2. Planning & preparation

The safety and success of any boating trip depends on the amount of planning and preparation before you leave, and it starts with choosing the right boat for your needs.

Marine and river conditions are harsh-salty water, vibration, sand, sun and rain combine to make life tough on the machinery. Regular maintenance by you and engine servicing by a qualified mechanic will help avoid an unsafe or disastrous experience, such as a breakdown at sea, or worse.

This chapter covers the minimum checks you should do before the season starts, and before and after each trip.

Choosing the right boat

Boats are designed and built for various purposes to suit different water conditions and loads. Before you use or obtain a boat, do your research, including talking to manufacturers, retailers and other boat operators.

The basic questions you should ask are:

What size boat do I need?

This depends on the number of people and the amount of equipment and provisions you intend to carry, as well as the water conditions you expect to experience.

What will I use the boat for?

Fishing? Cruising? Waterskiing? Sailing? The design, construction, stability, flotation and maintenance of the vessel will all factor in the safety and performance of your vessel.

What engine power do I need?

Boats have both minimum power needs and maximum power limits. Be careful not to overpower a boat—a bigger engine may be unsafe by unbalancing the boat and reducing the freeboard. Conversely, an under-powered vessel may reduce your vessel's capacity for safe operation—as well as reducing the enjoyment of your trip.

For more information on the above refer chapter 3, Safety on the water, loading for stability.

Before you take your boat on the water

A thorough pre-season check of both vessel and equipment is highly recommended for safer boating. The following steps are recommended as a minimum; however, it's also advisable to inspect many of these items before each trip.

For maintenance of personal watercraft (PWC), refer chapter 11, Special activities.

General vessel check

It's an offence to operate an unseaworthy vessel. As the operator, you may be directed by an authorised officer to take the vessel out of the water until the problems are fixed or, in more serious cases, the owner and/or operator may be fined or prosecuted.

When carrying out a vessel check it is recommended that you:

- Inspect vessel structure for corrosion, cracks, and general wear and tear
- Check for water and fuel leaks
- Test steering gear for stiffness and treat cables with correct lubricant
- Ensure the bung is suitable and in good condition
- Clear self-draining holes. Check drain flaps and grease if necessary
- Protect the hull and decks:
  - keep them clean and properly waxed
  - clean fibreglass with fresh water and a non-abrasive soap
  - if necessary, use a soft brush to help remove debris caught in crevices
  - patch any minor cracks, as well as gouges or chips in fibreglass gel coat, that may occur due to normal wear and tear
  - more serious cracks caused by vessel stress, age or accidents should be repaired by a qualified boat repairer
  - use a good metal wax to keep aluminium and stainless steel parts clean and polished; metals on boats can corrode quickly, especially near salt water
  - check all screws, bolts and other fittings.

Batteries

Flat batteries are a common cause of rescue call-outs. One recurring problem is that large boats require a lot of power to start and, if the battery is weak, a few starts will drain it.

Always use marine batteries, as they are designed for the environment; to reduce the risk of problems arising, keep your battery in the best possible condition.

- Check, charge and change your battery regularly
- Charge the battery to the appropriate or recommended level; never overcharge
- Secure the unit in brackets
- Ensure its location is ventilated and vented before starting the engine
- Keep terminals, cables and casing clean
- Grease terminals regularly
- Keep terminals and connections tightly secured
- Top up battery cells with distilled water and check each cell with a hydrometer
- To reduce the risk of explosion, turn off the power to the charger before disconnecting.

Keep your battery in good condition and check regularly

Bilges

- Test bilge pumps for effective operation and service as required
- Ensure bilges are clean and dry.

Electrical system

Exposure to salt water can corrode electrical systems—another common cause of marine equipment failure.

- Ensure frequent inspection and cleaning of all electrical systems
- Spray terminals and electrical connectors with a corrosion-retarding agent, such as CRC or WD-40
- Keep all fittings dry
- If navigation lights are fitted or a torch is carried, check they are working—even if you only plan to be out in daylight.

Engine care

It is recommended you have your engine fully serviced by an approved service agent; according to manufacturers recommended service intervals.

Before you use your motor, familiarise yourself with the manufacturer's manual—it should contain everything you need to know about your motor, as well as approved service agents, the availability of spares, and a troubleshooting section for minor faults. However, don't be tempted to tinker beyond what you can confidently do.

Periodically run and flush the motor, particularly after use in salt water; and also manually start it, if your engine allows this.

Fuel system

The following maintenance routine will help to prevent fuel defects, a common cause of engine problems.

- Clean the fuel tank with a suitable cleaning solvent at least once a year
- Drain fuel tanks if the vessel is not in use; always replace old fuel with new fuel if the boat has not been used for a while
- Inspect fuel lines, the manual priming bulb, shut-off valves, pumps and connections for cracks, corrosion, wear, hardening and leaks

- Check, clean and/or change filters frequently to prevent them clogging and ensure clean fuel is entering your engine
- Refer to the engine manufacturer's specifications on ethanol blended fuel.

LPG

If not handled correctly, LPG (liquefied petroleum gas) can be the most dangerous substance on boats. For safety, ensure that:

- installations and services are done by a licensed gas fitter
- cylinders are professionally and regularly inspected
- instructions for filling the tank are carefully followed.

For more information, contact the Office of the Technical Regulator (refer chapter 13).

LPG can be the most dangerous substance on boats

Gearbox oil

Water in the gearbox will eventually cause it to fail. Water in oil will give the oil a milky appearance. To avoid gearbox failure:

- change oil regularly
- check and refill gear case oil regularly
- check and service transmissions and lower units according to the manufacturer's recommendations.

Propellers

The bushing of a propeller can fail, especially if it has hit sand or rocks. Regular maintenance will help guard against this.

- Check steering
- Keep shafts and propellers clean and in good working order
- Check propeller nut and shear pin or split pin
- Check propeller shaft and remove caught fishing line or other materials that might affect the propeller's performance
- Carry a suitable spanner to undo the propeller nut
- Carry a spare propeller and shear pin / split pin/s if needed.

Spark plugs

- Clean spark plugs, check and adjust the gap or replace (replacement after 100 hours of use is recommended)
- Carry new spares—never keep old plugs as a standby for emergency use.

Water pump

- Replace impeller regularly, especially if you have been operating in the shallows and stirring sand. Water pump impellers also deteriorate if not used for long periods
- Make sure water is being discharged from the exhaust system—and from the tell-tale, where applicable— when the motor starts
- Regularly check for water leaks. It's helpful to have a water pressure gauge on motors of 50 horsepower (hp) and over.

Miscellaneous checks

- Keep the outer surface of your boat clean and touch up with paint as required
- Replace anodes as required
- Replenish your fresh water supply
- Keep ropes and lines in good condition and stored ready for use
- Test engine kill switches

- Test that hatches, windows and doors open easily
- Check ventilation
- Check hoses and carry spare
- Check any engine belts.

Mooring/berthing equipment

- Check the condition of lines for damage and wear
- Check cleats and bitts attached to the boat
- Check shackles, hard eyes and chain in the anchor cable
- Test washers and pads on bolts securing the cleats
- Check that shackles are 'moused' (wired) or otherwise prevented from undoing
- Store all rope out of the sun—hardness and roughness in feel and fading colour are signs of UV damage (untwist a section of the rope to reveal the original colour).

Safety equipment

- Inspect all safety equipment for deterioration or damage and expiry dates
- Inflatable lifejackets, should be regularly serviced in accordance with the manufacturer's instructions
- Refresh your knowledge of the use of the equipment
- Inspect anchor, shackles, chain and line for any sign of wear or corrosion, and replace if necessary
- Test bilge pump diaphragm for wear and tear
- If you have a marine radio, raise the antenna and aerials, and check it's working by making a test transmission to a volunteer marine rescue group (refer chapter 13)
- Check the expiry date on the flares and EPIRB
- Test your EPIRB battery and your waterproof torch.

(Refer also chapter 4, Safety equipment)

Spare parts and tools

An effective tool kit should include, at a minimum:

- an engine manual
- screwdrivers (Phillips and flathead)
- shifting spanner and pliers—long-nose pliers can be useful
- a set of open-end or ring spanners
- a suitable spanner or other tool to remove spark plugs
- de-watering spray, spare oil and a funnel or siphon hose for oil and fuel
- a roll of waterproof electrical tape
- starter cord
- a length of soft wire
- a wire brush
- a sharp knife
- spare items such as:
  - spark plugs and fuses (new)
  - batteries for torch and radio
  - 'O' rings for the fuel connector
  - bung
  - propeller nut and socket, washer and split pins
  - fuel line
  - 'D' shackle
  - key, on a lanyard or similar.

Recommended Boat Maintenance Schedule

	Pre-season	Mid-season	Post-season
Fuel Tank	• Avoid using old fuel • Keep clean and dry	• Maintain proper fuel/oil mix • Check for water in fuel	• Store in dry place (vented) • If metal, swish with 2-stroke oil
Fuel Line	• Check for cracking and loose fittings	• Watch for leaks	• Drain
Fuel Filter	• Check and replace as necessary	• Check and clean	• Check and clean
Fuel System (if you suspect an ethanol fuel blend has been used)	• Drain and clean out tank • Clean fuel lines • Change fuel filters • Have engine fuel system checked and serviced	• Do not leave ethanol fuel standing in any tanks • Check fuel filters • Monitor engine operating temperature	• Drain all ethanol-blended fuel from tanks, fuel lines and carburettors
Batteries	• Check electrolyte, top up with distilled water • Recharge, check mountings, clean terminals	• Check electrolyte, top up with distilled water • Recharge, check mountings, clean terminals	• Check electrolyte, top up with distilled water • Recharge regularly
Engine			• Store upright (outboard)
Pull Cord (if fitted)	• Replace if fraying		
Wiring	• Check for cracking, loose wire and corrosion		
Spark Plugs	• Clean and gap or replace	• Watch for fouling, moisture • Keep engine tuned • Clean and gap as necessary	
Cylinders	• Check for compression		
Moving Parts	• Lubricate all moving parts	• Lubricate every 60 days	• Lubricate before storing
Power Unit	• Drain and refill gear case oil	• Drain and refill gear case oil every 100 hours of operation or once a season.	
Cooling System	• Clean passages	• Check ports for weeds • Flush after use in salt water	• Flush with fresh water • Drain all water by pull-starting with plugs disconnected
Propeller	• Sand or file small nicks	• Check regularly	• Check for repairs
Outer Surface	• Clean • Replace anodes as appropriate	• Keep clean	• Keep clean, touch up with paint

Towing and launching your boat

This section covers the basic steps in getting your boat to the water using a boat ramp.

The brochure *You and your boat trailer*, has comprehensive information on trailers and towing refer to www.sa.gov.au

Towing safety

When towing your boat on a trailer, keep in mind that:

- your vehicle's steering and acceleration will be affected by the added weight
- you need a lot more room for overtaking and returning to your lane
- you need to be aware of smaller vehicles, such as motorbikes and bicycles.

Launching

Preparation at the launch site

- Inspect the ramp, check its:
  - general condition, including mooring cleats
  - gradient (slope) and width suits your vessel
  - depth of water
- Consider weather and tidal conditions
- Prepare your boat away from the ramp and ensure that:
  - the boat was not damaged on the trip
  - the straps and ties are undone
  - everything you need is on board
  - the bung is in and drain plugs are in place and tight
  - a handling line is attached to the bow and stern of the boat
  - the trailer winch is secure
  - the motor is tilted up, if it is stern drive or an outboard
  - the battery switch and, if fitted, the blower are on
  - the trailer wiring is disconnected

When launching your boat at a boat ramp you should wait your turn, boats coming out of the water take priority over those being launched. Give other operators a hand, if required and when you are ready, move towards the ramp at a gentle pace and ask someone to stand to one side of the ramp and direct you.

Unhooking the vessel

- Back the trailer into the water. Set the handbrake and lock the transmission.
- Slacken the trailer winch and, with the winch line still connected, push the boat slowly but firmly into the water.
- Make sure nobody stands behind the boat and trailer when winching your boat off or on to the trailer, in case the line breaks (use a line attached to the winch switch).
- Maintain a firm hold on the bow line, but remember it's dangerous to wrap it around your hand.
- Detach the trailer winch hook and line from the boat and wind the line back on to the winch.
- Don't step inside or on the trailer frame.
- Using the bow line, move the boat to one side, away from the launch position.
- Secure the boat to this holding position with the bow line and, if possible a stern line.
- Once you've launched, move your trailer out of the way so you don't hold other operators up.

To load, reverse the launching procedures.

When you return to shore

It pays to spend a few minutes on basic preventative maintenance each time your motor is used. You should take the following steps as a minimum after a trip.

- Flush your engine with fresh water as soon as possible after it has been in salty, silty or polluted water. This will minimise deposits that can clog cooling passages. Ask your dealer for a suitable flushing device and anti-corrosion flushing liquid, and follow the engine manufacturer's instructions.
- Remove the engine cover, check the connections and spray them with water dispersant.
- Wash down the engine with fresh water and dry off the exterior.
- Secure anchor shackles and pins with wire or cable ties.
- Stow synthetic ropes out of direct sunlight.
- Check the trailer's towing hitch and lights.
- Most importantly, make sure the trailer's wheel bearings are clean and well-greased.

Chapter 2. Self-check questions

1) When is it advisable to check your boat, its fittings and the engine?

A. Before each trip.

B. Before each boating season.

C. Both A and B.

2) If you have the room, what items apart from the required safety equipment are recommended to carry on board your vessel?

A. A tool kit, including spare parts.

B. An ice box for the fish.

C. Extra warm clothing.

D. Both A and C.

3) When launching your boat at a boat ramp, which of the following statements apply?

A. You should prepare your boat away from the ramp so you don't hold other boaties up.

B. General ramp conditions, tide and weather must be considered when launching.

C. Boats going out (launching) should give way to vessels coming in (retrieving).

D. All of the above.

3. Safety on the water

Having an enjoyable and safe day on the water goes well beyond avoiding an engine breakdown. There are lots of variables to consider and, as the boat operator, it's your responsibility to make sure things don't go sour.

This chapter outlines steps you can take to ensure a safe day on the water, including your duty of care; children aboard, stable loading, speed limits and the dangers of alcohol and drugs.

Let someone know

Before you go boating, always tell someone where you are going, your point of departure, when you plan to return and the number of passengers with you.

Provide them with a description or photo of your vessel including its registration number and, if it sits on a trailer, that registration number also.

Also, log your journey with a volunteer marine rescue group such as Australian Volunteer Coast Guard or South Australian Sea Rescue Squadron, but remember to log-off when you return to avoid an unnecessary search being launched.

Always let someone know

Your duty of care

As the vessel operator, you are responsible for the safety of the vessel and of your passengers.

This handbook lists the minimum safety equipment required. In deciding if you need more safety equipment, you should assess your vessel's - and your own - capabilities, the weather conditions, the area of operation, and the people who are coming on board.

Throughout the trip you should constantly:

- assess the weather forecast, including sea conditions, to decide if it is safe to continue
- ensure all hatches and doors are unlocked and clear of obstruction so that access is available in an emergency
- travel at a safe speed, particularly when visibility is reduced
- monitor your wellbeing and that of any passengers
- check your location/position by referring to charts, navigation markers and beacons (GPS can also be used as a guide, but it cannot be relied on solely)
- watch for potential emergencies or accidents
- observe other vessels nearby to determine right-of-way and to take evasive action if needed
- keep clear of larger vessels that cannot manoeuvre as quickly and easily as you
- follow navigation rules, including local area rules
- adjust the outboard leg trim to suit the direction of travel (generally, you trim the leg in—closer to the stern of the vessel—when heading into sea and out—away from the stern—when running with it)
- monitor the engine gauges
- ensure the vessel is not taking on water, and use your bailer or manual or electric pump if water does come on board
- assess and select safe anchorage sites
- ensure any rubbish is stowed and taken home for disposal.

Care of passengers

As the boat operator, you must be aware of your responsibility to your passengers at all times—and passengers must be prepared to follow your directions, especially in emergencies. In emergencies, always keep your passengers informed about what is going on.

For safety, at least one other person on board should have at least a basic understanding of how to operate the vessel and the safety equipment, including the radio.

Many injuries occur because people fall overboard while the boat is moving. To minimise this risk, ask your passengers:

- to keep to the centre of the boat for stability
- to sit in particular places for better trim and stability
- not to sit on the bow—unless your boat's bow is specifically designed for this—or to dangle legs in the water while the boat is moving.

When to wear a lifejacket

As the skipper, you are responsible for ensuring that passengers wear or put on a lifejacket according to the legislation.

A lifejacket must be of an appropriate size and properly adjusted for the person who is wearing or will be wearing the lifejacket.

New legislation relating to when a person must wear a lifejacket when boating in South Australia took effect in December 2017. It refers to vessel size as well as times of heightened risk during which a lifejacket must be worn on vessels up to 12 metres.

Times of heightened risk include the following:

- When operating alone
- Between the hours of sunset and sunrise
- When crossing a bar
- When operating in conditions of restricted visibility
- if the vessel is disabled so as to be incapable of making its way through the water
- When operating in an area subject to a gale, storm force, hurricane force or severe thunderstorm, severe weather warning from the Bureau of Meteorology

Refer also chapter 4, Safety equipment.

The operator is responsible for passengers safety

NOTE: Children less than 12 years of age, or weighing less than 40 kg **must not** wear an inflatable lifejacket.

CATEGORY OF WATERWAY AND VESSEL TYPE	LEVEL 100 OR ABOVE	LEVEL 50	LEVEL 50S
Children of or under 12 years of age when: • on vessels not more than 4.8 m fitted with engine when underway or anchored and • when in an open area of a vessel not less than 4.8 but not more than 12 metres when underway or at anchor			
PROTECTED WATERS – must wear		•	
SEMI PROTECTED WATERS – must wear	•		
UNPROTECTED WATERS –must wear	•		
Vessels not more than 4.8 metres fitted with engine when underway or anchored			
PROTECTED WATERS – all persons must wear (other than children -see above)	•	•	•
SEMI PROTECTED WATERS – must be equipped with level 100 or above for all persons, but all persons must wear level 100 or above, level 50 or level 50S (see requirements above for children)	•	•	•
UNPROTECTED WATERS – all must wear (see requirements above for children)	•		
Vessels not less than 4.8 metres but not more than 12 metres when underway or anchored			
PROTECTED WATERS – children of or under 12 years on an open deck must wear	•	•	
All other persons when on an open deck or at times of heighted risk must wear (see requirements above for children)	•	•	•
SEMI PROTECTED WATERS – must be equipped with level 100 for all persons	•		
All persons when on an open deck and at times of heightened risk must wear (see requirements above for children)	•	•	•
UNPROTECTED WATERS – must be equipped with level 100 for all persons, (see requirements above for children)	•		
All other persons when on an open deck and at times of heighted risk must wear	•		
Personal Watercraft			
PROTECTED WATERS – must wear		•	•
SEMI PROTECTED WATERS – must wear		•	•
UNPROTECTED WATERS – must wear		•	•

CATEGORY OF WATERWAY AND VESSEL TYPE	LEVEL 100 OR ABOVE	LEVEL 50	LEVEL 50S
Paddle board or surf ski			
PROTECTED WATERS – all must wear	•	•	•
SEMI PROTECTED WATERS – must wear when greater than 400 metres from shore	•	•	•
UNPROTECTED WATERS – all must wear	•	•	
Sailboards or kiteboards			
PROTECTED WATERS – must wear	•	•	•
SEMI PROTECTED WATERS – when less than 400 metres from shore must wear	•	•	•
SEMI PROTECTED WATERS – when greater than 400 metres from shore must wear	•		
UNPROTECTED WATERS – all must wear	•		
Surfboard			
PROTECTED WATERS –must wear	•	•	•
SEMI PROTECTED WATERS – no requirement to wear			
UNPROTECTED WATERS – no requirement to wear			
Canoe or kayak (including a motorised canoe or kayak)			
PROTECTED WATERS –must wear	•	•	•
SEMI PROTECTED WATERS – must wear	•	•	•
UNPROTECTED WATERS – must wear	•	•	
Rowboats			
PROTECTED WATERS – must be equipped with lifejacket for each person on board	•	•	•
SEMI PROTECTED WATERS – must be equipped with lifejacket for each person on board	•	•	•
UNPROTECTED WATERS – all must wear	•	•	
Dragon boats			
PROTECTED WATERS –must wear		•	•
SEMI PROTECTED WATERS – must wear	•	•	•
UNPROTECTED WATERS –must wear	•	•	
Small sailing dinghy or multi hull sailing craft less than 6 metres			
PROTECTED WATERS –must wear	•	•	•
SEMI PROTECTED WATERS – must wear	•	•	•
UNPROTECTED WATERS – must wear	•		

Boating with children

Many children love boating and other water activities. You can improve their confidence—and your peace of mind—by investing some time in training and education before you hit the water.

- Show children around the vessel—especially where lifejackets, the first aid kit and other equipment are kept.
- Teach them emergency procedures, particularly that if the boat capsizes everyone should stay with it or an easily seen floating object.
- Teach them about stability, getting on and off the boat, and distributing the load evenly.
- If they are old enough, show children how to use safety equipment such as the radio, EPIRB and flares.
- Before you take them boating, encourage children to learn to swim, and practise emergency positions in the water, such as treading water, HELP (heat escape lessening posture) and Huddle (refer chapter 9, Emergency action, First aid afloat, Hypothermia).
- Look at ways of rigging lifelines in open areas to give children enough handholds.
- Children should wear a lifejacket at all times when out on deck. Make sure it is well-fitting and suitable for their size, that they can't slip out of it, and that it is not too tight to move. Check that the type of lifejacket is appropriate for the nature of activity (refer chapter 4, Safety equipment, Standards and features). As a further check, make sure they can put on a lifejacket in darkness and while in the water.
- Though very small lifejackets are available, if you can't provide a correctly fitted lifejacket, the child shouldn't go out on the water.

Children of or under the age of 12 years must wear a lifejacket at all times when on deck

Speed limits

Travelling at a safe speed means that your vessel can be stopped in time to avoid a sudden danger. This depends on the circumstances and conditions at the time. It's up to you to keep a good lookout and continually assess your speed for safety.

Always drive slowly when visibility is low; that is, at night and in rain, fog, mist, smoke or glare.

Some SA waters have speed limits in areas where high-speed boats can be hazardous to other aquatic activities. These are often signposted near boat ramps. Make sure you know of any local restrictions, particularly if you plan to waterski or use a PWC (refer chapter 11, Special activities).

As well as local restrictions, the following general speed limits apply;

4 knots

- All vessels within 50 m of:
  - a person in the water;
  - a vessel or buoy displaying a blue and white flag—international flag A (refer chapter 7, Buoys, marks, beacons, signals & signs, Daymarks) indicating that there is a diver below; and
  - a person in or on a kayak, surfboard, sailboard or similar small unpowered recreational vessel.
- All vessels within marinas and other restricted areas.
- All vessels within 30 m of any other vessel (whether stationary or underway) that may be adversely affected by your wake or wash.
- All vessels within 100 m of a ferry crossing.
- All vessels within or passing through a mooring area or boat haven.
- All vessels within 30 m of a jetty, wharf or other place at which a boat is being launched or retrieved.
- All PWC operating within 200 m of the metropolitan shoreline (edge of water) between the Outer Harbor southern breakwater and the southern end of Sellicks Beach unless zoned otherwise; and the backwaters of the River Murray (excluding Lake Bonney at Barmera).

7 knots

Speed restrictions applied to specified areas, eg. sections of the Port Adelaide River. Refer to Schedule 10 of the Harbors and Navigation Regulations 2009 for details of these waters.

10 knots

The speed limit applied to vessels being operated by an unlicensed person under the direct supervision of a licensed person, or by a special permit holder without supervision. Unlicensed persons and special permit holders may not operate a PWC.

Loading for stability

Overloaded and unevenly-loaded vessels or vessels with unsecured loads are unstable and dangerous.
To be safe, your boat must have adequate freeboard for all possible weather conditions.

Ensure that the total load, including the passengers, is within the boat's specifications. If your boat is not fitted with a manufacturer's compliance plate or ABP, use the following tables to calculate the number of people your vessel can legally carry.

The maximum number of adults you can carry safely in calm conditions, based on an average weight of 90 kilograms (75 kg and 15 kg of personal gear), is shown on the tables where the length and width measurements of your boat intersect. Reduce this number when boating in the open sea, in rougher conditions, or when carrying extra weight (eg. diving gear).

Generally, children aged less than 12 can be counted as half an adult when working out safe capacity.

For a vessel longer than 10 m, or where length or breadth are not shown on the tables, use the appropriate formula below to calculate the maximum safe capacity in calm conditions.

For single-deck vessels (no flybridge):

Maximum capacity (nearest whole number) = 0.75L√ B

where **L** = length of vessel in metres, √ is the 'square root' symbol, and **B** = breadth (width) of vessel in metres.

Length (m)

Width (m)	3	3.5	4	4.5	5	5.5	6	7	8	9	10
1	2	3	3								
1.5	3	3	4	4	5	5	6				
2			4	5	5	**6**	6	7	8	10	11
2.5					6	7	7	8	9	11	12
3							8	9	10	12	13
3.5									11	13	14
4									12	14	15
4.5											16

Maximum safe capacity (adults) for conventional vessels without flybridges

Example: A vessel that is 5.5 m long and 2 m wide has a capacity of six adults.

For flybridge vessels:

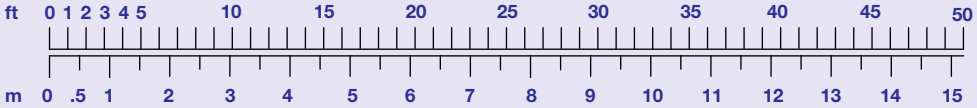
Maximum capacity (nearest whole number) = 0.6L√ B

where **L** = length of vessel in metres, √ is the 'square root' symbol, and **B** = breadth (width) of vessel in metres. (No more than one quarter of the maximum number of passengers allowed on board should be on the flybridge at one time.)

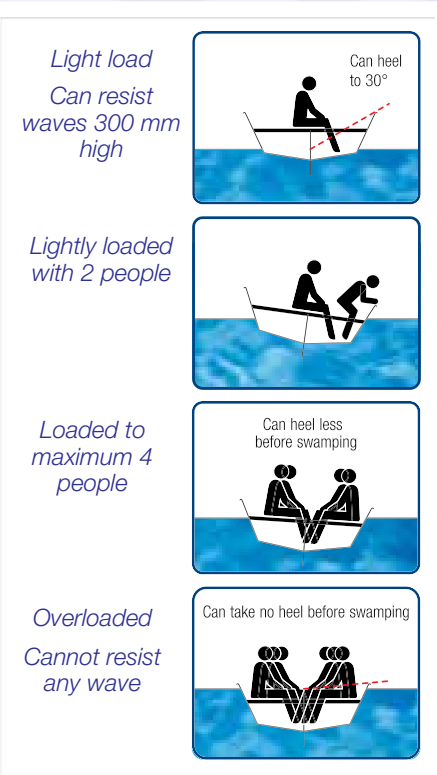
Width (m) \ Length (m)	4	3.5	5	5.5	6	7	8	9	10
1.5	3	3	4	4	4				
2	3	4	4	5	5	6	7	8	8
2.5			5	5	6	**7**	8	9	9
3					6	7	8	9	10
3.5							9	10	11
4								11	12
4.5									13

Maximum safe capacity (adults) for conventional vessels with flybridges

Example: A flybridge vessel that is 8 m long and 2.5 m wide has a capacity of eight adults.



Metric Conversion Chart (feet into metres)



Vessel stability example: Dinghy 1.5 m x 4 m

To load your vessel for stability:

- stow all gear securely
- stow heavy items low
- distribute items evenly, so they won't affect the trim
- don't allow gear to shift; restrain any loose gear with straps or ropes
- advise passengers that their movements may affect stability, especially in smaller boats.

Water in the vessel will increase the total load and cause the 'free surface effect', where free-moving water affects stability out of all proportion to its quantity. To avoid this effect, you should monitor the level of any water on board the vessel and regularly bail water out.

Australian Builders Plate (ABP)

The ABP has been introduced to inform purchasers of new recreational vessels as to the loading capacities for the vessel and states the maximum number of people allowed on a vessel, its maximum weight load capacity, and the engine's maximum power rating. This enables buyers to choose a boat which meets their needs.

For boats under six metres in length, the plate will also provide information on buoyancy performance.

For further information on ABP visit www.sa.gov.au.

Fuelling and fire prevention

Lack of maintenance, or inattention while refuelling, can cause damage to the environment and increase the risk of fire. Take the following maintenance steps to reduce fire risk.

The engine

- Check the fuel lines for cracks and splits.
- Ensure engine bays are ventilated to reduce the chance of fuel vapour build-up and possible explosion.
- If your engine runs on petrol, ensure it is properly grounded to reduce static electricity build-up, particularly on hot days.
- Lift the cover before the first start-up of the day to clear fume build-up.

The fuel system

- Don't fill the fuel tank to the brim—fuel expands as it warms up.
- Where practical, install an anti-surge valve in the fuel vent line to prevent fuel leaks.

Bilge/s

- Keep bilges clean.
- If bilge contains oil or fuel use polypropylene bilge socks to absorb any fuel or oil.
- Dispose of used bilge socks and waste oil facility at a waste oil station, or contact your local council.

Refuelling

Before refuelling

- Check that the dispensing point has appropriate fire-fighting appliances.
- Ensure all passengers and crew are above deck and clear of any areas where fumes may build up.
- Clear any blockages or obstructions from in or around refuelling equipment.
- Turn off pilot lights to gas appliances, and electric power at main switch.
- Close all hatches and openings to prevent fumes entering the hull and bilge.
- Turn off mobile phones.
- Place a discharge bucket under the air/ overflow pipe.

During refuelling

- Don't start the dispenser until the outlet nozzle is in the tank.
- Operate the fuel dispenser by hand—don't lock it open. Make sure the hose nozzle is connected to the filler neck to prevent static sparks.
- Carefully monitor the tank as it fills, using your hand to check for air escaping from the vent—a distinct increase in airflow is the signal to stop filling.
- Have a cloth handy to clean up any spills.

After refuelling

- Don't remove the filler hose until the fuel has stopped flowing.
- Lift the filler hose to drain all residual fuel into the tank.
- Check for any fuel which may have spilled into the bilges and clean up if necessary
- Leave boat wide open to ventilate and start the engine only once satisfied the boat is free of fumes.
- Allow the passengers aboard.

Refuelling on water

You should only refuel on water if there is no other option. Ideally, fill up at a service station, where any spills are easier to contain.

If you must refuel on water, take extreme care; use a funnel and hose from the fuel can to the fuel tank, and make sure the area is well ventilated, to safeguard against fire, fumes and toxic spills.

For what you should do if a spill or other incident occurs during on-water refuelling refer chapter 9. Emergency action.

Alcohol and drugs

Drugs or alcohol and boating do not mix. A vessel operator with a blood alcohol concentration (BAC) of .05 has double the risk of collision compared with an operator who has not been drinking alcohol.

In South Australia, it's an offence for vessel operators, waterskiers or ski observers to have a BAC of .05 or more or to be under the influence of drugs, and severe penalties apply. Marine Safety Officers and South Australia Police can conduct random breath tests for alcohol on waterways and at launch sites.

If a person aged over 10 years is admitted to hospital after a boating accident, a blood test for alcohol and other drugs is compulsory.

If you are on prescription drugs, read the label or ask your doctor or pharmacist if they will affect your ability to operate a vessel or participate in water activities such as waterskiing.

Drugs or alcohol and boating do not mix

Chapter 3. Self-check questions

1) Below what level must the maximum Blood Alcohol Concentration (BAC) be for a person to legally operate a recreational boat?

A. There is no limit.

B. Below 0.05.

C. Below 0.08.

2) In which of the following areas does a 4-knot speed limit apply in South Australian waters?

A. Within 100 m of a ferry crossing on the River Murray.

B. For Personal Water Craft (PWC), within 200 m of the metropolitan coast and in backwaters of the River Murray.

C. Within 50 m of a person in the water, or of a "Diver Below" flag.

D. All of the above.

3) At what maximum speed may an unlicensed person operate a recreational vessel (not a PWC) while under the direct supervision of a licence holder?

A. 20 knots.

B. 10 knots.

C. There is no speed limit.

4) When out on the water, which of the following would be considered "safe boating behaviour"?

A. Six friends and a cooler full of beer in a small dinghy.

B. Going boating in unfamiliar waters without telling anyone.

C. Monitoring weather changes as you go, and preparing to return to shore if the weather starts to turn bad.

D. Trusting your GPS alone for navigation.

4. Safety equipment

All vessels operating in South Australian waters are legally required to carry certain safety equipment, depending on the vessel's size and type, and where it is being used, for example in the open sea or in a river. For certain types of vessels and activities, it's also required that you wear a lifejacket at all times. Safety equipment must be in good working order readily accessible, and protected from the sea and weather.

In this chapter there are safety equipment checklists for all recreational vessel types and uses, and the required standards or features of the equipment.

What you need and where

As a ready reminder of the safety equipment you need on board, safety equipment stickers are available from DPTI by telephoning 1300 183 046.

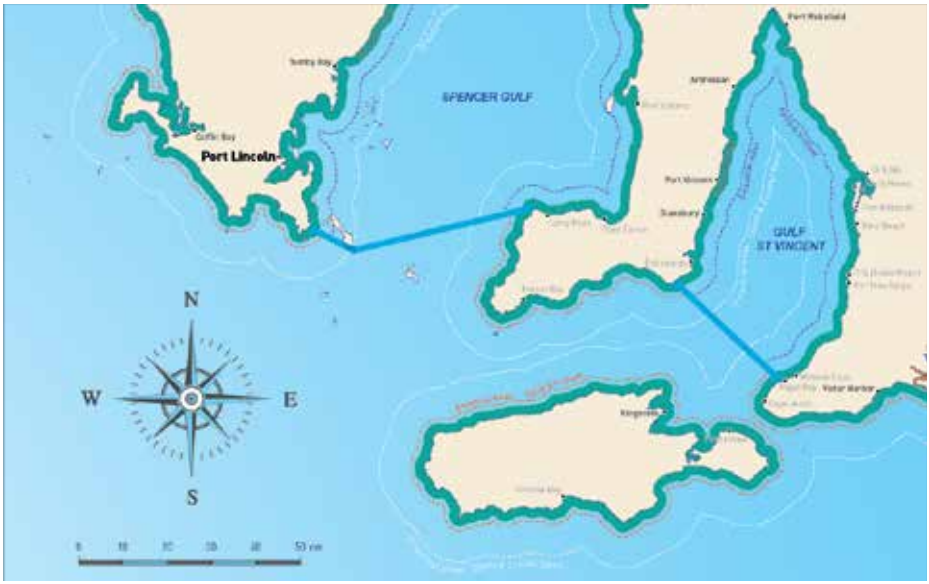
Categories of South Australian waters

Schedule 9 of the *Harbors and Navigation Regulations 2009* lists the minimum safety equipment that you're required to carry in South Australian waters; these waters are defined as being either protected, semi-protected or unprotected.

- Protected waters—all inland waters excluding Lake Albert and Lake Alexandrina and waters influenced by the tide.
- Semi-protected waters—waters inshore of a line 2 nautical miles to seaward of the low water mark of the coast of the mainland or Kangaroo Island, or the banks of Lakes Alexandrina and Albert. Tidal waterways such as the Port Adelaide River and the Coorong are classified as semi-protected waters.
- Unprotected waters—waters offshore of a line 2 nautical miles seaward of the low water mark of the coast of the mainland and Kangaroo Island, or the banks of Lakes Alexandrina and Albert.

The legislation also refers to the waters of Spencer Gulf and Gulf of St Vincent, which are defined as follows.

- Spencer Gulf—the waters north of a line drawn from Cape Catastrophe on Eyre Peninsula to Waterhouse Point on Thistle Island and then to Corny Point on Yorke Peninsula.
- Gulf of St Vincent—the waters north of a line drawn from Troubridge Point on Yorke Peninsula to Rapid Head on Fleurieu Peninsula.



Blue line indicates limit of gulf waters

Required safety equipment checklists

Required safety equipment	Protected Waters	Semi-protected Waters	Unprotected Waters
Vessels less than 8 metres long			
Approved lifejacket per person ^	✓	✓ Level 100 or above	✓ Level 100 or above
Bucket with line attached or bilge pump(s)	✓	✓	✓
Fire bucket	✓	✓	✓
One approved fire extinguisher (if engine fitted or cooking facilities on board)	✓	✓	✓
Anchor and cable	✓	✓	✓
Waterproof and buoyant torch	✓ if operating at night	✓	✓
Approved compass fitted to the vessel			✓
Four litres fresh water			✓
Two approved flares and smoke signals		✓	✓
Marine radio			✓
Paddles/oars (if your vessel is under six metres)	✓	✓ *	✓ *
Vessels 8 metres long and over			
Approved lifejacket per person ^	✓	✓ Level 100 or above	✓ Level 100 or above
Bucket with line attached and bilge pump(s)	✓	✓ two bailers	✓ two bailers
Fire bucket	✓	✓	✓
Two approved fire extinguishers (if engine fitted or cooking facilities on board)	✓	✓	✓
Anchor and cable	✓	✓ two #	✓ two
Waterproof and buoyant torch	✓ if operating at night	✓	✓
Approved compass fitted to the vessel			✓
Four litres fresh water			✓
Two approved flares and smoke signals		✓	✓
Marine radio			✓
Lifebuoy with line	✓	✓	✓
Additional equipment for all vessels regardless of length in prescribed unprotected waters i.e.: • **more than three nautical miles from shore**, except in inland waters, in Lakes Alexandrina and Albert; or • **more than five nautical miles from shore** in Gulf of St Vincent or Spencer Gulf			
EPIRB (Radio Distress Beacon)			✓
V sheet			✓
• **more than ten nautical miles from shore.**			
Two approved rocket parachute flares			✓
Chart of the area of water			✓
If your vessel is over 15 metres in length you are required to carry an extra lifebuoy with line and a life raft.			

* or another type of propulsion # If vessel is under 12 metres, second anchor can be carried as a spare
^ specific legislation applies to wearing of lifejackets – see table under When to wear a lifejacket Chapter 3 Safety on the Water

Variations from standard requirements

Certain types of vessels are either partially or totally exempt from the safety equipment requirements. Those vessels exempted must instead carry the following:

- Canoes, kayaks, rowboats, or similar small, unpowered vessels—in protected or semi-protected waters
  - a lifejacket, Level 100 or higher, 50 or 50S must be worn by each person on board, except when in a rowboat
  - one suitable bailer, unless the hull is permanently enclosed
  - if the vessel is being operated at night, a waterproof and buoyant torch or lantern.
- Canoes, kayaks, rowboats, or similar small, unpowered vessels—in unprotected waters:*
  - an approved lifejacket level 100 or above or level 50 with whistle attached, must be worn at all times by each person on board
  - one suitable bailer, unless the hull is permanently enclosed
  - if the vessel is being operated at night, a waterproof and buoyant torch or lantern
  - one spare paddle
  - V distress sheet
  - one tow line at least 15 m in length and strong enough for the vessel to be towed in any conditions
  - two hand-held red flares and two hand-held orange smoke signals
  - one approved compass fitted to the vessel
  - Approved navigation chart of the area of operation
  - one litre of fresh water
  - one EPIRB.
- Personal watercraft (PWC) - an approved lifejacket level 50 or 50S must be worn at all times.

A PWC may not be operated in unprotected waters.

- Sailboards or kite boards require:
  - within 400 m of shore – a lifejacket Level 100 or higher, 50 or 50S worn at all times
  - more than 400 m from shore – a lifejacket level 100 or higher, worn at all times.
- Surfboards or surf skis – in protected waters, an appropriate approved lifejacket, worn at all times.
- Surf rescue boats propelled by motor, when involved in rescue work within 1500 m of the shoreline or patrol work within 1000 m—pair of paddles or oars, or other means of auxiliary propulsion.
- Surf rescue boats propelled by paddles or oars—a bailer attached to the vessel by a lanyard.
- Tender vessels, while being used in conjunction with another vessel must carry:
  - one pair of paddles or oars, or other means of auxiliary propulsion
  - one bucket, bailer or bilge pump/s to drain each compartment
  - lifejackets must be worn in accordance with requirements for vessel size and area of operation – see table under When to wear a lifejacket Chapter 3 Safety on the Water.
- Waterskiers or people being towed by a vessel in any other way – an approved lifejacket Level 50 or 50S worn at all times.

* A canoe, kayak, rowboat or similar small, unpowered vessel operating in unprotected waters is exempted from carrying flares, smoke signals, compass, EPIRB or chart of the area, if the vessel is:

- with at least two other similar vessels, or a support vessel; and
- at least one of the accompanying vessels is equipped with all listed equipment; and
- the exempted vessel remains within 50 m of the fully-equipped vessel at all times.

Recommended equipment

Vessels longer than 6 metres, auxiliary power such as paddles, oars or a spare motor is strongly recommended.

Additionally every motorised vessel should be equipped or fitted with:

- a sounding signaling device (horn or whistle)
- a towing harness and rope
- an isolating switch
- emergency steering
- GPS (valuable to assist navigation, but do not rely on as the sole navigation tool. The units are electrical and batteries can go flat, while maps can be incomplete)
- first aid kit.

Standards and features

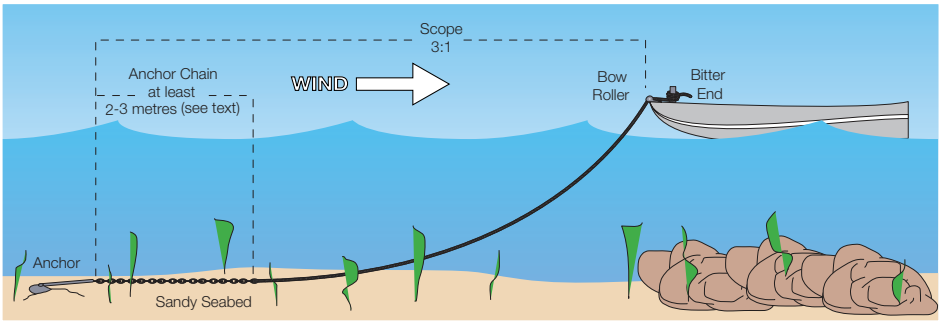
This section outlines the minimum standards and features your safety equipment requires to perform as you expect when needed.

Anchors

An anchor is a very important item of equipment and should be selected carefully.

Choose an anchor that will suit your circumstances and the area of operation. The most common types are:

- Danforth
  - recommended for small craft
  - small, light, easy to handle
  - excellent holding power, especially in sand, but may get caught on reefs.
- Coral quick release (CQR) or plough
  - suited to larger and heavier vessels
  - excellent holding power, but best suited to mud; may get caught on reefs.
- Grapnel
  - flexible prongs (suitable for anchoring on reefs)
  - suited to snag and rock conditions (for example, the River Murray)
  - though these anchors are fine in South Australia they may not be approved in all states; you should check with local authorities before going boating interstate.
- SARCA (sand and rock combination anchor)
  - superb holding power
  - multi-purpose—suited to mud, sand, gravel and rock bottoms
  - not suited to snags (for example, the River Murray).
- Sea anchor or drogue (not an approved anchor)
  - this may be anything that can be used for offshore boating to slow drift, eg. a large bucket trailing behind the vessel



The length of the anchor line is dependent on the depth of the water and the prevailing conditions.

  - keeps bow facing into wind and waves
  - a sea anchor or drogue will not hold your vessel fast, so if using a sea anchor you must also carry an approved type.

Consider the following points in selecting the line.

- Don't use a line that floats, such as polypropylene as it inhibits the anchors ability to dig in and is prone to being cut by other propellers
- Nylon and silver ropes have strength, stretching ability and resistance to abrasion, and don't easily float in water
- Nylon is stronger than silver rope
- The line must be resistant to chafing at the deck lead.
- For best performance, insert a length of chain between the anchor and line:
  - at least 2 m long, for nylon lines; or
  - at least 3 m long, for other lines
- All-chain lines are recommended for larger vessels, to increase holding power and absorb shock.

Charts and maps

Vessels operating more than 10 nautical miles from shore must carry a navigation chart or map of the waters they are navigating.

Navigation charts should:

- be suitable for navigation purposes
- be up-to-date
- help the operator plot a course or destination
- identify navigation features including the location of shipwrecks and other submerged hazards, depth of water, and the location of islands and hidden reefs
- show details such as navigation beacons and markers to harbours and channel entrances.

Note: GPS plotters while useful are not a substitute for a marine chart.

Distress flares

Flares are only used in emergencies to attract attention from passing vessels or aircraft, or to pinpoint your position to rescuers. They can't be re-used so use your marine radio or other distress signals first.

Ensure everyone on board knows where the flares are kept and how to use them.

In handling flares, it is important to:

- familiarise yourself with their operation (refer chapter 9, Emergency action)
- store them so they are accessible in an emergency
- keep them dry and stow them away from fuel and combustibles
- protect them from pounding in rough conditions, such as in speedboats.

Note: Flares have an expiry date of three years from date of manufacture and must not be kept beyond the expiry date.

It's an offence to misuse flares, or to activate a flare for 'practice'. Some volunteer marine rescue groups hold authorised demonstrations and these are recommended if you're unsure how to use your flares.

To dispose of expired flares contact Safework SA at www.safework@sa.gov.au for a list of disposal locations.

Emergency position indicating radio beacon (EPIRB)

An EPIRB is a buoyant, self-contained radio transmitter designed for marine use. When activated, continuously emits an alert signal for a minimum of 48 hours along with approximate location so that the search area can be identified and the rescue coordinated.

All recreational vessels operating more than three nautical miles from the shore or more than five nautical miles from the shore in Gulf St Vincent or Spencer Gulf must carry a 406 MHz EPIRB that complies with legal requirements. This does not apply to vessels navigating Lakes Alexandrina and/or Albert.

Once activated, the EPIRB's signal can be detected by both the international search and rescue satellite system, Cospas–Sarsat, and overflying aircraft. The Australian Maritime Safety Authority's (AMSA) Rescue Coordination Centre (RCC-Australia) in Canberra receives EPIRB signals detected, and acts on them immediately.

All 406 MHz beacons must be registered with AMSA and evidence of registration should be carried in the vessel. Each beacon carries a unique identifier and registration of the beacon provides emergency contact information which provides valuable information that can assist with a timely rescue. Registration is compulsory but is free of charge (refer chapter 13). There is no penalty for accidental activations however misuse of an EPIRB is an offence.

Standards

Your EPIRB must meet the Australian and New Zealand standard: AS/NZS 4280.1:2003 406 MHz Satellite distress beacons—Marine emergency position-indicating radio beacons (EPIRBs).

Personal locator beacons (PLBs) although they meet AS/NZS 4280.2 are not designed for marine use.

Your EPIRB should be tested regularly in accordance with the manufactures' instructions. Ensure the battery and registration are not past the expiry date.

EPIRBs should be mounted in an accessible position using the bracket supplied.

Fire extinguishers

Your fire extinguisher must comply with Australian Standard AS 1841 and be maintained in accordance with AS 1851 including 6 monthly servicing.

The minimum size of your fire extinguisher is related to the amount of flammable liquid you are carrying:

Amount of flammable liquid (litres)	Minimum fire extinguisher size (kg)
Not more than 115	0.9
More than 115 up to 350	2.0
More than 350 up to 695	4.5
More than 695	9.0

Note: you must have one extinguisher of the minimum size; for example, two x 1 kg extinguishers do not meet your needs if you're required to have a 2 kg extinguisher. If your vessel is of a size that requires more than 1 fire extinguisher each extinguisher must meet the minimum standard for the amount of fuel carried.

Ensure your fire extinguisher is:

- readily accessible and mounted on a suitable bracket
- suitable for the type(s) of fire that may occur on board your vessel (eg. wood or petrol)
- readily available to combat possible sources of fire (galley, engine compartment, or fuel storage)

Portable Fire Extinguisher Guide

Class & Type of Fire / Type of Extinguisher	Colours	A Wood, Paper, Plastic	B Flammable & Combustible Liquids	C Flammable Gases	D Combustible Metals	(E) Electrically Energised Equipment	F Cooking Oils and Fats	
Water		✓	✗	✗	✗	✗	✗	Dangerous if used on flammable liquid, energised electrical equipment and cooking oil/fat fires.
Carbon Dioxide (C02)		LIMITED	LIMITED	✗	✗	✓	✗	Not suitable for outdoor use or large class A fires.
Dry Chemical Powder (ABE/BE)		✓ AB(E) ✗ B(E)	✓	✓	✗	✓	✗ AB(E) ✓ B(E)	Look carefully at the extinguisher to determine if it is a BE or ABE unit.
Foam		✓	✓	✗	✗	✗	LIMITED	Dangerous if used on energised electrical equipment.
Wet Chemical		✓	✗	✗	✗	✗	✓	Dangerous if used on energised electrical equipment.
Fire Blanket		LIMITED	LIMITED	✗	✗	✗	✓	Fire Blankets effective for oil and fat fires within saucepans and are effective for extinguishing clothes that catch on fire. (Ensure you replace after every use).

Note: Image supplied by Fire and Safety Australia

Marine radio

A marine radio transceiver is specially designed for the marine environment. It allows you to keep up-to-date with weather information, monitor distress frequencies, contact other vessels nearby for help, and contact shore-based stations that can coordinate a rescue if needed.

If you are operating a vessel in unprotected waters, you must have a two-way marine radio that is capable of communicating with stations ashore.

There are three types of two-way marine transceivers:

- VHF
- MF/HF
- 27 MHz (commonly called '27 meg').

VHF and 27 MHz marine transceivers are relatively inexpensive and provide short-range communications. VHF is by far the more effective of these, as large ships are required to monitor the emergency channel 16. VHF offers a longer range and better quality transmission than 27MHz, with DPTI Coastal VHF network further improving coverage. However if you venture far offshore (i.e. more than about 30 nautical miles from shore) you will need to install an MF/HF marine transceiver.

The *Marine radio operator's handbook* provides information on correct operating procedures, maintenance of equipment and how to deal with minor faults at sea. The person operating the marine transceiver must hold an appropriate *Marine Radio Operator's Certificate* administered by the Australian Maritime College. (refer chapter 13).

MF/HF also requires an apparatus licence administered by the Australian Communications and Media Authority (ACMA) (refer chapter 13). Requirements may change from time to time, so you are advised to contact ACMA www.acma.gov.au for the latest requirements.

When buying a new MF/HF or VHF radio, it is advisable to select one that has Digital Selective Calling (DSC), which is Global Maritime Distress and Safety System (GMDSS) compatible.

DSC allows an automated distress message by the press of a switch to all other DSC radios within range, producing an alarm signal to gain their attention. If connected to a GPS, the DSC distress message will also include the vessel's position.

To make the most of DSC, the transceiver must be programmed with a unique nine-digit identification number, the Maritime Mobile Service Identity (MMSI), which uniquely identifies the vessel.

MMSI registration is free through AMSA. Further information on the HF radio communications system is also available from AMSA.

Use a VHF repeater channel or HF safety working frequencies 2524 or 4483 kHz in the first instance. Different repeater stations operate on different channels or frequencies, so familiarise yourself with the appropriate channels or frequencies for the area, through consulting with the local volunteer marine rescue organisation (refer chapter 13).

Doing this not only records your journey in the event you need help, but also gives you regular practice using your marine radio.

You can also do this by marine radio, using VHF channel 16, HF channels 2182, 4125, 6215, or 8291 kHz, and 27 MHz channel 27.88.

Note: HF channel 2182 kHz may only be monitored by some volunteer marine rescue stations, so use another of the listed frequencies if possible.

As these are both calling and distress channels, you will be directed to a 'working' channel once you have made contact.

Miscellaneous safety equipment standards

The minimum standards for other safety equipment are:

- A torch or lantern must be powered by internal batteries, waterproof and buoyant.
- An anchor must be:
  - appropriate to the vessel and its area of operation in both size and type (refer previous detail about anchor types)
  - attached to a length of chain or rope or both, appropriate in length and breaking strain to the vessel and waters in which the vessel is operating.
- A compass must be:
  - marked with cardinal points
  - one from which it is possible to determine, with reasonable accuracy, bearings and the vessel's heading
  - fitted to the vessel, not hand held.
- A bilge pump must be:
  - an appropriate type and pumping capacity for the vessel
  - fitted with a mesh strainer on the suction pipe
- A bailer must be:
  - suitable for bailing water without distorting or breaking when hauled over the side
  - attached to a lanyard.
- Paddles, oars or other means of auxiliary propulsion must be capable of propelling and manoeuvring the vessel.

Lifejackets

Lifejackets are also known as personal flotation devices (PFDs) and must comply with one or more approved standards.

Note: Australian Standard AS 4758.1:2015 incorporates all of the former approved Australian standards - AS 1512, AS 1499, AS 2259 and AS 2260. Some European, Canadian and New Zealand standards comply for details check the website at www.sa.gov.au/boatingmarine.

A person being towed by a vessel in any way must wear an approved lifejacket 50 or 50S at all times

Level 100, 150 or 275 (PFD Type 1)

- may be inflatable or non inflatable
- minimum required for semi protected and unprotected waters (not PWC)
- designed to promote "face up" floating position

Level 50 (PFD Type 2)

- less buoyancy than Level 100
- commonly used for canoeing or kayaking
- suitable for protected waters
- may be used for waker ski, PWC and special activities in semi proected water (see chapter 4 'Safety Equipment').

50S (PFD Type 3)

- similar to Level 50 but may have features for specific activities and in a wide range of colours.

SOLAS lifejacket

A very bulky lifejacket, with a light and whistle attached, that is designed to keep the body afloat for long periods. Carried by commercial vessels and recommended for use on larger vessels operating long distances offshore.

Coastal lifejacket

Has more flotation than a Level 100. Has a

whistle attached. Recommended for use on larger vessels operating long distances offshore.

Tide times

Some waterways, as well as boat ramps and other launching facilities, can only be safely used in certain conditions, so it's important to check the high and low tide times before you go boating.

Chart datum is the lowest predictable level of a tide and the common level from which all depths are measured. All soundings on a navigation chart are referenced to chart datum. To calculate the total depth of water, you must add the depth on the navigation chart to the tide height at that time.

Access to some boat ramps is restricted at low tide, so keep an eye on the time and leave a comfortable margin in case the ramp is busy.

Tide tables for South Australian ports contains tides for the main South Australian ports. In other locations, use the tide time and height ratios provided to determine the tide times. The book is not mandatory equipment, but it is wise to keep a copy on board—it could prevent you running aground.

Tide tables for South Australian ports can be purchased from Service SA customer service centres (refer chapter 13), most marine dealers, tackle shops or newsagents.

Chapter 4. Self-check questions

1) In which of the following occasions would you activate your EPIRB to attract attention?

A. When your vessel is threatened by grave and imminent danger, and only after trying other reasonable distress options available, such as flares and marine radio.

B. When you've run out of fuel and can't see any other boats nearby.

C. When a person on board has suffered a broken foot and you wish to notify authorities of the injury.

2) You need to choose an anchor for a boating trip; which of the following factors should you consider when making your choice?

A. The area you will be operating in, including the sea or river bed conditions.

B. The size of the boat.

C. Whether the anchor is an approved type.

D. All of the above.

3) When must a fire bucket be carried on board most recreational vessels?

A. Only in unprotected waters.

B. Only when carrying extra spare fuel.

C. At all times.

5. Weather & other potential hazards

It's very important to know about likely weather and sea conditions before you start a boating trip. Keep an eye and ear on the weather and if in doubt, don't go out.

Once on the water, always keep watch for signs of approaching bad weather—strong wind, cloud build-up, storms or squalls. The wind can quickly stir up high waves, making conditions even more challenging. This chapter outlines how to keep informed about weather and other changing conditions at all times.

Before you go out

When assessing weather conditions for a boat trip, be aware of your boat's safe operating limits and your capabilities. For example, if you have a small vessel you should consider postponing the trip if the forecast is for wind speeds of 15 knots or more and seas of more than a metre.

Learn how to read a weather map and always check the latest forecast. Don't rely on maps published in morning newspapers for the latest information as they are produced many hours before you will see them, and conditions may have changed since. Keep an eye on your local conditions, which may be different from the general forecast.

The Bureau of Meteorology (BOM) offers a range of up-to-date weather information services, through its website, phone or by radio broadcasts (refer chapter 13).

Weather reports via HF radio

BOM's HF radio network includes transmitters at Charleville in Queensland (call sign VMC) and Wiluna in Western Australia (call sign VMW). Both stations cover central and southern Australia and issue forecasts and warnings around the clock.

Weather reports via VHF radio

The Australian Volunteer Coast Guard broadcasts daily weather forecasts for South Australian waters. Contact your nearest base on the emergency channel (Channel 16) and they will advise you what channel their weather updates are broadcast on.

On the water

Avoid the potential for dangerous situations by:

- keeping your eye on the sky and the water—wind shifts, increases in swell, or cloud build-up may indicate bad weather
- listening to weather reports on public or marine radio
- knowing the local influences on water conditions
- knowing where to reach shelter quickly
- being prepared to change your plans if necessary—but tell someone if you do change plans.

Ocean bars

Coastal bars can occur anywhere and form quickly in areas that were previously free of bars. Bars are dangerous because:

- the conditions can cause steep and often breaking seas
- the conditions change quickly and without warning, once started, you are committed to crossing—trying to turn is too risky.

If you are likely to operate in an area where bar crossing is necessary to reach the open sea, ensure that you become familiar with the risks and safe practices associated with bar crossings and seek advice on the local conditions.

It is helpful to observe other boats navigating a bar crossing before attempting to do so yourself.

If you'd like to learn more, contact your local Volunteer Marine Rescue or other organisations that run boating safety courses.

Squalls

Sudden squalls are not easy to predict, so regularly check the horizon for rapidly darkening and lowering clouds or whitecap waves. Squalls don't usually last long and often precede a change in wind direction.

If you get caught in a sudden squall:

- head for the shore or the protected side of an island, if you are close
- if not, head into the wind and waves at a steady speed
- don't let the vessel drift side on to the wind and waves (it may take on water and capsize)
- without power or anchor in use, drag a sea anchor from the bow to keep the boat pointing towards the waves (for example, a sturdy bucket or oar on a rope).

Thunderstorms

Thunderstorms are a serious hazard for boats. They are indicated by heavy tall masses of clouds called cumulonimbus that produce strong, gusty winds blowing out from the storm front.

Observe which direction the cumulonimbus cloud is moving (clouds often move in different directions from surface wind) and head for shore if it is going to pass over or within a few kilometres of you.

Waves

Waves are a major cause of accidents and drownings, on both inland and coastal waters. The stronger the wind and the longer the 'fetch'—length of water over which the wind blows—the bigger the waves. Waves also are influenced by local conditions, such as tides and currents.

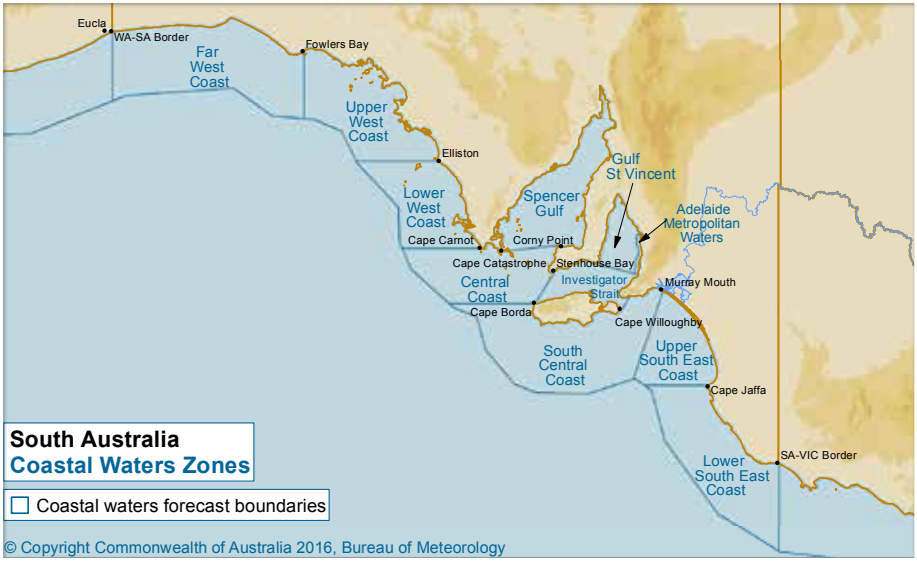
A forecast of 'seas to 2 metres' refers to the average wave height of the highest one third of waves: the largest waves may be up to twice that size. The larger forecast waves will only occur where the fetch is longest.

Wind warnings

The table shows the wind speed of the various warnings issued by the BOM.

Average wind speed (knots)

Strong wind warning	**25-33 knots** **45-60 km per hour**
Gale warning	**34-47 knots** **61-85 km per hour**
Storm warning	**48 and more** **86 km per hour or more** **Wind gusts up to 40%** **above the mean speed**



Chapter 5. Self-check questions

1) Before you go boating, which is the best weather forecast to take note of, and why?

A. The Bureau of Meteorology, either online or by phone because they will have the most up-to-date information.

B. Last night's TV news, because the maps show how the weather patterns are expected to move during the next day.

C. The morning newspaper, because it is printed and you can take it with you.

2) Which of the following may be a sign of bad weather?

A. Cumulonimbus cloud build up.

B. Increased height of swell and sea waves

C. Sudden increases in wind gusts.

D. All of the above.

6. Navigation

The navigation rules of the sea are as important to your boating safety as road rules are to your driving safety. If you're going to operate a boat, you need to know the rules.

In this chapter are the rules that are used by boaties the world over.

It also covers guidelines for navigating in low visibility and the responsibilities of sharing the sea with big ships.

Give way rules at a glance

Give way to the right and stay to the right.

Port

If a power-driven vessel approaches on your port (left) side, you have right-of-way.

Maintain your speed and course, with caution. If it becomes obvious that the other vessel is not going to give way, then you should take the necessary steps to avoid a collision. Unless there's no alternative, don't turn to port to avoid a collision if you have right-of-way; that's the most likely direction the other vessel will turn and you might cause a collision in trying to avoid one.

Starboard

If a power-driven vessel approaches on your starboard (right) side, they have right-of-way. Stop, slow down or change course to keep out of their way. Change course to pass behind the other vessel.

Stern

If any vessel approaches your stern, it is courteous to maintain your speed and course to allow the other vessel to overtake you safely. This does not however remove the overtaking vessels obligation to stay clear.

The international rules

This section outlines the rules that are recognised worldwide for safe navigation.

Most collisions between vessels are a result of carelessness. To be a good skipper you need to:

- observe and follow the rules
- maintain a proper lookout
- travel at a safe speed
- know the limits of your vessel
- be aware of potential hazards
- allow for the actions of others, both reasonable and unreasonable.

There are significant penalties if you fail to observe the navigation rules. It's also an offence to cause real or potential danger through reckless or negligent behaviour, and to cause nuisance or undue annoyance to other water users.

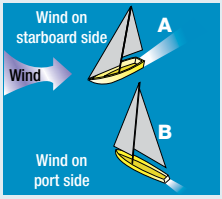
Be aware that navigation rules in a particular location can change, either permanently or temporarily. Notices to Mariners are issued to advise and warn of changed conditions, including restrictions placed on some or all boating activities in an area for a limited time. This could include community, sporting events, fireworks displays or other temporary water traffic restrictions.

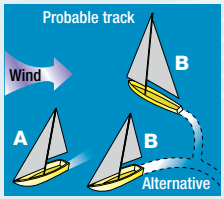
DPTI also publicises legislative and other changes at www.sa.gov.au and through On Deck. You should also regularly check the *Harbors and Navigation Act 1993* and associated regulations (refer chapter 13).

Vessels approaching one another

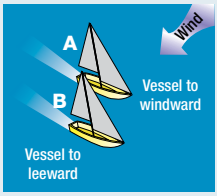
Two sailing vessels

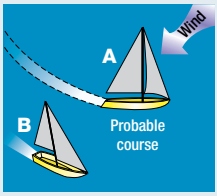
When each has the wind on a different side, the vessel that has the wind on their port side (B) shall keep out of the way of the other (A).



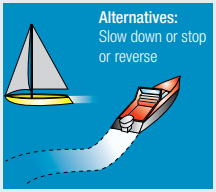


When each has the wind on the same side, the vessel that is to windward (A) shall keep out of the way of the vessel that is leeward (B).





When a sailing vessel with the wind on its port side encounters another sailing vessel to windward and cannot be certain whether that sailing vessel has the wind on its port or its starboard, it shall keep out of the way of that other sailing vessel.



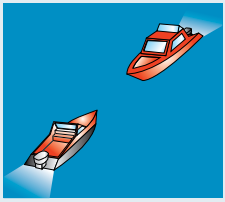
Power-driven and sailing vessels

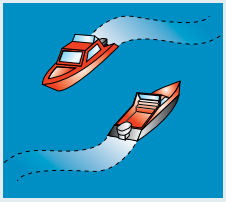
Power-driven vessels normally give way to sail; however, in harbours and channels and other areas where a larger vessel may be restricted in its movement, small sailing vessels must give way to large power-driven vessels that cannot easily manoeuvre.

Sailing vessels in a marked channel are required to operate on the starboard side of the channel; you can use more of the channel on the tack, provided it's safe to do so and you won't impede the passage of other vessels in the channel.

Power-driven vessels meeting head-on

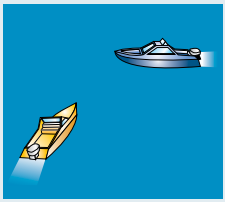
Power-driven vessels meeting another vessel head-on or nearly head-on must each alter course to starboard so that the vessels will pass on each other's port side, as they would in a channel or river.

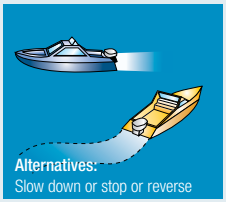




Power-driven vessels crossing

When two power-driven vessels are crossing, the vessel with the other on its starboard side (the 'give way' vessel) must keep out of the way and avoid crossing ahead of the other vessel, by stopping, slowing down or changing course.

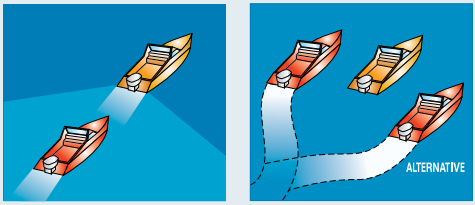




The other vessel (the 'right-of-way' or 'stand on' vessel) must maintain its course and speed unless it appears that the 'give way' vessel is not taking appropriate action.

Overtaking

Any vessel overtaking another, whether sail or power, must keep out of the way of the vessel being overtaken. That is, if a vessel is coming up on another vessel from any direction which is more than 22.5 degrees (in the shaded arc of the diagram) abaft that vessels beam (i.e. from generally behind so that if it were night you would only see the stern light and not the sidelights) it is considered to be the overtaking vessel until finally past and clear. You may overtake on either side only when it is safe, keeping well clear of the other vessel.



If in doubt, assume that you are the overtaking vessel and keep clear. If the other vessel alters course however, you still have a responsibility to keep clear.

If you are approaching or about to overtake a vessel that is engaged in waterskiing or otherwise towing people behind it, you must maintain a distance of 100 m directly behind the skier/s.

Giving way and right-of-way

The vessel giving way shall:

- take early and positive avoiding action
- make course/speed alterations obvious to the other vessel
- avoid crossing ahead of the vessel with right-of-way (stand on vessel)
- if necessary, stop or reverse.

The vessel with the right-of-way shall:

- keep its course and speed
- if insufficient action is being taken to avoid collision, give a series of five or more short and rapid blasts on a whistle or horn
- take avoiding action only if that taken by the giving way vessel is insufficient.

If a power-driven vessel is taking action to avoid a collision with another power-driven vessel, it must, if possible, avoid altering course to port.

Responsibilities between vessels

Recreational vessels must keep clear of fishing vessels with nets, lines, trawls or other gear set that restrict manoeuvrability. A professional fishing vessel is required to indicate its activity by displaying two black cones (points together), similar to a West Cardinal Mark (refer chapter 7, Buoys, marks, beacons, signals & signs) during the day and either of two light combinations at night:

- a red light over a white light; or
- a green light over a white light.

A vessel under power gives way to a vessel:

- not under command
- unable to manoeuvre easily, including large vessels navigating in or near a channel or fairway
- engaged in fishing, as per above
- under sail (for exceptions, refer below).

A sailing vessel must keep clear of a vessel:

- not under command
- unable to manoeuvre easily
- engaged in fishing, as per above.

Navigating in fairways and channels

Recreational vessel operators should take care and use common sense in channels and fairways, particularly in allowing unrestricted passage to larger ships.

All vessels in narrow channels must keep as far as practicable to the starboard side of the channel in the direction of travel.

A vessel engaged in fishing must not impede the passage of any other vessel navigating within a narrow channel or fairway.

Only cross a channel or fairway when safe to do so. Do not impede the passage of a vessel which can safely navigate only within a channel. Always try to cross a channel at the shortest possible distance.

A sailing vessel, or a vessel under 20m long, must not impede the passage of any vessel that can safely navigate only within a narrow channel or fairway.

Vessels required to give way in a channel must still observe general rules and keep to the starboard side of the channel.

Anchoring restrictions

As with parking a car, you're not allowed to just anchor wherever you like. It's an international law—not just South Australian—that vessels are not allowed to anchor in a channel, as this can restrict the movements of other vessels including large ships.

Under the *Harbors and Navigation Regulations 2009*, anchoring is also prohibited in certain areas of the Port Adelaide River, Spencer Gulf and Backstairs Passage.

Anchoring in a channel is prohibited

Interacting with big ships

It can be highly dangerous for recreational vessels to be near large ships and tugs. Their size, the power of their engines, limited visibility from the bridge and inability to change course quickly can put small vessels at risk and change normal sea conditions.

In most cases, large ships have right-of-way. Large ships or tugs:

- often cannot see small craft from their bridge
- have limited radar ability to detect small craft
- can travel at deceptively high speeds (more than 20 knots)
- cause 'prop' or 'wheel' wash—a strong underwater current up to hundreds of metres behind them
- cause 'bow waves' that can swamp small craft hundreds of metres away
- cannot alter course or stop quickly
- have powerful engines and thrusters that can pull a smaller vessel in
- may be towing a barge or another object on a long submerged line.

To be safe, recreational vessels should avoid large ships, even when they are moored. Vessels under sail, including windsurfers, should be aware that large ships can 'steal your wind', making it very difficult to manoeuvre.

As a general rule, you should:

- only cross channels when safe to do so and at the shortest distance
- use safe anchorages—it's illegal and dangerous to anchor in channels and tie up to navigation aids such as buoys and channel marks
- display the correct navigation lights at night to identify your vessel type and activity
- watch for ship lighting—if you see both red and green sidelights, you're dead ahead
- keep clear of large vessels
- avoid shipping activity around wharves
- avoid moored vessels
- not rely on hearing large ships at night
- not assume you have been seen.

Ships, tugboats and port control use VHF radio to communicate (channels 6, 8 and 12). If you are unsure of your situation, contact them. Within port limits, as with most other areas, emergency communication is on VHF channel 16.

For further information, refer www.sa.gov.au/boatingmarine

Flinders Ports also publishes the Port user guide, which details operating guidelines, facilities and services at South Australian ports (refer chapter 13).

Keep clear of large vessels

Navigating in restricted visibility or at times of heightened risk

You must be particularly careful when boating at times of heightened risk such as boating at night or at times of low visibility – it's harder to judge speed and distances and not all dangers are lit.

When on the water at night or in low visibility:

- keep a constant watch (look and listen) for hazards and other vessels
- if possible, travel with another vessel or vessels
- be aware that bright shore lights can obscure the lights of other vessels, buoys and marks
- when underway, correctly show the specified navigation lights and make sure you know what different light combinations on other vessels mean (refer chapter 7, Buoys, marks, beacons, signals & signs)
- ensure that any other lights on board don't interfere with your navigation lights
- travel at a slow speed to increase your safety margin
- ensure all crew and passengers wear a lifejacket if on an open area of a boat that is not more than 12 metres
- familiarise yourself with navigation hazards, lit and unlit—their position can occasionally change
- use spotlights and torches to assist, but be careful not to dazzle others on the water
- carry spare light bulbs and torch batteries.

If you hear another vessel's sound signal ahead, proceed with caution until the danger of collision is over or stop until you are fully aware of the danger.

Times of heightened risk include the following:

- When operating alone
- Between the hours of sunset and sunrise
- When crossing a bar
- When operating in conditions of restricted visibility
- if the vessel is disabled so as to be incapable of making its way through the water
- When operating in an area subject to a gale, storm force, hurricane force or severe thunderstorm, severe weather warning from the Bureau of Meteorology

Chapter 6. Self-check questions

1) On which side of a river or channel must vessels operate?

A. Only on the starboard (right) side.

B. Only on the port (left) side.

C. On any convenient side.

2) If you are overtaking another vessel, on which side can you pass?

A. Only on the starboard (right) side.

B. Only on the port (left) side.

C. On either side, but keep well clear of the other vessel.

3) If a vessel approaches you on your starboard side so that a 'give way' situation exists, what must you do?

A. Keep going—you have right-of-way; maintain speed and course, unless a collision appears likely.

B. Give way; stop, slow down or change course to keep out of the way of the other vessel.

C. Alter course to port (left).

4) If another small motorised vessel approaches you on your port side so that a 'give way' situation exists, what must you do?

A. Keep going—you have right-of-way; maintain speed and course, unless a collision appears likely.

B. Give way; stop, slow down or change course to keep out of the way of the other vessel.

C. Alter course to port (left).

5) Why should you avoid large ships in a harbour or narrow channel?

A. They often can't see smaller craft ahead or to the side of them.

B. They can create a potentially dangerous bow wave.

C. They can't easily manoeuvre to avoid a collision.

D. All of the above.

6) If another vessel approaches you head-on while you're underway, what must you do to avoid collision?

A. Alter course to port (left) so the other vessel will pass on your starboard (right) side.

B. Alter course to starboard (right) so the other vessel will pass on your port (left) side.

C. Slow down and wait for the other boat to pass.

7) When is it permissible to anchor a vessel in a marked channel or fairway?

A. Anytime as long as the vessel displays navigation lights.

B. Anchoring in a channel is not permitted at any time except in an emergency.

C. If you vessel is exceeds 6 metres.

7. Buoys, marks, beacons, signals & signs

Buoys and marks are like marine traffic signals, and they have particular meanings—warning of dangers, directing you to deep water and keeping you on the correct side of a channel. This chapter covers the IALA (International Association of Lighthouse Authorities) buoyage system 'A', which combines visual aids during the day and light signals at night.

The chapter also outlines the signals used on vessels to communicate to each other and shore, their activity such as fishing, and status such as at anchor or aground. These signs and signals include daymarks, navigation lights, and sound and light signals, as well as a range of radio emergency calls.

Flags to watch for

Surf-lifesaving patrol zone flag

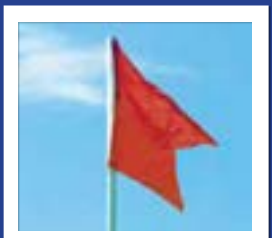
Surf-lifesaving patrol zone flag

The red and yellow flag is a familiar sight along Australian beaches, designating areas that are supervised or patrolled by surf-lifesavers. Because of the likely higher numbers of people in these waters, all vessels, including PWC and sailing craft, should avoid approaching within 200 m of shore within the flagged zone. You should also take care when operating craft adjacent to the flagged areas.

Marine signal flags are recognised throughout the world.

International flag A

International flag A indicates 'Diver below'; keep well clear. In South Australia this means you must not exceed a speed of 4 knots within 50 m of a vessel or buoy displaying this flag.



International flag B

International flag B indicates dangerous cargo—keep well clear.

International flag H

International flag H indicates there is a pilot on board directing the vessel into or out of port.

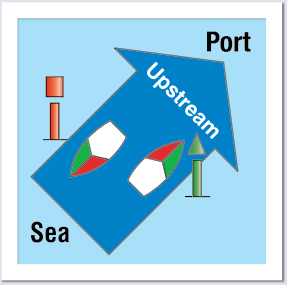
Buoyage and navigation marks

Direction of buoyage

On **entering** a port or harbour, or travelling upstream in a river or channel, you should pass the port (red) mark on your port (left) side and the starboard (green) mark on your starboard (right) side.

On **leaving** a port or harbour, or travelling downstream in a river or channel, you should pass the port (red) mark on your starboard (right) side and the starboard (green) mark on your port (left) side.

A simple rhyme that references navigation lights on your vessel and may to help you remember is: "*Green to green when going upstream; green to red when seas are ahead.*"



The buoyage system

The IALA (International Association of Lighthouse Authorities) buoyage system 'A' is used for marine aids to navigation in South Australian waters.

The system uses marks that may be buoys, piles or beacons. They are distinguished by their specific colour and shape and, usually, a topmark. At night, they can be recognised by the different colours and patterns of their flashing lights. The shape of a mark can also be used to distinguish its type in poor visibility.

A marker may consist of one or more of the characteristics described in this section. For example, a marker may be colour coded, but without a topmark due to damage.

It's an offence to interfere with a navigation aid in any way, including mooring to them.

The following table shows the types of light rhythm used in the IALA 'A' system. Use these lights to identify your position and necessary course when boating at night.

IALA 'A' light rhythms		
Rhythm	Description	Navigation chart abbr.
Flash	Duration of light shorter than duration of darkness	**Fl**
Occulting	Duration of light longer than duration of darkness	**Oc**
Isophase	Equal duration of light and darkness	**Iso**
Quick flash	Flash rate of 60 or 50 a minute	**Q**
Very quick flash	Flash rate of 120 or 100 a minute	**VQ**
Long flash	A flash of not less than 2 seconds	**LFl**
Group flash	A group of two or more flashes	**Fl(2) or VQ(9)**

Note: when the mark's light is not white, the colour is indicated in your chart abbreviation by either: Y (for yellow); R (red); or G (green). For example, a yellow light that flashes four times every ten seconds would be shown as Fl(4)Y10s.

The IALA buoyage system 'A' consists of five types of marks.

- Lateral
- Cardinal
- Isolated danger
- Safe water
- Special

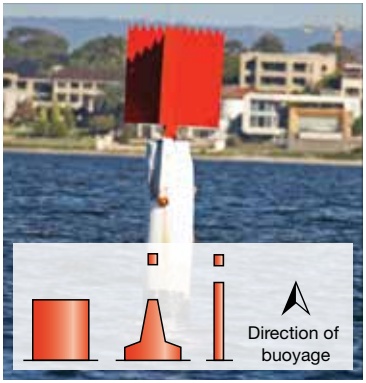
Lateral marks

Lateral marks indicate the port (left) and starboard (right) sides of a channel when travelling in the direction of buoyage, that is, upstream in a river or channel or into a port or harbour.

When lateral marks are numbered, odd numbers are on the starboard side and even numbers on the port side when travelling in the direction of buoyage. They are numbered from seaward heading into the harbour.

Port marks

On the port side of a vessel when entering a harbour or travelling upstream in a river or channel.

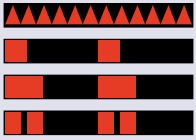


Port mark

- Colour—red
- Shape (buoys)—cylindrical (can), pillar or spar
- Topmark (if any)—single red cylinder (can)
- Lights (when fitted)—red. May have any consistent rhythm listed but not composite group flashing (eg 2 then 1).

Examples of light rhythms on port lateral marks are:

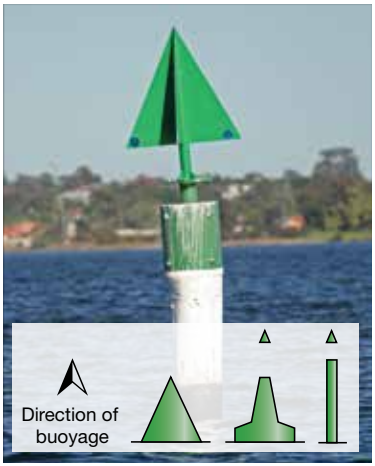
Q.R	**Continuous quick flash**
Fl.R	**Single flash**
L Fl.R	**Long flash**
Fl (2) R	**Group flash**



(Refer IALA 'A' light rhythm table; 'R' means 'red')

Starboard marks

On the starboard side of a vessel when travelling towards buoyage.

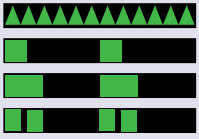


Starboard mark

- Colour—green (in exceptional cases, black)
- Shape (buoys)—conical (cone), pillar or spar
- Topmark (if any)—single green cone pointing up
- Lights (when fitted)—green. May have any consistent rhythm listed but not composite group flashing (eg. 2 then 1)

Examples of light rhythms on starboard lateral marks are:

Q.G	**Continuous quick flash**
Fl.G	**Single flash**
L Fl.G	**Long flash**
Fl (2) G	**Group flash**



(Refer IALA 'A' light rhythm table; 'G' means 'green')

Cardinal marks

Cardinal marks indicate the best navigable water and north, south, east or west as the safe side on which to pass danger (such as rocks, wrecks and shoals). A compass will help direct you to the safe side on which to pass these marks.

A cardinal mark is normally made up of a pillar or spar-shaped buoy coloured in black and yellow horizontal bands, and a black double cone topmark.

Both the topmark and the position of the black horizontal band or bands on the buoy or post have four different arrangements that indicate the side on which you should pass the mark; these two indicators will always match, with the points of the topmark cones pointing towards the black band/s on the pole, pillar, or spar.

When lit, cardinal marks have a white light that either has a quick flash (about 1 per second) or very quick flash (about 2 per second). Think of a clock face when remembering the lights on cardinal marks. A light flashing three times indicates east, six flashes plus one long flash is south, nine flashes is west, and continuous flashing indicates north. The additional long flash for south and the continuous flashes for north help to avoid confusion if you lose your count.

The characteristics of cardinal marks are described in the following diagram.

- Pass on western side of mark
- Horizontal black band—centre of buoy
- Topmark—pointing inwards
- 9 o'clock on clockface
- Light—white.
- 9 quick or very quick flashes.

Q(9)15s

VQ(9)10s

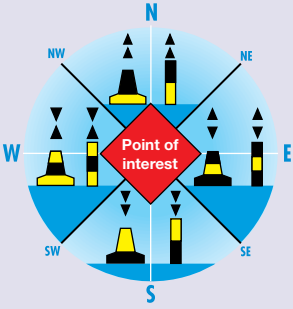
West cardinal mark

North cardinal mark

- Pass on northern side of mark
- Horizontal black band—top of buoy Topmark—pointing up12 o'clock on clockface
- Light—white. Continuous quick or very quick flashes.

Q

VQ



East cardinal mark

- Pass on eastern side of mark
- Horizontal black band—top and bottom of buoy
- Topmark—pointing outwards
- 3 o'clock on clockface
- Light—white.
- 3 quick or very quick flashes

VQ(3)5s **Q(3)10s**

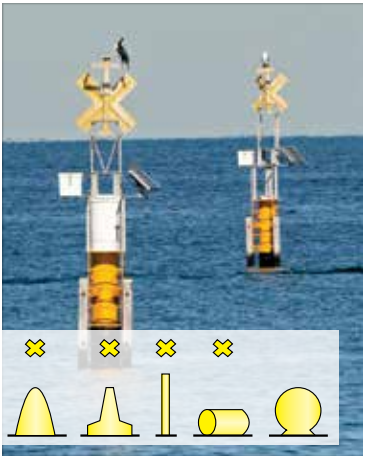
- Pass on southern side of mark
- Horizontal black band—bottom of buoy
- Topmark—pointing down
- 6 o'clock on clockface
- Light—white. 6 quick or very quick flashes and 1 long flash.

Q(6)+LFl.15s **VQ(6)+LFl.10s**

South cardinal mark

Special marks

As the name suggests, special marks indicate a special area or feature, for example, 'no-boating' zones or speed restricted areas such as the fish farms at Port Lincoln. You may be able to identify what is marked by checking on an up-to-date navigation chart.



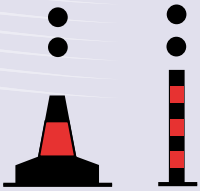
Special marks

- Colour—yellow
- Shape (buoys)—optional
- Topmark (if fitted)—single yellow 'X'
- Light (if fitted)—yellow. May use any rhythm not used for white lights, for example, a single yellow flash—FlY, or four yellow flashes—Fl(4) Y4s.

Isolated danger marks

Isolated danger marks identify a danger that has navigable water all around it. For example, the ballast ground in the North Arm of the Port Adelaide River has an isolated danger mark. As the marks are not always positioned centrally over the danger, do not pass too close.

- Colour—red and black horizontal stripes
- Shape (buoys)—pillar or spar



- Topmark—two black spheres positioned vertically
- Light (if lit)—white. Flashes in groups of two—Fl(2); the association of two flashes and two spheres may be a memory jogger.

If these shapes are used they will indicate the side on which the buoys should be passed

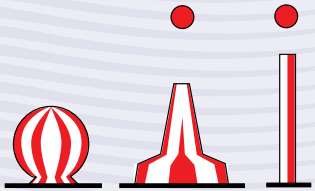
Don't pass too close to a danger mark

Safe water marks

Safe water mark

Safe water marks indicate navigable water all around. They can be used as a mid-channel, landfall or centre line buoy, for example the centre line safe water mark at Murray Bridge.

Be aware that large commercial vessels may pass close by these marks.



- Colour—red and white vertical stripes
- Shape (buoys)—spherical, pillar or spar
- Topmark (if fitted)—red sphere.
- Light—white. May use isophase (Iso) or occulting (Oc) rhythms, or a single long flash (LFl).

Arrows indicate the correct navigation past the buoys, marks and beacons shown.

Other buoys and marks

Lead marks

Lead marks define the correct course in waters containing navigational hazards and are often used to mark approaches to navigational channels.

Lead marks are made up of two separate triangular marks: one placed in the foreground and one further back and higher on the shore. The rear lead is often inverted (upside-down). Leads may also be lit at night. By lining up the apex (point) of each triangle—or at night lining up the lights on each lead—you can find the centre of the channel. You will need to adjust your course slightly to starboard so that you then steer the correct course on the starboard side of the channel.

'Port closed' or 'channel blocked' mark

This signal may be placed on shore, on a floating buoy, or on a vessel blocking the channel and is used to indicate where a regular waterway is no longer passable, whether temporarily or permanently.

By day shows:

- three black shapes (ball, cone pointing up, ball) in a vertical line.

By night shows:

- three round lights (red, green, red) in a vertical line and visible all-round.

Zone signage

Yellow buoys are used in South Australian waters to indicate controls in restricted areas, often for slower speeds.

Signals on vessels

Daymarks

Daymarks are signals used during the day on a vessel to indicate its activity. They are used in all weather conditions; however, when visibility is restricted the appropriate lights should also be shown.

The common daymarks for the various vessel types and operations follow.

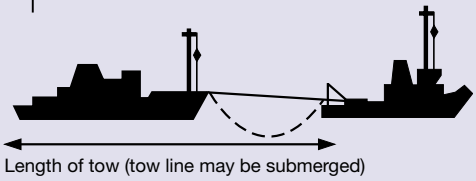
Note: for all the following daymarks and equivalent night navigation lights, each separate part (cone, ball or lights) must be set up to be clearly distinguishable, and are always displayed in a vertical line

Vessels under power with sails set show:

- one black cone, point down; forward, where best seen; this is so that other vessels can know you're operating as a motor boat and apply give way rules correctly.

Power-driven vessels towing:

- If length of tow is more than 200m, the towing vessel and the vessel being towed shall both display one black diamond, where best seen.



Vessels at anchor show:

- one black ball, forward, where best seen.

Only required for vessels 7 m or more in length when at anchor in or near a channel or channel approach, or in a usual anchorage, i.e. not required if you are well away from regular boating areas.

Note: vessels are not permitted to anchor in a channel unless in an emergency.

Vessels aground show:

- three black balls.

Not required for vessels less than 12 m long.

This signal does not mean distress or in need of help, but you should navigate with caution.

Vessels restricted in ability to manoeuvre show:

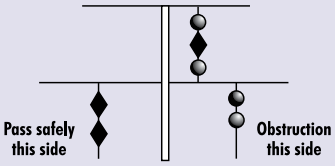
- black ball, black diamond, black ball.

When at anchor, vessel also shows another, separate black ball.

This signal does not indicate distress or a need for help, but you should navigate with caution.

Vessels engaged in underwater operations or dredging show:

- as for 'Vessels restricted in ability to manoeuvre', plus:
  - where one side is obstructed, two black balls on that side; and
  - on the side where vessels may pass, two black diamonds.



Black balls on both sides indicate that the passage or channel is blocked, and vessels should wait for instructions before proceeding.

Diving operations

A vessel with one or more divers operating from it must display signals indicating this. The international flag 'A' (refer to image below) is the signal that *'I have a diver below—keep well clear at slow speed'*. Other vessels must navigate to avoid injuring the diver or interfering with the vessel, float or buoy. In South Australia, the speed limit is four knots within 50 m of a vessel or buoy displaying a divers flag (flag A).

During the day:

- vessels 10 m or more in length must display a divers flag, either as a flag or rigid replica
- vessels less than 10 m long must display divers flag as a rigid replica, at least 750 mm by 600 mm, either from the vessel or floating buoy
- a diver operating independently of a vessel must ensure that a rigid replica of a divers flag (at least 300 mm by 200 mm) is displayed from a buoy or float moored within 30 m of the diver or is attached to a line and towed by the diver (a diver must not operate independently of a vessel in a dredged shipping channel within a harbour).

Vessels constrained by their draught to operating in a narrow channel, i.e. unable to change course easily show:

- one cylinder, where best seen.

Vessels not under command show:

- two black balls.

Not required for vessels less than 12 m long. This signal does not mean distress or in need of help, but indicates an inability to manoeuvre.

Fishing vessels underway or at anchor (when trawls, nets or other gear are in the water) show:

- two black cones, points inwards.

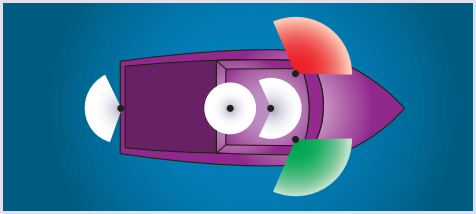
Navigation lights

If navigation lights are fitted to your vessel the navigation lights must be fitted in accordance with the *Prevention of Collisions at Sea Regulations* or the *River Murray Traffic Regulations*.

Vessel lights must be displayed from sunset to sunrise and in restricted visibility during daylight. To meet legal requirements the lights must be visible through both a minimum arc of visibility (measured in degrees of a circle) and for a minimum distance.

The following table shows the angle of visibility for each light.

Light	Angle of visibility (degrees)
Masthead light	**225**
Sidelight	**112.5**
Sternlight and/or towing light	**135**
All-round light (white, red, yellow or green)	**360**



The following table shows minimum distances of visibility on a clear, dark night.

	Minimum visibility for length of vessel (nautical miles)		
Light	**Less than 12m**	**12-50m**	**50m and over**
Masthead light	**2**	**5***	**6**
Sidelight	**1**	**2**	**3**
Sternlight and or towing light	**2**	**2**	**3**
Allround light (white, red, yellow or green)	**2**	**2**	**3**

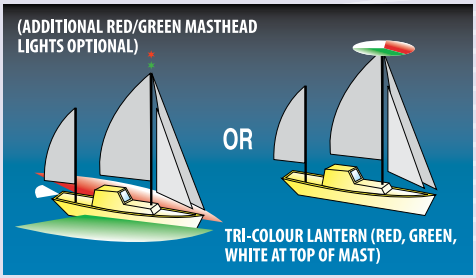
* Where the length of a vessel is 12-20 m, and the height is at least 2.5 m above the gunwale, the minimum masthead light visibility is three nautical miles.

The masthead and/or all-round white light must be fitted on the boat's centre line (bow to stern), if possible.

This section describes the required navigation lights, with diagrams showing which lights are visible from various angles to help with on-water recognition. This is important so you know when to give way and when others should give way to you.

Sailboats and row boats

Sailing vessels underway show:

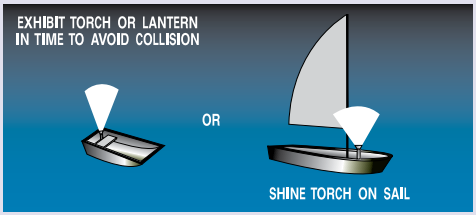


- sidelights and sternlight; or
- if vessel is less than 20 m long, one tricolour lantern (green, red, white) at or near the top of the mast.
- option addition – two all-round lights in a vertical line (red at top; green below) at or near the top of the mast.

When using its engine, a sailing vessel is considered a power-driven vessel and must show the appropriate shapes by day and lights by night. A tricolour lantern must not be used by a vessel operating under power.

Sailing vessels underway (not using power) less than 7 m long, or boats under oars show:

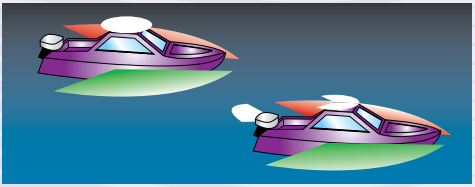
- if practicable, any of the combinations for 'Sailing vessels underway'; or
- an electric torch or lighted lantern with white light and used in time to prevent a collision.



Power-driven vessels

Vessels under 12 m long underway show:

- sidelights, masthead light and sternlight; or
- sidelights and all round white light.



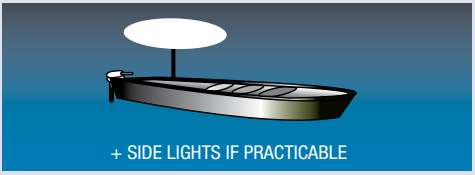
Note: if vessel is less than 12 m long, sidelights may be a combined lantern on the fore and aft centreline.

Configuration

- the centre of the masthead light or all-round white light must be carried at least 1 m high than the centre of each sidelight.
- the centre of each of the sidelights in a combined lantern must be at least 1 m below the centre of the masthead light.

Vessels under 7 m long and with a maximum speed less than 7 knots show, while underway:

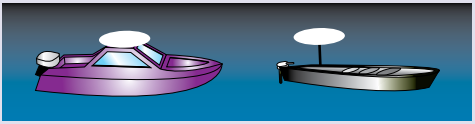
- all-round white light; and
- if practicable, sidelights.



Recreational vessels at anchor show:

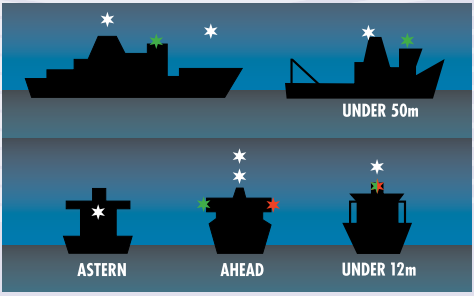
- all-round white light.

If drifting (underway but not making way), the vessel must display sidelights, masthead light and sternlight.



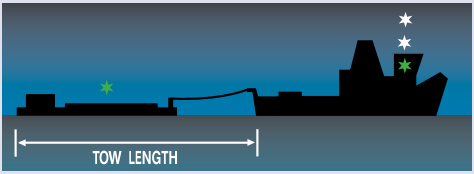
Larger power-driven vessels

Vessels less than 50 m long show while under way:



- sidelights, masthead light and sternlight
- optional addition – second masthead light abaft and higher than the first.

Vessels towing another vessel show, in addition to standard navigation side and

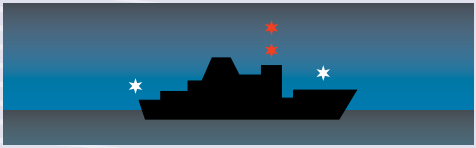


sternlights:

- yellow towing light above sternlight; plus:
- if tow length less than 200 m – two masthead lights
- if tow length more than 200 m – three masthead lights
- towed vessel shows
  – sidelights and sternlight.

Vessels at anchor show:

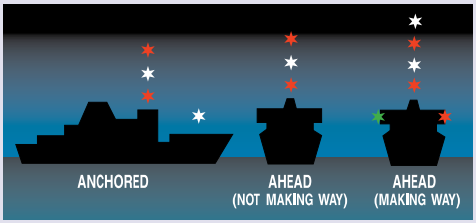
- if less than 50 m long, optional addition – second (lower) light at stern
- if more than 50 m long – two all-round lights, the forward one higher than the aft
- if more than 100 m long – as for vessels more than 50 m long, plus decks must be illuminated.



Vessels aground show:

- anchor lights
- two all-round red lights.
- All-round red lights not required for vessels less than 12 m long.

This signal does not mean distress or in need of help, but you should navigate with caution.



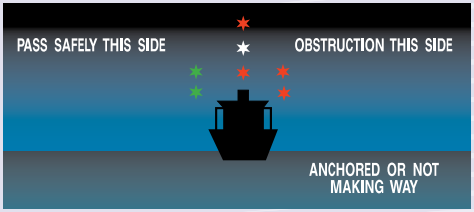
Vessels restricted in ability to manoeuvre show:

For example vessels engaged in: flying aircraft, underwater operations such as diving and cable laying, replenishment at sea, servicing navigation marks, or towing – where manoeuvre is restricted by the tow.

- when underway but not making way – three all-round lights in a vertical line (top and bottom red and middle white)
- when underway and making way – as above, plus masthead lights, sidelights and sternlight
- when at anchor – three all-round lights in a vertical line (as when not moving) and anchor lights.

This signal does not mean distress or in need of help, but you should navigate with caution.

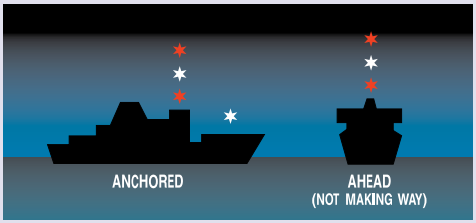
Vessels engaged in underwater operations or dredging show:



- as for 'Vessels restricted in ability to manoeuvre', plus:
  - two all-round red lights on the side of the obstruction
  - two all-round green lights on the side that vessels may pass.

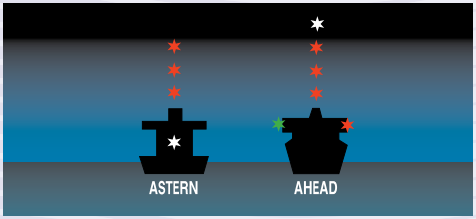
Vessels engaged in diving operations show:

- illuminated divers flag (or for vessels less than 10 m long, a replica as previously described); and



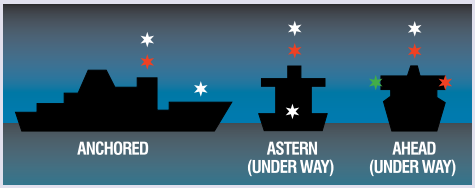
- the signal for stationary 'Vessels restricted in ability to manoeuvre'—three all-round lights in a vertical line (top and bottom red and middle white).

Vessels constrained by their draught show:



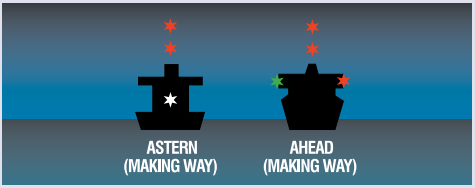
- sidelights, masthead light and sternlight
- three all-round red lights in a vertical line below the masthead light.

Pilot vessel on duty shows:



- two all-round lights, the top white and bottom red, plus:
  - when at anchor, anchor light or lights
  - when underway, sidelights and sternlight as well as the white and red all-round lights.

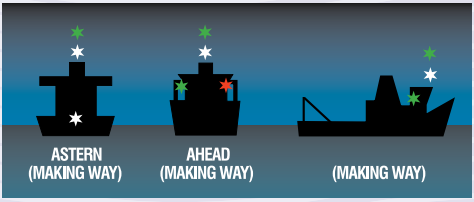
Vessels not under command show:



- two all-round red lights, plus when underway:
  - sidelights and sternlight.

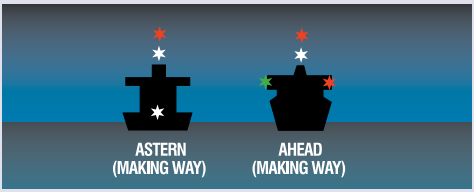
Not required for vessels less than 12 m long. This signal does not mean distress or in need of help, but you are required to keep clear.

Commercial fishing vessels trawling show:



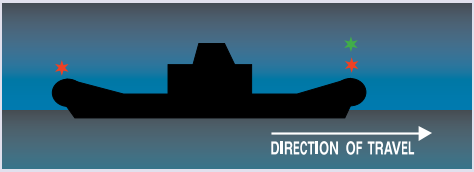
- two all-round lights, the top green and bottom white, plus, when underway:
  - sidelights and sternlight
  - for vessels less than 50 m long, optional addition—rear masthead light.

Fishing vessels (other than trawling) show:



- two all-round lights, the top red and bottom white, plus, when underway:
  - sidelights and sternlight
  - if outlying gear extends more than 150 m horizontally from vessel—one all-round white light in direction of gear.

Vessels working in cables (for example River Murray ferries) show:



- all-round red light at each end
- all-round green light above the red light at the forward end to indicate the vessel's direction.

Vessels operating near a vehicular ferry must keep clear and proceed with caution. A four-knot speed limit applies within 100 m either side of the ferry crossing.

Radio distress, urgency and safety signals

This section covers the three types of radio priority signals at sea: distress, urgency and safety.

Types of marine radios and where to get training on their use are discussed in chapter 4, Safety equipment, Standards and features.

The specific meanings and uses of each signal are outlined below. Understandably, there are strict rules governing their use.

Distress signal

- Given priority over all other calls.
- Only to be used when in grave and imminent danger.
- Immediate assistance is requested.
- Should only be sent on the authority of the person in charge of the vessel
- Identified by the word 'MAYDAY', spoken three times.

Urgency signal

- Given priority over other calls, except distress calls.
- An urgent message about the safety of the vessel or a person.
- Should only be sent on the authority of the person in charge of the vessel
- Signal and message are normally sent on the distress frequency.
- Transmission of the message is transferred to a working frequency or channel if it:
  - is long
  - concerns an urgent medical case
  - needs to be frequently repeated.
- Identified by the words 'PAN PAN', spoken three times.

Safety signal

- Used for important navigational or weather warnings.
- Other ship stations' radio operators must not interfere with the message.
- Signal and call to all stations are normally made on the distress frequency.
- Transmission of the message is on a working frequency or channel.
- Identified by the word 'SÉCURITÉ', pronounced 'SAY-CURE-E-TAY' and spoken three times.

How to make the calls

The calling and distress frequencies are:

- VHF marine radio – channel 16
- MF/HF radio – 4125, 6215 or 8291 kHz; and
- 27MHz radio – channel 88 (27.88MHz).
- When making a call, take the following actions:
  - identify yourself by radio call sign and/or vessel name
  - keep messages brief and clear
  - avoid non-essential remarks
  - avoid offensive language.
- When signalling distress, give brief details of:
  - your position
  - the nature of the distress
  - type of vessel
  - number of people on board.
- Use the phonetic alphabet and figure code if reception is poor or the message is unclear.
- Always end an exchange of transmissions with the word 'out'.
- Repeat the process as often as necessary; boats will respond once the message is given if they can help.
- If unsuccessful, try any available frequency.
- Stop transmitting if requested by a coast station.
- When the call is complete, return to the relevant emergency frequency for your type of marine radio as above.
- Report in when the emergency is resolved or assistance is given.

If you hear what appears to be an unanswered distress call, offer whatever assistance possible, even if only to try to relay the message on.

It is an offence to use a transmitter to cause serious alarm or affront (i.e. 'hoax' calls etc), or to harass someone.

For non-distress messages, switch to a working channel once you have made contact.

Phonetic alphabet for Marine Radio

RESPECTING OUR WATERS

MR 184 04/13

A	ALPHA	**N**	NOVEMBER
B	BRAVO	**O**	OSCAR
C	CHARLIE	**P**	PAPA
D	DELTA	**Q**	QUEBEC
E	ECHO	**R**	ROMEO
F	FOXTROT	**S**	SIERRA
G	GOLF	**T**	TANGO
H	HOTEL	**U**	UNIFORM
I	INDIA	**V**	VICTOR
J	JULIETT	**W**	WHISKEY
K	KILO	**X**	X-RAY
L	LIMA	**Y**	YANKEE
M	MIKE	**Z**	ZULU

DISTRESS

MAYDAY *three times*

If your vessel is threatened by grave and imminent danger and you are requesting immediate assistance.

URGENCY

PAN-PAN *three times*

If you have a very urgent message concerning the safety of your vessel or the safety of a person on board.

SAFETY (SECURITE)

SAY-CURE-E-TAY *three times*

To broadcast an important navigational warning to other stations. It may include a weather warning.

sa.gov.au/boatingmarine

Government of South Australia
Department of Planning, Transport and Infrastructure

Sound and light signals

Sound and light signals are an established way of communicating at sea, so it's important to get to know them. This section provides an overview of the most common signals.

In signalling, a ship's 'whistle' or other sounding device is used to make short (about 1 second) or long (4-6 second) blasts to indicate actions to other vessels. 'Whistle' signals can also be supplemented at night by lights (for example, one short whistle blast would mean the same as one short flash of light).

The type of signal used depends on the length of your vessel.

- 100 m or more—use whistle, bell and gong.
- 12 m to less than 100 m—use whistle and bell.
- Less than 12 m—use any effective sound.

Manoeuvring and warning signals

- I am altering my course to starboard—one short blast.
- I am altering my course to port—two short blasts.
- I am operating astern propulsion (in reverse)—three short blasts.
- To another vessel, when their intentions are unclear, or you doubt they're taking enough action to avoid a collision - at least five short and rapid blasts. +

Warning signals—vessels in narrow channels

- I intend to overtake on your starboard, please alter your course to permit me to pass—two long and one short blast.
- I intend to overtake on your port, please alter your course to permit me to pass—two long and two short blasts.
- Agreement by the vessel being overtaken—one long, one short, one long and one short blast.
- A vessel in doubt about the intentions or safety of the overtaking vessel's manoeuvre - five short and rapid blasts.
- A vessel nearing a blind bend in a channel—one long blast.
- Response from vessel on the other side of bend—one long blast.

Restricted visibility signals

All vessels operating in limited visibility should operate at a safe speed and be prepared to stop or alter course. If you hear another vessel's warning signal forward of the beam, stop or reduce speed to a minimum until the other vessel has moved away from your course.

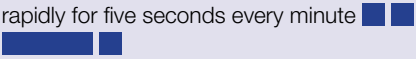
The following signals are used in restricted visibility both during the day and at night.

- Power underway and making way—one long blast every two minutes.
- Power underway, and not making way—two long blasts about two seconds apart at least every two minutes.
- A vessel that is of any of these conditions -
  - not under command
  - restricted in her ability to manoeuvre
  - constrained by her draught
  - a sailing ship (not under power)
  - fishing
  - towing or pushing - one long and then two short blasts at least every two minutes.

- Vessel towed (if manned) immediately after the signal from the vessel conducting the tow—one long and three short blasts at least every two minutes.

- Pilot vessel on duty—may also sound four short blasts in addition to applicable signals as above.

- Vessels at anchor:
  - vessels less than 100 m long—one short, one long and one short blast, plus ring bell rapidly for five seconds every minute



  - vessels 100 m or longer—one short, one long and one short blast, plus ring bell for five seconds every minute from the bow and then immediately hit gong for five seconds every minute from the aft.

  - to warn approaching vessels of your position —one short, one long and one short blast

- Vessels aground:
  - as for 'Vessels at anchor', but preceded and followed by three separate and distinct bell strokes and if over 100m three gong

  - vessels less than 12 m long, if unable to make the appropriate signals, must make another effective sound signal at least every two minutes.

Chapter 7. Self-check questions

1) When leaving a harbour, or travelling downstream in a river or channel, on which side should you keep a red (port) channel marker?

A. On the port (left) side of the vessel.
B. On the starboard (right) side of the vessel.
C. Whichever side is convenient.

2) When entering a harbour, or travelling upstream in a river or channel, on which side should you keep a green (starboard) channel marker?

A. On the starboard (right) side of the vessel.
B. On the port (left) side of the vessel.
C. Whichever side is convenient.

3) If you see this flag in the water or on a vessel, what does it indicate?

A. Dangerous cargo on board; keep clear.
B. Diver below; slow to four knots within 50 m.
C. Restricted area; authorised vessels only permitted.

4) If a vessel approaches at night displaying this combination of lights, what type of vessel is it?

A. A vessel powered by an engine.
B. A dredge.
C. A sailing vessel.

5) If you see a vessel displaying day marks that show it to be a dredge, on what side of the vessel is it safe to pass?

A. On the port (left) side of the vessel.
B. On the starboard (right) side of the vessel.
C. On the side displaying two black diamonds.
D. On the side displaying two black balls.

6) Of the following, when is a "MAYDAY" radio signal most appropriate?

A. When your boat is on fire and sinking.
B. When you have lost power and are drifting.
C. When you notice unmarked rocks or a wreck submerged just below the water's surface.

8. Anchoring, mooring & berthing

Approaching and leaving a mooring are important skills that will only come with experience – it's advisable to know the theory that makes for safe practice.

Anchoring & mooring

Anchoring

- Don't anchor in a marked channel
- Select an anchorage that offers protection
- Use the appropriate anchor for the area of operation (refer chapter 4, Safety equipment, Standards and features).
- Make sure the anchor line is attached to your vessel
- Untangle and lay the line out before deploying
- Move into the wind forward of where you want to end up and stop
- Gradually drop the anchor – don't just throw it overboard – and let it touch bottom. You will drift back to your selected location
- Allow for a scope of 3:1 (anchor line to depth of water) in normal conditions, and 5:1 in rough conditions. The flatter the pull on the anchor, the better it will hold
- Tie off the line to a forward bollard
- Adjust the length of line to the conditions
- Display the prescribed lighting if anchoring at night (refer chapter 7, Buoys, marks, beacons, signals & signs, navigation lights)
- Monitor your anchor's hold, as changing conditions can affect performance and vessel stability.
- When it's not in use, stow and lash the anchor securely.

Setting more than one anchor

Vessels which are likely to operate in adverse conditions should consider carrying a second anchor. Vessels over 8 metres are required to do so except in protected waters. A second forward anchor can be set spread apart from the first so the boat forms the bottom of a 'V'.

To hold the boat in one spot in calm conditions, such as when diving, use a stern anchor as well as the bow anchor.

It's not easy for one person to set more than one anchor. Ask your crew to help in letting out anchor lines so they are not picked up by the propeller as you locate the place for the second anchor. Once the anchors are down, adjust the lines so the vessel is riding safely.

Mooring

Before you put down a permanent mooring you need to complete an application form and lodge it with DPTI (refer chapter 13, Contact details & further information).

You should also think about asking a professional to do the work for you and consider the following related issues:

- Depending on the location of the proposed mooring, you may need to consult with appropriate authorities eg DPTI, DEW, Council etc
- Is the location protected from wind and tide effects?
- Can it be easily accessed for use and maintenance?
- Will it interfere with any other mooring or property?
- Will my vessel and those nearby have full swing clearance?
- Is the mooring apparatus suitable for the vessel?

'Picking up' (attaching to) a mooring

- Travel slowly
- Observe wind and/or tidal flow before approaching a mooring
- Don't take other boat positions as a guarantee of wind and current; different types of boats may lie in the opposite direction to the wind and/or current, as surface effects of wind may differ from general tidal or current effects
- The small pick-up buoy can also be an indicator of drift direction

- Approach slowly into the wind or against the tide, using the stronger of the two as a 'brake'
- Don't overrun the mooring buoy (this risks fouling the propeller on mooring lines)
- Use a boat hook to capture the pick-up buoy
- Secure the line or chain to a bow cleat

Leaving a mooring

- Warm up the engine – or prepare the sails if sailing
- Check for other boats nearby
- Travel slowly, and make sure your passengers and crew stay within the boat itself—not on the side decking or the bow, where they could block your view or risk injuring themselves
- If there is a heavy strain on the mooring, relieve this by using the motor or sails to come up to it
- Release the chain or rope from the bow cleat, and drift back to clear the buoy before moving away. As you drift, check for trailing ropes that may get caught in your propeller

Berthing at a wharf or jetty

This section outlines the steps to safely berth your vessel alongside a wharf or jetty, including the different actions required for various motor setups.

Berthing at a jetty

To avoid damaging your vessel, it's advisable to practise berthing against a soft buoy until you are confident.

Preparing to berth

- Make sure your passengers and crew are aware of your plans and identify where you intend to stop on the berth
- Show your crew where to place the fenders and what you plan to tie up to
- Check for obstacles, including other vessels at or near the berth
- Assess the impact of the prevailing winds and current
- If there is minimal or inconsistent wind along the berth, you can choose the side that best suits your vessel's steering
- Your approach speed should be as slow as possible with your bow pointing in the same direction as other vessels at the wharf
- Adjust your speed to the minimum without losing steering response, this allows more time to correct for errors.

Preparing to berth

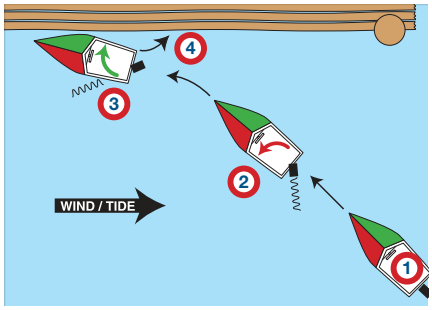
Berthing by motor setup

Outboard leg (outboard or sterndrive motor)

Outboard or sterndrive motors allow the boat to turn equally well in either direction, whether going ahead or astern.

When changing direction in a boat, the stern does nearly all the turning and it moves in the direction the propeller is pointing (while the bow barely moves).

- **Step 1:** Set a slow speed, aim for a spot at the berth where you intend ending up and hold that course. You should travel at an angle of 30 to 45 degrees to the berth.
- **Step 2:** When you are two to three boat lengths from it, turn away from the berth; this will start the stern swinging towards it. The steeper your angle of approach, the more you need to turn. This action will do most of the work in putting you alongside.
- **Step 3:** With the bow's shoulder nearing the berth, put the motor in neutral and turn to starboard (towards the berth).
- **Step 4:** Immediately after you have turned the wheel, put the motor in reverse. This will stop the boat moving ahead and, because the propeller is now pointing towards the berth, it will pull the stern into the berth. Once this is achieved, put the motor in neutral.



Berthing, outboard leg

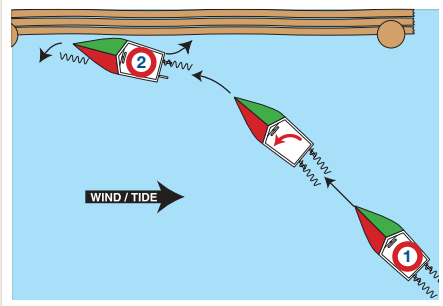
Twin shaft

Many vessels with twin shafts (twin-screw vessels) have outward-turning propellers. This means that whether moving ahead or astern, the vessel is set up to give the best engine assistance with turning.

Twin-shaft vessels give the operator greater manoeuvrability, however as with single-shaft vessels, their limitation is that the bow stays more or less motionless while the stern does all the turning.

Twin-shaft vessels have a smaller turning circle than a similar single-shaft vessel, and they are equally suited to putting either side of the vessel alongside a berth.

- **Step 1:** Make a slow approach, similar initially to a single-shaft vessel.
- **Step 2:** With the engine closest to the berth set to go ahead and the outer engine astern, use the short turning ability to pull the starboard stern alongside.



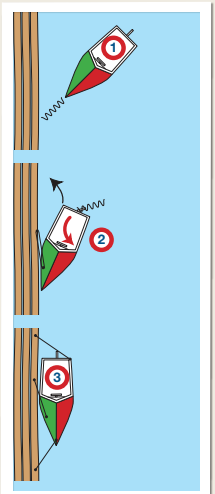
Berthing, twin-shaft vessel

Single shaft (inboard or jet engine)

Most single-engine vessels have a right-handed (clockwise) propeller. For these boats it is easier to berth on the port side, because the stern tends to kick to port when the engine is going astern. The opposite applies to left-handed (anti-clockwise) propellers. This description assumes a right-handed propeller.

- **Step 1:** Make a shallow angle approach and operate astern propulsion (i.e. use reverse gear) to stop the vessel with the bow's shoulder almost touching the berth.
- **Step 2:** Attach a spring or flexible rope from the vessel's forward section to the berth.
- **Step 3:** Turn the wheel away from the berth and select forward gear and idle speed. The vessel will come alongside and the vessel can be secured with the appropriate mooring lines.

If wind, current or the boat's manoeuvrability are making your task more difficult, or you have put the non-preferred side along the berth, you can use a spring to help bring the vessel alongside. The diagram shows the steps to put the non-preferred side alongside the berth.



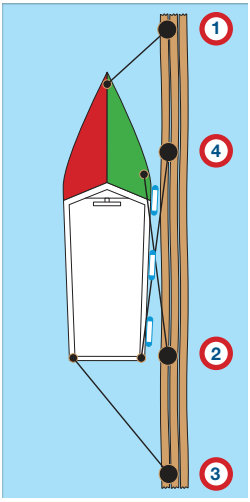
Berthing; single shaft

Berthing lines

The number of lines needed to adequately secure your vessel depends on the size of your vessel. Checking your mooring and berthing equipment should be part of your regular vessel maintenances.

The main types of berthing lines are:

- **bow (forward) line (1)**—attaches from the bow to a secure point on the berth (such as a bollard, secured post or similar)
- **bow spring (2)**—connects from the bow to a point on the berth that is aft (to the rear) of the centre of the vessel
- **stern (aft) line (3)**—attaches from the stern to a secure point on the berth
- **stern spring (4)**—connects from the stern to a point on the berth forward of the centre of the vessel. This reduces the amount of forward or backward movement, especially when combined with a bow spring.



Berthing lines

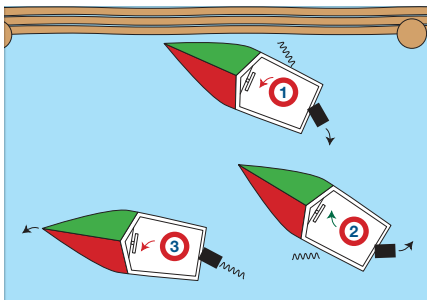
Leaving a berth

It's normal to reverse from a berth because vessels steer from the stern. If you try to leave by going forward, using rudder or engine movements for steering, the swing of the stern will make it difficult to get the bow off the jetty.

Before departing the berth, check for other vessels.

Outboard leg

- **Step 1:** With the motor in neutral, turn the wheel fully away from the berth; this points the propeller in the direction the stern will go when the motor is in reverse. Put the motor in reverse and apply very little throttle. Unless the wind or current is pushing the vessel on to the berth, the stern will move out and the bow will not scrape on the berth. Otherwise, you may need to straighten the wheel a little as the vessel moves astern to protect the bow from hitting the berth.



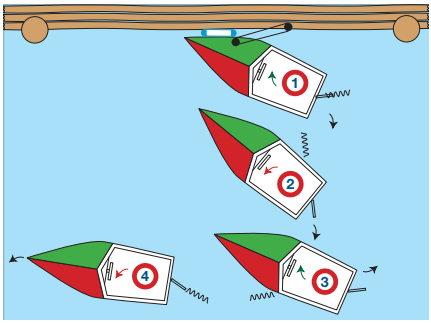
Leaving a berth, outboard leg

- **Step 2:** Once the bow of the vessel is clear of the berth and while still in reverse, turn the wheel fully towards the berth. This will straighten the vessel by swinging the stern towards the berth and the bow away from the berth.
- **Step 3:** When the vessel is parallel to the berth turn the wheel in the direction you want to go and select a forward gear.

Single shaft

The single shaft's rudder needs a flow of water over it before it will turn the boat, releasing the lines and going astern will not usually work—particularly if the wind or current is pushing the vessel on to the berth. The most effective way to get off is to use a spring.

- **Step 1:** Remove all berthing lines except a bow spring. Protect the vessel by putting a fender between the berth and the shoulder of the bow. Turn the wheel fully towards the berth. Put the motor into forward gear and apply a small amount of throttle. The vessel will try to move forward but the spring will stop this, while allowing a good flow of water past the rudder so that the stern will swing away from the berth. The vessel also tends to pivot around the bow's shoulder.
- **Step 2:** When the stern is pointing well away from the berth, put the motor in neutral, release the spring, turn the wheel away from the berth and reverse out.
- **Step 3:** Once the bow is clear of the berth and while still in reverse, turn the wheel fully towards the berth; the stern will swing towards the berth and the bow away from it, straightening the vessel.
- **Step 4:** When the vessel is parallel to the berth, turn in the direction you want to go and move forward.

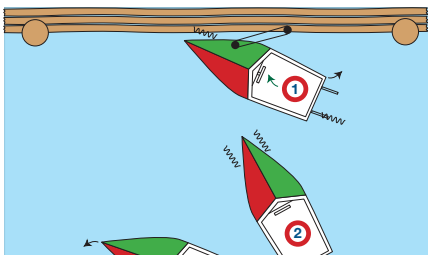


Leaving a berth, single shaft

Twin shaft

A similar manoeuvre can be made with twin-shaft vessels. Most close-quarter manoeuvring with twin-shaft vessels can be done entirely with the engines.

- **Step 1:** When swinging the stern out, use a forward gear on the engine furthest from the berth and reverse (astern) on the engine closest to the berth.
- **Step 2:** Once the stern has swung out far enough to clear any obstacles, release the spring and go astern on both engines.
- **Step 3:** Once the bow of the vessel is well clear of the jetty, go forward on the engine closer to the berth. When the vessel is pointing in the correct direction, go forward on both engines.



Leaving a berth, twin-shaft vessel

Chapter 8. Self-check questions

1) When approaching a mooring or preparing to berth, which of the following behaviours is most suitable?

A. Approach as quickly as safely possible to secure your spot.

B. Get a crew member or passenger onto the bow to grab hold of the mooring as you reach it.

C. Approach at the slowest possible speed that maintains steering.

2) When departing a berth or mooring, which of the following statements is correct?

A. You may sometimes use forward gear to help move away.

B. You will usually use astern propulsion (reverse gear) because boats steer from the rear.

C. How you depart a berth or mooring will be affected by the wind conditions at the time.

D. All of the above.

3) Before you approach a wharf or jetty to berth, which of the following steps should be taken?

A. Make sure your passengers and crew are aware of your plans.

B. Identify where you intend to stop on the berth.

C. Check for obstacles, including other vessels at or near the berth.

D. All of the above.

9. Emergency action

Most emergencies afloat can be avoided by good sea skills, planning and preparation - but not all. If you're facing a dangerous situation, you need to act quickly and, if warranted, raise the alarm to give rescuers the greatest chance of success.

This chapter discusses common emergency and first aid situations at sea, distress signals, and Australia's search and rescue system. It also covers your obligations to respond to requests for assistance from other vessels – long-held tradition of the sea.

Your obligations

As the boat operator you have legal obligations if your vessel is involved in an incident, someone is hurt or if you witness an incident.

If your vessel is involved in an incident you must stop and follow these steps:

- Help as much as you can, without putting yourself, your passengers and/or your crew at risk.
- Exchange your contact details with the operator of any boat involved, any injured person and/or the owner of any damaged property.
- If the incident has resulted in death, injury requiring medical attention, or damage worth more than $300 you are obligated to submit a completed Vessel Accident Report form to a DPTI Marine Safety Officer or to your nearest police station within 48 hours of the incident.

The Vessel Accident Report form must include the:

- time and place of the incident;
- circumstances (a description of the incident—a diagram may help);
- name and address of any person killed or injured;
- names and addresses of any witnesses; and
- nature of property damage.

Note: if you see a collision or distress signal but your vessel is not directly involved, you are still legally obliged to assist where possible, providing that in doing so this won't endanger your safety or that of your passengers and/or crew.

Whenever you're not using your marine radio, it should be set to the relevant distress frequency for the type of radio carried (refer chapter 7) with the volume and squelch set for you to clearly hear any calls for help. It is a long-standing maritime tradition to respond to requests for assistance, though they may not necessarily be emergencies. If you hear a mayday call and a coast station doesn't answer, try to relay the message and then assist if possible.

You're not obliged to tow other vessels, but you can offer to stand by until help arrives.

Insurance

Although recreational vessel insurance is voluntary, owners are encouraged to take out some form of cover. Third-party insurance is particularly important, as claims for personal injuries or damage caused to property can be significant.

Marine insurance cover can be arranged through insurance companies or brokers.

Common situations

If you're faced with a dangerous situation, the following common-sense steps will help reduce the risk of vessel or property damage, as well as personal injury or even death:

- As the skipper, take control of the situation and try to keep crew and passengers calm.
- Identify the type of situation you're faced with and how it can be managed.
- Remind everyone on board of where the safety equipment is and how to use it.
- If there's a fire, try to put it out. Similarly, if your vessel is taking on water, use your bailer or pump.

- If the situation can't be controlled:
  - use a torch or flare to attract attention from passing vessels or people on shore (refer to Distress signals in this chapter);
  - if carrying a V distress sheet, secure it in a visible place, either on top of or trailing behind the vessel;
  - transmit a mayday call if in grave and imminent danger, or a pan-pan message if you need less urgent assistance;
  - activate your EPIRB if you can't attract help using other methods.

The types of emergencies you are most likely to face on the water are:

Capsizing

A capsize can happen because of high speed, rough seas, surf, high wind, inexperience, or stupidity—and it can happen in seconds.

When lifejackets are not required to be worn they should be readily accessible, however it is recommended that you always wear an approved lifejacket when on board a vessel. Once everyone has been accounted for, stay huddled together and stay with the vessel, as rescuers will more easily spot it than you.

Engine failure

Even the best maintained engine can fail, so it is important to have some basic knowledge of how to re-start it and to always carry a kit of essential tools.

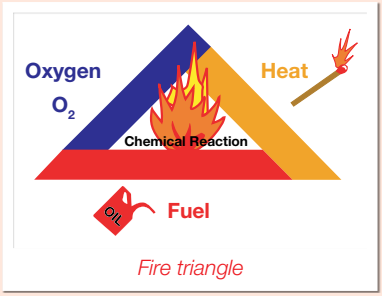
Become familiar with the sound of an engine so that you can easily detect that an engine is not running normally. You may then be able to take action before a complete breakdown happens.

If the engine does fail, use an anchor to stop the vessel drifting and keep the bow facing into the sea. This action, plus use of a well-maintained waterproof cover (such as a tarpaulin), can help keep the ignition dry and make re-starting the engine easier.

Fire

The most important factor in preventing most vessel fires is the safe handling of fuel, which involves:

- well-maintained fuel equipment
- correct use of refuelling equipment
- keeping any ignition sources well clear, such as pilot lights and lit cigarettes
- taking appropriate care.



Fire triangle

If you smell any petrol or gas fumes, check where they're coming from and why. Other common sources of vessel fires include heating appliances, stoves, gas or fuel leaks or cooking fat.

The three elements of fire are fuel, heat and air (oxygen). If brought together in sufficient quantities, a fire will start. Remove any one element and the fire will go out. Fire extinguishers work by cooling (removing the heat) or smothering (removing the air).

For information on the different types of extinguishers refer chapter 4, Safety equipment, Standards and features.

Fighting a fire

Fuel and gas fires can spread very quickly and even a minor spill can create an almost explosive spread of flames. You need to act quickly but calmly, taking the following steps:

- Raise the alarm to everyone who is onboard and to rescue organisations.
- Make sure everyone on board is wearing an approved and correctly fitted lifejacket
- If safe, manoeuvre the vessel to shield the fire from wind (generally downwind). This should help curb the spread of flames.
- If the fire is in an enclosed space, close all the hatches, vents and ports to reduce the supply of oxygen to the fire.
- If a burning object can be safely moved, put it over the side quickly, but away from any other vessel or flammable object.
- Shut off fuel and gas lines.
- Try to put out the fire; if using an extinguisher, point it at the fire's centre, not flames.
- Once the fire is out, keep a watchful eye for re-ignition.
- If you need to abandon the vessel, don't get off the vessel on the leeward (downwind side); the vessel may drift on to you or any fuel may spread towards you in the water.

Assisting when another vessel is on fire

A large black smoke pall on the water is an indication of a fire on another vessel. While it is important to assist, be very cautious as you approach and keep to the vessel's windward side.

Person overboard

Don't jump in after someone who has fallen overboard—that only doubles the problem. Instead you should:

- remain calm and don't panic
- throw a lifebuoy, lifejacket or other buoyance aid to the person
- delegate someone to keep the person in sight at all times
- at night, illuminate the area using the best available light
- steer the vessel as if to pass within one metre of the person
- when the person is opposite the bow, select neutral and turn the vessel away from the person (for dinghies, point the tiller at the person)
- approach the person from downwind
- once the person is being held, switch off the engine to reduce risk of injury
- bring the person in over the stern—not the side—to avoid a capsize
- if you don't have a boarding ladder, you can make one with rope
- help the person back on board, and have someone look after them—they may be hurt, exhausted, or cold.

It is advisable to practise this procedure with your crew members before you head out, so if someone needs to be rescued, it can happen quickly and efficiently.

Person overboard

Running aground

Grounding is very common, especially in areas with lower than usual water levels or new sand or silt build-up. Fortunately, in many cases grounding results in minimal damage or personal injury, however any damage or personal injury usually depends on your vessel's speed and the type of surface you run on to.

The following actions can help you to prevent grounding:

- Know where you should be and where you actually are when you are on the water.
- Keep a constant lookout.
- Use a chart of the waters you're operating in and tide table to plan your trips.
- During the trip, refer to the chart and tide table to estimate water depth.
- If you have one, a depth sounder can reduce the risk of grounding.
- Identify all navigation marks (remember not all are lit at night).
- Slow down if you are not sure of something.

If you do run aground:

- check the welfare of your crew and/or passengers
- call for medical assistance if required
- assess the vessel for leaks and other damage
- if you have an outboard or sterndrive engine, check for propeller damage; for other engine types you may need to wait until you are back on land unless it is safe for you to jump overboard to inspect the propeller
- if the vessel seems workable, check for depth of water around the vessel by probing with a boat hook or even getting over the side
- assess your options, which include:
  - pushing off
  - waiting for the tide to rise
  - calling for assistance if your vessel is unseaworthy or hard aground.

Sinking

If your vessel is sinking, you should follow these steps:

- Ensure everyone is wearing an approved and correctly fitted lifejacket.
- If the vessel has a leak, try to plug it to stop or slow down the rate of incoming water.
- Remove water using a bucket, bailer or pump.
- Check that there is no danger of fire or explosion.
- If in grave and imminent danger, transmit a mayday call or if the need is less urgent, a pan-pan message.
- If you don't get a response to your radio messages and there are no other boats around to see your flares, activate your EPIRB if you have one.

Abandoning your vessel

If you are forced to abandon your boat, take the following action:

- Ensure everyone is wearing an approved and correctly fitted lifejacket before going over the side (lifejackets are difficult to put on in the water)
- Ensure any life rafts or lifebuoys are ready for use.
- If possible, send a distress message on your marine radio.
- Use flares only if there is a reasonable likelihood of them being seen. Otherwise keep them for when rescue craft are visible.
- Activate your EPIRB if you have one.
- If the vessel is likely to stay afloat, or partially afloat, deploy the vessel's anchor to stop it drifting too far.
- Carry as much fresh water with you as safely possible.
- If possible, use the boat as a means of support and stay with it. Most boats involved in incidents don't sink and are easier to see than people are.
- Resist the impulse to swim ashore, unless you know for certain that land is within swimming distance.
- Huddle together by forming a tight circle with arms around each other to reduce heat loss.
- Avoid excessive physical activities such as swimming because this increases body heat loss.

Distress signals

These internationally recognised signals indicate distress and need of assistance. It is an offence to misuse these signals.

	Rockets or shells throwing red stars, fired one at a time at short intervals
	Morse code SOS, using light or sound. Radio signal: 'Mayday, mayday, mayday'
	Square flag with a round ball or anything ball-shaped above or below it
	Rocket parachute flare or hand-held red flare
	Orange smoke signal
	Slowly and repeatedly raising and lowering your arms outstretched to each side
	Rectangle of international colour orange with black letter 'V'
	Rectangle of international colour orange with black square and circle
	Dye marker
	International code signal of distress: N over C (November Charlie) flags
	EPIRB signal
	Oar with cloth on the end
	Reflective mirror

Example marine radio calls

Distress call

Signal (state three times)	**Mayday, mayday, mayday**
	This is .....
Your call sign or vessel name (state three times)	**Scamp VL2345, Scamp VL2345, Scamp VL2345**

Distress message

Signal	**Mayday**
Your call sign	**Scamp VL2345**
Position	**20 nautical miles due west Carpenter Rocks**
Nature of distress and/ or assistance required	**Sinking rapidly after striking submerged object. Estimate further 15 minutes afloat**
Other information to assist rescue	**20-metre motor cruiser, red hull, white superstructure, four people on board, EPIRB activated**

Urgency call

Signal (state three times)	**Pan, pan, Pan, pan Pan, pan**
Station alert (state three times)	**Hello all stations, Hello all stations, Hello all stations**
	This is .....
Your call sign (state three times)	**Hawk VL2345 Hawk VL2345 Hawk VL2345**

Urgency message

Nature of situation	**10 nautical miles due west of Cape Borda, lost propeller, estimate drifting southwest at 3 knots, require tow urgently.**

Safety call

Signal (state three times)	**Say-cure-e-tay, say-cure-e-tay, say-cure-e-tay,**
Station called (state three times)	**Hello all stations, hello all stations, hello all stations,**
	This is .....
Your call sign or vessel name (state three times)	**Seafox VL9876, Seafox VL9876, Seafox VL9876**
Change of frequency	**Navigational warning, listen on 2524**
Vessel station changes to working frequency and calls again	

Safety message

Signal (state three times)	**Say-cure-e-tay, say-cure-e-tay, say-cure-e-tay**
Station called (state once)	**Hello all stations**
	This is .....
Your call sign (state once)	**Seafox VL9876**
Safety message	**Position 030 degrees, two nautical miles from Neptune island, shipping container floating just below surface, danger to navigation**

Activating an EPIRB

To activate your EPIRB you need to:

- take the device from its cradle
- raise the antenna
- activate the switch
- attach the device by its lanyard to the life raft, your lifejacket or your vessel if that will stay afloat
- throw the device into the water and allow it to drift away from you.

If possible you should also try to keep a flare(s) available to help searching boats and aircraft to pinpoint you.

If you accidentally activate your EPIRB, switch it off and immediately notify the Rescue Coordination Centre Australia (RCC Australia) (refer chapter 13, Contact details & further information). If accidental activation occurs onboard and you can't make a phone call, contact a volunteer marine rescue group via marine radio to notify RCC-Australia on your behalf. There is no penalty for accidental activations however misuse of an EPIRB is an offence.

It is important to correctly dispose of an unwanted EPIRB so they do not accidentally activate and cause unnecessary searches. (refer chapter 13, Contact details & further information).

Activating flares

This section contains general instructions for using flares, however you should be aware that brands may differ in their firing methods. Carefully follow the manufacturer's instructions for use of flares, as a misfire can cause injury.

It's an offence to misuse flares, or to activate a flare for 'practice'. Some volunteer marine rescue groups hold authorised demonstrations and these are recommended if you're unsure how to use your flares.

All marine flares must be approved to Australian Standard AS 2092.

The three types of flares and their operation are:

Parachute (rocket flare—red)

Parachute flares can reach a height of 300 m and can be seen for up to 40 km at night and 15 km by day.

Step 1: Remove screw cap at bottom, hold by ribbed handle

Step 2: Hold vertically above head, pull sharply on ball to fire.

Orange smoke flare

Orange smoke flares are visible for up to 4 km and 10 km by aircraft. They are for daytime use only. For identification, the end cap has a raised 'O'.

The same steps apply to operating the red and orange hand-held flares.

Step 1: Remove screw cap at top to expose tab.

Step 2: Hold flare by handle at bottom, pull tab up and out quickly and firmly.

Red hand-held flare

Red hand-held flares can be seen for up to 10 km. They are designed for use at night, but can also be seen during the day. For easy identification in darkness, the plastic end cap has a raised '**+**'.

Step 1: Remove screw cap at top to expose tab.

Step 2: Hold flare by handle at bottom, pull tab up and out quickly and firmly.

First aid afloat

Every vessel should carry a suitable first aid kit, which can be bought from specialist organisations such as St John Ambulance or Australian Red Cross (these organisations also run first aid courses). The kit should contain adequate wound and burn dressings and a booklet explaining basic first aid procedures.

Chemists stock simple kits that can be supplemented with sunscreen lotion, seasickness tablets, a felt-tip pen (for recording injuries and treatment, to inform medical staff if necessary) and a pair of side-cutting pliers for removing fishhooks. Clearly mark the kit as first aid and keep it in a sturdy, watertight container where anyone on board can reach it.

Bites and stings

Bites or stings from sea snakes, blue-ringed octopus and some jellyfish can cause breathing and circulation problems.

It is vital in all of these instances to keep the patient calm, assured and rested, monitor their airway, breathing and circulation (ABC) and get medical help urgently.

If necessary in the most serious cases, you may also need to begin resuscitation immediately and continue until medical help arrives.

The following steps are also recommended for particular bites and stings.

Jellyfish

- Prevent patient from rubbing the area.
- Pour vinegar over the affected area to deactivate the stinging capsules and prevent further venom release.
- Apply icepacks to relieve pain.

Blue-ringed octopus and sea snakes

- Apply a pressure immobilisation bandage to the affected limb.

Stingrays and other venomous spines

- Immerse area in water as hot as the patient can tolerate, to help relieve the pain.
- Don't use pressure bandages (i.e. tourniquets).

Bleeding

Small cuts can be treated easily by washing with a disinfectant solution and closing with a suitable dressing.

The most effective way to stop bleeding is to apply pressure directly to the wound. Elevating the limb also will help control bleeding.

If a patient is bleeding severely due to a significant accident such as a propeller strike, you may have to apply a constrictive bandage as a last resort, but more standard bandaging is preferable.

- Use a broad (5-7.5 cm wide) soft rolled bandage, strip of material or wide belt.
- Apply the bandage to the upper part of the limb to completely cover the arterial pulse, but keep clear of limb joints.
- Encircle the limb several times.
- If bleeding appears to increase, slowly release the bandage as this reduces the risk of a surge of blood and then reapply immediately.
- Once the bandage is correctly applied, record the time on the patient's forehead.
- The bandage must not be covered up by clothing.
- Transport the patient to hospital as soon as possible.

Burns

Immediately and gently cool the burned skin with plenty of cold water (sea water is excellent). Never burst blisters or cut away clothing unless it's a chemical burn, which might continue to eat into the clothing and skin beneath.

Cover the area lightly with a clean, dry, sterile burns dressing or clean cloth, and keep the patient calm and assured. Seek medical assistance as soon as possible.

Hypothermia

Hypothermia is a serious medical condition resulting from heat loss due to prolonged immersion in water or insufficient protection in cold, wet or windy conditions, so it's particularly relevant to boaties.

The loss of core body temperature in vital organs such as the heart, lungs and kidneys can cause death quickly. The risk is increased if the person is anxious, hungry, exhausted or mentally low.

Form a huddle to stay together and minimise loss of body heat

Hypothermia is not always easy to recognise. The person may no longer even feel cold which can disguise the real risk. Early signs of hypothermia may include:

- lethargy and difficulty in reasoning
- poor sense of touch and clumsiness
- slurred speech
- developing muscle rigidity
- swollen lips, hands and feet.

As the condition develops, more critical symptoms include:

- rigid muscles
- very slow, weak pulse and breathing
- uneven heartbeat
- unconsciousness
- cold and bluish-grey skin
- dilated and unresponsive pupils
- death-like appearance.

Minimising the risks

To reduce the risk of hypothermia:

- keep warm and dry
- avoid fatigue by resting if you are tired
- eat and drink normally to prevent dehydration
- avoid alcohol as it increases the pulse rate and increases body heat loss
- avoid seasickness
- be aware of special medical needs.

To slow the development of hypothermia in the water:

- put on extra clothing before entering the water but be careful to choose clothing that won't absorb water and weigh you down too much
- protect the head, neck, hands, feet, chest and groin from heat loss
- minimise swimming and strenuous activity
- adopt the heat escape lessening posture (HELP).

Treatment

Careful treatment of a person with severe hypothermia is crucial and involves the following steps:

- Do not massage their skin.
- Shelter them in a warm environment away from wind and cold.
- Replace wet clothes with dry.
- Keep them horizontal and in the 'shock' position (on their back, with legs bent and raised), and encourage them to minimise their movement.
- Restore core temperature gradually - the body's shock at too-rapid warming can kill.
- Share body warmth with them.
- Breathe across their mouth and nose.
- Apply gentle warmth to head, neck, chest and groin.
- Give warm sweet drinks (not alcohol), if conscious.
- Administer cardiopulmonary resuscitation (CPR) if necessary.
- Seek medical advice.
- Keep them under continuous observation.

Exposure

To prevent exposure to the elements, you should take note of the following.

- It's colder out on the water, so take extra jumpers and waterproofs.
- The sun reflecting off the water makes its effects stronger, so apply sunscreen regularly.
- Carry adequate wet weather gear for your planned trip.
- Wear clothing that will protect you from the elements (wind, water and sunlight).
- Wear clothing that will not restrict your movements.
- In shallow water and if possible before you go boating, test your ability to swim or float in your clothes, but make sure you have a spare set with you.

Sun exposure

Boaties are particularly susceptible to ultraviolet (UV) radiation from the sun, because of the additional radiation reflecting off the water. UV radiation is present during daylight all year, but is strongest between 11 am and 3 pm during daylight savings time (10 am to 2 pm other times).

Clothing offers the best sun protection: wear a long-sleeved shirt and a hat that covers the face, ears and neck (a dark colour under the brim will help reduce glare off the water). Also apply to exposed skin a water-resistant, broad-spectrum sunscreen with a sun protection factor (SPF) of at least 15+ and a lip sunscreen. Apply the sunscreen 20 minutes before going out and reapply it every two hours. For further information, contact the Cancer Council South Australia, (refer chapter 13).

To treat serious sunburn, apply a cool, moist compress to the affected area but do not break any blisters. Give plenty of fluids and seek medical attention quickly.

Seasickness

Seasickness can be avoided in many cases if you sleep aboard the vessel the night before, to let your body get used to the motion. Of course, this is not always possible.

Otherwise, you can take seasickness tablets as advised by a doctor or chemist, but be aware that some may make you drowsy. Experienced sailors keep their diet free of rich, fatty foods and alcohol both before going to sea and while aboard.

If you feel seasick, keep busy and stay in the fresh air, away from enclosed areas where fuel fumes and food odours may collect. Avoid the 'head down' position, as this aggravates illness. Nibble on a dry biscuit, or chew barley sugar or dried fruit. Ginger is also considered a good remedy.

Search and Rescue (SAR)

National coordination

The Rescue Coordination Centre (RCC-Australia) is responsible for coordinating all aviation and maritime Search and Rescue (SAR) in Australia. It also operates the Australian ground segment of the Cospas–Sarsat distress beacon detection system and broadcasts maritime safety information.

RCC-Australia, part of the Australian Maritime Safety Authority (AMSA), is staffed by SAR specialists and operates 24 hours a day.

Technology such as the EPIRB has taken some of the guesswork out of SAR in Australia, but RCC-Australia is still alerted to emergency incidents through such traditional means as 'mayday' radio calls, flares and phone calls from concerned relatives and friends.

Once alerted to an emergency, RCC-Australia may call for assistance from a wide range of sources which includes:

- Volunteer Marine Rescue (VMR) groups
- the shipping and fishing industries
- state police and other emergency services
- defence forces
- airlines and trained aviation organisations
- emergency medical helicopters
- the Australian Communications and Media Authority (ACMA).

RCC-Australia's 24-hour emergency maritime search and rescue telephone number is 1800 641 792.

South Australian coordination

The South Australia Police (SAPOL) is responsible for sea search and rescue in the state and are supported by volunteer marine rescue groups and other South Australian Government agencies.

SAPOL Water Operations Unit personnel are trained in the latest technology for search and rescue planning and have access to a state-wide database of appropriate resources and information.

Police can assist you with any marine emergency or general enquiry, contact details are:

- SA Police Water Operations
  Telephone: (08) 8242 3466
- Police attendance
  Telephone: 131 444
- Crime Stoppers
  Telephone: 1800 333 000
- For life-threatening emergencies
  Telephone: 000

Rescue by helicopter

A helicopter is a quick and efficient means of rescuing injured or stricken people at sea.

It is preferable for a helicopter to perform a winching operation into the wind. For easier and safer recovery your vessel should, if possible, be underway and steering a little across the relative wind line. This will allow the helicopter to line up on the vessel, giving the pilot and crew better visibility and ensuring any downwash lies behind the vessel and aircraft.

Before the arrival of the helicopter, all loose articles above deck should be securely stowed or lashed down, and a clear area prepared. To make a rescue, the helicopter must maintain its position over the target.

If you're on a yacht or similar craft with rigging or other items that may hinder the helicopter, consider moving onto a tender dinghy or life raft tied to the stern of the yacht, if available. A helicopter can be pulled into the sea in rough conditions, so never attach the helicopter's winch (or rescue) line to the vessel. You must also guard against snagging a winch cable.

Towing a vessel

Towing a vessel usually requires a high level of skills and experience, especially in rough conditions.

Before towing, ask yourself the following questions:

- Is there an alternative to towing?
- Is the tow within my vessel's capability?
- Do I have enough fuel?

To set up the tow:

- designate one person in control, this is normally the skipper of the towing vessel
- establish communication signals, preferably radio, but agree on hand signals as a back-up
- ensure the towline is
  - strong enough
  - long enough (preferably at least 2.5 times the wave spacing)
  - secured to strong points on both vessels
  - protected from chafing
  - easily slipped from either vessel, if required use cleats
  - flexible, with some elasticity (don't use chain)
- ensure the towing vessel's steering is not hampered; attach the towline forward of the rudder or engine on the towing vessel or set up a bridle
- ensure the towed vessel is trimmed by the stern and is steered, or its steering is fixed.

If the towed vessel yaws heavily (swerves off course), try:

- changing course or speed
- trimming the towed vessel further aft
- fixing the towed vessel's steering at an angle
- streaming a drogue, or sea anchor, from the towed vessel; or
- attaching another vessel astern of the tow.

For better control in confined waters, shorten the tow or tow alongside your vessel (well aft to ensure good steerage).

Chapter 9. Self-check questions

1) If an emergency forces you off your vessel but the vessel stays afloat, which of the following actions is recommended?

A. Try to swim ashore if you think you know which is the correct direction.

B. Stay with the vessel, as it's easier to see for a rescuer.

C. Swim around to try and stay warm.

2) If someone falls overboard after you've switched the engine off, over which part of the vessel should you help them back on board?

A. The side opposite to the wind direction.

B. The side offering best protection from the waves.

C. Put a ladder over the bow (front) of the vessel.

D. The stern of the vessel, as it is most stable.

3) Once someone who's fallen overboard has been brought back onto the boat, which of the following actions should you take to help their recovery?

A. Give them a warm, sweet drink.

B. Get them into dry clothes.

C. Rub their skin to warm them up.

D. All of the above.

E. Both A and B.

10 . Navigating South Australian rivers

Special regulations or conditions apply to some waterways, and you should be aware of them before you go boating. In particular, the River Murray has hidden navigation hazards and specific rules about navigating its bridges, ferries and locks. As the boat operator's licence covers all of the state's waterways, even if you only intend boating at sea you will need to know these rules

Local knowledge

There are several ways of finding out if the area you are visiting has any specific rules or water conditions you need to be aware of. These may include hazards such as coastal bars, etc (refer chapter 5, Weather & other potential hazards), specific regulations, or local by-laws.

The majority of speed or vessel restrictions applying in South Australia are detailed in the *Harbors & Navigation Regulations 2009*. These restrictions may apply to certain types of vessels or vessel operations in specific areas of water.

Additionally, some councils may have By-Laws applying to launching or mooring boats, or to certain types of vessels which operate along the foreshore or riverbanks. It is recommended that you check with the council before using your vessel in any unfamiliar area.

The book Tide tables for South Australian ports has information on ramps, including their location, ease of access, launching conditions, parking and any shelter.

If boating interstate you must follow the local rules and law. For information you can refer to the relevant State authority website

Boating on the River Murray demands special care

Inland waters

Boating on the River Murray and other inland waterways demands special care. Possible dangers and obstructions such as submerged trees, shallow sandbars and other snags, may be hidden just below the murky surface.

Floating trees, branches and other debris can be brought into waterways by increased flows or after heavy rain and flooding. While navigating past obstructions such as ferry cables and water intake pipes you should take greater care.

Where identified, the more dangerous hazards are generally marked with navigation markers. Hazards are not always marked as soon as they appear and it is not always feasible or practical to remove all of them. Get to know the buoys, marks and beacons (refer chapter 7, Buoys, marks, beacons, signals & signs) and stay within any marked channel.

Maintain a safe speed and constant lookout. Seek local knowledge and familiarise yourself with an area every time you visit before attempting any high-speed activities such as waterskiing. Conditions can change in a short time, even in areas you visit regularly.

River Murray

The rules that apply to boating on the River Murray are essentially the same as those for other navigable waters. However, additional rules under the *River Murray Traffic Regulations* that specifically apply to bridges, ferries and locks on the River Murray are incorporated into the *Harbors & Navigation Regulations 2009* and are outlined below.

Bridges

For all of the listed bridges, where two or more vessels need to pass under the bridge and there's not enough room to pass at the same time, the vessel that is upstream of the bridge has right-of-way. River Murray bridges and ferry operations are managed by DPTI (refer chapter 13).

Hindmarsh Island Bridge

Vessels more than 10 m long that are navigating under the bridge are required to:

- proceed with caution, maintaining a mid-channel course when passing under the bridge, returning to the starboard side of the navigation channel as soon as practicable; and
- give way to vessels moving downstream (until that vessel is well clear of the bridge structure).

Kingston Bridge

Vessels more than 10 m long that are navigating under the bridge are required to:

- proceed with caution, maintaining a mid-channel course when passing under the bridge, returning to the starboard side of the navigation channel as soon as practicable; and
- give way to vessels moving downstream (until that vessel is well clear of the bridge structure); and
- sound one long blast (4-6 seconds) when it comes within 0.5 nautical miles (that is, just over 900 m) of the bridge; and
- respond with a long blast to a long blast from an approaching vessel; and
- not overtake another vessel within 0.25 nautical miles (about 450 m) of the bridge; and
- after giving way, must again sound one long blast before proceeding under the bridge.

Paringa Bridge

The Paringa Bridge must be raised manually for larger vessels to pass through. It is opened daily at 9:30 am and again at 2:30 pm. If you need the bridge opened at any other time you need to contact the DPTI bridge operator (refer chapter 13) at least two hours before the bridge needs to be opened.

A vessel wanting to pass must sound three long blasts or wave a flag when it is no more than 600 m but at least 400 m from the bridge. If the bridge operator is available, he or she will indicate:

- that the signal has been heard, by waving a red flag or flashing a red light; or
- that the vessel can proceed, by waving a green flag or flashing a green light.

Before going through the bridge, the vessel must sound one long then one short blast, or wave a flag.

Paringa Bridge

A four knot ferry crossing.

Ferries

When approaching a ferry crossing you must:

- if possible sound one long blast on a whistle, horn or similar device when between 800m and 400m from the ferry, then proceed with caution
- reduce speed to 4 knots within 100 m of either side of the crossing
- all vessels must give way to a ferry which is crossing the channel and avoid proceeding ahead of the ferry
- never pass close to a ferry that is crossing because the heavy steel cables used to guide it may be close to the surface and can severely damage a vessel
- slow down or stop, and wait for the ferry to reach the bank and 'lock on' before proceeding, keeping a look out for the ferry cables

A ferry signals its intention by showing:

- a flashing green light if it is not going to proceed and the other vessel can pass; or
- between sunset and sunrise an all-round red light at each end, and an all-round green light above the red light at the forward end, to indicate the direction in which it is moving.

Locks

Traversing a lock is quite simple providing you observe the following basic rules.

- When between 600m and 400m from the lock, signal the lock master your intention to proceed by:
  - sounding three long blasts (4-6 seconds each) on a whistle, horn or similar device; or
  - waving a flag; or
  - flashing a light.
- Wait at least 150 m from the lock until the lock master gives the signal to proceed, which is:
  - a green flag, or
  - a green fixed or flashing light.
- Slowly proceed into the lock chamber.
- If necessary, use the holding ropes to counter the water surge when the water level alters.
- Never tie up to anything inside the lock.
- Wait for the lock master to indicate it is safe to move out of the chamber.

The SA Water Berri office has information on lock opening times (refer chapter 13).

Port Adelaide River

Note: a four knot speed limit applies within 100 m either side of all Port River Bridges.

Birkenhead Bridge

If you require Birkenhead Bridge to be opened you need to contact the DPTI Traffic Management Centre, either by telephone or VHF Marine Radio Channel 68, call sign 'Birkenhead Bridge', at least two hours before you need the bridge opened (refer chapter 13).

Port River Expressway (PREXY) Bridges

As these bridges have a minimum clearance of more than 8 m, many vessels are able to pass under without the bridges being opened. However, if you require the PREXY Bridges to be opened you need to contact the DPTI Traffic Management Centre, either by telephone or VHF Channel 68, using call sign 'Prexy Bridges' at least 10 minutes ahead of the opening time, but no more than one hour ahead of opening. The opening times of the PREXY Bridges, on request only, are as follows:

Weekdays:

6:00 am to 6:15 am and 7:00 am to 7:15 pm.

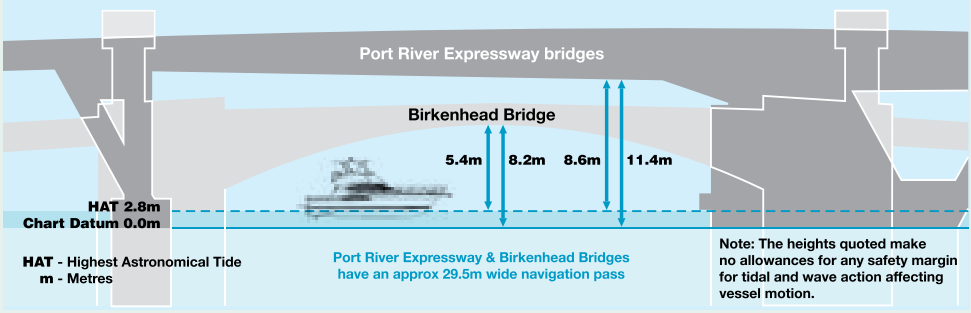
A four knot speed limit applies within 100 m either side of all Port River Bridges.

Weekends and Public Holidays:

10:00 am to 10:15 am, 3:00pm to 3:15 pm and 6:00 pm to 6:15 pm (extra opening available from 10:00 am to 10:15 pm during daylight saving).

Vessels must not approach within 100 m of the PREXY Bridges while they are being raised or lowered.

For all Port River bridges, where no vessel traffic control signals are operating at the time, if two vessels are approaching the bridge from opposite directions and cannot pass each other safely under the bridge, the vessel travelling upstream (that is, inland away from Outer Harbour) is required to give way to and allow safe passage to the vessel travelling downstream (that is, towards Outer Harbour and open water). Further information regarding opening times and procedures for Port River Bridges can be found at www.sa.gov.au/boatingmarine.



Chapter 10. Self-check questions

1) What must you do when nearing a ferry crossing on the River Murray?

A. Reduce speed to four knots within 100 m either side of the crossing and watch out for ferry cables.

B. Reduce speed to four knots within 50 m if the ferry is moving and watch out for ferry cables.

C. Reduce speed to four knots if the ferry is moving and watch out for the ferry cables.

D. Sound one long blast on a horn, whistle or similar to advise the ferry operator you intend approaching and they should not start crossing.

2) How can you tell whether it's safe to pass through a ferry crossing?

A. The ferry operator waves a green flag.

B. A flashing green light shows the vessel is not moving.

C. The ferry operator sounds a siren to any vessel waiting to pass.

3) What distance from a lock must you wait for the Lock Master's signal to enter?

A. 150 m.

B. Between 800 and 400 m.

C. No minimum distance as long as you slow to four knots.

4) At night, what lights does a ferry show to indicate the direction of travel?

A. A flashing green light forward.

B. Red lights each end and an all-round white light above the forward red light.

C. Red lights at each end, with a green light above the forward red light in the direction of travel.

11. Special activities

Waterskiing and operating personal watercraft are popular activities in South Australia's waterways. Both involve high speed, which is appealing but also comes with risks. In this chapter you will find information on licensing and registration, as well as the safety rules that apply to both activities, and steps you can take so you can enjoy your time on the water without attracting complaints from other water users or local residents.

You should always check the water for hazards before undertaking any high-speed activities.

Personal watercraft

Personal watercraft (PWC) are often known by their brand names, including Jet Ski®, WaveRunner®, Sea-Doo® and WaveJammer®.

A PWC has four key characteristics:

- has a fully enclosed hull
- is propelled by a motor
- is designed not to retain water if capsized
- is operated by a person who sits astride, stands or kneels on it.

PWC operate under the same general rules as other power-driven vessels. The driver must have a boat operator's licence and it is illegal to let an unlicensed person drive a PWC.

Exemptions may apply where an area is covered by an approved commercial hire and drive business operation.

Note: Special permit holders cannot operate a PWC.

The manoeuvrability of PWC is a large part of their appeal but it also makes them dangerous in inexperienced hands. There is a designated PWC only area at Goolwa and several PWC Hire and Drive businesses throughout the state where you can have a try at operating a PWC and decide if it is for you.

Noise is a common complaint about PWC operations. Constant or excessive noise when PWC congregate in one area can be very irritating for local residents and those who are visiting. You should respect other people's right to peace and quiet, the wildlife and be considerate. To avoid or reduce the chance of complaints being made, it is recommended that you avoid operating PWC when the winds are blowing onshore towards populated areas, including campsites.

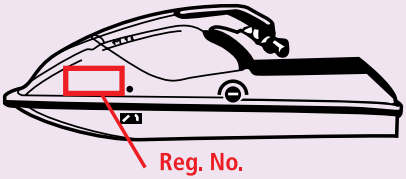
Code of Practice Sticker (Ride Smart)

The Code of Practice (Ride Smart) sticker is a legal requirement and must be affixed on the PWC so that it is clearly readable from the steering position.

The sticker reminds the operator of rules which are specific to PWC.

Registration

As with other motorised vessels, PWC must be registered for use in South Australia. The following guidelines apply to affixing your registration number, which takes precedence over decorative or customised decals and striping.



Your registration number must be:

- a different colour to the PWC
- be fixed on both sides of the PWC
- a minimum of 150mm high if the PWC is 3m or more in length; numbers of a minimum 100mm are acceptable if the PWC is less than 3m
- affixed to the hull above the waterline and clearly legible from 50 m in fine, clear conditions (refer diagram).

Operating rules

Operating in a reckless manner, without due care or causing nuisance are offences and carry serious penalties.

Like operators of other power-driven vessels, PWC operators are required to:

- comply with give way rules, including giving way to sailing vessels, larger vessels operating in confined channels and other vessels crossing from your starboard side
- comply with all speed limits (vessels are required to travel at a safe speed at all times)
- ride on the starboard (right) side of a river or channel in the direction of travel
- comply with waterskiing rules when towing a person (refer Waterskiing, this chapter)

There are other rules that are specific to PWC. Operators must:

- check for local rules including operating restrictions, which are often displayed on signage at boat ramps and on beaches
- operate only until sunset or 8 pm (whichever is the earlier) on any day*
- only operate after 9 am on Sundays, or after 8 am on Monday to Saturday*
- comply with a 4 knot speed limit within 200m of the metropolitan shoreline (edge of water) between Outer Harbour southern breakwater and the southern end of Sellicks Beach and the backwaters of the River Murray, unless zoned otherwise
- comply with 4 knot speed limits or exclusion zones that apply to a number of other areas across the state, as well as all other general boating speed limits
- ensure that they and any passengers are wearing an approved lifejacket Level 50 or 50S (Level 100 or above can restrict movement and can cause injury in high-speed activities, and as such is unsuitable for use on a PWC)
- not operate in unprotected waters (beyond two nautical miles seaward from the coast of the mainland and Kangaroo Island, or from the shores of Lakes Albert or Alexandrina), without approval from the CE of DPTI.

* A PWC engaged in towing another person (that is, waterskiing and such) on the River Murray can operate between sunrise and sunset any day, provided all waterskiing rules are complied with.

There is no legal requirement to carry safety equipment on your PWC except that each person on board must wear an approved and properly fitted lifejacket Level 50 or 50S at all times. However, it is recommended that you carry easily transportable equipment including flares if you are operating in semi-protected waters (inshore of a line 2 nautical miles seaward of the low water mark of the coast of the mainland or Kangaroo Island, or of the banks of Lakes Alexandrina and Albert).

Safe operation

It is most important to keep a good lookout for other vessels, people, and hazards in the water at all times.

- Wherever you operate, swimmers may be hidden from view by waves and swell, so keep well away from, or slow down in areas where swimmers are likely to be. A 4 knot speed limit applies within 50m of swimmers or other people in the water.
- Don't cut blind corners.
- Slow down or stop if your vision is affected by sun or spray.
- Keep clear of anchored and moored vessels.

For your own safety you should always attache the ignition cut-out safety line to your lifejacket and consider suitable footwear, goggles and gloves.

PWC are increasingly being used for waterskiing. The same rules apply to PWC operators as all powerboat operators, including the requirement to carry an observer who must face the skier at all times. The PWC must have seating for at least two people and ideally three, in case the skier is injured. It is also advisable to use a PWC that is designed for towing.

Maintenance

As there are different makes and types of PWC, operators must refer to the PWC user manual for more detail on maintenance and services. As part of your trip preparation it is important to ensure that your PWC is in good order by inspecting key features before leaving home, the ramp or shore. It is recommended that you inspect your PWC when you return from each trip for any damage or faults. If you do not use your PWC for long periods of time, it is recommended that you arrange for it to be serviced by an approved service provider.

Hiring a PWC

You need a boat operator's licence to be able to drive a PWC on South Australian waterways. Exemptions may apply where a PWC is operated in waters defined under an approved Hire and Drive operation. For more information about domestic commercial vessel operations please contact The Australian Maritime Safety Authority (refer chapter 13, Contact details & further information).

Waterskiing

Waterskiing is a popular and exciting sport however the combination of relatively narrow waterways, crowds of boats at busy times and the relatively high speeds involved, there are some risks.

To help reduce the chance of an incident, the following special rules apply to waterskiing in addition to the general boating rules.

- Waterskiing is not allowed between sunset and sunrise, except with written permission from DPTI.
- No more than three waterskiers, or one device with no more than three people on it, may be towed at one time, except with written permission from DPTI.

Note: a special permit holder cannot operate a vessel towing a waterskier or any other person.

- Every person being towed must wear an approved lifejacket Level 50 or 50S.
- Any vessel (including a PWC) being used to tow a person must carry an observer as well as the licensed operator. In general, both the operator and observer must be aged at least 16 years (a special permit holder may act as the observer only if the boat operator is aged at least 18).
- The observer must watch the skier at all times and give the operator directions to keep the skier safe.
- Boat operators, observers and waterskiers must not have a blood alcohol concentration (BAC) of .05 or above.

- On leaving a take-off/landing area, the operator should keep to the starboard side and keep well clear of any vessel approaching.
- All turns on the River Murray must be in an anti-clockwise (left-hand) direction. This helps you keep to the starboard side in the direction of travel at all times.
- On returning to a take-off/landing area, the operator should approach from the starboard side and clear the area as quickly as possible.
- Ski ropes, devices or skis trailing from a boat must be removed from the water and booms brought on board before returning to a take-off area.
- Dropped skis, ski ropes etc must not be left in the water where they can be a hazard to other traffic.
- For their own safety, skiers must be dropped off in the water to glide towards the riverbank or shore, rather than skiing into the launching area.
- Vessels must not approach within 100 m directly behind a person who is being towed.

Hand signals

Boat operators, observers and waterskiers should learn the hand signals in the following diagram for clear communication between boat and skier.

A skier falling into the water must hold an arm or ski in the air to show the observer where they are and that they are not hurt, and to draw attention of their presence in the water to other boat operators.

1—Speed up

(Thumbs up)

2—Slow down

(Thumbs down)

3—Turn

(Circling motion above head followed by pointing in the direction of the turn)

4—Back to shore

(Pat top of head)

5—Cut motor

(Slashing hand across throat)

6—Stop

(Hands raised with fingers outstretched)

7—All OK

(An 'O' made with the thumb and index finger)

Seaplanes

When on the water, seaplanes are just like any other vessel. They are subject to all the restrictions and privileges of other boats and conduct their operations accordingly.

Don't be alarmed if a seaplane alights or takes off in the waterways near you. Seaplane Pilots are specially trained and qualified to operate upon the water. Like other boat operators, they hold a boat operator's licence to operate a vessel with an engine.

Avoid making sudden changes of direction which might confuse the Pilot or obstruct the Seaplane's path.

Chapter 11. Self-check questions

1) What is the speed limit when operating a PWC within 200 m of the metropolitan shoreline, and in backwaters of the River Murray?

A. 5 knots.
B. 10 knots.
C. 4 knots.

2) On which side of a river or channel must a person remain when operating a PWC?

A. On any convenient side, except when waterskiing.
B. To the starboard (right) side in the direction of travel—the same as all vessels on water.
C. To the port (left) side in the direction of travel—so that other vessels can see you coming and get out of the way.

3) What information is displayed on the PWC Code of Conduct ('Ride Smart') sticker?

A. The rules and regulations that apply specifically to PWC.
B. Maximum speed and stoppage distance information, to allow for safer stunts and tricks.
C. Emergency telephone numbers.
D. All of the above.

4) In what direction must turns be made by a vessel engaged in waterskiing on the River Murray?

A. To the right (clockwise).
B. To the left (anti-clockwise).
C. In any direction, as long as you signal where you're going.

5) When is an observer required on board a vessel that is towing a skier or skiers?

A. When the vessel is towing children.
B. At all times and on all vessels towing a person or persons—whether on skis, a kneeboard/wakeboard, or a device.
C. Only in or on vessels that have a seat for an observer.

12. Protecting the environment

All boaties can play an important role in looking after our State's waterway environments. This involves not only your own good practices, such as retaining rubbish on board and preventing fuel leaks and spills, but also protecting our waters and wildlife by watching out for the harmful or illegal actions of others.

Remember also that your vessel's wake and wash can impact on riverbanks and wildlife, as well as on other water users, so consider the effect of all of your actions on the environment

Marine wildlife

Marine mammals

All marine mammals including whales, seals, sea lions and dolphins, are protected in South Australian waters and any person causing harm to a marine mammal can expect a heavy fine.

National Parks and Wildlife legislation (refer chapter 13, Contact details & further information) specifies minimum allowable distances from whales and dolphins for various types of boats and other water users. Some further restrictions may apply within the Adelaide Dolphin Sanctuary, located mainly within the Port Adelaide River.

You must reduce speed and change direction away from whales and dolphins to protect them and ensure your safety.

Reporting incidents

You are asked to report sightings of stranded, injured or dead marine mammals, or of anyone harassing a marine mammal contact the Department of Environment Water and Natural Resources (refer chapter 13, Contact details & further information).

The following details may be required in your report.

- When it was first observed, the location, type and number of animals
- Your name and contact details
- The nature of the incident.
- Identity or description of people involved (if any)
- The registration number of any boats (or vehicles) involved
- Accessibility by boat and/or vehicle.

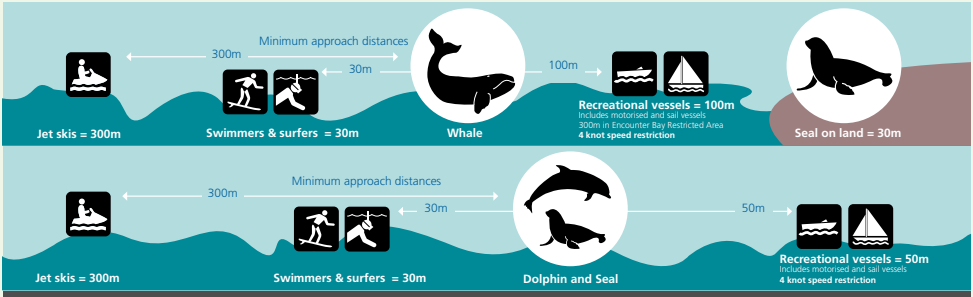
Sightings of rare species

If you see marine life that's unusual in South Australian waters, including turtles, strange fish and sea snakes, please contact the South Australian Museum, (refer chapter 13, Contact details & further information).

Sightings of sharks

If you see a shark near swimmers or where it could otherwise harm humans, please report the location, description, distance to shore, and your contact details to one of the following:

- FISHWATCH, telephone: 1800 065 522
- SA Police, telephone: 131 444
- the local surf life saving club.



If a marine mammal approaches your vessel:

- Put engine in neutral and let the animals come to you
- Do not engage propellers until they move off
- Make no sudden movements and continue on a slow, straight course where possible

Penalties up to $100,000 for breaches of the Act and Regulations apply.

ADELAIDE DUTY OFFICER MOBILE NUMBER: 0427 556 676
Visit www.environment.sa.gov.au for further information

Australian Government
Government of South Australia
Department for Environment and Water
National Parks South Australia

Aquatic reserves and marine parks

Aquatic reserves and marine parks safeguard important marine habitats, species of flora and fauna, significant natural features and cultural heritage.

Restrictions in aquatic reserves range from totally closed areas to areas allowing some recreational fishing. These are sometimes signposted; please check for details before you go boating (refer chapter 13, Contact details & further information).

Marine park sanctuary zones prohibit all forms of extractive activities, including fishing and collecting, mining, aquaculture and dredging. Maps and coordinates are available online at www.marineparks.sa.gov.au

Sanctuary zone boundaries are progressively being incorporated into navigational charts and other publications.

If you see a fishing offence in an aquatic reserve or marine park sanctuary zone, please contact FISHWATCH on 1800 065 522

If you use a chart of the area and a hand-held GPS receiver for navigation, you should take care; variances can occur both from GPS inaccuracy and from changing conditions since the chart was printed.

Avoiding pollution

Garbage, ship's waste and fuel spills from boats can be fatal to marine animals, as well as harmful to waterways.

Good environmental practices on the water include:

- retain all garbage on board until on shore
- avoiding refuelling on water where possible and ensure fuel lines and connections are tight
- don't discharge human waste overboard in harbours, or within three nautical miles of shore (a self-contained portable toilet is recommended for vessels that do not have a toilet installed—where space permits).

To report incidents of marine pollution (refer chapter 13, Contact details & further information). In your report, you'll be asked to provide:

- your name and address
- the registration number and name of the vessel involved, if known
- if possible, a description of the person responsible
- the location of the incident (if possible, latitude and longitude where clear landmarks are not available)
- details of the incident (what was discharged and how much)
- names and addresses of any witnesses
- details of any other boats nearby
- If possible take a photograph

Disposing of vessel waste

The Environment Protection Authority (EPA) has introduced a Code of Practice for vessel and facility management (marine and inland waters), which covers what must be done with black water (toilet waste) and grey water (water from dishwashing, laundry etc) when on the River Murray or on open water.

Noise

Because noise carries easily over water it should always be kept to a minimum. This includes engine noise, as well as that created by activities on board, such as with generators or loud music. This is particularly important along the River Murray and near coastal settlements, where your noise is more likely to disturb people—residents are entitled to reasonable consideration, especially early in the morning.

Historic shipwrecks

Vessel anchors are a major threat to historic shipwrecks. Anchors can tear the structure, disturb the site and destroy sensitive marine life. It's an offence to anchor on a historic shipwreck, so if you intend to visit a wreck site you must anchor away from the wreck itself.

Historic shipwreck

The recommended anchoring procedure near an historic shipwreck is to:

- locate the wreck (generally using an echo sounder)
- mark the position of the wreck by dropping a buoy attached to a line and small weight (sufficient to resist any current, but light enough to avoid damaging the wreck)
- motor upwind or, if appropriate, up-current of the wreck
- drop a suitable anchor a little way off the wreck; if you drop enough line and have positioned the boat correctly, you'll drift back on the anchor line until the vessel is positioned near to or over the wreck (close to the marker buoy)
- if there is little wind or current the marker buoy can be left in place, otherwise retrieve it.

Some shipwreck sites are protected zones and can't be entered for any reason without a permit issued by the Department for Environment Water and Natural Resources (refer chapter 13).

Riverbank erosion

Riverbanks can be extremely sensitive to erosion and other soil effects. 'Slumping' is where a section of riverbank suddenly gives way, taking with it trees and whatever else is on the bank at the time. Slumping incidents have caused problems in some areas of the Murray in recent years.

Riverbank erosion can be caused or affected by natural actions like wind and wave action, heavy rain or soil cracking in the heat, but boating can also have an effect by raising wake and wash and stirring up sediments. You can do your bit by trying to minimise your vessel's wake and wash.

Some vessels have a larger wash at slow speeds and some at higher speed, so you need to be aware of your boat's behaviour to take the necessary action to reduce your impact on the river environment. Take care if waterskiing to cut down the amount of wash your skiing creates near the riverbanks (refer chapter 13, Contact details & further information).

New slumping incidents should be reported to the Riverbank Collapse hotline 1800 751 970.

Watching our borders

Border Watch plays a vital role in protecting Australia's borders from the entry of illegal and harmful goods and unauthorised people. Counter-terrorism and improved quarantine intervention remain top priorities, as does intercepting illicit drugs and other potentially harmful items.

You can assist by reporting any unlawful or suspicious border (coastal) activities to the Border Watch (refer chapter 13). Callers may remain anonymous and all information is treated confidentially.

If you see something, it's important to act as soon as possible. Don't get involved—simply report what you see or hear—and try not to disturb or remove anything, as this could destroy vital evidence.

Chapter 12. Self-check questions

1) When is a vessel permitted to anchor on an historic shipwreck?

A. With permission from DPTI.

B. Between sunset and sunrise.

C. It's an offence to anchor on an historic shipwreck at anytime.

2) What basic restrictions apply to vessels operating near whales and dolphins in South Australian waters?

A. All boats must stay away a minimum distance from whales and dolphins and, if a whale or dolphin approaches, must stop or move away from the animal.

B. Sailboats can approach single whales or dolphins but must stay away from groups, for their and the animals' safety.

C. Motor boats must never approach within 500 m of a dolphin, or within 800 m of a whale, within Gulf Waters.

3) What restrictions apply within South Australia's aquatic reserves and marine parks?

A. No boating anytime.

B. No fishing at any time.

C. Different restrictions apply to different parks and reserves; you need to check before entering these areas.

13. Contact details & further information

Service SA customer service centres

For most marine enquiries, including registration, licensing and special permits contact:

Telephone: 13 10 84

www.sa.gov.au/customerservice

Credit card payments for registration renewals

(24 hours a day; change of address can also
be performed online through EzyReg).

Telephone: 1300 363 805
8 am—6 pm, Monday to Friday.

www.sa.gov.au/ezyreg

Marine operations

For general boating, safety enquiries, reporting accidents, incidents and navigational advice contact:

Telephone: 1300 183 046
9 am—5 pm, Monday to Friday.

dpti.recreationalboatingunit@sa.gov.au

www.sa.gov.au/boatingmarine

Aquatic reserves and marine parks

(refer to FISHWATCH)

Australian Builders Plate

South Australian Government website:

www.sa.gov.au/boatingmarine

Australian Communications and Media Authority (ACMA)

For radio frequency enquiries
Telephone: 1300 850 115
www.acma.gov.au

Australian Maritime College (AMC)

For the Marine radio operator's handbook and Marine Radio Operator's Certificate of Proficiency, contact the Office of Marine Communications at AMC
Telephone: 1300 365 262
www.amc.edu.au/omc

Australian Maritime Safety Authority (AMSA)

General enquiries: (02) 6279 5000 (during EST business hours)
www.amsa.gov.au
Register a 406 MHz beacon or maritime mobile service identity (MMSI)
www.beacons.amsa.gov.au

Bridges – Port River

General enquiries

Telephone: 1800 018 313
Radio: VHF Channel 68 using call sign either 'Birkenhead Bridge' or 'Prexy Bridge'.

Boat Code

For a list of South Australian Boat Code agents
www.sa.gov.au/boatingmarine

Telephone: 13 10 84
(Service SA customer service centre)

Border Watch

Telephone: 1800 009 623 (24 hours a day)
www.border.gov.au

Bureau of Meteorology (BOM)

Reports for South Australian coastal waters are available at all times
www.bom.gov.au/marine

Telephone recorded forecast service for all areas of South Australia 1900 955 365 (charges apply)

Department of Environment and Water (DEW)

General enquiries

Telephone: (08) 8204 1910
www.environment.sa.gov.au

- Report a stranded or injured marine mammal
- Animal welfare
- Coast & Marine conservation
- Historic shipwrecks
- Marine parks

Water Connect

www.waterconnect.sa.gov.au

Riverbank collapse hotline

Telephone: 1800 751 970 (24 hours)

Department of Planning, Transport and Infrastructure (DPTI)

General boating safety and Boat Code enquiries

Telephone: 1300 183 046
www.sa.gov.au/boatingmarine

Boat Registration and Licensing enquiries

Telephone: 13 10 84
www.sa.gov.au/customerservice

Traffic Management Centre

Telephone: 1800 018 313
For enquiries relating to the ferry (River Murray), general marine issues, marinas, boat ramps, marine works program, jetty damage, navigation beacons faults and emergencies

Marine Safety Officers

Telephone: (08) 8260 0554
(ask for the office near your area)

Offices:

Adelaide
Goolwa
Murray Bridge
Port Lincoln
Renmark

Disposing of unwanted EPIRBs

- All Battery World stores across Australia have collection bins for unwanted EPIRBs – charges may apply. Visit to www.batteryworld.com.au for locations.
- Volunteer marine rescue groups may also accept unwanted EPIRBs (please contact before drop-off. Beacons must not be left at an unattended squadron):
  - SA Sea Rescue Squadron Radio Room
  - Australian Volunteer Coast Guard
  - Whyalla Sea Rescue

For details of other squadrons, go to the South Australian State Emergency Service website www.ses.sa.gov.au

DPTI - Ceduna transaction centre

Ceduna (limited transaction service)

c/- Ceduna District Council
44 O'Loughlin Terrace
Ceduna SA 5690
Telephone: (08) 8625 3407

Environment Protection Authority

Telephone: (08) 8204 2004
www.epa.sa.gov.au
Illegal Dumping

Flinders Ports Pty Ltd

General enquiries

Telephone: (08) 8447 0611
www.flindersports.com.au

Flinders Ports emergency number

Telephone: (08) 8447 0600

Hydro Survey

Telephone: 1800 060 450
www.hydrosurvey.com.au

Report oil spills

Telephone: (08) 8248 3505 or call VHF Radio Channel 12 (24 hours a day)

Harbors and Navigation Act 1993 & Regulations 2009

Refer to www.legislation.sa.gov.au click 'Act' or 'Regulations and rules', and select from the alphabetical list.

Locks

Refer SA Water at
www.sawater.com.au

LPG

Information regarding gas installations or incident reporting

Office of the Technical Regulator

Telephone: (08) 8226 5500
www.sa.gov.au

Marine mammals and Shark sightings

If you find a stranded or injured marine mammal (refer to the Department for Environment and Water)

If you see a dead marine mammal or a marine mammal being harassed (refer to the Department for Environment and Water)

If you see a shark near swimmers or where it could harm humans, report the location, description, distance to shore, and your contact details to:

FISHWATCH

Telephone: 1800 065 522

SA Police Water Operations Unit

Telephone: (08) 8242 3466

Marine parks

General enquiries

Telephone: (08) 8204 1910
www.marineparks.sa.gov.au

Murray Watch

Telephone: (08) 8531 0710
www.murraywatch.org.au

National and interstate maritime authorities

Australian Maritime Safety Authority
www.amsa.gov.au

New South Wales
www.rms.nsw.gov.au

Northern Territory
www.nt.gov.au

Queensland
www.msq.qld.gov.au

Tasmania
www.mast.tas.gov.au

Victoria
www.transportsafety.vic.gov.au

Western Australia
www.transport.wa.gov.au

Notices to mariners

www.sa.gov.au

Office of the Technical Regulator

Electrical, plumbing and gas compliance

Telephone: (08) 8226 5500
www.sa.gov.au

Oil spills and Marine Pollution

Telephone: (08) 8248 3505
or call VHF Radio Channel 12 (24 hours)

Outer Harbour Vessel Traffic Services (formerly Signal Station)

Telephone: (08) 8248 3505
or VHF Radio Channel 12 (24 hours)

Paringa Bridge

The bridge opening hours are Monday to Friday between 9.30 am and 2.30 pm.

Telephone: 0408 955 322 at least two hours before the bridge needs to be opened.

Primary Industries and Regions SA

General enquiries

Telephone: (08) 8204 1380
www.pir.sa.gov.au/fishing

FISHWATCH

Telephone: 1800 065 522 (24-hour hotline)

Rescue Coordination Centre (RCC-Australia)

General enquiries

Telephone: (02) 6230 6811 (EST office hours)
www.amsa.gov.au/search-and-rescue

Maritime search and rescue

Telephone: 1800 641 792
(24-hour emergency number)

River levels/riverbank slumping or collapse

Riverbank collapse hotline
Telephone: 1800 751 970 (24 hours)

RSPCA

Telephone: 1300 4 RSPCA
(1300 477 722)

SA Police

For life-threatening emergencies

Telephone: 000

SA Police Water Operations Unit

Telephone: (08) 8242 3466

Police attendance

Telephone: 13 14 44

Crime Stoppers

Telephone: 1800 333 000

Service SA Customer Service Centres

Telephone: 13 10 84
www.sa.gov.au/customerservice

Shipwreck sites

(refer to the Department of Environment and Water)

South Australian Museum

Telephone: (08) 8207 7500

State Emergency Services

Storm or flood emergency

Telephone: 13 25 00

Life-threatening emergencies

Telephone: 000
www.ses.sa.gov.au

SA Water

www.sawater.com.au

Adelaide
Telephone: 1300 650 950

Berri
Telephone: (08) 8595 2222

Volunteer Marine Rescue

Contact via Marine Radio as follows.

- VHF channel 16
- MF/HF channels 4125, 6215, or 8291 kHz
- 27 MHz channel 27.88

Waste oil stations

Restricted to commercial fishing operators only
Telephone 1800 018 313

Waste water
(Grey water and Black water)

Telephone: (08) 8204 2004
The Code of Practice for vessel and facility management (marine and inland waters) is available at (all hours)
www.epa.sa.gov.au

Publications:

For information regarding available publications refer to
www.sa.gov.au/boatingmarine

Acknowledgements:

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Answers to self-check questions

Chapter 1: **1.** B **2.** A **3.** B **4.** A

Chapter 2: **1.** C **2.** D **3.** D

Chapter 3: **1.** B **2.** D **3.** B **4.** C

Chapter 4: **1.** A **2.** D **3.** C

Chapter 5: **1.** A **2.** D

Chapter 6: **1.** A **2.** C **3.** B **4.** A **5.** D **6.** B **7.** B

Chapter 7: **1.** B **2.** A **3.** B **4.** A **5.** C **6.** A

Chapter 8: **1.** C **2.** D **3.** D

Chapter 9: **1.** B **2.** D **3.** E

Chapter 10: **1.** A **2.** B **3.** A **4.** C

Chapter 11: **1.** C **2.** B **3.** A **4.** B **5.** B

Chapter 12: **1.** C **2.** A **3.** C