prevention of fatigue, the prevention of the spread of disease and the avoidance of conflict;
- modification of the requirements for headroom to allow for local encroachments;
- restriction of the requirements to control vermin and the spread of disease through materials to vessels on voyages of 36 hours or more only;
- reduction in requirements for allowable noise;
- extension of sleeping accommodation requirements to vessels on voyages of more than 12 hours, to reflect existing practices and to capture vessels operating overnight;
- reduction in dedicated space requirements;
- reduction in floor area of crew accommodation requirements for vessels under 35 metres (provided communal areas account for the difference);
- reduction in sleeping berth dimensions (for crew) for vessels under 35 metres on journeys over 72 hours;
- increase in sleeping berth dimensions (for crew) for vessels over 35 metres on voyages 12 – 36 hours, in order to provide for manufacturing economy;
- reduction in requirements for writing and other personal space for vessels on voyages less than 72 hours and for vessels less than 35 metres;
- reduction in provision of seating requirements for class C, D and E vessels;

- ▶ restriction of access for persons with disabilities requirements to ferries with more than 36 passengers, and pre-booked services with more than 100 passengers;
- ▶ removal of separate sick bay requirements;
- ▶ reduction in sanitary facility requirements for vessels on voyages of less than 1 hour;
- ▶ removal of specified potable water requirements;
- ▶ reduction in handrail requirements;
- ▶ simplification of bulwark and guardrail criteria; and
- ▶ reduction in ladder, gangway and gangplank requirements for smaller vessels.

These changes are reflected in this RIS.

8. EVALUATION AND CONCLUSIONS

The conclusions drawn from the draft RIS are that the proposed standard is expected to:

- ▶ Further the NMSC's objectives specified in the National Marine Safety Strategy;
- ▶ Provide a set of required outcomes consistent with the performance framework established in the NSCV Part B: General Requirements that was approved by the ATC in 2002;
- ▶ Reduce system costs by employing a more flexible and efficient requirement regime that results in a more appropriate and better tailored set of requirements;
- ▶ Have a positive impact on competition because the performance-based approach supports innovative solutions, provided safety is maintained;
- ▶ Provide an efficient and effective bridge that satisfies obligations imposed by a number of relevant national and international standards while minimising the burden on the industry.
- ▶ Have cost impacts that are outweighed by safety and social benefits; and
- ▶ Have benefits that are likely to be greater than the alternatives and best meet the objectives of the proposal.

The issues discussed in this RIS and the results of the impact analysis suggest that Option 3 is the preferred option. While Options 1 and 2 may offer some benefits and meet the objectives of the proposal to some extent, Option 3 appears to offer greater benefits and best meets the objectives of this proposal.

Furthermore, Option 3 is likely to address all the deficiencies currently encountered in complying with the requirements in the USL Code. The conclusions reached by stakeholders and industry representatives at the Reference Group Meeting in July 2010, through teleconference, telephone conversations and emails, were all in support of the proposed standard.

9. IMPLEMENTATION AND REVIEW

9.1. Public consultation

The proposed standard and RIS have been subject to public consultation and the final documents will be published on the websites of the NMSC and the Office of Best Practice Regulation.

9.2. Approval

The draft standard has been amended as appropriate and endorsed by the NMSC. The proposed standard will be submitted to the Ministerial Council for approval in accordance with the National Framework for Marine Safety.

9.3. Legislation

This RIS covers the regulatory proposal and the legal instrument that gives effect to it.

The Arrangement, Accommodation and Personal Safety section of the NSCV could be made mandatory after amendments have been made to the present USL Code. These amendments replace existing USL Code sections with the equivalent new parts of the NSCV. Where the USL Code presently is applied in state and territory legislation, new vessels, vessels that undergo an initial survey, and vessels that are upgraded would need to comply with a combined USL/NSCV. This process allows the NSCV to be introduced progressively across Australia as soon as possible after the parts are approved by the Ministerial Council.

Some jurisdictions may also implement the standard through regulation or amendment of marine safety legislation presently in force. Alternatively, the Commonwealth may implement the standard via Commonwealth legislation. The method of legal implementation will likely depend on the timing of the introduction of the National System for Commercial Vessels.

9.4. Review

The NMSC has committed to review the NMSC standards at five-yearly intervals.

Owing to anticipated changes in the administration of domestic commercial vessel safety, there is uncertainty as to what the exact arrangements will be in the new environment. However, based on current arrangements, the success of the proposed standard would be monitored by:

1. Feedback provided by users and surveyors applying the standard through correspondence, the Commercial Vessel Survey Forum and the Australian Commercial Marine Compliance Professionals Forum;

2. Monitoring of exemptions and equivalent solutions through the NMSC's exemptions database;
3. The holding of Peer Advisory Network meetings to review applications for Generic Equivalent Solutions;
4. Monitoring and acting on proposals for modifications to the standard received by the NMSC Secretariat from the jurisdictions; and
5. Ongoing collection and analysis of incident and accident data over time.

ANNEX A SUMMARY OF IMPACT OF CHANGES TO THE USL CODE

Cost Impact	New or changed Requirement	Costs	Benefits
Impact Unidentifiable	2.11 (Operating stations, visibility and steering) Visibility from the operating station		
	Limits on the arrangement of obstructions to vision from the operating station including raised fore decks on vessels Wheelhouse may be required to be raised in height potentially impacting the stability and thereby the earning capacity of the vessel. Following public consultation, greater flexibility was provided to sailing vessels.	Difficult to quantify costs as the impact of rearranging the design to meet the criteria may have no impact or may require a totally different design concept in some cases, with cost increases potential offset by construction methods and materials.	Alignment with international requirements. Since the USL Code was first published, there have been significant reforms at an international level. Safety benefit through reduced likelihood of collision with other vessels and with fixed objects are the most frequently recorded commercial vessel incident over the years 2005 to 2009 representing 29% of total reported vessel incidents. While visibility from the operating station may be just one factor in a chain of events, there is clearly a large potential benefit to be achieved by reducing the likelihood (and perhaps also the consequences) of collision by facilitating the observation of potentially hazardous situations.
	4.10 (Accommodation) Crew accommodation, Maximum number of persons per sleeping room		
	Application of MLC 2006 to Class 1A, 1B, 2A, 2B vessels of length 35 m or more. Requirements increased for vessels on journeys over 72 hours from a maximum 6 to a maximum of 4 crew per sleeping room.	Minimal impact anticipated. Impact difficult to quantify as applies at design stage	Reduced fatigue, greater alertness of crew
	5.10.2.5 (Access, Escapes and Evacuation) Control Spaces		
Requires provision of alternative escapes for control spaces which are	Although a new requirement as compared to the USL Code, it is	Improved safety outcomes through the provision of alternative escapes for spaces likely to be	

Cost Impact	New or changed Requirement	Costs	Benefits
	likely to be occupied in an emergency	currently applied administratively to vessels. As such, the impact should be minimal. Where vessels do not currently have to comply with this, the impact is difficult to quantify as it affects the design of the vessel. On some vessels, at least one operating compartment window may have to be arranged to be opening or breakable for escape.	occupied in an emergency, as it ensures that the spaces don't have to be abandoned prematurely
	5.10 (Access, Escapes and Evacuation) Prohibition on escapes leading into the same high fire risk space		
	New limits on the location of escapes to ensure that they achieve safety outcomes	Largely applicable to vessels having ro-ro decks above the machinery space, but may also apply in other circumstances. Limits location of escapes and may require provision of protected escape tunnels.	Improved levels of safety Aligns with international standards
Reduced Cost Impact	5. 11(Access, Escapes and Evacuation) Evacuation paths		
	For vessels with assembly stations, reduction in the required width of passageways	None	Greater flexibility and reduced construction costs
	5. 13.2.2 (Access, Escapes and Evacuation) Minimum width of passageways other than corridors		
	Reduction in current requirements where the passageway is not a thoroughfare for escape or evacuation (380 – 700mm rather than 600 - 750 mm).	None	Greater flexibility and reduced construction costs
	5.13.4 (Access, Escapes and Evacuation) Passageways that serve only as a means for occasional access		

Cost Impact	New or changed Requirement	Costs	Benefits
(b) (5) - Information exempt from release under the Access to Information Act / (b) (5) - Information exempt from release under the Loi sur l'accès à l'information	Passageways for the purposes of inspection or maintenance may be less in width than other passageways.	None	Greater flexibility and reduced construction costs
	5.15.3 (Access, Escapes and Evacuation) Step dimensions		
	Differentiation in requirements for steps on stairs for high capacity escapes and those for low capacity escapes. The latter have increased flexibility.	None	Increased safety by highlighting preferred dimensions beyond minimum requirements Increased flexibility Better correlation with what is actually being accepted
	5. 15.3.8 (Access, Escapes and Evacuation) Stairways—Handrails		
	Relaxation of handrail requirements. USL code requires intermediate handrails for stairways exceeding 1500mm – this is increased to 1800mm	None	Decrease in construction costs
	6.15.5 (Personal Safety) Gangways		
	New gangway requirements suited to smaller passenger vessels	None, reflects current practice in most jurisdictions	Requirements are proposed to be better suited to domestic vessels
	6.15.6 (Access, Escapes and Evacuation) Gangplank		
	For vessels where full gangways may be impractical, gangplanks are accepted in limited circumstances	None	Increased flexibility
6.15.8 (Access, Escapes and Evacuation) Pilot transfer arrangements			

Cost Impact	New or changed Requirement	Costs	Benefits
	Limits application of existing requirements to vessels 50 m or more engaged in Operational Areas A, B and in some cases C.	Reduced cost for some vessels	Greater flexibility
No Cost Impact	3. Arrangements for the provision of Navigation Signals		
	COLREGS requirements apply	None	Stakeholders are alerted early to key aspects of arrangement that will need to comply with COLREGS, potentially reducing costs and improving levels of compliance
	4.11.2.2 (Accommodation) Seating for passengers		
	Relaxes rules for vessels carrying divers	None	Permits greater flexibility in the type of vessel that can engage in dive operations.
	4.11.3 (Accommodation) Sleeping accommodation for passengers		
	Less prescriptive requirements for vessels on journeys over 36 hours	None	More flexibility in approach to accommodation type.
	5.11.6 (Access, Escapes and Evacuation) Embarkation stations		
	Number and arrangement of embarkation stations must be sufficient to ensure that all survival craft can be launched with their full complement of persons on board within a period not exceeding 30 minutes	Aligns with the criterion that is already in NSCV Part C Subsection 7A Clause 3.10.2. As such, there should therefore be no additional cost.	Safety benefits
6.10.2 (Personal Safety) Protection from the weather			
This clause codifies current administrative policy applied by a	None	Clarifies existing requirements, increasing certainty	

Cost Impact	New or changed Requirement	Costs	Benefits
	number of the jurisdictions. Applicable to all operational A vessels, B and C vessels that operate 12 hours or more, and D and E vessels that operate 36 hours or more.		and consistency
	6.11.6.1 (Personal safety) Maximum size of clear openings—Guardrails		
	Relaxation of guardrail spacing requirements	None	Greater flexibility and reduced construction costs
Minor Increased Cost Impact	2.14 (Operating stations, visibility and steering) Operating station layout, design and arrangement of navigational systems and equipment		
	Increased restrictions on layout of operating station, including for control console layout\ New requirement to disengage remote steering positions which are located in spaces accessible to passengers	Minor design and construction cost increases possible	Aligns with current technology for indicators and controls on consoles Improves layout of the operating station in order to improve safety outcomes. Problems in the layout have been a factor in a number of vessel incidents Reduced distractions through separation of operating stations and public spaces playing loud music, using flashing lights and other distractions that would prevent proper attention to sound signals Aligns with Coroner’s findings regarding N’gluka, where the second set of steering controls may have been tampered with.
	2.10 (Operating stations, visibility and steering) Separation of operating and passenger spaces		
	New requirement to separate operating station from passenger spaces for	Moderate impact; some vessel designs will need to be altered to accommodate	Reduced distractions through separation of

Cost Impact	New or changed Requirement	Costs	Benefits
	passenger vessels > 24m	the new requirements	operating stations and passenger spaces.
	4.8.3 (Accommodation) Ventilation		
	Mechanical ventilation required for vessels on voyages > 36 hours, in accordance with WIFC 2007.	New requirement, but in line with standard practice so the cost impact should be limited	Improved standard of crew accommodation Reduced likelihood of error from fatigue
	4.8.4 (Accommodation) Temperature Control		
	Temperature control required for vessels on voyages > 36 hours, in accordance with WIFC 2007	New requirement, but in line with standard practice so the cost impact should be limited	Improved standard of crew accommodation Reduced likelihood of error from fatigue
	4.11.2.2.3 (Accommodation) Minimum space between rows of seats		
	For rows of seats exceeding 3.5 m to an aisle, 500 mm space is required.	Long rows of seats are not common, so the 500 mm criterion will have little impact	Facilitates rapid escape by a larger number of persons and to discourage long rows of seating that could hinder escape. Safety benefit
	5.10.3.4 (Access, Escapes and Evacuation) High capacity escapes		
	New concept of high capacity escapes and low capacity escapes. Creates greater flexibility in design while maintaining escape redundancy.	Minimal impact due to flexibility.	Aligns with international standards while still allowing flexibility to apply current (USL Code) requirements in certain circumstances.
	5.10.2.3 (Access, Escapes and Evacuation) Spaces on decks above the bulkhead deck		
	Alternative escapes must lead to routes that connect with evacuation paths, except in certain limited circumstances.	Limits flexibility of design and décor.	Alignment with international standards

Cost Impact	New or changed Requirement	Costs	Benefits
5.11.5 (Access, Escapes and Evacuation) Assembly stations			
	<p>Assembly stations proposed to be only required on vessels carrying more than 36 passengers and vessels of measured length 35 m or more. (USL code requires for vessels greater than 25 m except class 2D + E and 3D + E</p> <p>Assembly stations proposed to be required to be a minimum of 0.35 m² per person. Clarification of requirement compared to USL code</p>	New size specification, but minimal cost impact.	<p>Reduced construction costs for certain vessels</p> <p>Improved transparency of requirements through the removal of ambiguities.</p>
5. 12.3 (Access, Escapes and Evacuation) Securing of escape and evacuation routes when the vessel is unmanned			
	New requirement to address escape and evacuation routes that are secured when vessel is unmanned	Minimal impact as will be addressed at the design phase	Aligns with findings of investigation into an incident on a fishing vessel in WA. Safety benefits as the consequences of a serious incident will be reduced
5.14 (Access, Escapes and Evacuation) Handrails			
	<p>Applies to passenger vessels having certain characteristics when flooded.</p> <p>New requirements for strength of handrail.</p>	Cost may be occurred in that handrails that may have been accepted previously may not apply under the proposed standard. But only applies to limited vessel types (changed following public consultation)	<p>Increased levels of safety</p> <p>Aligns to international standards</p>
5.15.4 (Access, Escapes and Evacuation) Details of ladders including step ladders			
	Updated requirements	For most vessels there should be no impact	<p>Align with international standard</p> <p>Greater flexibility for smaller vessels regarding slope of vertical ladders</p>

Cost Impact	New or changed Requirement	Costs	Benefits
Cost Impact	5.15.3.6 (Access, Escapes and Evacuation) Spiral Stairways		
	Most spiral stairways no longer acceptable for high capacity escape because of the risk of persons tripping and being injured or blocking the stairway.	Costs may increase due to reduced flexibility	Increased levels of safety
	5.15.3.7 (Access, Escapes and Evacuation) Stairways—Construction		
	Minimum structural standard for stairways. Not previously stated in the USL code.	Increased costs associated with higher construction specifications	Clarification of minimum structural loading for stairways. Unification of standards across all vessels Aligns with international standards
	5.16.2 (Access, Escapes and Evacuation) Instructions for safe escape		
	Requires marking of escape routes and assembly stations for vessels carrying 12 or more berthed persons or greater than 36 passengers	Minimal impact. A similar notice is specified under USL Clause 5E.5.1, applicable to all passenger accommodation but giving the Authority discretion to waive requirements where it is unnecessary on small vessels.	Clarifies the requirement Allows flexibility in regards to specific vessels
	5.16.2 (Access, Escapes and Evacuation) Marking of escape and evacuation routes		
	Formalises requirements applied administratively for exit signs in passenger spaces of vessels.	Cost impact associated with signage requirements	Removal of requirement to fit textured surfaces on doors will reduce costs and increase flexibility Safety benefit: addresses concerns that certain substantial vessels are not required to be fitted with emergency lighting. Aligns with international standards

Cost Impact	New or changed Requirement	Costs	Benefits
	6.10.1.1 (Personal Safety) Protection of persons moving about the vessel		
	Increased protection required for individuals moving on exposed decks of certain vessels by providing for underdeck passages, raised gangways, harnesses, guardrails, life links.	Some cost may be incurred by some catamarans where access to anchoring arrangements is via open fore decks where the great breadth of the vessel sometimes precludes relying on side rails or bulwarks for access.	Increased safety benefits
	6.11.7 (Personal Safety) Strength of guardrails		
	Specific criteria regarding strength of guardrails.	Majority of vessels should already comply	Clarifies existing requirements
	6.11.6.3 (Personal Safety) Additional protection on certain passenger vessels		
	Must have arrangements to limit the size of openings in bulwarks and guardrails to 125 mm diameter sphere maximum.	Minor cost impact	Increased safety for small children but considerably less onerous than specified for swimming pool requirements
	6.12 (Personal Safety) Protection from hazardous plant (machinery)		
	Requires arrangements to protect persons from exposure to hazardous elements of plant	Limited costs associated with these clauses because it aligns with broad OH & S obligations	Safety benefits
	6.13 (Personal Safety) Safe movement of persons on the vessel		
	Clarifies requirements for access ways not forming part of escape or evacuation routes.	Aligns with existing administrative requirements; majority of vessels should already comply	Provides additional flexibility in plant (machinery) spaces by adding reference to AS 1657

Cost Impact	New or changed Requirement	Costs	Benefits
			Clarifies requirements
	6.15 (Access, Escapes and Evacuation) Access to and from the vessel		
	Clarifies requirements for access and egress from the vessel	Minimal cost impact due to majority of vessels complying with current acceptable practice	Clarifies requirements
Potentially Significant Cost Impact	4 (Accommodation) Crew accommodation - overview		
	MLC 2006 applies in full to passenger and cargo vessels over or equal to 3000 GT	MLC 2006 significantly increases requirements for crew accommodation on passenger and cargo vessels	Does not specify fishing vessels need to meet same standards as MLC 2006.
	MLC 2006 applies in part to passenger and cargo vessels < 3000GT	MLC 2006 changes could well adversely impact characteristics such as stability, deck area, vessel configuration, bollard pull on tugs, cargo capacity, etc. on smaller vessels	Specifies Class 1 and Class 2 crew accommodation if not MLC should be the same as Class 3 which has been derived from WIFC 2007. Same standard of safety applied to all seafarers – including fisherman.
	MLC 2006 applies in part of passenger and cargo vessels < 35 m	Increased/improved crew accommodation on commercial vessels – negative impact on smaller commercial vessels, through stability & cargo capacity, mostly.	Safety, health, amenity benefits.
	Work in Fishing convention (WIFC 2007) applies to all other vessels engaged in longer voyages that are not subject to MLC 2006	Main implications are for vessels on voyages longer than 72 hours.	As with minimum headroom, the changing demographics of persons means that the berth size specified in the 1970s no longer provides the same outcomes in 2010. Persons are getting taller and wider.
		Cost impacts could be large, due to potential complete redesign of vessels	
	4.8.1 (Accommodation) Head room		
	For vessels 35 m or over, minimum required headroom increases from 1.9	For vessels of measured length 35 m	Conservatively reflects changing demographic increase in the average height of males has been

Cost Impact	New or changed Requirement	Costs	Benefits
	<p>m (USL Code) to 1.98 m in accordance with ILO C133</p> <p>This is less than MLC 2006 requirement of 2.03 metres. The proposed standard also allows for local encroachments such as light fittings, smoke detectors or signs located so as to avoid interference with the normal movement of persons within a space</p> <p>For vessels < 35 m, 1.9 m requirement is maintained</p>	<p>and over, will be a cost increase</p>	<p>0.74 cm per decade. Over 61 years⁴¹, this amounts to 4.5 cm.</p> <p>Greater alignment with international standard</p>
4.10.8 (Accommodation) Crew accommodation - Sleeping berths			
	<p>For vessels up to 35m minimum size of sleeping berths is increased from 1900 x 680 (1949 ILO dimensions) to 1900 x 700</p> <p>For vessels over 35m minimum size of sleeping berths is increased from 1900 x 680 (1949 ILO dimensions) to 1980 x 700</p> <p>These limitations do not apply to passenger berths where market forces are permitted to operate.</p>	<p>Cost impacts could be large, due to potential complete redesign of vessels</p>	<p>Same standard of safety applied to all seafarers – including fisherman.</p> <p>Risks of fatigue reduced.</p> <p>Safety, health, amenity benefits.</p> <p>Changing demographics of persons means that the berth size specified in the 1970s no longer provides the same outcomes in 2010. Persons are getting taller and wider.</p>
4.10.7 (Accommodation) Crew accommodation, Floor Area			
	<p>Increase in floor area required</p>	<p>Cost impacts could be large, due to</p>	<p>Same standard of safety applied to all seafarers –</p>

⁴¹ Tomkinson, G., Clark, A and Blanchonette, Peter. Body Size Changes of Royal Australian Air Force Aircrew: 1971 – 2005. Defence Science and Technology Organisation. University of South Australia. DSTO-TR-2339. p.19

Cost Impact	New or changed Requirement	Costs	Benefits
		<p>potential complete redesign of vessels</p> <p>This may have significant impact due to the disparity between the old and new standards, and passenger, cargo and fishing vessels</p>	<p>including fisherman.</p> <p>Social risks (suicide, homicide and drug and alcohol abuse) addressed by MLC 2006 for voyages over 72 hours may account for as much as 50% of total fatalities at sea.⁴²</p> <p>Safety, health, amenity benefits.</p> <p>As with minimum headroom, the changing demographics of persons means that the berth size specified in the 1970s no longer provides the same outcomes in 2010. Persons are getting taller and wider.</p>
	4.11.4 (Accommodation) Access for persons with disabilities		
	<p>Applies to Class 1 passenger ferries carrying 36 passengers or more and pre-booked passenger services carrying 100 passengers or more</p> <p>Access for persons with a disability including width for doorways, corridors and passages, priority seating, allocated spaces for wheelchairs, accessible sleeping berths and suitable sanitary facilities</p>	<p>Potential high cost involved in vessel modification</p>	<p>Social benefits, alignment with disability discrimination laws</p>
	4.12 (Accommodation) Facilities for sick and injured persons		
<p>Dedicated sick bay area required for vessels on journeys over 72 hours</p> <p>Dedicated sick bay facilities required</p>	<p>Construction costs may increase</p>	<p>Aligns with international standards</p>	

⁴² DnV Technical Report. Social Factors and Human Performance on Ship Operation. 28 July 1995.

Cost Impact	New or changed Requirement	Costs	Benefits
	for class A vessels over 35m.		
	5.9 (Access, Escapes and Evacuation) Obstructions to be avoided		
	Restrictions regarding arrangements of furniture and floor coverings that could block escape or evacuation routes should the vessel heel.	Limits flexibility of design and décor	Safety benefit - address factors that contributed to deaths resulting from incidents (for example the Marchioness tragedy on the Thames in 1989 where 51 people died). Aligns with international standards
	5.12.3 (Access, Escapes and Evacuation) Securing of escape and evacuation routes when the vessel is unmanned		
	Requires release devices on large doors that are normally latched	Likely to only impact larger passenger vessels.	Increased levels of safety
	5. 15.3.1 (Access, Escapes and Evacuation) Alignment of stairways		
	Increased requirements for stairways on seagoing vessels over 90 persons	Reduced flexibility of design	Safety benefits
	6.10 (Personal Safety) Protection of persons from the elements		
	Open decks accommodating persons for extended periods are required to provide some protection from the elements Applicable to all Operational Area A vessels, Operational Area B or C vessels engaged in passages of 12 hours duration or more; and sheltered water vessels engaged in passages of 36 hours duration or more	Potential increased construction costs for sea going vessels	Safety benefits

Cost Impact	New or changed Requirement	Costs	Benefits
	6.11.4 (Access, Escapes and Evacuation) Minimum height of bulwarks and guard rails		
	Minimum height requirement of 1000 mm on vessels of over 16 m in length.	Possible increased construction costs Possible interference with the vessel's function (though overcome by provisions for special purpose decks and special working decks)	Increased levels of safety Aligns with international standards More flexible arrangements for decks used for special purposes

ANNEX B STAKEHOLDERS WHO COMMENTED ON THE DRAFT STANDARD

Organisation
DTEI SA
Office of the Commissioner for Equal Opportunity – SA
DoT Western Australia
Riviera Marine
National Marine Safety Committee
Private individual
Marine and Safety Tasmania
Oceanic Yacht Design
Marine and Safety Tasmania
DoT Western Australia
Maritime Safety Queensland
MMD Naval Architects
Transport Safety Victoria – Maritime Safety
Sydney Ferries
NSW Maritime
Private individual
MMD Naval Architects
Taylortech Pty Ltd
Perth Presentation Comments - 20 participants
Queensland Web Presentation No. 1 - 8 participants
Queensland Web Presentation No. 2 - 5 participants
Sydney Presentation – 14 participants

ANNEX C SUMMARY OF CHANGES TO THE PROPOSED STANDARD AS A RESULT OF PUBLIC CONSULTATION

Chapter / Clause	Topic	Change	Cost / Benefit Impact
1.5	Definitions	<ol style="list-style-type: none"> 1. New definition for 'seat' 2. 'Conning position' replaced with operating position' 3. New definitions for 'primary steering position', 'primary operating station' and 'secondary steering position' 	Clarification only
2.6	Location of the operating position	Common vertical eye positions introduced for both deemed to satisfy alternatives based on Australian demographics	Simplifies standard by replacing disparate specifications for vertical eye heights previously based on SOLAS and ABYC and by making low & high positions common to both.
Criterion 2.11.11b	Vertical field of vision from the operating position	Reduced requirement for the height of the upper edge of operating compartment front windows on vessels less than 45 m measured length (from 1,800 mm to the new high eye position)	Removes a considerable burden on smaller vessels that might not be readily justified
Criterion 2.11.13b	View to the sides of the vessel	New criterion for vessels of measured length less than 45 m that the sea surface at a transverse distance of 1,500 mm from the maximum beam throughout the vessels length along each side be visible from a location in the operating station	<p>Clarification only</p> <p>Updated to reflect the SOLAS requirement (MSC.1/Circ.1350 1 June 2010 Unified Interpretations of SOLAS CHAPTER V)</p> <p>Extends the requirement for vision from being vertically down the sides of the vessel to a 1,500 mm width from the sides of the vessel</p>
Criterion 2.12.2	Alternate D-t-S View forward from operating position	The vertical range of visibility modified to take into account the reduced visibility expected from the helm position of sailing vessels	Greater flexibility for sailing vessels
	Trim adjusting devices used to	Clause deleted as was allowed as an option and including this option raised	No impact

Chapter / Clause	Topic	Change	Cost / Benefit Impact
	meet criteria	concerns about specifying all possible options.	
2.13.1	Note	A note indicating that soft clears and acrylic materials do not comply was modified to state they may be considered as an equivalent solution	Greater flexibility
2.13.2.1 and Criterion 2.11.15a	Prohibitions on use within the operating station [tinted or polarized windows]	The use of tinted material now permitted for windows in vessels of measured length less than 45 m, except not permitted in particular forward fields of vision.	Greater flexibility
CHAPTER 3	Arrangements for provision of navigation signals	Clauses 3.4 Definitions deleted Clause 3.5 Modified to require compliance with COLREGS	Clarification only
4.4.2	Passenger accommodation— Prevention of fatigue	Modified from ‘avoiding the risks....’ to ‘eliminate or reduce to acceptable levels the risks’; reflects recognition that impossible to comply with original wording	Greater flexibility
4.5.1	Berthed accommodation— Prevention of fatigue	Reference to passengers added; aligns principle of protecting passengers from fatigue reflected elsewhere	Clarification only
4.5.2	Berthed accommodation— Disease and other risks to health	Modified from ‘must be arranged to prevent the spread of disease’ to ‘must facilitate the prevention of the spread of disease’; reflects recognition that impossible to comply with original wording	Greater flexibility
4.5.3	Sufficient personal space [was ‘Avoidance of conflict’]	Change of title and clause as follows: Sufficient personal space must be provided in sleeping accommodation to minimise interference that may compromise the harmony between persons on board the vessel— reflects recognition of assumptions and that impossible to comply with original wording	Greater flexibility

Chapter / Clause	Topic	Change	Cost / Benefit Impact
4.5.4	Facilitation of social harmony	Modified to replace 'promote and enhance' with 'maintain'. Reflects concern that the expectation may be to actively promote and increase social harmony instead of maintaining adequate social harmony for the purposes of safety Notes modified to provide clarification by attributing statements to particular studies and statements by the MLC 2006	Greater flexibility
4.7	Accommodation spaces D-t-S Solutions	Addition of table identifying application of deemed-to-satisfy clauses for different accommodation levels	Clarification only
4.8.1	Headroom	Now allows for local encroachments such as light fittings, smoke detectors or signs located so as to avoid interference with the normal movement of persons within a space	Less onerous for accommodation areas where full and free movement is necessary or persons are expected to stand for long periods
4.8.2.1	Control of vermin and disease – materials	Application reduced from all vessels to only those undertaking voyages of 36 hours or more.	Less onerous
4.8.4	Temperature Control	Provision of control changed from 90 to 95% of the time to reflect the temperature percentiles used for establishing when to apply active temperature control	No impact
4.8.6 and 6.14	Noise and Vibration	Allowable noise levels now aligned with accepted levels in land based workplaces adjusted for exposure period	Less onerous
4.10	Crew sleeping accommodation	Requirement to provide sleeping accommodation extended from voyages of more than 36 hrs to voyages more than 12 hrs – for voyages more than 12 hrs applies to provision of berths only, not other criteria.	More onerous Acknowledges that a vessel may operate overnight without operating for 36 hrs Reflects existing practices
4.10.3	Dedicated space	Now allows goods and stores in crew accommodation, provided they are kept in dedicated lockers	Greater flexibility Allows less overall space as stores need not be kept in dedicated storerooms
4.10.7	Floor area of crew	Reduced for vessels <35 m provided	Less onerous –

Chapter / Clause	Topic	Change	Cost / Benefit Impact
	sleeping rooms	communal areas account for the difference	smaller crew cabins on vessels <35 m
4.10.8.4	Minimum dimensions of sleeping berths	Variations in berth sizes with respect to voyage duration removed resulting in: Berth sizes for vessels ≥ 35 m increased for voyage duration AL 12 – 36; and Berth sizes for vessels < 35 m decreased for AL 72+	Provides for manufacturing economy; less onerous in costs overall
4.10.9	Fitout	Personal locker space increased to mirror USL Code original specification	Minor impact
4.10.9	Fitout	Provision of suitable writing surface in crew accommodation limited to voyages AL 72+ Requirement for a desk and chair reduced to vessels ≥ 35 m	Less onerous
4.11.2.2	Passenger seating accommodation	Requirement for provision of seating for every passenger removed from Class C vessels Requirement for number of passengers seated for C, D and E vessels reduced and apportioning allowed dependent upon vessel operating accelerations	Less onerous
4.11.2.2.2	Minimum requirements for seats	Location of seating added and clarification with respect to collared vessels	Clarification only
4.11.4.1	Access for persons with disabilities	Application reduced from ferries and pre-booked services carrying more than 32 pax to ferries carrying more than 36 pax and pre booked services carrying more than 100 pax	Less onerous
4.11.4.5	Allocated spaces	Threshold for allocation of spaces increased from 32 to 37 pax to align with break points elsewhere	Less onerous
4.11.4.7	Sanitary facilities	New requirement for a grab rail with specifications Addition of specifications for washbasins and showers.	Required to comply with disability standards Corrects mistake in public comment draft
4.12	Facilities for sick and injured persons	Removal of the requirement for a separate cabin to be a sick bay. Now a designated space must be provided	Less onerous
4.15.13	Minimum number of sanitary	Reduction in the requirement for toilets and washbasins for unberthed	Less onerous

Chapter / Clause	Topic	Change	Cost / Benefit Impact
	facilities	pax for vessels of voyage duration 1 hour or less	
4.17.1	Quantity of potable water	Required amount removed. Informative table inserted	Less onerous
5.11.2	Size of evacuation path	Path size of individual path at the evacuation station reduced from total assigned to the evacuation station to the proportion of persons assigned that would be using that path	No impact
5.14.1.1	Handrail application	Application of the requirement for handrails along evacuation routes changed from all vessels to only passenger vessels having a certain characteristic when flooded	Less onerous
15.4.3.7	Step dimensions	Dimensions of steps for high capacity escapes modified to better reflect industry practice elsewhere	No impact
5.15.3.6	Spiral stairways	Specification for spiral stairs in low capacity escapes added	Clarification only
5.16.1	Marking of maximum passengers on each deck	New marking requirements added for decks above the hull accessible to passengers	More onerous Low impact as vessel deck identification already required
6.3.1 to 6.4.2	Personal safety required outcomes	Modified from 'absolute' statements to reflect the elimination or reduction to acceptable levels of risks reflecting recognition that impossible to comply with original wording in each clause.	Less onerous
6.10.1	Protection from seas	Deemed to satisfy solution changed from being prescriptive to being performance based	Greater flexibility
6.10.2	Protection from the weather	Clause modified from applying to Operational A vessels engaged in passages of 12 hrs or more duration to apply to all Operational A vessels	No impact
6.11.4	Minimum height of bulwarks and guard rails	Criteria simplified with range of options reduced from 3 to 2, namely for vessels ≤ 16 m and those > 16 m Heights for special purpose deck and special working deck increased	More onerous

Chapter / Clause	Topic	Change	Cost / Benefit Impact
6.11.5	Additional requirements for nominated special purpose and special working decks	Guardrails/bulwarks now mandatory And harnesses now optional on special working decks of Seagoing Operational Areas A, B or C vessels. Reduced guardrail/bulwark heights now allowed on collared vessels and vessels <16 m provided certain combinations of options are applied	Slightly more onerous
6.11.6.1	Guardrails	Maximum permissible clear opening between horizontal courses now specified for special working decks	More onerous but cost neutral
6.11.7.1	Strength of guardrails	Criteria for glass added for where glass is used	No impact
6.11.7.2.3	Flexible horizontal courses	New requirement for flexible wire or similar material to be arranged so that it is visible for inspection purposes	More onerous
6.11.8.5.4	Clipping point location	Criteria added requiring clipping points for fishing positions and game fishing chairs	Clarification only
6.15.2	Deemed-to-satisfy requirements for accommodation ladders, gangways and gangplanks	Break point for smaller vessels increased from 30 m to 35 m and options in some circumstances added	Less onerous
Annexes A to D	Guidance	New Annexes added providing information for complying with standard	Clarification only