



Recreational Vessel Safety Equipment

Discussion Paper - Summary

March 2017





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Introduction

The Department of Transport (DoT) is conducting a review of the safety equipment required to be carried on recreational craft used on all WA waters, including inland waterways, rivers and lakes.

The legislation that specifies what safety equipment must be carried on recreational craft is the Western Australian Navigable Waters Regulations 1958 (the Regulations).

A significant review of the Regulations was conducted in 1992. Since that time a number of impacting changes have occurred, such as:

- improved statistical incident information;
- technological development and new equipment in the market;
- new vessel types and water based activities;
- other Australian states introducing mandatory wearing of lifejackets; and
- increasing globalisation in trade (international and interstate) and consequent use of national and international standards.

1. Recreational Vessel Safety Equipment Discussion Paper - Full

This document is a summary version of the longer and more detailed *Recreational Vessel Safety Equipment Discussion Paper – Full*. The full discussion paper can be downloaded from www.transport.wa.gov.au/safetysafetyequipmentreview. Please refer to the full discussion paper for further information on the statistics, relevant facts, considerations and approach in other jurisdictions.



2. Reference group

An external reference group has been formed to help guide the review. Members of the group comprise representatives from various organisations with particular interests or expertise with particular vessel types, or represent particular user groups with an interest in water safety.

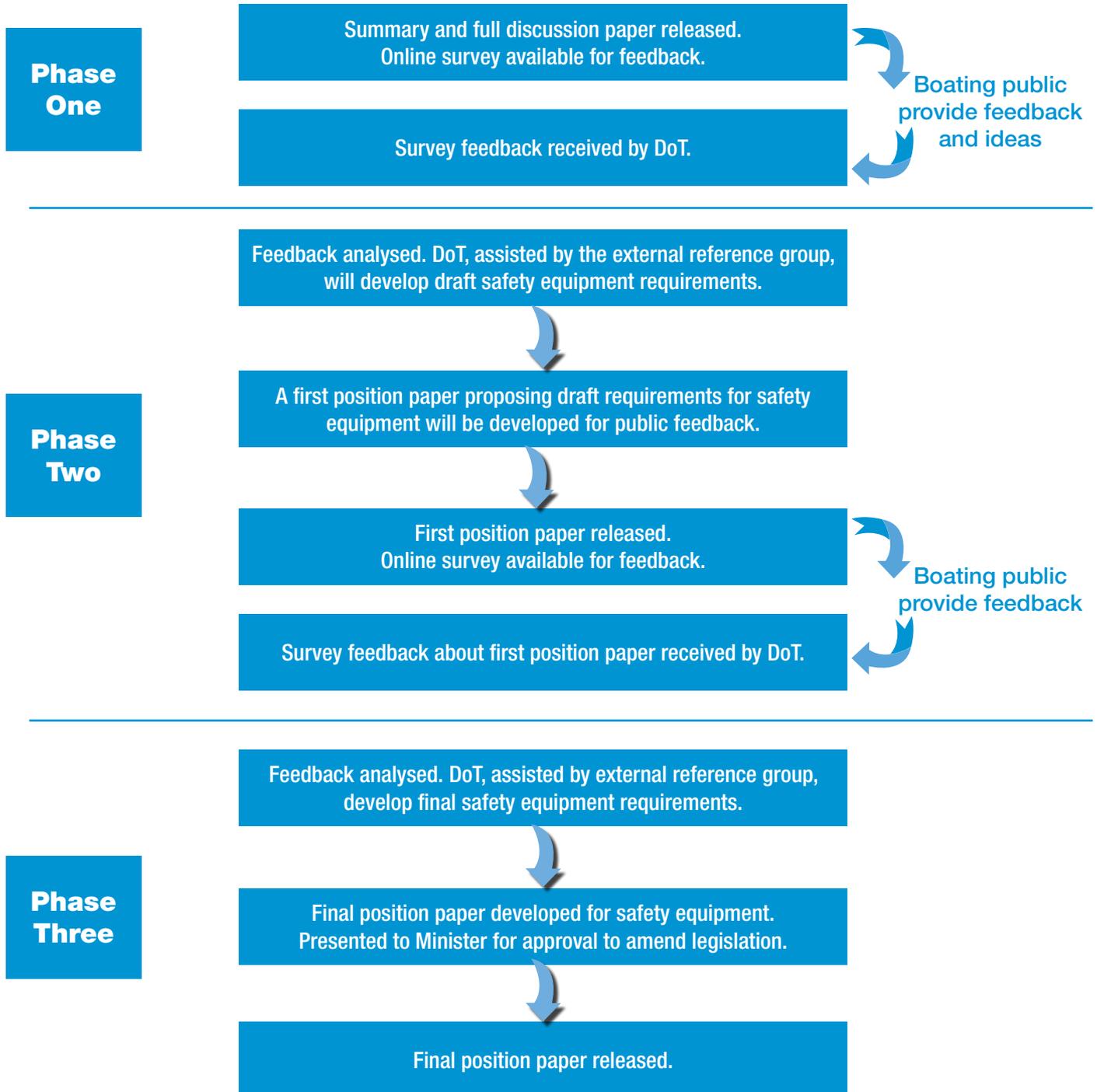
The reference group members were selected to ensure the interests of the public involved with recreational vessels were represented. The group's membership includes representatives from:

- Boating Industry Association of WA
- Boating Western Australia Inc.
- Canoeing Western Australia Inc.
- Department of Sport and Recreation
- Jet Sport West
- Outdoors WA
- Recfishwest
- Royal Life Saving Society WA Inc.
- Surf Life Saving Western Australia
- Western Australian Kite Surfing Association
- Western Australian Water Police
- Western Australian Water Ski Association
- Windsurfing WA
- Whitfords Volunteer Sea Rescue Group
- Volunteer Marine Rescue WA
- Yachting Western Australia 'Limited'

3. How will the review be conducted?

This summary and the supporting full discussion paper have been developed by DoT after an analysis of past incident statistics and how safety hazards are managed. An investigation into new equipment was also completed.

The process for review



4. While we have your attention: loading limits

Included in this paper is a suggestion about limits on loading of motorboats as mentioned on an Australian Builders Plate. This is not part of the review of safety equipment. DoT is taking this opportunity to ask this question while we have your attention. This will give an idea of how supportive the community is for such regulation at a later time.

Safety Equipment – The Review

1. The function of safety equipment

The existing Regulations are pre-emptive; not just reactive. Safety equipment is intended to assist people survive an emergency situation e.g. lifejackets, flares. The Regulations also contain requirements for anchors and set limits on how far small vessels can go to sea, neither of which directly assists people in an emergency. They do, however, reduce the likelihood of an emergency arising.

2. The most hazardous incidents

By analysing past incident data, the kind of incidents that are the most hazardous have been identified. These incidents provide guidance as to what safety equipment recreational vessels should have. More detail on this analysis can be found in the full discussion paper.

Table 1. Incident Data Summary from 2007 to 2014 calendar years

Category of Incident	No. of Incidents	No. of Incidents as a % of all incidents of all categories	% of incidents that involve one or more injuries	% of incidents that involve one or more deaths	% of incidents that involve one or more deaths or injuries
Collision	304	34.8	23.4	1.3	23.7
Capsize	115	13.2	33.0	9.6	36.5
Grounding	112	12.8	15.2	0.0	15.2
Sunken vessel	80	9.2	7.5	0.0	7.5
Fire	34	3.9	20.6	0.0	20.6
Navigation	33	3.8	12.1	0.0	12.1
Person overboard	30	3.4	50.0	33.3	83.3
Swamping	29	3.3	27.6	10.3	31.0
Flooding	24	2.7	8.3	4.2	8.3
Diving	23	2.6	4.3	13.0	17.4
Other personal injury	22	2.5	100.0	0.0	100.0
Onboard incident	14	1.6	92.9	7.1	100.0
Fatality (not boating related)*	14	1.6	0.0	100.0	100.0
Collision – Prop strike	13	1.5	100.0	7.7	100.0
Structural failure	12	1.4	0.0	8.3	8.3
Loss of vessel	8	0.9	0.0	0.0	0.0
Mechanical failure	5	0.6	40.0	0.0	40.0
Explosion	1	0.1	100.0	0.0	100.0
TOTAL	873				

* not boating related incidents are those that might happen anywhere and are not associated specifically with vessel operations. Often they are medical conditions or the doing of something from a vessel that is not associated with the vessel, such as diving. They are incidents that must be managed and which may affect safety equipment requirements.

3. Safety equipment – overview

Comment is welcome about any items of safety equipment mentioned in this paper, and other safety equipment that should be carried on recreational vessels. Comment can also be made about how safety equipment is verified during or after manufacture, marked, installed or stowed, secured or operated, and how vessels might be marked in relation to safety equipment.

Safety equipment in this paper is for water craft such as motor boats, sailing vessels, personal water craft (PWC) or jet skis, sailboards (kite surfing or windsurfing), canoes and kayaks, paddleboats (including paddle-boards and craft powered by pedalling), or any other type of vessel.

Safety equipment is often required in some waters but not others. This is because there are different water risk areas. All Australian jurisdictions classify the various areas of water into risk areas, extending from very sheltered to very exposed. The two water risk areas in WA are protected waters ([defined in Terms used, on page 27 of this document](#)) and unprotected waters.

4. Safety equipment – detailed equipment requirements

The following pages provide background, statistics and the approach taken in other jurisdictions for specific safety equipment.

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4.1 Lifejackets – carriage

Incident statistics show that in many accidents on the ocean or on protected waters, people could have been saved if they had access to a suitably sized lifejacket. Lifejackets are now made to fit better and are specially designed for specific activities.

Currently in WA, lifejackets have to be carried only when on the ocean, not on lakes or rivers. Lifejackets have to be worn on any waters by people on personal water craft (PWC) or when slalom skiing. See table 2.

4.1.1 Statistics:

Of all incidents in WA between 2007 and 2014, 30 involved persons overboard (PoB). Of these, one third (33 per cent) resulted in death. It appears that the areas in which the fatalities occurred were reasonably evenly split between protected, unprotected, and unprotected but sheltered waters.

Other incidents recorded as capsized, flooding or sunken vessel could also result in people in the water, though these incidents are not recorded as PoB incidents. People in these incidents probably could have avoided injury or death had they had a lifejacket.

PoB incidents in protected waters are extremely unlikely to be reported unless a drowning or near-drowning occurred.

4.1.2 Considerations:

Level 100 lifejackets provide about 10 kilograms of buoyancy for the average adult while Level 50 lifejackets provide about 5 kilograms of buoyancy for the average adult.

Besides the amount of buoyancy, lifejackets are also categorised according to the likelihood of timely rescue and the waters within which the lifejackets are likely to be used.

Figure 1. Application and performance level classification of Level 50 lifejackets.



Level 50: This level is intended for use by those who are able swimmers and who are near to bank or shore, or who have help and a means of rescue close at hand. They are not designed to assist in turning the wearer into a face-up position. They require active participation by the wearer.

4.1.3 Across Australia:

The majority of Australian jurisdictions require lifejackets on all waters; the majority require Level 50 lifejackets on protected waters.

Currently, WA is not aligned with other jurisdictions for protected waters, but is aligned for vessels on unprotected waters.

Table 2. Carriage of lifejackets currently required in WA

Vessel Type	Protected waters	Unprotected waters within 400 metres of shore	Unprotected waters beyond 400 metres of shore
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	-	Lifejacket minimum Level 100	Lifejacket minimum Level 100
PWC (e.g. jet skis, power boards)	Lifejacket minimum Level 50 or 50S	Lifejacket minimum Level 50 or 50S	Lifejacket minimum Level 100
Sailboards (wind surfers, kite boards)	-	-	Lifejacket minimum Level 50 or 50S
Paddle craft [^]	-	-	Lifejacket minimum Level 50 or 50S
Slalom Skiing [†] (only for the skier)	Lifejacket minimum Level 50 or 50S	Lifejacket minimum Level 50 or 50S	Lifejacket minimum Level 50 or 50S

* These vessels include dinghies and tenders – powered or unpowered.

[^] Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

[†] Note that this includes parasailing, but excludes normal skiing.

4.2 Lifejackets – wearing

In an emergency, wearing a lifejacket can mean the difference between life and death. In an incident, people have little time to put on a lifejacket, and this can contribute substantially to their deaths. Lifejackets are now designed and manufactured to be comfortable to wear.

Currently in WA, lifejackets have to be worn by people on any waters when operating a PWC, slalom skiing, or when sailboarding on the ocean more than 400 metres from shore. See *table 3*.

4.2.1 Statistics:

Of all incidents in WA between 2007 and 2014, 30 were PoB incidents. Of these, one third (33 per cent) resulted in death.

Areas in which the fatalities occurred for PoB incidents were reasonably evenly split between protected, unprotected, and unprotected but sheltered waters. Most of the vessels from which people fell overboard were open boats, followed by PWCs. In capsize, flooding or sinking incidents, people not wearing lifejackets are susceptible to drowning as sinking is very rapid; leaving little time to locate and put on lifejackets.

4.2.2 Considerations:

Anecdotally, where people fell overboard and could have drowned but did not, was because there were people on hand to assist. It may be that when operating alone in isolation, lifejackets should be worn instead of just carried.

Wearing a lifejacket inside an enclosed compartment with small exits is likely to increase the chance of drowning if the vessel capsizes or sinks very rapidly.

Compulsory wearing of lifejackets might be best targeted at vessels that are:

- likely to capsize (small vessels operating in the ocean, small sailing dinghies, canoes, kayaks, sailboards, paddle boards);
- prone to people falling overboard (PWCs, smaller vessels, unstable vessels);
- carrying children; and
- operated in a way that when a person falls overboard they are less likely to be recovered (only one person aboard or operating at night).

4.2.3 Across Australia:

As in WA, the majority of Australian jurisdictions require lifejackets to be worn in different circumstances and on different vessel types where the likelihood of a person falling into the water is higher or rescue opportunities are limited. Consistency with other jurisdictions would encourage the wearing of lifejackets.

Table 3. Wearing of lifejackets as currently required in WA

Vessel Type	Protected waters	Unprotected waters within 400 metres of shore	Unprotected waters beyond 400 metres of shore
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	-	-	-
PWC (e.g. jet skis, power boards)	Compulsory wearing	Compulsory wearing	Compulsory wearing
Sailboards (wind surfers, kite boards)	-	-	Compulsory wearing
Paddle craft^	-	-	-
Slalom Skiing† (only the skier while skiing)	Compulsory wearing by skier	Compulsory wearing by skier	Compulsory wearing by skier

* These vessels include dinghies and tenders – powered or unpowered.

^ Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

† Note that this includes parasailing, but excludes normal skiing.

4.3 Flares (pyrotechnics)

Red hand flares, red parachute rocket flares and orange smoke signals assist in the timely rescue of people needing help.

In WA, no flares need to be carried in protected waters. In the ocean, two red hand flares (or red parachute rockets) and orange smoke signals need to be carried. See table 4.

4.3.1 Statistics:

DoT has no reliable data about the effectiveness of flares and other visual signalling devices in search and rescue.

4.3.2 Considerations:

Currently WA is the only Australian jurisdiction allowing red parachute rockets to replace red hand held flares. Compulsory carriage of red parachute rockets begins at 5 n miles from the coast.

Red hand held flares burn for 60 seconds; visible at night to 5 n miles. Red parachute distress rockets (from 300 metres height) burn for 40 seconds; visible at night to 8 n miles. Orange hand held smoke signals produce smoke for 60 seconds visible to 2 n miles. Floating orange smoke canisters produce the same smoke for three minutes.

With two hand held smoke signals there are two chances of firing a signal, but with one smoke canister there is only one chance.

Despite being manufactured to be as safe as possible, flares are dangerous if used incorrectly, and there are alternatives available.

Other active visual signalling devices could replace red hand held flares. If permitted¹, such devices could include:

- LED² distress beacons
- Laser “flares”³
- Distress locator beacons⁴

The LED distress beacon and distress locator beacon might be recognised as distress signals by Australian search and rescue organisations (if they signal Morse Code SOS), but are not yet likely to be recognised by recreational vessel operators. There is also no standard with which they must comply.

4.3.3 Across Australia:

The requirements of other jurisdictions are not consistent with each other or with WA.

- 1 Before any distress signal will be specified in regulations, it has to be recognised for search and rescue, and generally should also be of a type that is recognised internationally as a distress signal.
- 2 LED – Light Emitting Diode
- 3 Similar to laser pointers, but with the laser beam flared out to some 10 to 20 degrees wide (but only in a very narrow plane).
- 4 Floating devices that flash an intense white light above the horizontal, for location at night.



Table 4. Flares (pyrotechnics)
(and alternatively permitted Emergency Position Indicating Radio Beacons (EPIRB) / Personal Locator Beacons (PLB)).

Vessel Type	Unprotected waters	Unprotected waters beyond 2 n miles of mainland shore (or beyond 400 metres of an island itself beyond 2 n miles of mainland shore)	Unprotected waters beyond 5 n miles of mainland shore (or beyond 1 n mile of an island itself beyond 5 n miles of mainland shore)
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	2 red hand flares OR 2 parachute rockets And 2 hand held smoke signals OR 1 smoke canister	2 red hand flares OR 2 parachute rockets And † 2 hand held smoke signals OR 1 smoke canister	2 parachute rockets And † 2 hand held smoke signals OR 1 smoke canister
PWC (e.g. jet skis, power boards)	Only beyond 400 metres of any shore: As for vessels above	As for vessels above	As for vessels above
Sailboards (wind surfers, kite boards), paddle craft^	Only beyond 400 metres of any shore: As for vessels above, OR EPIRB or PLB	EPIRB or PLB	As for vessels above, AND EPIRB or PLB

* These vessels include dinghies and tenders – powered or unpowered.

^ Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

† EPIRB also required; see sub-section 4.

Protected waters not shown – flares, EPIRB, PLB not required in protected waters.



4.4 Emergency Position Indicating Radio Beacon/Personal Locator Beacon

Emergency Position Indicating Radio Beacons (EPIRB) and Personal Locator Beacons (PLB) alert sea search and rescue services that someone is in serious trouble. They have been very successful in saving lives at sea.

Currently in WA, EPIRBs must be carried on most vessels in the ocean more than 2 n miles from the mainland shore, or more than 400 metres from the shore of islands where the island is more than 2 n miles from the mainland. Sailboards and paddle craft must carry an EPIRB, PLB or flares when more than 400 metres from shore up to 2 n miles from the mainland coast, but at 2 n miles they must carry an EPIRB or PLB. See *table 5*.

4.4.1 Statistics:

The Australian Maritime Safety Authority (AMSA) was involved in 150 incidents in WA in 2015. EPIRBs were responsible for alerting AMSA in 90 incidents, and sixteen lives that were at risk were saved.

4.4.2 Considerations:

EPIRBs and PLBs have been getting cheaper.

For vessels within 400 metres of islands where an EPIRB is not required, an assumption is made that a person requiring assistance can swim to the island, and thereafter does not need rescue.

400 metres is a reasonably large distance for a person to swim and 200 metres might be more realistic. Some vessels often go inadvertently outside 200 metres from shore and therefore 400 metres might be more practical.

Some EPIRBs have a global positioning (GPS) feature fitted allowing the EPIRB to signal that there is an emergency, and indicate the GPS position of the EPIRB. This gives a much more accurate position of the EPIRB.

A GPS enabled EPIRB could decrease the time from activation of the EPIRB to approximate location of the EPIRB by almost 2.5 hours. It also decreases the search time.

A PLB does the same thing as an EPIRB, but it is worn on the person. Unlike an EPIRB, the aerial on a PLB does not automatically deploy vertically to allow it to work.

Differences between EPIRBs and PLBs (drop tests, battery life, water-tightness, ability to float with aerial vertical) explain why EPIRBs are required on conventional vessels, in preference to PLBs.

4.4.3 Across Australia:

As EPIRBs are a part of the Australian national sea search and rescue arrangements, all Australian jurisdictions have adopted similar distances from the mainland where an EPIRB must be carried. No other Australian jurisdiction has required EPIRBs to be GPS-enabled, or to be fitted to float free and activate when the vessel sinks.

Global Positioning System used in EPIRBs

For your best chance of survival a Global Positioning System (GPS) distress beacon will provide rescuers with a signal to a location accuracy of 120 metres and the satellite detection time is greatly reduced.

A non GPS distress beacon has a location accuracy of five kilometres and requires a number of passing satellites to detect and pinpoint your location.



Table 5. EPIRB / PLB as currently required in WA

Vessel Type	Unprotected waters beyond 400 metres of any shore	Unprotected waters beyond 2 n miles of mainland shore (or beyond 400 metres of an island itself beyond 2 n miles of mainland shore)	Unprotected waters beyond 5 n miles of mainland shore (or beyond 1 n mile of an island itself beyond 5 n miles of mainland shore)
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	-	EPIRB	EPIRB
PWC (e.g. jet skis, power boards)	-	As for motorboats	As for motorboats
Sailboards (wind surfers, kite boards), paddle craft^	EPIRB or PLB OR Flares as for motorboats	EPIRB or PLB	EPIRB or PLB AND Flares as for motorboats

* These vessels include dinghies and tenders – powered or unpowered.

^ Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

Protected waters not shown – EPIRBs, PLBs and flares not required in protected waters.



4.5 Liferaft

When a vessel sinks or needs to be evacuated, liferafts can keep people safe until rescue arrives.

Currently in WA, liferafts are not required on recreational vessels in any waters.

4.5.1 Statistics:

It is not evident from incident records whether the carriage of liferafts would increase safety significantly or not.

4.5.2 Considerations:

Given their weight and space requirements, liferafts are more appropriate for larger vessels, and larger vessels are more likely to be far from rescue.

Questions arise as to the standard that liferafts should meet. However, two current standards (ISO 9650-1 and ISO 9650-2) offer a big increase in personal safety on vessels operating in remote/rough/cold environments (if fitted, stowed, launched and used correctly).

Compared to rigid liferafts, dinghies or lifeboats, inflatable liferafts have superior performance in the ocean; they occupy less space (assuming a dinghy is not already carried) and contain comprehensive safety equipment. However, they are technically complex to operate and require regular maintenance and servicing.

Liferafts are most effective when fitted with dedicated launching arrangements. If WA required liferafts on some vessels, their use would have to be included in the Recreational Skipper's Ticket (RST) Workbook.

4.5.3 Across Australia:

Most Australian jurisdictions do not require liferafts to be carried. Currently, WA is aligned with the majority of jurisdictions.



4.6 Radio

The safety of people on vessels can be improved by communications with other vessels or with the shore. With a radio, a person can call for help, describe their situation and seek advice.

Currently in WA, vessels operating more than 5 n miles from the mainland shore or more than 1 n mile from an island where the island is more than 5 n miles from the mainland shore, must be equipped with a marine radio (can be a 27 MHz radio or a VHF or HF radio). See table 6.

4.6.1 Statistics:

The source of distress information for incidents is not recorded in DoT incident data. Of all the safety equipment carried, radios (their carriage and technical standards) are one of the items with which most operators consistently comply.

4.6.2 Considerations:

A radio might be installed in a vessel, connected to the power supply and aerial, or it might be a portable hand-held device.

There have been incidents where lives could have been saved if radios were used effectively (even when the vessel was close to shore).

Radio communication generally becomes more important when a vessel is operating in more remote waters, where its flares or smoke signals are less likely to be seen in an emergency.

A radio allows the skipper of a vessel to call a shore-based rescue facility or another vessel for help. It allows the skipper to describe the emergency. It also allows the skipper to receive weather updates. All of these features become more important to safety as the vessel operates further from shore. An EPIRB only transmits distress information.

Merchant ships are required by law to listen to VHF channel 16 as much as possible when at sea. State and territory limited coast stations⁵, port authorities, fishing craft and many pleasure craft use VHF channel 16.

Operators of all marine radios, other than 27 MHz sets, need to be licensed to use the radio.

4.6.3 Across Australia:

No Australian jurisdiction requires a marine radio close to shore (within about 2 n miles from the mainland), and to this extent WA is reasonably consistent with other jurisdictions. However WA is inconsistent with some jurisdictions as to the type of radio (27 MHz versus VHF) and its features (e.g. Digital Selective Calling (DSC) capability).

For equipment that has to be fitted to a vessel (radio, power supply and aerial), consistency across Australia is more important than for a hand-held radio. Where there are differences between jurisdictions with fitted radios, non-compliance is more difficult to rectify.

⁵ Means coastal radio communications facilities as defined in the W.A. Marine (Radiotelephony) Regulations 1981, licensed to exchange communications with vessels.

Table 6. Radios currently required in WA

Vessel Type	Protected waters	Unprotected waters within 5 n miles of mainland shore (or within 1 n mile of an island itself beyond 5 n miles of mainland shore)	Unprotected waters beyond 5 n miles of mainland shore (or beyond 1 n mile of an island itself beyond 5 n miles of mainland shore)
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	-	-	1 marine transceiver
PWC (e.g. jet skis, power boards)	-	-	1 marine transceiver
Sailboards (wind surfers, kite boards)	-	-	1 marine transceiver
Paddle craft [^]	-	-	1 marine transceiver

* These vessels include dinghies and tenders – powered or unpowered.

[^] Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

4.7 Distress signalling sheet

When a vessel is disabled and still afloat, a high visibility distress signalling sheet secured to its deck or cabin roof can help rescue aircraft locate the vessel. A distress signalling sheet can also be used to signal to other vessels. Distress signalling sheets displaying a V are sometimes called V-sheets.

Currently in WA, vessels don't have to carry a distress signalling sheet.

4.7.1 Statistics:

DoT has no incident records noting the use of, or benefits of a distress signalling sheet.

4.7.2 Considerations:

Volunteer Marine Rescue (VMR) organisations advise that a floating vessel with a distress signalling sheet displayed on its deck or wheelhouse roof is more visible from the air than without the distress signalling sheet, but only if search aircraft fly very low.

4.7.3 Across Australia:

The majority of Australian jurisdictions require a distress signalling sheet in more remote waters (beyond about 2 n miles from shore). WA is one of only two jurisdictions where there is no requirement for a distress signalling sheet in any waters.



4.8 Compass

A compass can be useful to chart a course or to have a rough idea of the direction in which your vessel is travelling. This can be important when out of sight of land or if you are using a chart to navigate a larger boat through dangerous waters.

Currently in WA, there is no requirement for vessels to carry or fit a compass.

4.8.1 Statistics:

No incidents in WA have been attributed to not having a compass fitted or carried.

4.8.2 Considerations:

Vessels travelling beyond sight of land are likely to carry a GPS or compass without it being a requirement. In WA, the only qualification required to skipper a recreational vessel is a Recreational Skipper's Ticket (RST). The RST course does not teach navigation by chart and compass.

In circumstances where only broad direction-finding is required (such as when operating just beyond sight of land, or in fog), a compass might assist with navigation without a chart.

4.8.3 Across Australia:

Currently WA is unaligned with four of the six other jurisdictions as well as the National Standard.



4.9 Fire bucket

When an extinguisher is not available to put out a fire, a fire bucket can assist, and it can be used in many different ways on a vessel.

Currently in WA vessels are not required to carry a fire bucket, but they are required to carry bailers in certain circumstances (vessels less than 7 metres in length not fitted with a bilge pump).

4.9.1 Statistics:

Fire is the fifth most likely incident type with no injuries or deaths and the tenth most likely incident type where there is a death or injury.

4.9.2 Considerations:

Fire buckets have additional uses. For example, they can be used as a bailer, or at slow speed as a sea anchor.

There would be a reduced fire hazard on vessels not fitted with fuel or ignition sources such as motors, stoves, heaters or electrical systems. A fire bucket perhaps should not be required on vessels with a reduced fire hazard (e.g. sailboards, canoes, kayaks, sailing vessels without cooking facilities).

A fire bucket would not be an effective extinguisher for flammable liquid fires or high voltage electrical system fires.

If the source of fire cannot be accessed by the fire bucket (such as on jet skis or where the potential fire source is under a low deck) then a fire bucket would be of little practical use.

4.9.3 Across Australia:

WA is inconsistent with most other Australian jurisdictions in not requiring a fire bucket. However, there is higher consistency in an operational sense for vessels less than 7 metres in length where a bilge pump is not fitted and a bailer is the compulsory alternative.



4.10 Fire extinguisher

Larger vessels often have an increased fire risk due to their engines, fuel, cookers and combustible furnishings. Fire extinguishers are designed for specific fuel types and require maintenance.

Currently in WA vessels are required to be fitted with a single fire extinguisher if the vessel has an inboard engine or hydrocarbon cooling or heating appliance. See *table 8*.

4.10.1 Statistics:

There is no incident data on how fires of certain types were extinguished by appropriately matched extinguisher types, or on how reliably fire extinguishers operate in the absence of maintenance.

4.10.2 Considerations:

A fire on a vessel at sea is extremely dangerous because people cannot simply walk away.

There have been incidents where extinguishers have not been serviced and failed to operate, or have been operated and not recharged.

The Regulations already mention different extinguisher types (for example, foam, carbon dioxide) but do not mention the types of fires for which these extinguishers are intended.

Maintenance of extinguishers is currently required by the Regulations but no standard is mentioned; extinguishers currently must only be maintained in serviceable condition.

There are a number of Australian standards that provide guidance about the type and number of fire extinguishers on vessels.

4.10.3 Across Australia:

Currently, WA requirements are only slightly different when compared to other jurisdictions.

Consistency between Australian jurisdictions for fire extinguishers is important for larger vessels where multiple extinguishers are provided for the layout and equipment of the vessel. Extinguishers cannot simply be placed aboard larger vessels, but have to be fitted near fire sources.



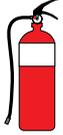
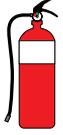
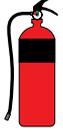
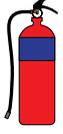
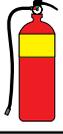
Table 7. Fire extinguishers currently required in WA

Vessel Type	Protected waters	Unprotected waters within 400 metres of shore	Unprotected waters beyond 400 metres of shore
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	If fitted with inboard engine or hydrocarbon cooling or heating appliance, must be fitted with a fire extinguisher complying with AS 1841 appropriate to the extinguisher type (foam, powder etc.)		
PWC (e.g. jet skis, power boards)	-		
Sailboards (wind surfers, kite boards)	As for motorboats		
Paddle craft^	As for motorboats		

* These vessels include dinghies and tenders – powered or unpowered.

^ Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

Table 8. Fire extinguisher usage chart

Extinguisher type		Extinguisher colour scheme	A Wood, paper and plastics	B Flammable combustible liquids	C Flammable gases	D Energised electrical fires	E Cooking oils and fats	Remarks
At least one extinguisher from this group must be carried if the boat is fitted with an inboard engine or hydrocarbon heating or cooling appliance	Dry Powder ABE AS1841.1 and AS1841.4		✓	✓	✓	✓	✗	Special Powders are available specifically for various types of metal fires. Seek expert advice.
	Dry Powder BE AS1841.1 and AS1841.4		✗	✓	✓	✓	✓	Special Powders are available specifically for various types of metal fires. Seek expert advice.
	Carbon Dioxide AS1841.1 and AS1841.5		✓ Limited	✓ Limited	✗	✓	✗	Generally not suitable for outdoor fires. Suitable only for small fires.
	Foam AS1841.1 and AS1841.6		✓	✓	✗	✗	✓ Limited	Dangerous if used on energised electrical equipment.
	Vaporising Liquid AS1841.1 and AS1841.7		✓	✓ Limited	✓ Limited	✓	✓	Check the characteristics of the specific extinguishant.
Optional equipment	Fire blanket		✗	✗	✗	✗	✓	Blanket should be replaced after use.
	Fire bucket and lanyard		✓	✗	✗	✗	✗	Can be useful if there is access to water.

4.11 Fire blanket

Even when fire extinguishers are carried, fire blankets can be a useful tool to extinguish oil and fat fires. Larger vessels are often fitted with cooking appliances, and with that the risk of a cooking oil fire increases.

Currently in WA vessels are not required to have a fire blanket.

4.11.1 Statistics:

Although the cause of a fire is not recorded in incident reports, it is more common for fires to begin from electrical faults or machinery and sometimes from BBQs on decks. Few fires resulted from stoves in enclosed spaces.

4.11.2 Considerations:

Despite fire blankets not being required in WA, they are recommended in the RST Workbook for fires such as oil and fat fires where the vessel has a galley. On larger vessels where people sleep on board and cooking can be conducted, it is argued that a fire blanket should be carried. Victoria has a similar requirement.

AS 1851 specifies servicing requirements for fire blankets relating to blanket condition and blanket mounting and signage.

4.11.3 Across Australia:

WA is currently consistent with the majority of other Australian jurisdictions in not requiring a fire blanket.

Only Victoria requires a fire blanket and the National Standard suggests the vessel owner should consider if one should be fitted.



4.12 Bilge pumps and bilge alarms

Taking on water can result in sinking by capsizing, or can result in, or from, swamping. Sinking can happen in many ways and is a major contributor to people being injured or killed on the water.

Currently in WA vessels must either be fitted with a bilge pump or (for smaller vessels) carry a bailer or bucket. See table 9.

4.12.1 Statistics:

Incident types that can be controlled by bilge water removal collectively accounted for 28.4 per cent of incidents. Many incidents have as a causal factor, water entering the vessel without being noticed.

4.12.2 Considerations:

The size of bilge pumps on a vessel should depend on how much unwanted water is likely to enter the vessel, and this depends upon the vessel size and if it is in a river or the sea. Existing requirements only specify pumps of one minimum size. Vessels with fully enclosed hulls (rigid inflatables, sit-on-top paddle craft) might not need a pump or alarm at all.

Bilge alarms are useful where water entry is not visible (under floors) and where automatic pumps can't be heard or the pump's on light is difficult to see. Automatic pumps can give a false sense of security.

Some vessels less than 7 metres long have non-watertight decks (technically open vessels - water can enter bilges over the sides). As they are shorter than 7 metres they currently don't require bilge pumps. Instead they need only a bailer even if the bilge is not accessible for bailing.

If only a manual bilge pump or bailer is fitted, and only one operator is aboard it may be difficult for the bilges to be emptied.

4.12.3 Across Australia:

WA is not completely consistent with most of the other jurisdictions. However, if an alarm was required this would add to inconsistency. Consistency between Australian jurisdictions for bilge pumping is important because bilge systems and alarms have to be fitted instead of just carried.



Table 9. Bilge pumps and bilge alarms currently required in WA

Vessel Type	Protected waters	Unprotected waters within 400 metres of shore	Unprotected waters beyond 400 metres of shore
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	If L = 7 metres or longer, 1 bilge pump of 4 kL per hour, and if automatic or electric, be wired so that an indicator shows when the pump is working. If L shorter than 7 metres and no bilge pump is fitted, the vessel must carry a bucket or bailer.		
PWC (e.g. jet skis, power boards)	As for motorboats		
Sailboards (wind surfers, kite boards)	As for motorboats		
Paddle craft^	-	-	If not self-draining, 1 bailer.

* These vessels include dinghies and tenders – powered or unpowered.

^ Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

4.13 Paddles and/or oars

Vessels with a single motor can sometimes lose power which can result in people being stranded far from shore. Even with two motors, if the electrics or fuel system fail, both motors can stop operating. People are then stranded and without control, with possible risks to their safety.

Currently in WA vessels are not required to carry paddles or oars.

4.13.1 Statistics:

Although there are no incident reports of loss of propulsion or stranding, it happens often in WA that Volunteer Marine Rescue (VMR) groups send vessels to assist with breakdowns.

4.13.2 Considerations:

Paddles assist when a vessel loses power and is forced offshore. A conventional vessel longer than about 4.8 metres would be difficult to paddle any distance.

If the vessel is far from shore and return by paddling is not practical, fitting paddles may still be useful for orienting the vessel head-to-wind to minimise drift, or to move towards or away from other vessel traffic.

On paddle boards or sailboards, hand paddling is probably effective for short distances to return to shore, and additional paddles might not be needed.

On powered vessels, an additional outboard motor could be fitted instead of paddles/oars if the motor does not use the same fuel supply or starting battery.

4.13.3 Across Australia:

Currently, WA is not aligned with five of the six other jurisdictions. Given the size of vessels affected, they are unlikely to voyage between jurisdictions and are easily provided with paddles/oars without significant modification.

The majority of Australian jurisdictions require paddles or oars, though the conditions for when they are required vary.



4.14 Anchor and cable

Anchors prevent vessels from coming free and drifting away from divers, becoming collision risks to other vessels and structures, or from grounding and thereby damaging themselves.

Currently in WA vessels are required to be equipped with an efficient anchor and line, but only in unprotected waters. See table 10.

4.14.1 Statistics:

Incidents have resulted from the dragging of anchors, and three incidents saw the handling or retrieval of the anchor cause sinking, injury or death.

4.14.2 Considerations:

Anchors might need to be heavier in unprotected waters than in protected waters because of exposure to ocean winds and waves.

The holding power of an anchoring system depends on the:

- anchor type (for sand, mud, rocky ground, weed), and weight;
- length of cable;
- weight (or stretch) of the cable;
- weight of the cable directly connected to the anchor;
- abrasion resistance of the cable at the anchor end and the vessel end; and
- area of the vessel exposed to wind.

Three other Australian jurisdictions and the National Standard refer to AS 2198 – Anchors for Small Boats. While this is an old standard and applies only to vessels up to 15 metres in length, it was developed by the same committee that developed AS 1799: Small craft. It provides guidance on selecting anchors and cable, how they should be used and for manufacturers how they should be tested.

4.14.3 Across Australia:

WA is consistent with the majority of Australian jurisdictions requiring only one anchor regardless of vessel length and in not specifying minimum anchor weights or cable types. However, in WA skippers are not told what factors to take into account when choosing an anchor and cable. Also, the majority of jurisdictions require anchors on vessels in protected waters while WA does not.



Table 10. Anchors and cable currently required in WA

Vessel Type	Protected waters	Unprotected waters within 400 metres of shore	Unprotected waters beyond 400 metres of shore
Motorboats, sailboats, dinghies* (i.e. vessels not tabled below)	-	An efficient anchor and line.	
PWC (e.g. jet skis, power boards)	-	-	
Sailboards (wind surfers, kite boards)	-	As for motorboats	
Paddle craft [^]	-	-	

* These vessels include dinghies and tenders – powered or unpowered.

[^] Paddle craft include pedalled craft, canoes, kayaks, sit-on-tops, surf-skis and paddle boards. They do not include tenders or dinghies (powered or unpowered)

4.15 First aid kit

Vessels are by their nature and where they operate, hazardous places, increasing the likelihood that there might be injuries.

Currently in WA vessels are not required to carry a first aid kit, and no-one on a vessel needs to know how to administer first aid.

4.15.1 Statistics:

DoT has no statistics about the types of injuries and how they are initially treated on board recreational vessels.

4.15.2 Considerations:

Commercial operators are required to carry a first aid kit and for a person on board to be trained to administer first aid.

Away from the marine environment in WA, the Royal Automobile Club (RAC) recommends the carriage of first aid kits on holiday drives.

First aid kits are recommended in the RST Workbook.

Contents of a first aid kit can expire with time. Depending on stowage, a kit could last three to seven years.

4.15.3 Across Australia:

WA would be out of step with five of the six other jurisdictions were a first aid kit required. Only Tasmania requires a first aid kit to be on board a vessel although its contents are not specified.



4.16 Torch

Torches seem to be an obvious piece of equipment to carry on board a vessel at night, and could be very useful in a break down or if a vessel is forced to stay out overnight.

Currently in WA vessels are not required to carry a torch.

4.16.1 Statistics:

DoT has no statistics showing torches as having been responsible for saving lives in any incidents. Night rescues have been assisted by a lit, floating torch being thrown to people overboard.

4.16.2 Considerations:

While vessels are not currently required to carry torches, they are recommended in the RST Workbook and it is likely that most vessels carry torches.

Torches are essential at night for people to move about a vessel, to use safety equipment and can be used to attract attention in emergencies.

On decked vessels during daylight hours, a torch can be required underdeck to see seawater, electrical and fuel system controls or to check bilge water levels.

Signalling distress by SOS in Morse Code is still a signalling method specified in the International Regulations for Preventing Collisions at Sea 1972.

4.16.3 Across Australia:

WA is inconsistent with most other Australian jurisdictions in not requiring a torch.



4.17 Tracking device

If the skipper of a disabled or lost vessel can't activate the EPIRB, it is difficult to find the vessel. A tracking device can indicate where a vessel is at any time.

Currently in WA vessels are not required to have a tracking device.

4.17.1 Statistics:

No incidents in WA have been attributed to not having a tracking device. However, they're quite new and incident investigations would not have contemplated their use.

4.17.2 Considerations:

A tracking device is a device that transmits vessel location information to the shore. Alarm conditions might also be transmitted.

Tracking devices can be as regulated and formalised as Automatic Identification Systems (AIS) used on larger commercial vessels, or as simple as devices utilising the mobile telephone network.

An AIS is a VHF radio broadcasting system which enables AIS equipped vessels and shore-based stations to send and receive vessel information to help avoid collisions with other AIS-equipped vessels.

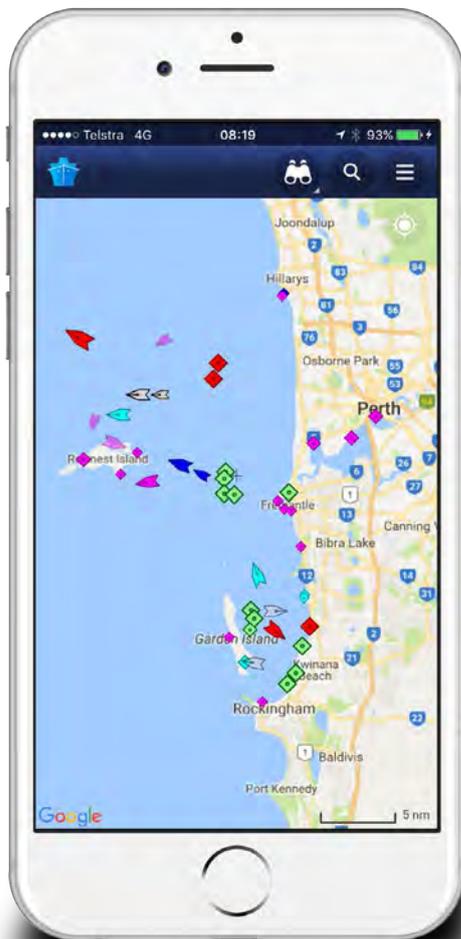
Other tracking devices on the market that are not regulated specifically for marine use as is AIS, can track and record the location of a vessel. The device has a SIM card and processes data such as GPS position. It can:

- send messages that include GPS positions to programmable addresses (mobile phone or email) at programmable time intervals; and,
- send alerts to those addresses when certain events occur. Some devices are fitted with a sensor that triggers an alert when a capsized is likely to have occurred.

The devices rely on the mobile network, but some can connect automatically to the Iridium satellite⁶ service when out of mobile network range.

4.17.3 Across Australia:

No Australian jurisdiction requires a tracking device and neither does the National Standard.



⁶ A constellation of satellites providing voice and data to satellite phones over the Earth's entire surface.

5. While we have your attention: loading limits

5.1 Capacity plate

A capacity plate is being considered, but no changes will be made to the Regulations as part of this review. Instead, your comment will help determine if the boating public support the introduction of loading limits in the future.

Currently in WA an information plate - the Australian Builders Plate (ABP) - is required at the point of first sale or first registration. The ABP specifies, among other things, the maximum recommended number of people that can be carried on a vessel.

5.1.1 Statistics:

Capsize is the second most frequent incident category. Where incidents involved deaths, capsize is again the second most frequent incident category. Capsize is not the only possible consequence of overloading.

Sinking, capsize, swamping and flooding collectively accounted for 28.4 per cent of all incidents.

5.1.2 Considerations:

Weight limits for stability are often also based on the reserve buoyancy of the vessel (the volume of the buoyant hull; not the fitted flotation). Carrying more weight than recorded on the ABP might not only compromise stability, but could also increase the probability of swamping or flooding resulting in sinking.

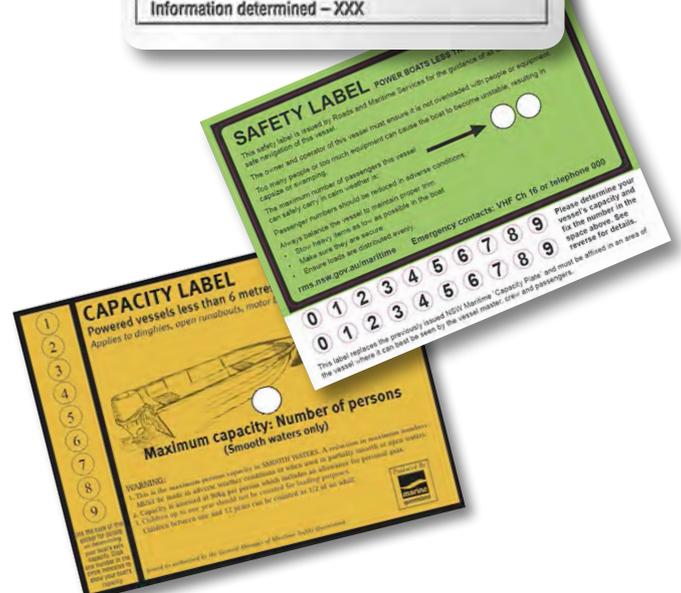
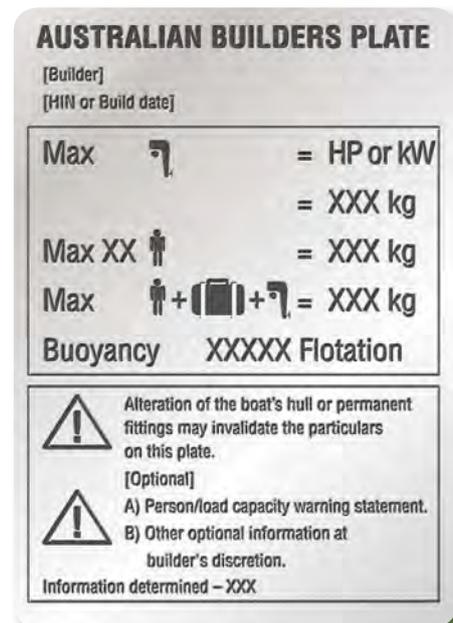
Complying with the maximum persons capacity could decrease the number of incidents of sinking, capsize, swamping and flooding.

The ABP is currently only for information at the point of first sale or first registration. Operators are not compelled to abide by the loading (or powering) limits indicated on the ABP.

Currently, there is no legal obligation placed on a person who, after registering their new vessel and modifying it in a way that affects the vessel's carrying capacity, to then correct the information on the ABP.

5.1.3 Across Australia:

If WA enforces loading limits, they need to be as consistent as possible with the loading limits currently applied in the other four jurisdictions that have them.



6. Terms used

The following terms and abbreviations have been used in this discussion paper:

Term / abbreviation	Meaning
AMSA	Australian Maritime Safety Authority
Decked vessel	A vessel fitted with a deck (or partial deck with protective deck structures) that excludes water from entering the inside of the vessel.
Dinghy	A vessel less than 6 metres in length, without either a solid structure above the vessel sides or a full deck (that is, most of the bilge is always visible).
DSC	Digital Selective Calling: Facility to enable activation of a single button that sends a distress call to all DSC enabled radios in range on VHF Channel 70. The call automatically includes: <ul style="list-style-type: none"> • caller identity; • caller position (if a GPS receiver is connected); and • the nature of the distress. The call will be automatically repeated until stopped by an acknowledgment message.
EPIRB	Emergency Position Indicating Radio Beacon
GPS	Global Positioning System
HF	High Frequency. Radio frequency band between 3 and 30 MHz.
L	Length (of a vessel, in metres)
Lifejacket	This term is used throughout this paper instead of life-jacket or life jacket, and means the same thing as a PFD.
National Standard	National Standard for Recreational Boat Safety Equipment – A non-binding safety equipment standard for recreational vessels published in 2004, presently the property of AMSA.
n miles	nautical mile (1.852 kilometres)
Open vessel	A vessel that is not a decked vessel.
Paddle craft	A canoe, kayak, surf ski, inflatable craft or any other similar craft propelled by paddle or otherwise by the movements of a person operating the craft, including paddle boards and craft propelled by pedalling, but does not include such a craft that is or may be propelled by mechanical power.

Term / abbreviation	Meaning
PFD	Personal Flotation Device
PLB	Personal Locator Beacon
PoB	Person Overboard
Protected Waters	In WA, protected waters means waters contained in any lake, river or estuary or by any breakwater, but does not include the waters of Cambridge Gulf or Lake Argyle
PWC	Personal Water Craft
RST	Recreational Skipper's Ticket
RST Workbook	Book containing everything you need to know for the theory and practical assessments for an RST. The workbook can be downloaded from: www.transport.wa.gov.au/mediaFiles/marine/MAC_P_RST_Workbook7.pdf
Safety Equipment (for the purpose of this paper)	Lifesaving appliances (survival craft and aids to buoyancy such as lifejackets) Distress signals such as EPIRBs, PLBs and flares Communications (radios and distress signal sheets) Navigation equipment (compasses and global positioning systems) Equipment to extinguish or control fire Miscellaneous equipment (first aid kit, lighting, paddles, bilge pumps, anchors)
Sailboard	Includes kite boards and windsurfers
Sheltered waters	In unprotected waters but close to a harbour or shore.
Unprotected waters	All waters that are not protected waters.
Vessel	Any craft used or capable of being used to transport persons or goods by water, however propelled or moved (Including dinghies, motorboats, sailing boats, PWCs, sailboards and paddle craft).
VHF	Very High Frequency. Radio frequency band between 30 and 300 MHz.
VMR	Volunteer Marine Rescue

Contact

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