



Government of **Western Australia**  
Department of **Transport**

Empowering a  
thriving community

# Recreational Skipper's Ticket **Workbook**

Eighth Edition - November 2024



**YOU'RE THE SKIPPER  
YOU'RE RESPONSIBLE**



[www.transport.wa.gov.au/imarine](http://www.transport.wa.gov.au/imarine)

# Where to get assessed?



*An RST Interim Certificate being issued*

## Assessment Locations

The Department of Transport (DoT) has established a network of Authorised Providers who conduct Recreational Skipper's Ticket assessment throughout the State. A list of Authorised Providers and the regions they service can be found on DoT's website: [www.transport.wa.gov.au/imarine/rst](http://www.transport.wa.gov.au/imarine/rst)

Contact an Authorised Provider in your area to obtain details on assessment locations, times and prices. DoT does not regulate the assessment fee, prices vary, so shop around for the deal that best suits your needs.

For more information visit our website: [www.transport.wa.gov.au/imarine](http://www.transport.wa.gov.au/imarine) or phone the RST information line on 13 11 56

# You're the skipper, you're responsible

To skipper a recreational vessel in Western Australia you'll need to demonstrate a minimum set of core competencies.

Developed by the Department of Transport (DoT), the agency responsible for marine safety in Western Australia, the Recreational Skipper's Ticket (RST) will ensure that people in charge of recreational vessels have the minimum skills and knowledge to protect themselves and their passengers, and to share the waterways safely with others.

This workbook contains all the information that you will need to know in order to obtain an RST:

- the enrolment and assessment processes;
- the theoretical components (with sample questions to test your knowledge); and
- the practical component skills you will need to demonstrate.

We hope that you find this workbook both useful and informative and trust that the RST process will encourage you to continue your pursuit of boating knowledge. The greater the depth of your knowledge, the more confident and competent skipper you will be.

To keep abreast of the latest marine safety information we recommend you register to receive our Boating Community Newsletter by subscribing at [www.transport.wa.gov.au/1marine/boating-communities-newsletter.asp](http://www.transport.wa.gov.au/1marine/boating-communities-newsletter.asp) and join us on Facebook at [facebook.com/MarineSafetyWA](https://facebook.com/MarineSafetyWA)

I wish you a safe and enjoyable time on the water!



Yours sincerely

  
Chris J Mather  
Executive Director Maritime



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# The Recreational Skipper's Ticket

The Recreational Skipper's Ticket (RST) is a qualification based on a set of competencies that have been adopted by all government marine safety authorities in Australia to contribute to and to promote:

- safe use of waterways; and
- awareness of boating safety.

The assessment of these competencies is in two sections: theory and practical.

Depending on your prior qualifications, you may be exempt from the assessment. A list of recognised qualifications is available on our website: [www.transport.wa.gov.au/imarine/rst-skills-recognition-and-equivalents.asp](http://www.transport.wa.gov.au/imarine/rst-skills-recognition-and-equivalents.asp)

## Who has to have one?

The person in charge of a recreational vessel propelled by a motor greater than 6 hp (4.5 kW) must hold an RST.

## What are the age limits?

People of 14 years and older may hold an RST.

RST holders aged from 14 years but under 16 years of age are restricted to operating during daylight hours and at a speed not exceeding 8 knots.

## RST requirements

Function	RST required	Functions that can be performed by the following age groups?					
		Under 10	At least 10 but under 14	At least 14 but under 16	At least 16	At least 17	At least 18
Be the holder of an RST	✓	✗	✗	✓	✓	✓	✓

## Boats with a motor of 6 hp or less

Skipper a boat with a motor 6 hp or less	✗	✗	✓	✓	✓	✓	✓
Drive a boat towing a water skier	✗	✗	✗	✗	✗	✓	✓
Drive a boat when engaged in towing operations	✗	✗	✗	✗	✗	✓	✓

## Boats with a motor over 6 hp

Skipper a boat with a motor greater than 6 hp	✓	✗	✗	✓	✓	✓	✓
Skipper a boat at a speed greater than 8 knots	✓	✗	✗	✗	✓	✓	✓
Skipper a boat between sunset and sunrise	✓	✗	✗	✗	✓	✓	✓
Skipper a boat when engaged in towing operations	✓	✗	✗	✗	✗	✓	✓
Drive a boat towing a water skier (an RST holder must be on board <u>supervising</u> )	✗	✗	✗	✗	✗	✓	✓
Drive a boat while not holding an RST (an RST holder must be on board <u>supervising</u> )	✗	✗	✓	✓	✓	✓	✓
Supervise a person driving a boat (who doesn't hold an RST)	✓	✗	✗	✗	✗	✗	✓

**Definition:** Skipper: The person responsible for the safe operation of the vessel and the safety of all on board.

Drive: To be at the helm and physically operate the controls of the vessel.

## How do I get one?

To obtain an RST you must have your knowledge and skills assessed by an RST authorised assessor. The assessments will cover the following areas:

### Theoretical

A 40 question multiple-choice paper (using questions of a similar standard to the samples in this workbook) will assess your knowledge and understanding of:

- Rules and regulations
- Collision avoidance
- Navigation lights
- IALA buoyage
- Maintenance
- Safety equipment
- Safe operations
- Emergencies.

You will need to get at least 34 questions correct before progressing to the practical assessment.

Answering between 30 and 33 questions correctly is not sufficient: however, you may attempt a different set of questions on the same day. If you answer less than 30 questions correctly you will need to sit the assessment on another day. A maximum of two attempts are allowed in one day.

A range of quizzes to help you prepare for the assessment are available on our website:  
[www.transport.wa.gov.au/imarine/rst-practice-quizzes.asp](http://www.transport.wa.gov.au/imarine/rst-practice-quizzes.asp)

### Practical

The practical assessment will take about 30 minutes and requires you to demonstrate a well-conducted boating trip, including preparation and vessel manoeuvring.



*Assessment will take approximately 30 minutes*

Specific tasks you will be assessed on include:

- operating the vessel within the marine safety rules and regulations throughout the assessment;
- checking the condition of a vessel's berthing and mooring equipment and securing the vessel;
- conducting a safety briefing for all on board;
- preparing and starting the motor safely;
- logging a voyage plan;
- safely departing a berth;
- safely retrieving a simulated man overboard;
- determining your position by using navigational marks, transits and other landmarks;
- performing a controlled stop;
- returning to a berth and securing the vessel; and
- logging off.

Applicants who obtain a result of at least 56 out of the 62 criteria (six wrong or less) will be deemed competent.

An applicant will only be able to undertake one practical assessment per day. If an applicant fails an assessment, they will need to book another assessment on another day.

Once you have successfully completed the theoretical assessment and demonstrated the practical tasks to DoT's standards your assessor will issue you a Receipt of Completion certificate. This entitles you to immediately skipper a recreational vessel with a motor over 6 hp (4.5 kW).

Once your records are approved and processed by DoT an RST card will be sent to your home address.

### Letter of consent

If you're under 18, you must have a letter of consent signed by your parent or legal guardian prior to commencing the RST assessment. A proforma letter can be found on page 119.

### Skills recognition

If you hold a current recreational or commercial qualification that is listed on DoT's website: [www.transport.wa.gov.au/imarine/rst-skills-recognition-and-equivalents.asp](http://www.transport.wa.gov.au/imarine/rst-skills-recognition-and-equivalents.asp) then you may apply for an RST through the Skills Recognition scheme. This will require submitting your qualification to an authorised provider for verification.

A list of authorised providers can be found on DoT's website: [www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp](http://www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp)

## Who does the assessing?

You will need to book in for assessment through an RST authorised provider. DoT maintains a list of RST authorised providers that can be viewed on our website: [www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp](http://www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp)

## What must I provide for the assessor?

Before assessment can take place, you must complete an RST application form and provide the assessor with certain declarations (eyesight and medical) and proof of identity (POI).

### Eyesight declaration

To hold an RST you must have a minimum corrected vision standard of at least 6/12, in at least one eye.

A valid Australian driver's licence or learner's permit will be accepted as proof of adequate eyesight to be in charge of a recreational vessel.

If you don't hold a recognised Australian motor driver's licence or learner's permit you will need to have a medical practitioner, qualified nurse or optometrist complete an RST Eyesight Declaration form. The form is available from your authorised provider or can be downloaded from our website: [www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp](http://www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp)

### Medical fitness declaration

A serious medical condition could conceivably affect your ability to safely operate a recreational vessel. A self-declared medical statement is required before obtaining the RST.

You must advise DoT if you suffer from any physical or mental condition that could affect your ability to safely operate a vessel. This could include:

- epilepsy, fits, giddiness, fainting, seizures;
- heart disease;
- high/low blood pressure;
- arthritis;
- type 1 diabetes; or
- any other physical or mental disability that could affect your ability to safely operate a vessel.

If you suffer from any of the above listed conditions and you believe that it could affect your ability to operate a vessel safely, you must have a medical practitioner complete an RST Declaration of Medical Fitness form on your behalf. The form is available from your authorised provider or can be downloaded from our website: [www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp](http://www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp)



*A Medical and/or Eyesight declaration may be required*

## Proof of identity requirements

As part of the enrolment process, proof of identity (POI) needs to be established. Applicants must show POI to verify their name and signature.

A valid photographic Australian driver's licence or learner's permit will satisfy the POI requirements. People without a driver's licence will need to provide POI documents.

## POI documents

To satisfy these POI requirements, you must provide either:

- one full POI document; or
- one primary plus one secondary POI document.

You must provide the original documents or certified copies.

At least one document **must** show your signature.

### Acceptable full POI documents – no other proof required

You can prove your identity with any one of the following current full POI documents:

- photographic driver's licence or learner's permit issued within Australia;
- Australian passport (not expired more than two years);
- document of identity issued by the passport office;
- Australian Defence Force photographic identity card;
- Federal or Western Australian police officer photographic identity card;
- Police Warrant Card;
- Western Australian Photo Card issued by DoT;
- Marine Certificate of Competency carrying a photograph of the holder; or
- Western Australian photograph (security) licence issued by or cleared with the Western Australian Police Service.

If you have changed your name, you must provide documentary evidence that clearly shows the link between your birth name and your current name.

If you cannot provide full POI documents you must provide one primary AND one secondary POI document.

## Acceptable forms of primary identification:

- overseas passport (not expired more than two years);
- Australian citizenship or naturalisation document or immigration papers issued by the Department of Immigration and Multicultural and Indigenous Affairs, and local government and ethnic affairs documents issued by a passport office;
- Western Australian Firearm Licence;
- birth certificate, or an extract of the birth certificate (must be a certified copy from the issuing body);
- consular photo identity card issued by the Department of Foreign Affairs and Trade;
- Certificate of Aboriginality issued by an organisation (for example, Land Council) recognised by the Aboriginal and Torres Strait Islander Commission;
- photographic licence issued by an Australian driver licensing authority (which can have expired within the last two years);
- security licence (which can have expired within the last two years); or
- evidence of resident status issued by the Department of Immigration.

## Acceptable forms of secondary identification:

- current entitlement card issued by a Commonwealth government department (for example, a Medicare card);
- current card or account card from a bank, building society or credit union;
- passbook or account statement from a bank, building society or credit union (not more than 12 months old);
- telephone, gas or electricity account (not more than 12 months old);
- water or local rate notice or land valuation notice (not more than two years old);
- electoral card or other evidence of enrolment (not more than two years old);
- armed services discharge papers (not more than two years old);
- certificate or statement of accomplishment or enrolment from a recognised educational institution; or
- letter (not more than 12 months old) from the principal of a recognised educational institution.

## Where can I be assessed?

A network of RST authorised providers and their assessors has been established providing good coverage throughout the State. A list of providers can be found on DoT's website: [www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp](http://www.transport.wa.gov.au/imarine/how-to-get-an-rst.asp)

## How much will it cost?

The RST authorised assessor will charge a fee for assessment. This fee is not regulated by DoT so it would be wise to shop around for the best deal. An assessment fee may be required for each attempt.

All RST applications, including Skills Recognition are charged a recording fee by DoT which is paid to the assessor.

## Must I attend a training course?

No, completing a training course is not compulsory. You can study on your own by using the RST Workbook and practice your skills with the help of a supervising skipper.

A supervising skipper can be a parent, relative or friend, however they must hold a RST and be at least 18 years of age.

## Lost or damaged RST

Lost or damaged RST cards can be replaced by submitting an Application for a Replacement Card form and if applicable paying the application fee.

An application form for change of name and address and an RST replacement card is available on DoT's website: [www.transport.wa.gov.au/imarine/change-details-or-replace-card.asp](http://www.transport.wa.gov.au/imarine/change-details-or-replace-card.asp)

## Will it be recognised in other states?

All states require that vessel drivers prove themselves to a common set of standards, so each state's qualification will be recognised in other states the same way a car driver's licence is. When visiting other states always check with the local marine authority to ensure you meet all of their requirements.

## Interstate or overseas ticket valid for three months

If you hold an approved interstate or foreign skipper's ticket, recognised by DoT and listed on DoT's website: [www.transport.wa.gov.au/imarine/rst-skills-recognition-and-equivalents.asp](http://www.transport.wa.gov.au/imarine/rst-skills-recognition-and-equivalents.asp) and you enter Western Australia, as a visitor or with the intention of permanently residing in the State, it will be taken that you hold a RST until three months have elapsed since you entered the State.

After that period you must apply for an RST, under the Skills Recognition scheme, if you wish to continue operating an RST vessel in Western Australia.



*Authorised Assessors are located throughout the State*

## Rules and Regulations

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*A mooring control area*

# Rules and Regulations

WA's waters keep getting busier, and a great range of activities share the limited space. To ensure the safety of all boaters, there are rules and regulations.

At the end of this section, skippers will have a good knowledge of the specific rules and regulations that apply within the navigable waters of Western Australia.

## Responsibilities and duty of care

It does not matter whether you are the master of a large ship or skipper of your own trailer boat – you are responsible for the safety of your vessel, crew and passengers; you must not endanger any other vessel; and you must be ready to assist others who need help.

## Enforcement officers

In WA, DoT, Fisheries, Water Police and other government agencies administer the marine acts and regulations that apply to recreational vessels and boaters. They regularly check vessels for registration and safety gear, as well as monitoring the behaviour of water users.

## RST change of address or name

The holder of an RST must notify DoT within 21 days of a change of name or address. The form can be downloaded from DoT's website: [www.transport.wa.gov.au/imarine/change-details-or-replace-card.asp](http://www.transport.wa.gov.au/imarine/change-details-or-replace-card.asp)

## Identifying the skipper

You must carry your RST and produce it for inspection when requested to by a WA Marine Officer, a member of the Police or other authorised officers.

## Marine infringements and penalties

There are a variety of penalties that can be imposed on a skipper who commits a marine offence. This may include fines, imprisonment and the suspension or cancellation of their RST.

## Marine safety signs

It is the responsibility of the skipper to know the rules for the area they are operating in. Information on gazetted (special use areas) can be found on marine safety signage, charts and boating guides.

At the launching ramps near ski areas there are also signs explaining the rules for that particular area, such as hours of operation, direction of the ski circuit, etc.

Areas subject to gazetted speed limits often have signs depicting the maximum speed limit for the area. Make yourself familiar with these requirements.

## Mooring areas

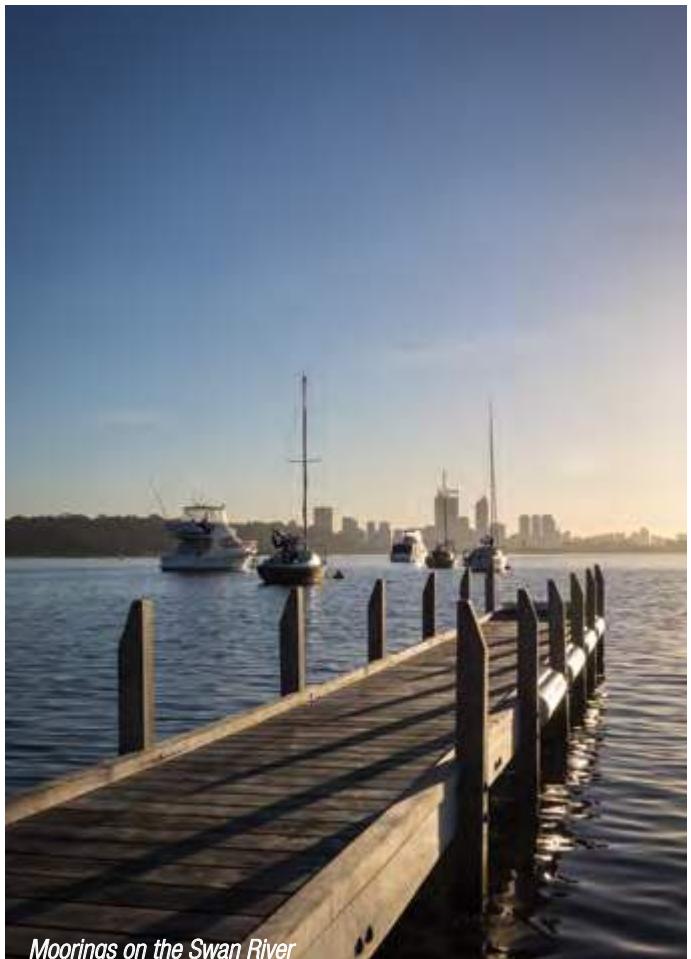
There are many sheltered places in Western Australia where vessel owners can moor their vessel however, you need to seek authorisation from DoT before you can lay a mooring in any navigable water.

Moorings within Mooring Control Areas, (for example, Rottnest Island and the Swan and Canning rivers) must be installed and maintained to a specified standard.

You must have approval from DoT or the local authority to use a mooring within a Mooring Control Area.

Only one vessel at a time is permitted on a mooring, and the vessel must be no larger than the mooring was designed or approved for.

For more information about moorings visit our website: [www.transport.wa.gov.au/imarine/moorings-and-pens.asp](http://www.transport.wa.gov.au/imarine/moorings-and-pens.asp)



*Moorings on the Swan River*

## Nuisance or damage

You are not allowed to travel at a speed or in a way that causes a nuisance or damage to people or other vessels, or causes damage or erosion to the shore or property.

## General speed limit restrictions

Without the approval of DoT you may not drive a motor boat at over 8 knots:

- through an arch of a bridge (unless water skiing is specifically permitted for a bridge);
- in or through a mooring area;
- in any water having a depth of less than 3 metres;
- within 15 metres of a vessel underway; and
- within 50 metres of:
  - (i) a moored vessel;
  - (ii) a person in the water;
  - (iii) a jetty or wharf; or
  - (iv) a river bank or low water mark.

## Obstruction of navigation aids, channels and leads

Crab nets, cray pots, fishing nets, marker buoys – or any other buoyed objects – are not allowed in any channel, fairway or passage without the permission of DoT. Anchoring or mooring is also prohibited in these areas unless you are in distress.

You must not secure a vessel to a beacon or other navigation aid.

## Accident or incident reporting

When an accident results in serious injury or death, or the vessel has been damaged enough to make it unseaworthy or unsafe, the owner or skipper must report full particulars of the incident to DoT within 72 hours.

You can pick up a Marine Incident Report form from DoT's offices, download it from our website: [www.transport.wa.gov.au/imarine/what-to-do-in-an-emergency.asp](http://www.transport.wa.gov.au/imarine/what-to-do-in-an-emergency.asp) or phone 13 11 56 for one to be sent to you.

## Assisting people in distress

All skippers have a legal obligation to assist people in distress unless:

- they are unable to – perhaps the call for assistance was from too far away;
- assistance is not required – marine rescue has taken over; or
- the circumstances make it too dangerous.

If an accident occurs nearby, you must assist where possible, provided it does not seriously endanger you or your passengers.

## Aquatic events

An aquatic event is any form of on-water race or display which may affect the normal navigation of vessels on a waterway. You will need to apply for approval from DoT for most aquatic events. The application process allows the event to be assessed to ensure that all waterway users and legislative requirements are taken into consideration. Information on aquatic events is available at: [www.transport.wa.gov.au/imarine/aquatic-events.asp](http://www.transport.wa.gov.au/imarine/aquatic-events.asp)



*Tying to navigation aids is prohibited*

## Alcohol and drugs

Whether you are going fishing, skiing, diving or just cruising, when you mix alcohol and drugs with boating the consequences can be fatal.

On the water, the effects of alcohol and drugs are magnified and negatively impact the judgement and skills of the skipper and passengers.

WA marine laws prescribe limits for blood alcohol content (BAC) and illicit drug presence. Skippers navigating a vessel are subject to the same alcohol and drug limits and penalties as those in place for WA drivers.

The BAC limit is 0.05 and graduated penalties for being above this limit will align with road laws in WA, including 0.05, 0.08 and 0.15. The illicit drugs captured by these laws will align to the *Road Traffic Act 1974* and the *Road Traffic (Drug Driving) Regulations 2007* and include:

- Cannabis;
- Methamphetamine; and
- MDMA.

DoT marine inspectors and WA Police have the authority to test skippers suspected of being under the influence of alcohol or drugs even if the vessel is not operational and secured, either at a jetty, to a mooring or on anchor.

There is mandatory alcohol and drug testing after boating incidents which result in serious injury or death and if the skipper can't be identified, all those on board the vessel at the time of the incident could be tested.

Failure to comply with a requirement associated with an alcohol or drug test can result in significant penalties above and beyond those that would have applied for an alcohol or drug offence.

## Safety on board

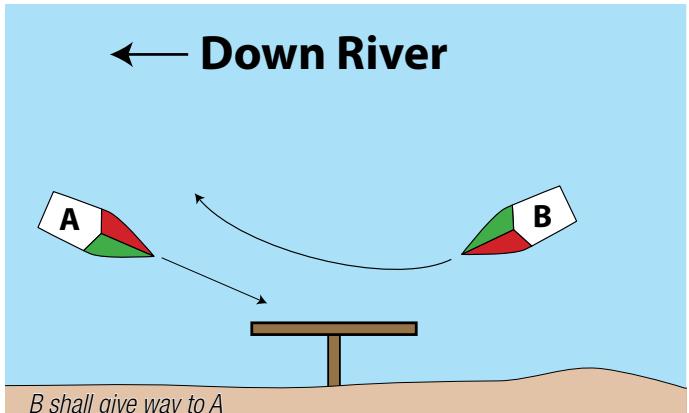
Once a vessel is underway, everybody on board the vessel must keep all parts of their body within the limits of the hull.



## Right of way at jetties

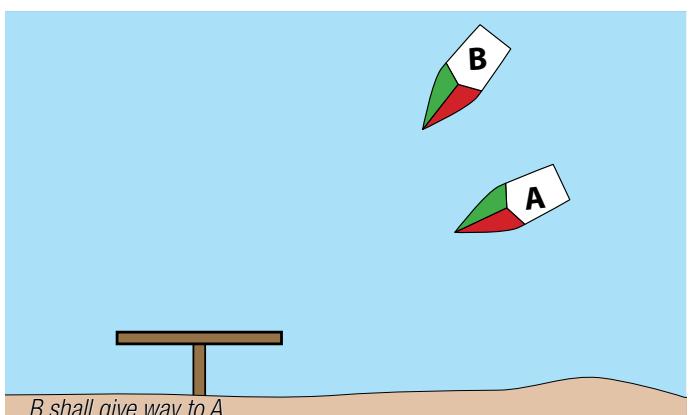
### Approaching from different directions

When two motor boats approach the same public jetty from different directions under such circumstances that if they proceed on their courses a dangerous situation is likely to arise, the motor boat heading down river (B) shall give way to the motor boat heading up river (A).



### Approaching from the same direction

When two motor boats approach the same public jetty in the same direction under circumstances that if they proceed on their course a dangerous situation is likely to arise, the motor boat on the outer course (B) shall give way to the motor boat on the inner course (A).



### Leaving at the same time

When two or more boats are scheduled to leave the same or adjoining jetties or berths at the same time, the vessel first under way shall have the right of way and the other vessel or vessels shall remain stationary until the vessel first under way is well clear.

## Fremantle bridges

Access to the ocean for many thousands of metropolitan boaters is through the Fremantle bridges, the narrowest part of the river and the point where the tidal streams flow most strongly.

Ferries, charter boats, yachts, motor boats and dinghies merge and have to share the available water. Ferries, with their steering less effective at low speed, need plenty of room. Most people realise this and stay well clear, but many do not realise the special problems of yachts.

All but the smallest yachts have to lower their masts to pass under the two downstream bridges, and this makes them vulnerable in two ways. With the compensating weight of the mast now at deck level, the keel has a stronger effect and makes the vessel's rolling motion more violent. If you can, avoid passing a yacht near the bridges, stay well clear and reduce your wake.

## Marine animals and habitat

### Anchoring

An act of vandalism you may never realise you are committing is damage to the seabed when anchoring. Reefs and sea grass beds are very important to sea life, and you should avoid anchoring on them. You can almost always find a patch of sand among them that your anchor will not hurt. If you have no choice but to anchor on reef, use a specialised reef anchor.

Note: There may be anchoring prohibited rules in parts of marine parks.

### Disturbance of wildlife

You should not try to get close to sea lions, whales, dolphins and whale sharks – they can become distressed, especially if they have babies with them.

### Noise, wake and wash

Another form of pollution is the nuisance you can cause simply by operating your vessel thoughtlessly. Wake and wash can cause damage to vessels on moorings and in pens, and injury to people on board them. Keep your speed low enough to cause negligible wash when passing near these areas – and also in the vicinity of wildlife.

Just like many near-shore residents, wildlife can also be upset by noise. For the sake of both people and wildlife limit the noise you have control over – music for instance – and ensure that your exhaust noise has not increased with the age of your motor.

## Sewage

The discharge of sewage from vessels, especially at popular destinations, reduces water quality, creates a human health risk and is universally loathed aesthetically.

As the number of large recreational vessels and commercial vessels in Western Australian waters increases, it is becoming more and more important to control the discharge of sewage into the marine environment.

Marine pollution due to sewage and sullage is regulated at the international, national and state levels.

### How does it enter the marine environment?

Treated and untreated sewage can be discharged from vessels under normal operating conditions. Accidental discharges could also come from vessels and land-based sources.

Sewage treatment plants may also make controlled discharges into the water.

### What impact does it have?

Sewage can have varying effects on the marine environment, depending on habitat types and locations. Some may be able to absorb more sewage, but others could be significantly impacted.

Large quantities of nutrient-rich sewage may encourage algal blooms, which deplete the oxygen supply, killing larger marine life.

Sewage could also introduce bacteria that cause disease for humans who come into contact with it, or who eat seafood from an affected area.

### What you can do

You can reduce the amount of sewage being released into the water by:

- using shore facilities when in harbour, rather than your vessel's toilet; or
- installing an approved sewage treatment system in your vessel if possible (please contact the Department of Health for more information).

### Strategy

To limit the impact of sewage on our environment, the State Government has adopted a regulatory plan that establishes three sewage discharge zones based on the degree of risk to public health or the environment: [www.transport.wa.gov.au/imarine/marine-pollution.asp](http://www.transport.wa.gov.au/imarine/marine-pollution.asp)

# Pollution and the environment

Western Australia's coastal environment is among the most spectacular in the world. With over 13,500 kilometres of salt marshes and temperate ocean, it has a rich biodiversity of marine life that cannot be found anywhere else in the world, including several species of corals, mangroves and sea grasses.

The protection of the marine environment is the responsibility of everyone. We must be conscious of the pollution threats to our waterways and oceans and the serious effects that may result.

State and Commonwealth laws, based on international conventions, cover all kinds of marine pollution including rubbish, oil, plastics and sewage. Pollution is taken so seriously that the penalties can be up to \$200,000 for an individual and \$1,000,000 for companies.

## Rubbish

The pollution regulations relating to boating state that there is no dumping of:

- Oil or noxious substances or plastic anywhere. Plastics include synthetic ropes and synthetic fishing lines and nets.
- Floating rubbish within 25 nautical miles from the nearest land.
- Garbage including food wastes, paper products, rags, glass or metals within 12 nautical miles from the nearest land, or 3 nautical miles if the garbage has been passed through an approved grinder.

## What you should do

You need to plan. Small boats have to arrange to store garbage, waste or oily bilge water and noxious substances on board until they can be discharged responsibly when back in port.

Larger vessels may operate far enough offshore to dispose of garbage and waste at sea, but no vessel can release waste oils, oily bilge or noxious substances anywhere at sea or in the inland waters of Western Australia.

## Bilges

- Check your bilges and keep them clean and dry. If an automatic bilge pump puts an oil and bilge water mix in the water it will land you in trouble.
- Inspect fuel lines and seals regularly and ensure that oil leaks are dealt with quickly.
- Fit a drip tray under the engines with drainage to a holding tank for disposal ashore.

- Consider fitting high efficiency by-pass oil filters. These decrease the frequency of oil changes.
- If you have engine oil leaks, consider placing oil absorbent or water repellent material in the bilge. This is not expensive.

## Refuelling

Refuelling is the most common time for spillage of fuel into the environment. The same procedure that guards against risk of fire during and after refuelling (detailed in the Emergency section, page 87) will also help prevent pollution.

In particular guard against overfilling by:

- knowing how much fuel you need to take (allowing space in the tank for expansion)
- not leaving the filling nozzle unattended; and
- listening for the sound of fuel blowing back from the tank breathers – you may need to slow the filling rate.

## Reporting spills and illegal dumping

Under Western Australian law, the polluter must report spills of oil or noxious substances to DoT – and there are penalties for failing to do so.

The information needed is:

- when and where the incident occurred;
- name and registration number of the offending vessel;
- type and extent of pollution; and
- any other relevant information.

For further information or to report an incident phone: Oil Spill Response Coordination Unit (08) 9480 9924.



# Vessel registration

## Vessels that must be registered

Vessels that are or may be propelled by mechanical power, this includes electric motors and boats which are ordinarily propelled by sail, must be registered with DoT and will be subject to an annual registration fee.

Registration fees contribute towards launching ramps, jetties, navigation aids, safety patrols and boating safety education.

Vessels currently registered in another state receive a three month period of grace after entering Western Australia. Vessels entering from the Northern Territory have 30 days. After this period of grace the vessel must be registered with DoT in this State.

## Exemptions from registration

The following recreational vessels, that are not fitted or cannot be fitted with mechanical power, do not have to be registered:

- yachts;
- canoes, surf skis and other craft without motors; and
- tenders (see below).

## Tenders

A tender vessel does not have to be registered provided it:

- is no more than 3.1 metres in length;
- has a motor no bigger than 5 hp (3.73 kW); and
- is used only as a lifeboat or for ship to shore transport from a parent vessel – it cannot be used in isolation from the parent vessel.

A tender must also carry the mandatory safety equipment as per their area of operation.

## Change of ownership details

The owner of a registered vessel must notify DoT within 15 days of any changes to the registered details of the vessel or the address of the owner.

**The seller** must notify DoT within seven days of selling the vessel.

**The buyer** must notify DoT within 15 days of buying the vessel.

## Registration label

A registration label will be forwarded on payment of the annual registration fee. The registration label is colour coded and contains the month and year of expiry.

## Placement of registration label

The registration label sticker must be fixed on the port side of the vessel, adjacent to the registration number.

## Placement of registration numbers

Numbers must be fixed as follows:

**Motor boats** – Midships on both sides of the hull where they are clearly visible – not under the flare of the bow – 150mm high x 25mm wide.



*Placement of motor boat registration numbers*

**Yachts** – On the side of the hull immediately forward of the transom – 50mm high x 12mm wide.



*Placement of yacht registration numbers*

**Tenders** – Must have its parent vessel's registration number displayed on each side of the vessel forward of the transom – 50mm high x 12mm wide.



*Placement of tender registration numbers*

**PWC** – On both sides of the hull where they are clearly visible – 100mm high x 25mm wide.

# Diving regulations

Regulations are in place to ensure the safety of divers. As the State's marine authority the DoT recommends divers and skippers be extra cautious and adopt a number of recommended practices to further enhance safety and preserve lives on the water.

## Diving flag

A vessel with divers operating from it must carry the appropriate day or night signals.

The daytime signal for divers is the International Code Flag "A". This is a swallowed tailed flag having two vertical halves; the inner being white and the outer blue. It must be at least 750 millimetres long and 600 millimetres wide. Divers operating without a vessel, for example from a jetty, must also display the International Code Flag "A" of the same minimum size.

You can choose to show this flag from a buoy, in which case the minimum size must be 300 millimetres in length and 200 millimetres in width.

A dive flag must be clearly visible to all vessels operating in the vicinity.

As a dive flag is only a visual indication to other vessels and will not automatically prevent other craft from venturing into a dive area.

It's recommended divers always listen out for other craft before surfacing, and surface as near to their vessel as possible.

While it is not law it is highly recommended that snorkellers display a dive flag particularly when snorkelling offshore or in areas of high boating traffic.

## Diving lights

By night the diver's vessel, as well as appropriate lights such as an anchor light, must show three all-round lights in a vertical line: the top and bottom lights red and the middle light white.

People engaged in night diving without a vessel must display a yellow or orange flashing light that can be seen from a minimum distance of 200 metres.

## Vessels to keep clear

All vessels must keep at least 50 metres clear of vessels, buoys or areas showing diving signals.

Where it is not possible to keep 50 metres clear or when in the vicinity of a diving signal, all vessels must proceed at safe speed and with due caution until well clear and keep a good look-out for persons in the water.

If you have no valid reason to be within 50 metres of a dive signal then don't be. Please use common sense and courtesy.



*Code flag "A" indicates there are divers in the area*

### Unattended vessels

The practice of divers leaving vessels unattended can be very dangerous. DoT strongly recommends that a responsible person stays on board at all times to raise the alarm if the diver is overdue or to attend to the vessel should it start to drift.

### In an emergency

A 24 hour, 7 days a week service operated from the Water Police Coordination Centre in North Fremantle monitors marine radio channels 27MHz channel 88 (27MHz will be phased out over a five year period), VHF channels 16 or phone 000.

Fiona Stanley Hospital at Murdoch Drive, Murdoch, coordinates the treatment of all cases of civilian diving accidents. Call (08) 6152 2222 and immediately state that the call is about a diving related accident.

### Before diving:

- Check** the weather as conditions on the surface can deteriorate rapidly during the dive.
- Inform** a friend of your dive site and your estimated time of return.
- Establish** entry and exit points and techniques.
- Choose** a course to follow, taking currents and other factors into consideration.
- Consult** dive tables, agree on a maximum time and depth limit.
- Establish** and review communication procedures and revise hand signals.
- Agree** on an air pressure for returning to the surface, usually 50 bar.
- Decide** what to do if separated.
- Discuss** what to do in an emergency.



*Dive flag must be visible for 360°*

## Water skiing

Water skiing involves being towed over water, at a speed of 8 knots or more, by a vessel, supported by a ski, or skis, an aquaplane, other apparatus or feet. This includes being towed on a wakeboard, kneeboard or inflatable device.

Water skiing is a high risk activity and as the skipper of a vessel towing a water skier, it's your responsibility to ensure the safety of your crew and the skier at all times.

To reduce the risks associated with water skiing it is important that skippers familiarise themselves with:

- the rules and regulations;
- the layout and boundaries of the ski area;
- the direction of ski;
- the hours of operation;
- the location of the take-off and landing areas; and
- any shallow water areas or other hazards.

This information is available in local boating guides and charts available from DoT or on signage at boat ramps.

Before commencing skiing, it is recommended that skippers brief each participant on their roles and responsibilities, hand signals and the various procedures associated with water skiing, such as recovering and reboarding of a downed skier.

Care should also be taken to brief participants on the location and use of safety equipment on-board the vessel and measures to avoid propeller strike.

When underway:

- follow the required direction of travel and remain inside the ski area;
- be alert and maintain a good lookout for other vessels, objects and downed skiers; and
- be courteous of other users and keep clear of slower moving vessels, paddle craft and sail craft.

With a bit of planning, courtesy and attention to safety, all users of water ski areas will be able to enjoy their day out.



*It requires at least three people to go skiing, the driver, the observer and the skier*

## The ski boat crew

To go skiing there must be a minimum of two in the ski boat, the skipper and at least one observer. The observer faces towards the skier at all times and communicates to the skipper while the skipper faces forward to maintain a proper lookout and concentrates on the vessel's course within the ski area.

## The skipper

To be the driver of a vessel, with a motor over 6 hp (4.5 kW), engaged in water skiing you:

- must hold an RST, or be supervised by an RST holder who is at least 18 years of age; and
- must be at least 17 years of age.

The skipper is responsible for abiding by the rules and regulations and for the safety of the:

- vessel;
- crew; and
- skiers.

## The observer

To be the observer you:

- must be at least 14 years of age;
- have the prime responsibility of observing the towed skiers and reporting all matters affecting them to the skipper;
- alert the skipper about other vessels approaching from behind; and
- should be familiar with the standard hand signals.

## The skier

Skiers can be any age; however, it is recommended they wear an approved Level 50 or 50s lifejacket while skiing.

## Areas for water skiing

You can only water ski in a gazetted ski area and only during the permitted times. Ski areas are marked by signs on the foreshore and at each public boat ramp adjacent to the ski area. Ski area boundaries may also be marked in the water by buoys. The signs also provide information on the direction (clockwise or anti-clockwise) you must follow, times when skiing is permitted, and where the take-off and landing areas are located. Consult these signs before skiing.

DoT produces regional boating guides and charts for most of the popular boating destinations throughout the State. These guides provide useful local information including water ski and speed restricted boating areas. The guides are available from DoT offices or visit [www.transport.wa.gov.au/imarine/boating-guides-and-activities.asp](http://www.transport.wa.gov.au/imarine/boating-guides-and-activities.asp)

## Congestion

If you think that the ski area is too congested to ski safely, consider an alternative gazetted area or defer your skiing activities until it becomes less congested.

## Hand signals

Hand signals should be used to communicate the intentions of the skier and of the driver to each other and to other water users.



### [Waiting to take-off with a skier Driver's signal](#)

When waiting for a safe opportunity to take-off with a skier, the skipper should signal to vessels dropping off a skier that they do not intend to move until it's clear. This is indicated by holding both hands in the air showing that they are not on the boat's controls.



### [Skier down Observer's signal](#)

The observer only should hold one arm straight up in the air to indicate to other vessels that the skier has fallen off and is in the water.

Vessels seeing this signal should keep a good lookout for the skier in the water.



### [Skier down and is OK Skier's signal](#)

A fallen skier who has sustained no injuries should indicate that they are OK by raising both arms into the air.

If the observer does not see this signal, they should inform the skipper to return to the skier as quickly and safely as possible.



### [Dropping off a skier Driver's signal](#)

When returning a skier to the shore the driver should indicate this by the raising and lowering of a hand above the head.

## Rules and regulations

All the rules and regulations that apply to motor boats also apply to vessels that are towing skiers. The prevention of collision rules still apply in ski areas, this means a ski boat has no priority over a vessel that is passing through the area.

### Skipper needs to be seated

The skipper should not sit on the gunwale (side) or on the back of the driving seat while driving a speed boat.

### Distance behind a skier

You must not drive any closer than 50 metres directly behind a skier or any other vessel.

### Distance from shore

Stay at least 50 metres (*or as gazetted*) from shore except when landing or taking off in a gazetted take-off and landing area.

### Towing skiers near landing or take-off areas

You must not drive a motor boat towing water skiers within 30 metres of the shore or any landing or take-off area, except for when you are landing or taking off.

### Right of way when landing a water skier

The skipper of a vessel about to take-off a skier must give way to a ski boat approaching to land a skier.

### Approaching shore where a skier has landed

A skipper landing a skier must not approach within 25 metres of the shore where the skier has landed.

### Water skis to be retrieved

Immediately after losing or intentionally discarding a ski, the skier should ensure it is retrieved.

## Ski line to be retrieved

After landing a water skier, skippers should continue to at least 60 metres from the point of dropping the skier, stop and have the ski line retrieved. If coming to shore, the skipper must reduce boat speed to less than 8 knots and not interfere with, or obstruct, any other vessel towing a water skier.

### Ski ropes

A skipper must not permit a ski rope to trail within 30 metres of the shore of any area set aside for water skiing, unless the rope handles are held by a skier.

### Towing trick skiers

Trick water skiing is being towed over the water by a vessel, without being continuously supported on the surface. Skippers must not drive a speed boat towing a skier engaged in trick skiing within 100 metres of any landing or take-off area.

### Slalom skiing or ski-jumping

Navigable waters should not be used for the purpose of:

- a slalom course or ski-jump unless there is prior approval in writing from DoT;
- a slalom course or ski-jump unless a safety zone surrounding the slalom course or ski-jump is defined by red marker buoys, each having a diameter of 200 millimetres and fitted with a 300 millimetre high orange triangular pennant;
- slalom skiing unless the person is wearing a Level 50 or 50s lifejacket; and
- slalom skiing or ski-jumping unless the person is permitted to use the slalom course or ski-jump by approval from DoT.





*A lifejacket must be worn while operating a PWC*

## Personal water craft

Personal water craft (PWC) – often called jet skis – are craft propelled by an inboard motor powering a water jet pump. The operator sits, stands or kneels on the vessel.

PWCs and similar craft are motor boats as far as the rules are concerned. This means there are rules for the age of skippers, safety equipment, areas where they can operate and the distance offshore they can travel.

### Safety equipment

#### Operating within protected waters or up to 400 metres from the shore in unprotected waters

##### Required

- RST;
- lifejackets (one to be worn and suitable for each person on board, minimum level 50s (see lifejackets page 51)).

##### Recommended

- GPS enabled EPIRB or PLB (see EPIRB and PLBs on page 57);
- in date flares or EVDS; and
- a marine radio.

#### Operating beyond 400 metres from the shore in unprotected waters

##### Required

- RST;
- lifejackets (one to be worn and suitable for each person on board, minimum level 50s);
- in date GPS enabled EPIRB or PLB;
- in date flares or electronic visual distress signal (EVDS (see visual distress signals on page 54)).

##### Recommended

- a marine radio (until you travel beyond 4 nautical miles from shore in unprotected waters when it becomes a requirement for a HF or VHF marine radio to be carried (see radios page 60)).



## PWC registration

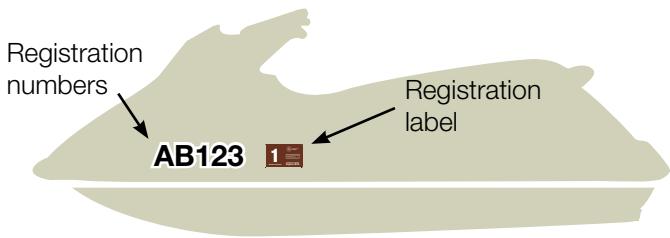
PWCs, as with all vessels fitted with a motor, must be registered with the DoT and are subject to an annual registration fee.

### Placement of registration numbers and label.

Numbers must be fixed as follows:

- on both sides of the hull where they are clearly visible (*Note – not under the flare of the bow – 100mm high x 25mm wide*); and
- the numbers should be black numerals on a white background;

The registration label sticker must be fixed on the port side of the vessel, adjacent to the registration number.



## Freestyle, wake and wave jumping

Freestyle is operating a PWC in a way that the skipper of another vessel would be unable to predict its course or speed in order to avoid a collision, this includes doughnuts, 180 degree turns, hops and jumps etc.

Wave and wake jumping is driving a PWC over a wave or swell with the aim of becoming airborne.

The wave or the swell may be formed naturally or by the passage of a vessel.

Freestyle and wake jumping is prohibited:

- within any speed restricted area;
- within 30 metres of another PWC; and
- within 50 metres of another vessel or person in the water.

Freestyle is prohibited on the Swan and Canning Riverpark except in the gazetted freestyle area downstream of the Narrows Bridge.

## PWC prohibited areas

PWCs are prohibited in the Swan River upstream of the Windan Bridge, upstream of Salter Point in the Canning River and in all Swan River Marine Parks.

PWCs are permitted in all Swan and Canning Riverpark water ski areas except for the Belmont ski area.

PWCs are permitted to operate in most of the large offshore water ski areas such as Warnbro, Cockburn Sound and Geographe Bay.

For more information pick up a Local Boating Guide and check the signage at launching ramps.



## Tow-in surfing

Tow-in surfing, is a technique by which a person operating a PWC tows a surfer onto a breaking wave. PWC skippers need to familiarise themselves with the regulations to conduct tow-in surfing in Western Australia to ensure they abide by the law. For further information regarding tow-in surfing, please contact your nearest DoT office or visit our website: [www.transport.wa.gov.au/marine/tow-in-surfing.asp](http://www.transport.wa.gov.au/marine/tow-in-surfing.asp)

## Rules and Regulations self-test questions (answers on page 118)

**Q1.** When operating a motor boat near a person in the water you must:

- A. Not exceed 4 knots within 100 metres.
- B. Not exceed 6 knots within 100 metres.
- C. Not exceed 8 knots within 50 metres.
- D. Not exceed 10 knots within 50 metres.

**Q2.** What is the maximum speed limit within 15 metres of a vessel underway?

- A. 4 knots.
- B. 7 knots.
- C. 8 knots.
- D. 10 knots.

**Q3.** What is the maximum speed limit within a mooring area or boat haven?

- A. 4 knots.
- B. 7 knots.
- C. 8 knots.
- D. 10 knots.

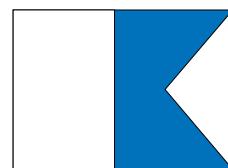
**Q4.** What types of boating accidents must be reported?

- A. All accidents.
- B. All accidents involving motor boats or water skiers.
- C. Accidents resulting in serious injury or death, or if the vessel has been damaged enough to make it unseaworthy or unsafe.
- D. Accidents involving loss of life, personal injury or property damage over \$1000.

**Q5.** What vessels are required to be registered?

- A. Vessels fitted with an engine of 5 hp or more.
- B. Other than a tender, all recreational vessels that are fitted with, or can be fitted with an engine.
- C. All recreational vessels over 3.1 metres fitted with an engine.
- D. None of the above.

**Q6.** What does this flag (pictured) indicate?



- A. Dangerous cargo being carried on board a vessel – keep well away.
- B. Diver below – keep 50 metres clear or travel at the slowest possible speed and keep a good lookout for people in the water.
- C. Shallow water – proceed with caution in the vicinity.
- D. Vessel aground keep clear.

**Q7.** A Recreational Skipper's Ticket entitles you to drive:

- A. Vessels under 8 metres in length only.
- B. All recreational vessels.
- C. All commercial vessels.
- D. All recreational and commercial vessels.

**Q8.** What is the maximum speed limit within 50 metres of a jetty, wharf or the shore?

- A. 8 knots.
- B. 6 knots.
- C. 10 knots.
- D. No speed limit applies.

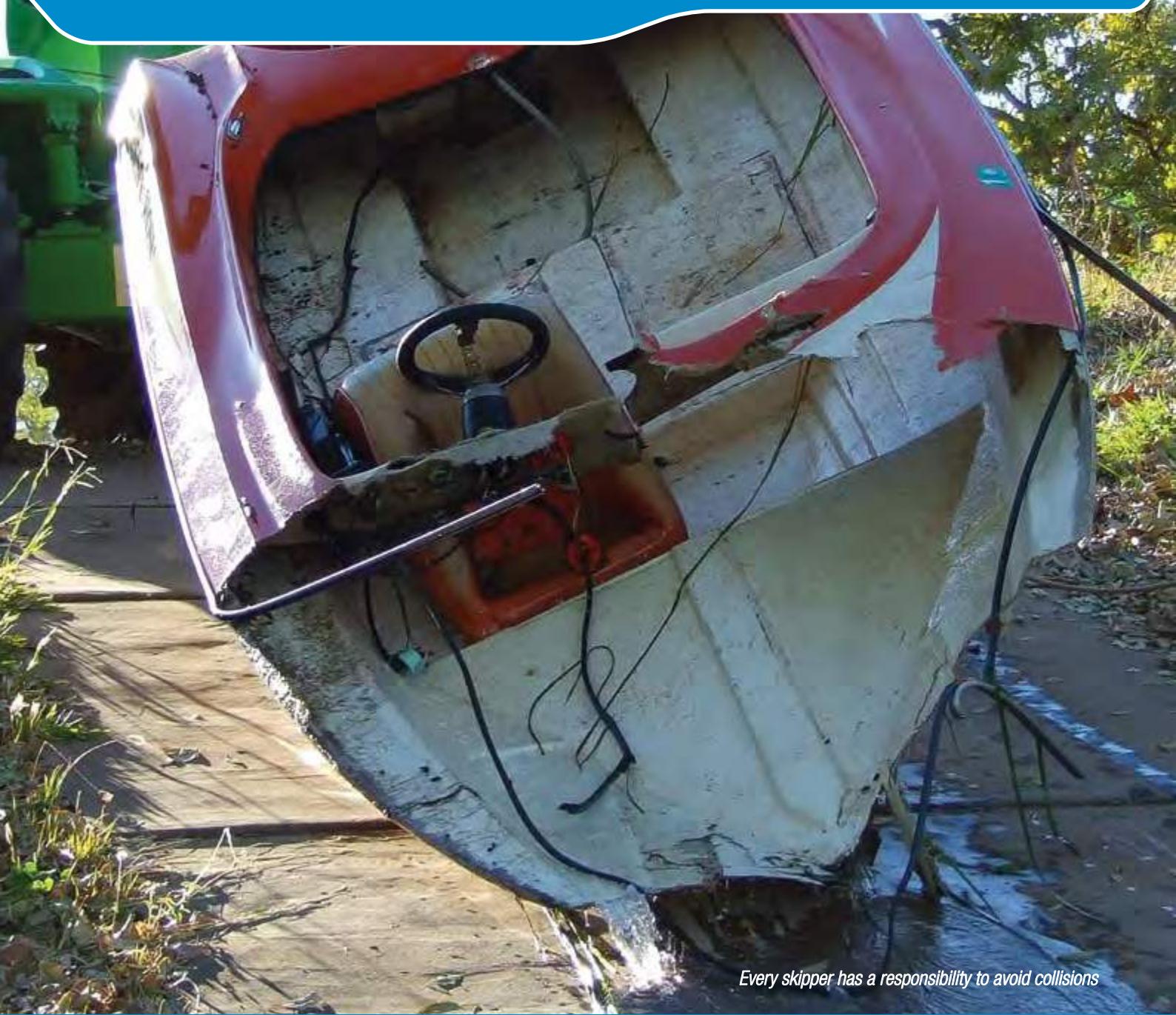
**Q9.** A holder of an RST under the age of 16 is restricted to operating a vessel:

- A. That is less than 4 metres in length.
- B. With a motor under 6 hp.
- C. During daylight hours and at a speed of less than 8 knots.
- D. All of the above.

## Collision Avoidance

27

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*Every skipper has a responsibility to avoid collisions*

# Collision Avoidance

At the end of this section, skippers should have a working knowledge of the International Prevention of Collision at Sea Regulations, a thorough knowledge of the International Association of Lighthouse Authorities (IALA) system of buoyage and a good understanding of navigation lights.

## International regulations for preventing collisions at sea

The regulations which apply on all waters in this State, also apply all over the world. These are the traffic laws of the sea, and every ship or vessel afloat has to obey them.

There is a lot of detail in the collision rules; the following summary covers the main principles.

## Responsibility

Every skipper has a responsibility to avoid collisions. Even if the rules require another vessel to keep out of your way and it doesn't, then you must be ready to take action yourself to avoid collision.

## Lookout

Perhaps the most important rule of all is to keep a good lookout. The skipper is responsible to keep a lookout with eyes and with all available means, at all times.

Equipment such as radars, sounders and plotters should be used if available especially in poor visibility and at night.

## Safe speed

The lookout rule links with the requirement that calls for skippers to travel at a safe speed. A safe speed is a speed that allows for enough time to manoeuvre the vessel in order to avoid a collision. Visibility, volume of traffic, background lighting and the water depth are some of the factors that should be considered when determining a safe speed.

## Assessing risk of collision

Constantly assess all the vessels in the vicinity to see if they are likely to come close. A useful technique is to see whether your line of sight (the bearing) to another vessel does not move ahead or drop back. If it is steady, you are on, or nearly on, a collision course.

Any action you now take under the rules must be obvious to the other vessel, and result in passing well clear.

## Restricted visibility

Situations such as fog or heavy rain can affect visibility. Under conditions of restricted visibility you should:

- ensure you keep good lookout;
- turn your navigation lights on;
- proceed at a safe speed that suits the prevailing circumstances and conditions; and
- be prepared to stop or manoeuvre to avoid collision.

## Sound signals

Sound signals are sometimes used by ships and ferries to indicate an action they are about to take.

**One short blast:** I am altering course to starboard.

**Two short blasts:** I am altering course to port.

**Three short blasts:** My engines are going astern.

**Five short blasts:** (officially) I am unsure of your intentions; (practically) you are not following the rules – get out of the way.

## The rules of the road

You must keep a good lookout at all times and be ready to give way to other vessels. If you must give way, do it in good time and make a move which will be obvious to the other vessels.

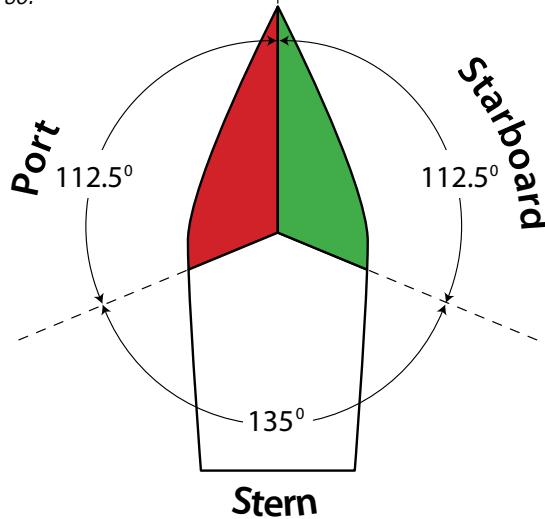
The golden rule is "look to the right, give way to the right, turn to the right and stay to the right".

## Operating rules

### Port

If a motor boat approaches within this sector maintain your course and speed with caution.

*Note: Be prepared to make an alteration in course or speed to avoid collision if the other vessel fails to do so.*



### Starboard

If any vessel approaches within this sector, give way.

*Note: This rule may not always apply if one or both boats are sailboats.*

### Stern

If any vessel approaches this sector, maintain your course and speed with caution.

*Note: Be prepared to make an alteration in course or speed to avoid collision if the other vessel fails to do so.*

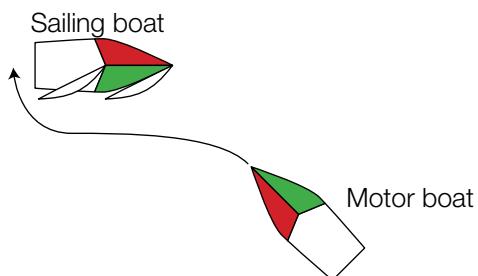


*Some Authorised Providers can supply a vessel if you don't have one*

## General right of way

In general, motor boats have to keep out of the way of sailing vessels and vessels that are hampered by such tasks as dredging, cable laying and so on.

### Power gives way to sail.



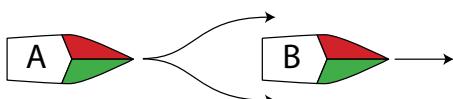
## Overtaking

This rule overrides all the other give-way rules. The overtaking vessel (including sailing boats) must keep out of the way of the vessel being overtaken.

You can pass on either side of the vessel, but keep well clear – the other skipper may not have seen you.

If you are being overtaken, hold your course and speed until the other vessel is past and well clear.

### A keeps clear of B.



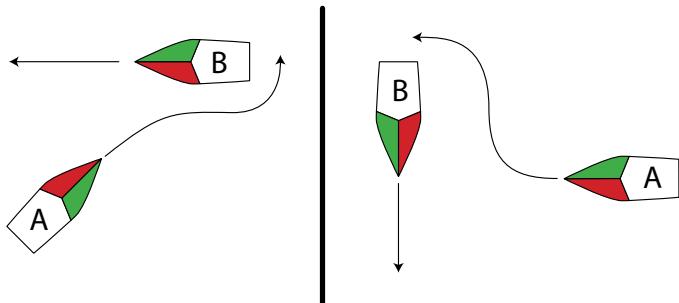
## Power to power

### Crossing

If the other vessel is on your right (starboard) side it has right of way and you must keep clear: you must either turn right, slow down to let the other vessel pass ahead of you – or do both.

If the other vessel is on your left (port) side you have right of way and should hold your course and speed, however, if you think the other vessel is leaving it too late, you have to take action yourself. The “right rule” still applies: if you alter course, alter to the right (starboard). Or you can slow down, or do both.

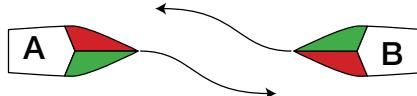
### A gives way to B.



### Meeting head on

Both vessels must alter course to the right (starboard). If the other vessel turns the wrong way, you should turn even more right, slow down, or stop your vessel.

### Both vessels alter course to starboard.



## Navigation Lights

Extra care at night	31	
Night vision	31	Lights required for motor boats underway
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Types of lights	31	Optional lights
Placement of lights	31	Vessels at anchor
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*Navigation lights are required from sunset to sunrise*

# Navigation Lights

Navigating at night requires special care and attention. Vessels that operate from sunset to sunrise, whether at anchor or underway, must carry and exhibit the correct lights. A vessel is underway when not anchored, moored to the shore or aground. Navigation lights must also be displayed during daylight hours in periods of restricted visibility.

All vessels must comply with the regulations concerning lighting. Before using a vessel ensure that the navigation lights are in working order.

## Extra care at night

Many navigation aids are unlit, and there are many other potential hazards, so keep your speed down. Some areas may have special speed limits after dark; for example, the open speed limit areas of the Swan and Canning rivers are reduced to 10 knots between sunset and sunrise.

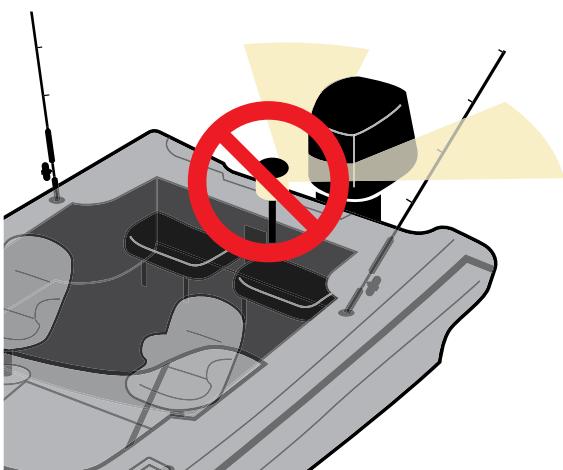
## Night vision

Rhodopsin (the molecule found in the rods in our eyes that allows for night vision) is extremely sensitive to light. Rhodopsin will immediately bleach when exposed to a bright white light and night vision will be lost. It takes time for night vision to recover, about 10 minutes for 10 per cent recovery, 30–45 minutes for 80 per cent recovery and the rest may take hours.

Many people use red light to help preserve night vision. Placing red filters over cabin lights will allow you to operate at greater light intensity level than under a dimmed white light without disrupting your night vision.

## Lights must not be obscured

Check that your vessel's structure does not obscure the navigation lights. The masthead light on many trailer boats is on an extending pole at the stern, and it does not lift high enough to be visible over the cabin top or windscreens. This is dangerous as it may cause confusion to other vessels and is unacceptable.



Navigation lights must not be obscured.

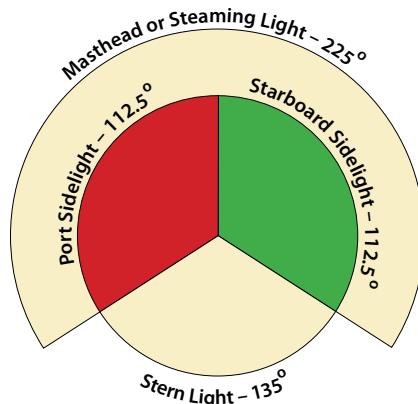
## Types of lights

It is crucial the lights on your vessel be placed and displayed appropriate to the size and class of your vessel. These lights tell other vessel operators what your vessel is doing – whether it is at anchor, under sail or motoring. This guide will assist you in understanding the correct use of navigation lights on your vessel.

## Placement of lights

### Sidelights

The port (red) and starboard (green) lights shine for  $112.5^\circ$  either side of the centre line (bow to stern) of the vessel.



### Masthead and stern lights

The white masthead light shines forward in an arc of  $225^\circ$ . The white stern light shines aft and covers an arc of  $135^\circ$ . The combination of these lights creates a  $360^\circ$  arc of white light. In a vessel of less than 12 metres, these two separate lights can be combined into a single all-round white light.

The masthead, stern or all-round white light must be fitted (if practical) on the centre line of the vessel.

### Anchor lights

An anchor light must be placed where it can best be seen, white in colour and have an arc of visibility of  $360^\circ$ . If practical, the anchor light should be placed on the centre line of the vessel.

## Range of visibility of lights

### Minimum visibility for length of vessel

Vessel length in metres = m

Distance in nautical miles = n mile

Light	Vessel length		
	< 12 m	12 m up to 50 m	50 m and over
Masthead lights	2 n mile	5 n mile*	6 n mile
Sidelight	1 n mile	2 n mile	3 n mile
Sternlight	2 n mile	2 n mile	3 n mile
Towing light	2 n mile	2 n mile	3 n mile
All-round lights (white, red, yellow, green)	2 n mile	2 n mile	3 n mile

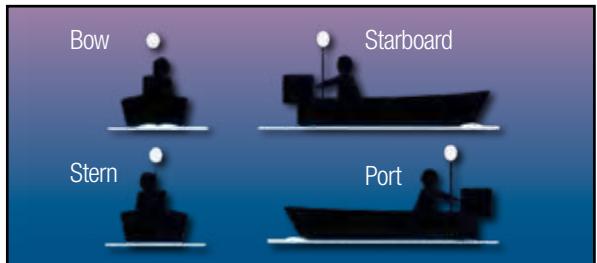
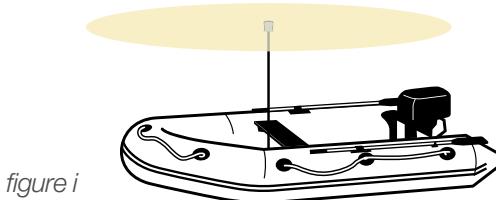
\* Where the length of a vessel is 12 metres or more, but less than 20 metres, the masthead light visibility is 3 nautical miles.



### Lights required for motor boats underway

#### Vessels under 7 metres and less than 7 knots

Motor boats of less than 7 metres in length, with a maximum speed of 7 knots or less shall exhibit a visible all-round white light and, if possible, separate or combined sidelights.

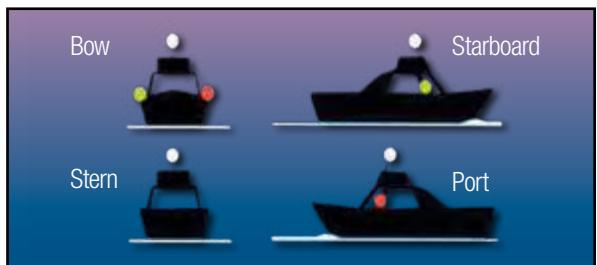
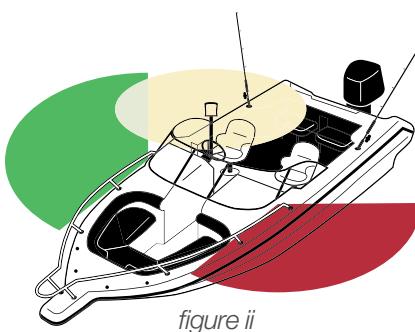


#### Vessels under 12 metres

Motor boats of less than 12 metres in length shall exhibit:

- separate or combined sidelights and an all-round white light; or
- separate or combined sidelights, a masthead light and a stern light (figure iii).

Masthead or an white all-round light shall be carried at least one metre above the sidelights.



## Vessels 12 metres to 20 metres

Motor boats of more than 12 metres but less than 20 metres in length shall exhibit:

- a masthead light, separate sidelights and stern light; or
- a masthead light, combined sidelights and stern light.

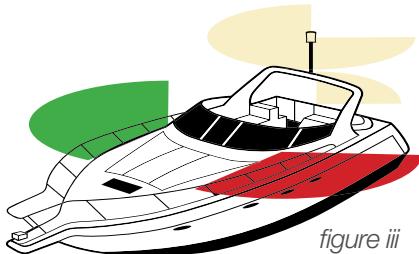
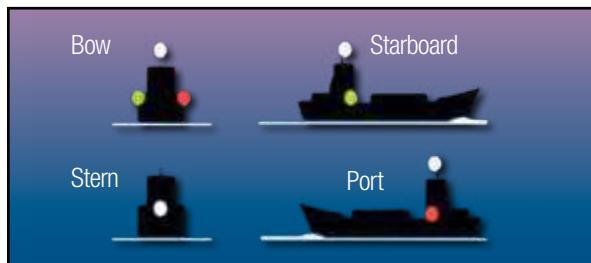


figure iii



The masthead light shall be carried at least 2.5 metres above the gunwale. Combined sidelights shall be carried at least one metre below the masthead light.

## Lights required for sailing boats underway

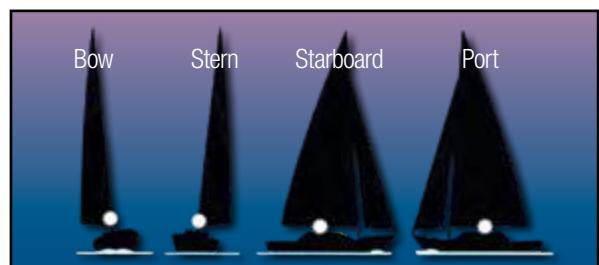
Sailing boats while underway (being motor driven) shall exhibit navigation lights applicable to motor boats.

### Sailing boats under 7 metres

Sailing boats of less than 7 metres in length or boats being rowed shall exhibit the lights required for sailing boats over 7 metres in length (figure v, vi). If not, they shall have ready for use an electric torch or lighted lantern showing a white light, which shall be exhibited in sufficient time to prevent a collision.



figure iv



*Check your navigation lights are working before sunset*

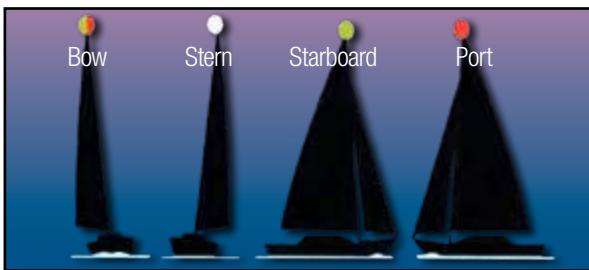
### Sailing boats 7 metres to 20 metres

Sailing boats of more than seven metres in length and less than 20 metres in length shall exhibit:

- Combined lantern, that is at or near the top of the mast and incorporates sidelights and stern light; or
- Separate sidelights and stern light (*figure vi*).



figure v



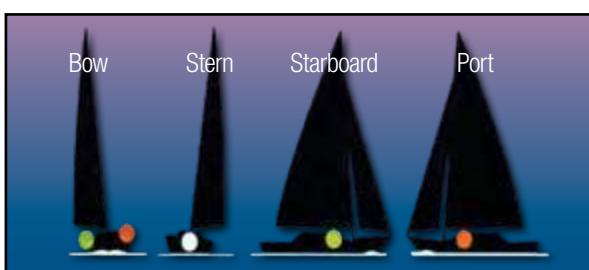
### Sailing boats over 20 metres

Sailing boats more than 20 metres in length shall exhibit sidelights and stern light and may carry the optional red and green all-round lights.

However, these boats may not carry a combined lantern.



figure vi



### Optional lights

A sailing boat of any length, which is fitted with sidelights and a stern light (but not a combined lantern) may, in addition, carry two all-round lights in a vertical line at or near the top of the mast. The upper light shall be red and the lower green.

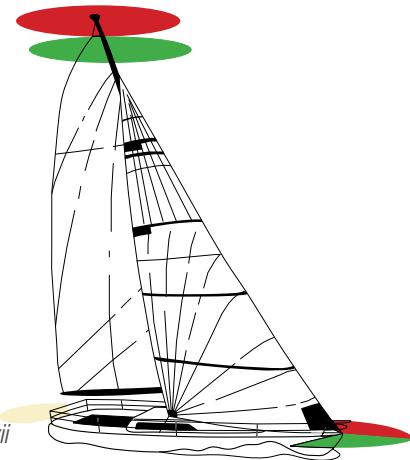


figure vii

### Vessels at anchor

#### Vessels under 50 metres

Vessels less than 50 metres in length at anchor, shall exhibit an all round white light placed where it may best be seen. Anchor lights must always be shown from sunset to sunrise. If you are at anchor or in a busy area, then show additional lights, such as deck lights, to ensure you are seen and keep a good watch.

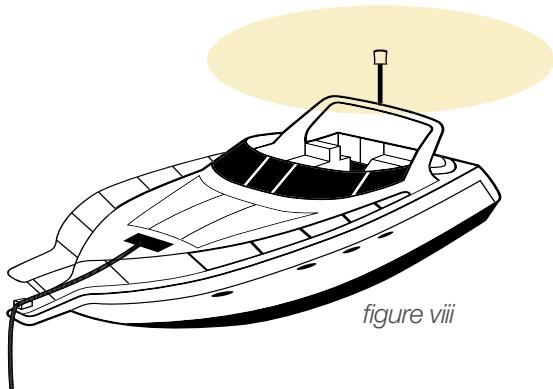


figure viii

#### Vessels over 50 metres

Vessels larger than 50 metres in length at anchor, shall exhibit two all round white lights. The forward light shall be placed higher than the after light.

There are many other combinations of lights used on vessels. The lights shown relate to the activity the vessel is engaged in – activities such as fishing, dredging or not under command.



*The type and placement of navigation lights depends on the size, type and operation of the vessel*

## IALA Buoyage

**37**

Lateral Marks	37	Leads	40
Isolated Danger Marks	37	Sector lights	40
Safe Water Marks	38	Self-test questions (answers on page 118)	41
Special Marks	38		
Cardinal Marks	39		



*Special marks can be used for traffic separation schemes*

# IALA Buoyage

An international system of buoys, beacons and lights helps guide vessels clear of dangers and indicates safe water. Navigation marks are recognised by distinctive shapes and colours, and their lights by distinctive colours and rhythms.

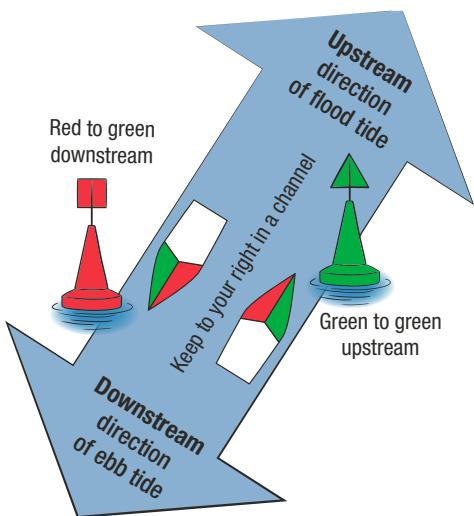
All these marks are on the chart – when you have any doubts what you are looking at always refer to the chart.

## Lateral Marks

The marks indicating the port and starboard sides of channels are called Lateral Marks. Those topped by a red can shape are called Port Marks, and those topped by a green triangle shape are called Starboard Marks.

When entering harbours or travelling upstream in a river, leave port marks on your port side and starboard marks on your starboard side.

When leaving harbours or travelling downstream, leave port marks on your starboard side and starboard marks on your port side.



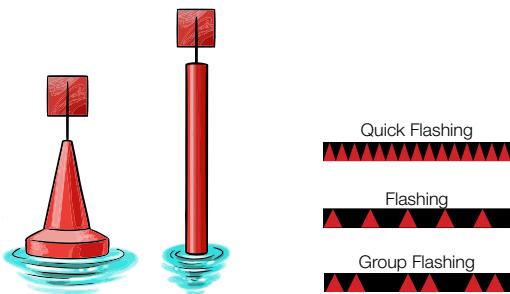
One way to remember this is the saying, “there’s some red, port, left in the bottle” when travelling upstream.

Lateral Marks are not always placed in pairs where you simply have to pass between them. When you see just one, you will need to bear in mind the upstream–downstream principle.

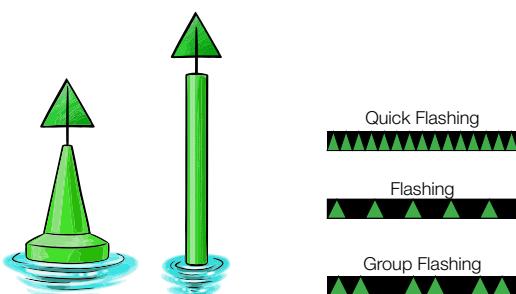
## Lights

When lit, Port Marks have red lights, Starboard Marks have green lights. These are the only marks to use these colours. The light can be any rhythm, other than Composite Group Flashing (2+1).

## Port Marks



## Starboard Marks

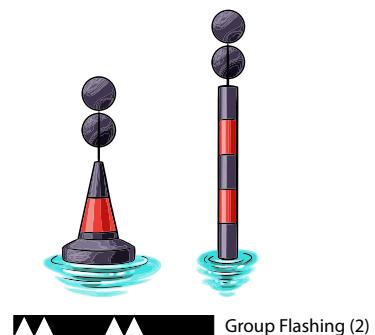


## Isolated Danger Marks

As the name suggests, it marks danger with navigable water all around, too small to need marking with a series of marks. In general, pass as well clear of it as you can.

## Light

If lit, it will have a white light, flashing in groups of two. The memory jog is two flashes to match the two-sphere topmark.

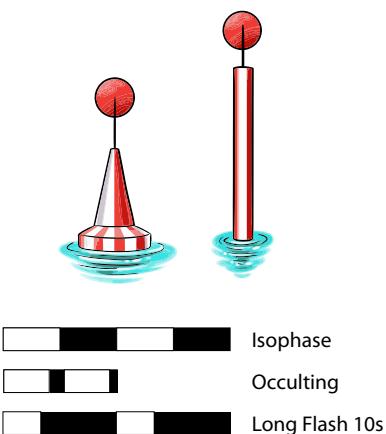


## Safe Water Marks

There is safe water all around this mark. Most commonly, it used to mark the seaward end of channels into ports. They are sometimes used to mark the centre of a channel; occasionally they are used in a series down the middle of a channel instead of Lateral Marks on the edges of the channel.

### Light

If lit, it will have a white light whose rhythms are listed below. It may also use the Morse "A" rhythm.



## Special Marks

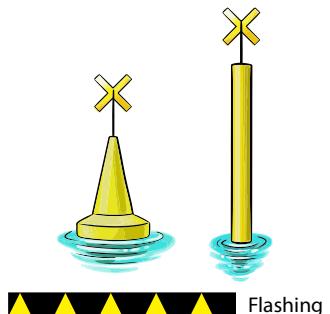
Marks used to indicate a special area or feature whose nature may be apparent from reference to a chart or other nautical publication. They are not generally intended to mark channels or obstructions where other marks are more suitable.

Some examples of uses of Special Marks:

- Traffic separation marks;
- Spoil Ground marks; and
- Aquaculture.

### Light

If lit, a Special Mark will have a yellow light and may have any rhythm other than those used for white lights on Cardinal, Isolated Danger or Safe Water marks.



## Navigation aid light characteristics

Type of light	Characteristic	Abbr.	Description
Fixed		F	A light showing continuously and steadily.
Flashing		Fl	A light in which the total duration of light in a period is shorter than the total duration of darkness and the appearances of light (flashes) are usually of equal duration.
Long flashing		LFl	A flashing light in which an appearance of light, of not less than 2 seconds duration, is regularly repeated.
Group flashing		Fl(3)	A flashing light in which a group of flashes, specified in number, is regularly repeated.
Composite group flashing		Fl(2+1)	A light similar to a group-flashing light except that successive groups in a period have different numbers of flashes.
Quick flashing		Q	A continuous flashing light with a rate of 50 or 60 per minute.
Very quick flashing		VQ	A continuous flashing light with a rate of 100 or 120 per minute.
Occulting		Oc	A light in which the total duration of light in a period is longer than the total duration of darkness and the intervals of darkness (eclipses) are usually of equal duration.
Isophase		Iso	A light in which all the durations of light and darkness are clearly equal.
Morse		Mo(A)	A light in which appearances of light of two clearly different durations are grouped to represent a character or characters in the Morse Code.
Period shown			

## Cardinal Marks

These are used where Lateral Marks would be inappropriate or confusing. They indicate the compass direction of the safest water, so having a compass on board is very useful.

You should pass to the east of an East Cardinal Mark, to the south of a South Cardinal, to the west of a West Cardinal Mark and to the north of a North Cardinal Mark.

The lights, topmarks and colour schemes have a logic to help you memorise them.

The cones on the top point in the direction of the black segment of the pillar:

- North** both cones top point up, black at the top of the pillar.
- East** the cones point up and down, black at top and bottom.
- South** both cones point down, black at the bottom.
- West** the cones point inwards, black in the middle.

### Lights (white)

The lights patterns almost follow the clock face:

3 o'clock = East Cardinal = 3 flashes

6 o'clock = South Cardinal = 6 flashes + 1 long flash

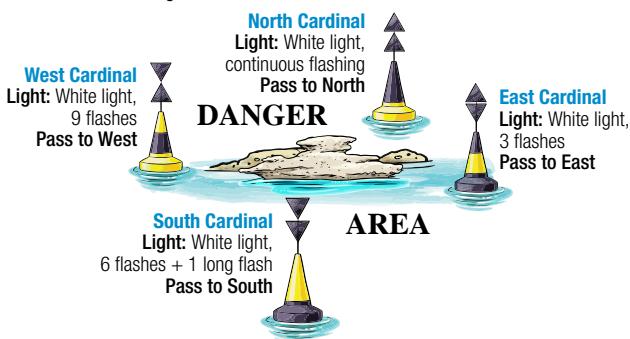
9 o'clock = West Cardinal = 9 flashes

12 o'clock = North Cardinal = continuous flashing.

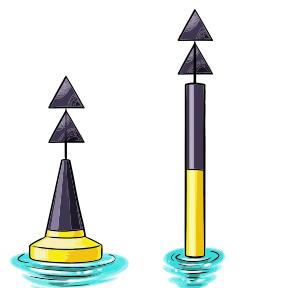
The long extra flash for south, and the continuous flash for north are to avoid confusion if you lose track with your counting.

### Cardinal marks

Used to indicate that deeper water lies in a compass direction away from a danger area such as a reef, shallow areas, etc.



## North Cardinal



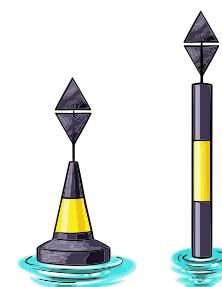
Very Quick Flashing



Quick Flashing



## East Cardinal



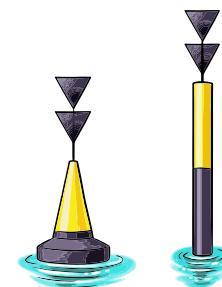
Very Quick Flashing (3) 5s



Quick Flashing (3) 10s



## South Cardinal



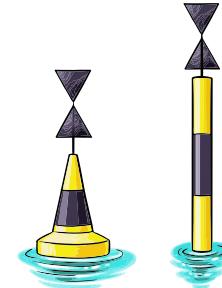
Very Quick Flashing (6) + 1 Long Flash 10s



Quick Flashing (6) + 1 Long Flash 15s



## West Cardinal



Very Quick Flashing (9) 10s

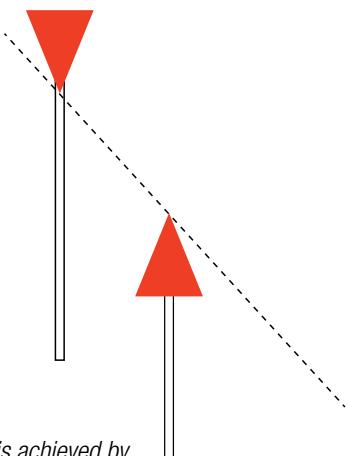


Quick Flashing (9) 15s



## Leads

Leads are a pair of marks that when aligned form a transit along the safe channel through shallow or dangerous waters. They are often used for the approaches to anchorages (there are many at Rottnest). You steer to keep the rear lead directly above the front lead.



*The course is achieved by keeping the rear lead directly above the front lead*

## Lights

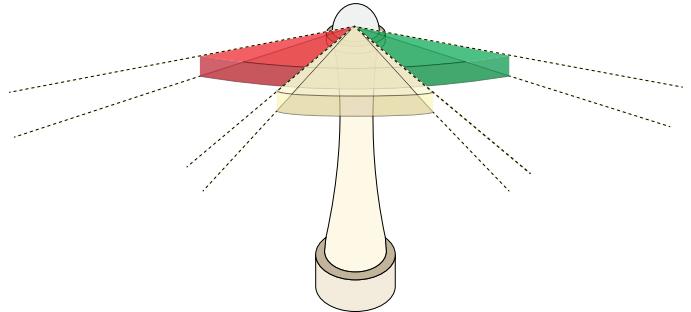
If lit, they may use any colour. The chart will have the details.

## Sectored lights

Sectored lights are navigation aids that indicate a safe channel through shallow or dangerous waters.

Generally there are three lights of different colours each identifying a sector of an arc. The white sector will generally be the safe water and the red or green sectors areas to avoid. It is particularly important to check the chart for the light's meaning, purpose and to determine the extent of the safe passage.

The recommended course is achieved by keeping within the white sector of the light. If the light colour shifts to red or green an adjustment of course is required to bring it back into the white and back on track.



*The course is achieved by keeping within the white sector*



*Keep the front lead in line with the rear lead*

# Collision Avoidance, Navigation Lights and IALA Buoyage: Self-test questions (answers on page 118)

**Q1.** You are in charge of a motor boat with right of way and an approaching motor boat did not seem to be taking action to prevent a collision, what would you do?

- Speed up because you have a bigger engine and you can get past in time to prevent a collision.
- Exercise caution and take any necessary avoiding action.
- Maintain your same course and speed because it is on your starboard side and they should give way to you.
- Let off an internationally recognised distress signal.

**Q2.** What is implied by “maintaining a good lookout”?

- Looking ahead.
- Looking forward and to each side.
- Looking behind.
- By sight, hearing and all available means.

**Q3.** You are overtaking another vessel. What action do you take?

- Overtake on the starboard (right) side.
- Overtake on the port (left) side.
- Keep out of the way of the vessel you are overtaking.
- No special action to be taken.

**Q4.** When travelling upstream in a narrow channel or river, where should you operate your vessel?

- On the port (left hand) side.
- On the starboard (right hand) side.
- In the middle of the channel.
- On either side when safe to do so.

**Q5.** What is the sound signal for “I am operating astern propulsion”?

- Three short blasts.
- Two short blasts.
- One short blast.
- One prolonged blast.

**Q6.** Which vessel must give way in the situation pictured?



- Vessel A gives way to vessel B.
- Vessel B gives way to vessel A.
- Neither – they should continue their course until one gives way.

**Q7.** What lights are required on a motor boat, less than 12 metres in length, when underway at night or in reduced visibility?

- Sidelights and green masthead light.
- Two all-round white lights.
- Red and green sidelights only.
- Red and green sidelights and either an all-round white light or a masthead light and stern light.

**Q8.** What kind of navigation mark is this?

- Port Lateral Mark.
- Starboard Lateral Mark.
- Safe Water Mark.
- Isolated Danger Mark.

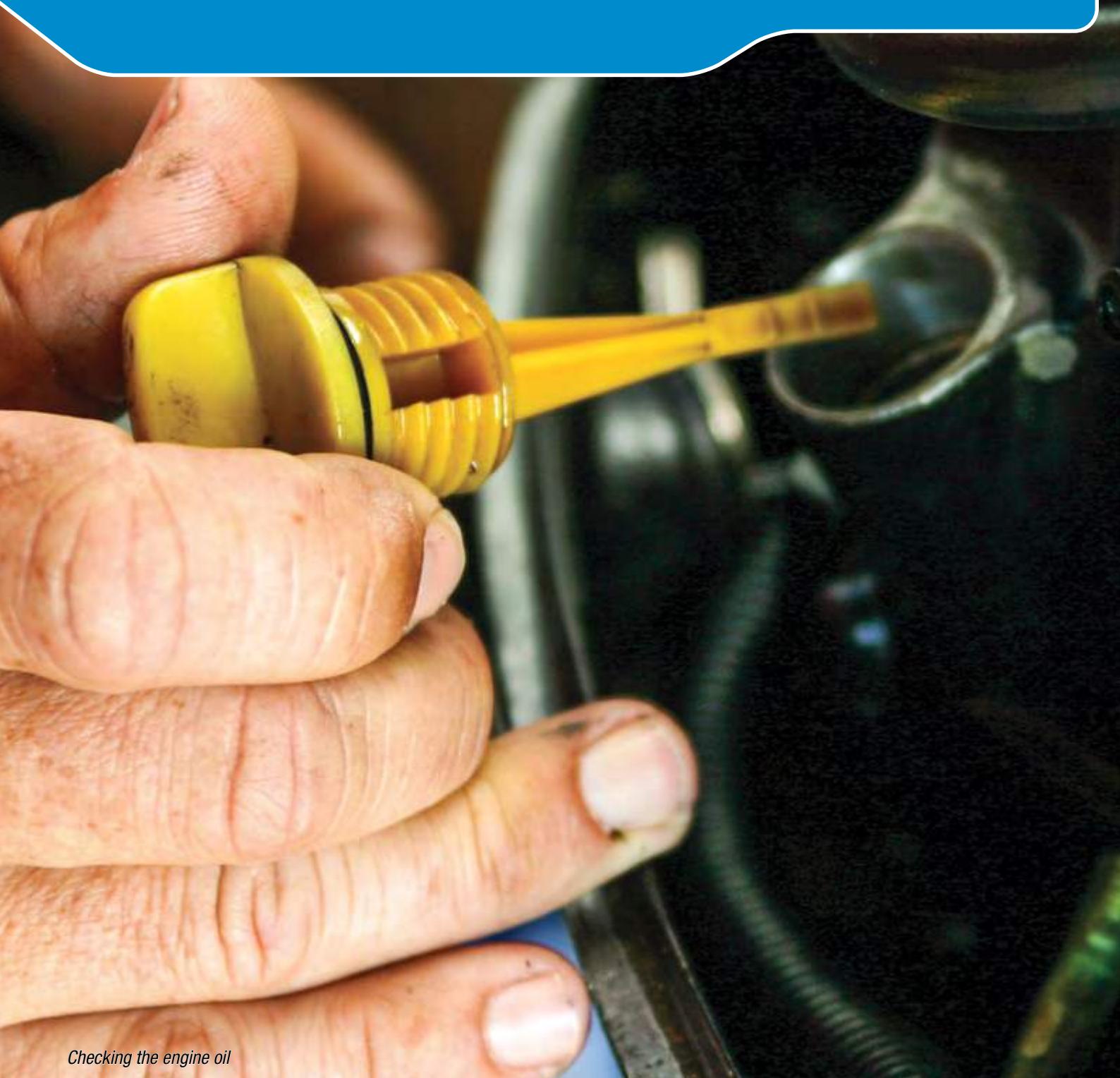


**Q9.** A top has fallen off a Cardinal Mark. The colours on the pole from the top down are Black – Yellow – Black. What type of navigation mark is it?

- West Cardinal.
- East Cardinal.
- North Cardinal.
- South Cardinal.

## Maintenance

Engine service	43	Propellers	44
Electrical system	43	Vessel maintenance schedule and checklist	45
Water pump	44	Self-test questions (answers on page 118)	46
Gearbox oil	44		
Fuel	44		



*Checking the engine oil*

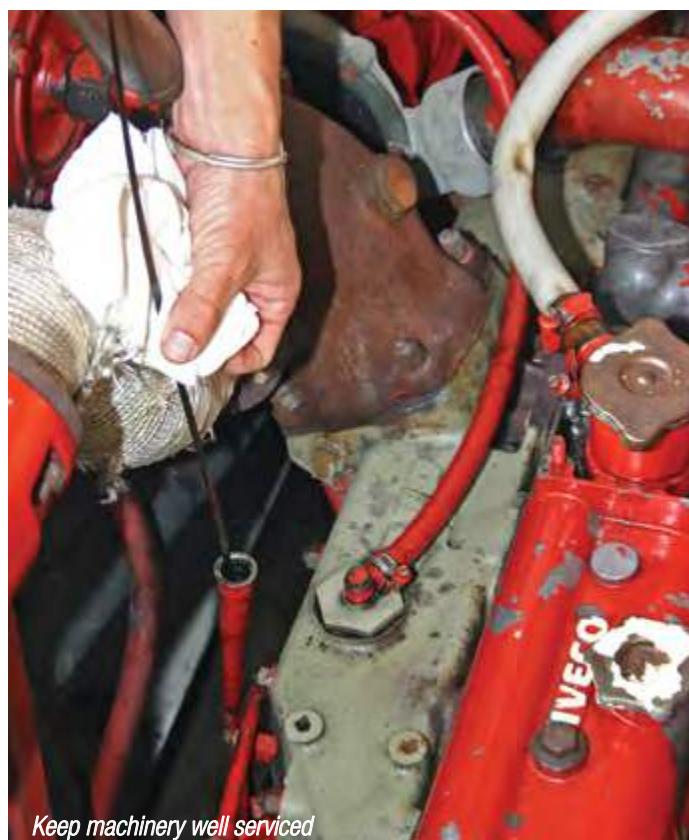
# Maintenance

A well-maintained vessel is basic to safety at sea. Poor motor maintenance alone is responsible for thousands of calls for assistance each year.

This section covers maintenance techniques and schedules that skippers should be aware of to keep their vessels in a reliable and seaworthy condition.

## Engine service

Manufacturers usually recommend a service by a specialised workshop at least once a year, even if you use the motor very little. This ensures that vital internal parts, like the water pump, get looked at. If you work your motor hard, then you should have the gearbox oil changed every three months.



## Electrical system

Electrical systems on vessels commonly fail through corrosion.

- Keep all electrical systems clean and corrosion free by frequent inspections.
- Spray terminals, electrical connectors, etc. with a corrosion-retarding agent. Keep all electrical fittings dry.
- Check the navigation lights are working even if you expect to be out only during daylight hours.

## Batteries

One of the most common reasons for calling on marine rescue is a flat battery. Batteries deserve a lot of attention at regular intervals.

- Use a genuine marine battery – your motor's handbook will tell you what capacity. Check it and charge it regularly. If the battery does not hold its charge, it should be tested or replaced.
- Batteries should always be secured with brackets within a ventilated container.
- If it is in an enclosed space, ensure it is properly ventilated.
- Terminals and cables must be kept clean, and terminals greased.
- Terminals and connections must be tight and secure.
- Top up battery cells with distilled water and check each cell with a hydrometer if the battery is serviceable.
- Turn off the power to the charger before disconnecting the charger leads. This may prevent an explosion.

## Spark plugs

With modern engines, spark plugs generally last longer. If they fail, then cleaning them is not very likely to bring them back to life. Carry a spare set of new plugs and a spark plug spanner.



## Water pump

Outboard water pump impellers are normally changed at the annual service. If you have been operating in the shallows and stirring sand, consider changing more often.

Make sure water is being discharged from the exhaust system or telltale when started.

Regularly check for water leaks.



## Gearbox oil

Bleed a little oil from the drain screw in the gear case – if water appears, or if the oil looks milky, take the motor to a service centre.



## Fuel

Fuel is a key element in successful boating. Running out of it, disabling the engine because of dirt or excess moisture in it, or exposing it to fire risks are all possibilities against which you should take precautions.

### Fire/explosion risks

Fuel, for engines or for stoves, is the most common component of vessel fires or explosions. Leaks in systems and ventilation shortcomings are the usual problems. Regularly inspect fuel and gas tanks, valves, pumps and lines for visual condition – especially corrosion – and leaks. Get problems fixed by an expert; temporary repairs can be dangerous.

Do the sniff test each time you board your vessel. If you smell fuel – find the problem.

### Fuel system

Check and change filters frequently to be assured of clean fuel entering your engine. Carry spare filters.

Keep tanks topped-up and close them up when not in use. This reduces the chance of condensation occurring and putting water in your fuel.

### Use clean, fresh fuel

Clean out portable fuel tanks at least yearly and replace old fuel after a long period of inactivity; water is likely to have built up in it.

If your motor uses pre-mix lubrication you should not use a petrol–oil mix older than three months. The oil will lose lubrication properties and produce sludge. For direct oil injection motors, ensure the oil reservoirs are kept full.

## Propellers

The rubber bushing of an outboard or stern drive's propeller can fail, especially if it has hit sand or rocks.

Carry a spare propeller – perhaps a second-hand one.

Keep props clean and in good working order. This includes removing the propeller, hammering out any small bends, and filing any jagged bits smooth or replace if badly damaged.

Snagged fishing line wrapping around the outboard leg propeller shaft can destroy the gearbox seals and allow water in. Water in the gearbox will eventually cause it to fail. Remove the propeller regularly to check for fishing line – or any time you think you might have hit a line.

## Vessel maintenance schedule and checklist

The table provides information about type of maintenance required for each vessel part. Maintenance periods are suggestions, more details can be found on manufacturers specifications.

Vessel part	Pre trip	Post trip	Monthly	Yearly
Vessel	Check vessel for any obvious signs of structural flaws, rust, osmosis or stress fractures.	Inspect the boat for rubbish – it is especially important to remove stray metal items from an aluminium boat.	Check aluminium hulls for corrosion and fatigue cracks, check fibreglass for blistering and impact cracks.	Check anodes for erosion, replace when about 40 per cent eroded. Inspect through-hull fittings for corrosion and water tightness; ensure sea cocks are working and check the condition of hoses and clamps attached to them.
	Check structural fittings for signs of fractures, rust or stress.			
	Ensure the bilges are clean and dry.			
Motor	Check engine oil and coolant levels. Top up if required. Tests run the motor.	Flush the engine with fresh water and wash down its exterior.	Spray all moving parts periodically with a spray that will displace water and apply a protective film.	Service motor as recommended by manufacturer or earlier if required. Replace gearbox oil as recommended by manufacturer. Check and replace impellers as required.
	Make sure water is being discharged from the exhaust system—and from the tell-tale, where applicable— when the motor starts.			
Fuel	Maintain proper fuel/oil mix. Check for water in fuel.	Top up fuel tanks to reduce moisture entering tanks.	Avoid using old fuel.	Avoid using old fuel.
Fuel tank	Ensure fuel tanks are secure.	Protect portable tanks from elements.	Inspect the tank for cracks and corrosion.	Clean the fuel tank with a suitable cleaning solvent at least once a year.
Fuel line	Inspect fuel lines, priming bulbs and connections for cracks and leaks.	Protect from the elements.	Check for cracking and loose fittings.	Drain.
Fuel filter	Check and clean.	Check for leaks.	Check and clean.	Check and replace as necessary.
Batteries	Check the battery is secure and is working.	Disconnect battery/turn off isolator switch.	Check electrolyte, top up with distilled water, recharge, check mountings, clean terminals.	Disconnect in the off-season and preferably keep on charge.
Bungs	Check that the bungs are in, not worn and that the washer is in good condition.	Take bungs out when the boat is out of the water.	Check the condition of the thread and washer. Replace if damaged.	Check the condition of the thread and washer. Replace if damaged.
Safety equipment	Check safety equipment is in good condition and in date. Test bilge pump if fitted.	Store equipment in dry and safe location.	Inspect all safety equipment for deterioration or damage. Check flares and EVDS are in a serviceable condition. Check the service intervals on inflatable lifejackets. Service or replace if necessary. Use your EPIRB or PLB test function if applicable.	Check safety equipment is in good condition and in date.
Steering	Test steering gear for stiffness.	Check for any leaks.	Oil steering gear cable with the correct lubricant, check hydraulic fluid levels.	Lubricate before storing.
Winch gear	Check securing points and lines for any damage.	As you winch the boat onto the trailer inspect the rollers, wire, webbing or rope for wear.	Lubricate gears and cables. Replace equipment as required.	Lubricate gears and cables. Replace equipment as required.
Lines and ropes	Check berthing lines and anchor rope for wear.	Protect from the elements.	Check berthing lines and anchor rope for wear.	Check berthing lines and anchor rope for wear.
LP gas	Ensure no leakage.	Turn valves off.	Inspect hoses and cylinders.	Have the LP gas system serviced.
240 Volt	Check system working.	Check no water on unprotected leads or connections.	Check no wearing on wiring.	Have any 240 volt system checked.

## Maintenance self-test questions

(answers on page 118)

**Q1. How often should you have the motor on your vessel serviced?**

- A. Before each time you use the vessel.
- B. Every four months.
- C. At least once a year.
- D. Once every two years.

**Q2. Before you go on a boating trip you should?**

- A. Test navigation lights.
- B. Check bilges are clean and dry.
- C. Check steering.
- D. All of the above.

**Q3. You should replace old fuel after a long period of inactivity because?**

- A. Your vessel won't reach top speed.
- B. The oil will settle on the bottom of the tank.
- C. The octane level will reduce with time.
- D. Water is likely to have built up in it.

**Q4. Batteries in a vessel should be located?**

- A. In a ventilated container.
- B. In a sealed container.
- C. As low as possible in the bilge.
- D. On deck, exposed to the elements.

**Q5. If your vessel is fitted with a LP gas system, how often should you have it serviced?**

- A. Before each trip.
- B. After each trip.
- C. Monthly.
- D. Yearly.





*Flush outboard motors with fresh water after use*

## Safety Equipment

**49**

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*The required safety equipment depends on where your vessel is operated*



# Safety Equipment

Responsible skippers know that vessels are required to carry in date safety equipment. The quantity and type of equipment varies depending on the area you are operating in, **protected or unprotected waters** and the type of vessel you are operating, a **registerable or non-registerable** vessel. It is important to understand that the requirements listed below are the minimum requirements and where equipment is **recommended**, the onus is on the skipper to determine if it should be carried.

## Definitions:

### WA navigable waters categories

- Protected waters** - Includes river, lakes, estuaries, harbours and waters within 400 metres of the shore in unprotected waters but excludes the Cambridge Gulf or Lake Argyle.
- Unprotected waters** - Beyond 400 metres from the shore.

**Registerable vessel** – Is any pleasure vessel, which is or may be propelled by mechanical power, including such a vessel which is ordinarily propelled by sail only.

**Non-registerable vessel** – Includes tenders and sailing dinghies.

## Safety equipment requirements table

		PROTECTED WATERS		UNPROTECTED WATERS	
		Registerable Vessels	Non-registerable Vessels	Registerable Vessels	Non-registerable Vessels
<b>REGISTERABLE VESSEL:</b>	Vessels including sailing vessels that are or can be propelled by mechanical power.	✓	NOT REQUIRED	✓	NOT REQUIRED
<b>NON-REGISTERABLE VESSEL:</b>	Tenders and sailing dinghies.				
	<b>Recreational Skipper's Ticket</b> The skipper of a recreational vessel, powered by a motor greater than 6 horsepower must hold an RST.				
	<b>Lifejacket Carriage</b> A lifejacket, as indicated in the table opposite, must be carried for every person on board.	<b>Vessels smaller than 4.8m</b> <b>✓</b> <b>Minimum Level 100 MUST BE CARRIED</b>	<b>RECOMMENDED</b>	<b>✓</b> <b>Minimum Level 100 MUST BE WORN</b>	<b>✓</b> <b>Minimum Level 50S MUST BE WORN</b>
	<b>Lifejacket Wearing</b> As indicated in the table opposite.	<b>Children older than one and younger than 12</b> <b>✓</b> <b>Minimum Level 100 MUST BE CARRIED</b>	<b>RECOMMENDED</b>	<b>✓</b> <b>Minimum Level 100 MUST BE WORN</b>	<b>✓</b> <b>Minimum Level 50S MUST BE WORN</b>
	<b>Distress Beacon (in-date)</b> A GPS enabled 406 MHz EPIRB <b>OR</b> if worn by at least one person, a GPS enabled PLB. Distress beacons must be in-date and registered with AMSA.	<b>RECOMMENDED</b>	<b>RECOMMENDED</b>	✓	✓
	<b>Red and Orange Flares (in-date)</b> At least two hand held red flares and two hand held orange flares must be carried. <b>OR</b> <b>Electronic Visual Distress Signal (EVDS)</b> An electronic signalling device may be carried in lieu of flares <b>IF</b> a GPS enabled EPIRB or PLB (must be worn) is also carried.	<b>RECOMMENDED</b>	<b>RECOMMENDED</b>	✓	✓
	<b>Marine Radio</b> A VHF or HF marine radio on any Registerable Vessel when operating <b>more than 4 nautical miles</b> from shore in unprotected waters.	<b>RECOMMENDED</b>	<b>RECOMMENDED</b>	<b>REQUIRED</b> beyond 4 nautical miles <b>RECOMMENDED</b> within 4 nautical miles	<b>RECOMMENDED</b>
	<b>Recommended Additional Safety Equipment</b> It is recommended an anchor and line, a fire extinguisher and a means of removing water be carried.	<b>RECOMMENDED</b>	<b>RECOMMENDED</b>	<b>RECOMMENDED</b>	<b>RECOMMENDED</b>

## Keep it maintained

All safety equipment must be maintained in very good condition and be accessible at all times. To maximise survival in an emergency, you and your passengers need to know:

- where the equipment is stowed;
- how to use it; and
- when to use it.

## Know how to use it

Make sure everyone on board knows how to use the safety equipment. Have everybody practise putting on lifejackets in good conditions so they are familiar with how they feel and how they do up. Make sure you are familiar with the instructions for use of EPIRB/PLB, flares, EVDS and the fire-fighting equipment required and carried on your vessel as you may not have time for a crash course in an emergency.

## Know where it is stowed

As skipper, you should brief everyone on the vessel about where the equipment is kept. It should be stowed where it is easily reached and preferably visible.

Keep the following points in mind every time you load and stow your equipment aboard:

- lifejackets need to be accessible and ready for use, not locked away in a cupboard or under bunks;
- if a fire extinguisher is being carried, it should be stored in areas where fire is likely to occur but where they can be still accessed should a fire break out;
- approved electronic visual distress signal (EVDS) can be carried in lieu of flares, they should be stored in a dry and accessible area;
- your flares should be kept dry and accessible (use a waterproof container that will float); and
- a GPS enabled EPIRB should be positioned in the cockpit or near the helm where it can be reached quickly in an emergency. In lieu of an EPIRB, a GPS enabled personal locator beacon (PLB) may be carried on any vessel; however, it must be worn when operating in unprotected water more than 400 m from shore.

## Know when to use it

“In good time” sums it up. Lifejackets take time to put on, so do not hesitate to wear them in deteriorating weather. Your radio lets you pass on varying degrees of urgency to a marine rescue group, so do not wait for full-blooded distress before calling for help.

## Know when it expires

A lot of safety equipment has an expiry, service or maintenance date. It is important that you are aware of these dates as the regulations require some of them to be in date.

Items that have expiry or service dates includes: flares, EPIRB, PLB, EVDS, fire extinguishers and inflatable lifejackets.

To assist skippers to remember these dates, DoT has produced a simple sticker where the dates can be recorded. To get a sticker, or to learn more about the reasons behind the expiry dates, visit: [www.transport.wa.gov.au/imarine](http://www.transport.wa.gov.au/imarine) or call the information line on 13 11 56



*Don't Expire stickers are available from DoT*

# REQUIRED: Lifejackets

## Approved lifejackets

Approved lifejackets bear the standard or stamp:

- AS 4758 – Level 100 (or higher); or
- ISO 12402.

Each lifejacket must suit the weight of the person for whom it is intended, be maintained in a good condition and kept in an easily accessible place.

## Carriage of lifejackets

All registrable vessels must carry an approved lifejacket for each person on board when operating in all waters. In some instances lifejackets must be worn. (see page 52)

Non-Registrable vessels must also carry approved lifejacket in unprotected waters and in some instances they must be worn. (see page 52)

### Types of lifejackets

Lifejacket	Level	Standard	Comments
<b>APPROVED</b> for Registrable vessels			<p><b>Level 100 and higher lifejackets</b> Provide a high level of buoyancy and are:</p> <ul style="list-style-type: none"> <li>• AS 4758 <ul style="list-style-type: none"> <li>– Level 275</li> <li>– Level 150</li> <li>– Level 100</li> <li>or</li> </ul> </li> <li>• ISO 12402</li> </ul> <p>– Fitted with head and neck support.</p> <p>– Designed to keep you in a face up floating position.</p> <p>– Manufactured using high-visibility colours.</p> <p>– Suitable for offshore and general boating in all waters.</p>
<b>APPROVED</b> for Non-Registrable vessels			<p><b>Level 50 lifejackets</b> Have a lower level of buoyancy than the Level 100 and higher lifejackets and are:</p> <ul style="list-style-type: none"> <li>• AS 4758 <ul style="list-style-type: none"> <li>– Level 50</li> <li>or</li> </ul> </li> <li>• ISO 12402</li> </ul> <p>– Not fitted with head and neck support.</p> <p>– Not designed to keep you in a face up floating position.</p> <p>– Manufactured using high-visibility colours.</p> <p>– Normally used for sailing, wind surfing and on personal water craft.</p>
			<p><b>Level 50S lifejackets</b> Have similar buoyancy to the Level 50 lifejackets and are:</p> <ul style="list-style-type: none"> <li>• AS 4758 <ul style="list-style-type: none"> <li>– Level 50S</li> <li>or</li> </ul> </li> <li>• ISO 12402</li> </ul> <p>– Not fitted with head and neck support.</p> <p>– Not designed to keep you in a face up floating position.</p> <p>– Not manufactured using high-visibility colours.</p> <p>– Favoured by waterskiers and wakeboarders, where comfort and style are important.</p> <p>– Available as a built in garment (eg water skiing wet suit).</p>

## Wearing of lifejackets

The table below lists the carriage and compulsory wearing requirements for lifejackets.

DoT encourages you to wear your lifejacket at all times while boating and especially in the following circumstances:

- at the first sign of bad weather;
- between sunset and sunrise or during restricted visibility;

- when operating in unfamiliar waters;
- when operating with a following sea;
- when boating alone (this is especially recommended); and
- if you are a poor swimmer.

Practise putting them on in the dark and in the water – it is harder than you think!

Lifejacket carriage and wearing requirements			
<b>REGISTRABLE VESSEL:</b> Vessels including sailing vessels that are or can be propelled by mechanical power.	<b>PROTECTED WATERS</b> Includes rivers, lakes, estuaries, harbours and waters within 400 metres from the shore in unprotected water but excludes the Cambridge Gulf and Lake Argyle.		<b>UNPROTECTED WATERS</b> Beyond 400 metres from the shore.
	<b>Registrable Vessels</b>	<b>Non-registrable Vessels</b>	
<b>NON-REGISTRABLE VESSEL:</b> Tenders and sailing dinghies.	✓ Minimum Level 100 <b>MUST BE CARRIED</b>	<b>RECOMMENDED</b>	✓ Minimum Level 100 <b>MUST BE WORN</b>
	✓ Minimum Level 100 <b>MUST BE CARRIED</b>	<b>RECOMMENDED</b>	✓ Minimum Level 100 <b>MUST BE CARRIED</b>
<b>Lifejacket Wearing</b> As indicated in the table opposite.	✓ Minimum Level 100 <b>MUST BE CARRIED</b>	<b>RECOMMENDED</b>	✓ Minimum Level 100 <b>MUST BE WORN</b>
	✓ Minimum Level 50S <b>MUST BE WORN</b>	—	✓ Minimum Level 50S <b>MUST BE WORN</b>

## Lifejacket size and fit

For infants, because of the varying weight distribution of babies it is difficult to put flotation in the right places. Children less than about a year old cannot be adequately catered for and should not go afloat.

For older children, there are three main things to look for:

- the weight range on the lifejacket's label agrees with the child's weight;
- the lifejacket is a snug fit (loose lifejackets work poorly); and
- the child is comfortable while wearing it.

For adults, too, a snug fit is important.

As for comfort, generally the less money you pay, the more uncomfortable the lifejacket.



Boaters are encouraged to wear a lifejacket at all times while boating

## Inflatable lifejackets

Inflatable lifejackets are becoming increasingly popular. These CO<sub>2</sub> inflated garments are lighter and less cumbersome than conventional foam lifejackets and are quite versatile – they're even made as wet weather jackets and windproof vests.

Care should be taken when purchasing an inflatable jacket to ensure that it conforms with Australian Standards: AS 4758 – Level 100 (or higher) or ISO 12402. This will be clearly marked on the lifejacket.

Boaters should be aware of the added maintenance requirements that come with this style of jacket as well as the need for detailed crew and passenger briefing on their operation.

### Maintenance

It is important that lifejackets are serviced regularly. You should follow the manufacturer's instructions or, if the manufacturer doesn't specify, you should have your lifejacket serviced at least every 12 months. This will ensure that the lifejacket is in good working order. When they are serviced, checks will be carried out to ensure the bladder, reflective tapes, buckles and straps are in working order, and that the inflation system and oral inflation tube are operating correctly.

Inflatable lifejackets are certainly very convenient but remember to be diligent with your checks and undertake regular servicing to ensure it will work when you need it.

## Maintaining lifejackets

As lifejackets spend most of their time in a harsh environment (particularly with saltwater boaters) their condition should be checked monthly or as recommended by the manufacturer.

- Check for cuts and tears that could let water enter the lifejacket and rot the buoyant material.
- Check the straps and buckles are in good condition and are not frayed or damaged.



# REQUIRED:

## Visual distress signals

### Required visual distress signals

All vessels operating in unprotected waters (beyond 400 metres from shore) must carry visual distress signals. This can be:

- Two hand held red flares and two hand held orange flares; or

### Flares and their characteristics

Type of flare	Suitable use	Burn time	Sighting range potential
Orange smoke flares	<ul style="list-style-type: none"> <li>• Day use only</li> <li>• No luminosity</li> <li>• Orange cloud of smoke</li> <li>• Especially visible from search aircraft</li> </ul>	60 seconds	<p>Day: 4 km Note: less than 1 km in a fresh breeze</p>
Red hand-held flares	<ul style="list-style-type: none"> <li>• Night and day</li> </ul>	45 seconds	<p>Day: 4–6 km Night: 10–12 km</p>
EVDS - white flashing light	<ul style="list-style-type: none"> <li>• Night and day</li> <li>• Assists rescuers once they are in the general vicinity of an EPIRB or PLB signal.</li> </ul>	20 hours	<p>Day: up to 1 km Night: up to 10 km</p>

### Types of visual distress signals

There are three main types of distress flares approved for use in Western Australia. All of them must be manufactured to Australian Standard AS 2092-2004 or comply with *AMSA Marine Orders Part 25*.

#### Orange smoke flares

These are designed for day use only and have no luminosity. They emit a cloud of orange smoke. Orange hand-held flares burn for about 60 seconds and have a potential sighting range by day of 4 km, although this can drop to less than 1 km in a fresh breeze; however, these flares are especially visible from aircraft, even on windy days.

#### Red hand-held flares

These are designed for use both night and day and burn for about 45 seconds at 15,000 candle power. Potential sighting range at night is 10–12 km and about 4–6 km during the day.



Red handheld and orange smoke flares

## Electronic visual distress signal (EVDS)

These are water resistant light sources, which are able to be detected at night by rescuers responding to an EPIRB or PLB activation. The role of an EVDS is to assist a rescue once searchers are in the general vicinity of an EPIRB or PLB signal.

An EVDS can be carried in lieu of flares, provided a GPS enabled EPIRB or PLB is worn at all times by a passenger on the vessel.

EVDS have a much longer 'burn'/display time in comparison to conventional flares.



## Know how to use them

Visual distress signals are best used when you believe there is chance of it being seen.

The method used to fire flares varies widely between flare types and manufacturers. The firing instructions are always printed on the flare, and you should be familiar with your flare's methods. Hand-held red flares especially, burn very hot and may spill glowing embers. Hold it downwind so that embers don't spill into the vessel and point it angled outwards while in your hand to avoid being burnt.



## Storage

Visual distress signals should always be readily accessible: stored in a waterproof container, in a place where they don't receive too much pounding in rough conditions, away from dampness and heat sources above 60°C.



## Expiry dates

Visual distress signals must be within the expiry date and maintained in serviceable condition at all times. Check them regularly to ensure they have not been rendered unserviceable by exposure to moisture. Mildew or bubbling of paper coatings may indicate this.

## Disposal

Do not discard unserviceable or out of date flares in general rubbish collections or land fill. Visit the DoT website: [www.transport.wa.gov.au/imarine/flares.asp](http://www.transport.wa.gov.au/imarine/flares.asp) for disposal locations.

## Unauthorised use of flares

There are severe penalties for the improper use of flares. Flares have a very serious purpose.

Falsely indicating distress rightly carries a severe penalty, but it also wastes a lot of time and resources – possibly weakening the ability to respond to a genuine emergency.

Do not leave flares in your vessel when it is not in use, and keep them away from children.



Flares are required to be in date

# **REQUIRED: GPS enabled EPIRB/PLB Distress beacons**

Distress beacons are devices that when activated in a life threatening situation assists rescue authorities by providing the approximate location of the beacon. Lives are saved each year because responsible skippers carry distress beacons.

A distress beacon is required when operating more than 400 metres from the shore in unprotected waters.

## **Types of distress beacons**

There are currently two types of portable distress beacons available on the market, the Emergency Position Indicating Radio Beacon (EPIRB) and the Personal Locator Beacon (PLB).

### **EPIRB – (AS/NZS 4280.1)**

Distress beacons approved for maritime use are labelled as EPIRB and must bear the standard (AS/NZS 4280.1) and be GPS enabled.

EPIRBs are designed to operate most effectively when activated in the water. They are required to operate for a minimum of 48 hours and float upright when deployed.

Vessels operating more than 400 metres from the mainland shore must carry a registered GPS enabled 406 MHz EPIRB (AS/NZS 4280.1) or a GPS enabled PLB (AS/NZS 4280.2) (must be worn).

### **PLB – (AS/NZS 4280.2)**

GPS enabled PLBs are now able to be used in lieu of an EPIRB. If a PLB is chosen to be carried, it must be worn by a person on board the vessel when operating more than 400 metres from shore in unprotected waters.

PLBs bearing the standard (AS/NZS 4280.2) are portable distress beacons that operate in much the same way as EPIRBs. Unlike EPIRBs, PLBs are only required to operate for a minimum of 24 hours and do not need to float in a manner that keeps the antenna above the water.

PLBs require the survivor to ensure the beacon's antenna is supported clear of the water.

### **Global Positioning System (GPS) distress beacons**

A built in GPS system is now required for it to be an approved distress beacon (once the phase out period has passed). GPS enabled distress beacons provide rescuers with coordinates of the beacon. This greatly improves the location accuracy (approximately 120 metres) and the time required for rescuers to locate the device.

GPS enabled EPIRB or PLB will now be required on any vessel when operating more than 400 metres from a shore. This will allow;

- enhanced accuracy in locating those in danger.
- timely assistance to be provided in life-threatening situations.



## Battery expiry date

EPIRBs and PLBs are battery-operated devices that will only function if the batteries are in good condition. To ensure that the batteries are operational manufacturers provide a battery expiry date on the device. This expiry date must be in date. If the battery has expired the distress beacon is deemed to be noncompliant and the unit will need to be replaced.



*Distress beacon batteries must be in date*

## Distress beacon registration

EPIRBs must be registered with the Australian Maritime Safety Authority (AMSA). Registration is a free and simple online process via: [www.beacons.amsa.gov.au](http://www.beacons.amsa.gov.au). Registration gives AMSA vital information to assist in a rescue.

### Proof of registration

Skippers are required to provide proof of beacon registration if asked by authorities, you must use one of the following methods:

- **email registration:** carry a printed copy of your email registration confirmation;
- **SMS registration:** save your SMS registration confirmation in your phone;
- **post printed registration:** if you don't have an email address or mobile phone, request a copy of your registration confirmation be sent to you by post and carry it with you when using your vessel; or
- **mobile beacon system:** owners and inspectors will be able to enter the beacon's HEX ID into a new beacon system on their mobile device to confirm whether the beacon is registered.

## Update registration details

If the EPIRB or PLB registration details change or the vessel is sold the details need to be updated with AMSA. To update details:

- visit the AMSA website: [www.beacons.amsa.gov.au](http://www.beacons.amsa.gov.au)
- email [ausbeacon@amsa.gov.au](mailto:ausbeacon@amsa.gov.au); or
- phone 1800 406 406.

## Distress beacon usage

As with all pieces of safety equipment responsible skippers need to become familiar with the safe operation of their EPIRB or PLB. Read the manufacturer's instruction so that in the event of an emergency the operation of the device will be understood.



*Testing an EPIRB*

Distress beacons should only be used when there is an emergency situation and a person believes they are in imminent danger or when they are told to do so by a rescue authority.

In the event of an emergency, also consider initial communication with others close-by via radio and other distress signalling devices.

### Accidental activation

If an EPIRB or PLB is activated by accident, the most important thing to do is to turn it off and let the authorities know as soon as possible by calling:

- AMSA on free call 1800 641 792;
- WA Water Police on (08) 9442 8600; or
- the nearest Marine Rescue (MR) group.

### Unauthorised use of distress beacons

EPIRBs and PLBs have a very serious purpose. Falsely indicating distress rightly carries a severe penalty and also wastes a lot of time and resources, possibly weakening the ability to respond to a genuine emergency.

## Storage, testing and disposal

Store EPIRBs in an accessible place where they can be easily retrieved but away from areas where they might be knocked or accidentally activated.

When not in use, removing safety equipment including EPIRBs from the vessel may help prevent unauthorised use.

## Testing EPIRBs and PLBs

These beacons should be tested before departing. The purpose of this is to ensure the battery is still working, there is signal presence and if GPS enabled, location services are working. Use the test switch as per the manufacturer's instructions to verify power and operation and physically check the beacon for signs of damage. Return the device to the place of purchase or the manufacturer if faulty.

## Disposal of unwanted EPIRBs and PLBs

EPIRBs and PLBs need to be disposed of responsibly to avoid accidental activation. Distress beacons must not be disposed of in general waste as they could end up in landfill and be inadvertently activated.

## Unwanted distress beacons can be:

- handed in for safe disposal to any DoT office listed on our website: [www.transport.wa.gov.au/imarine/epirbs.asp](http://www.transport.wa.gov.au/imarine/epirbs.asp) ;
- left in marked bins at Battery World stores around Australia, (disposal fees may apply). Location of Battery World outlets can be found on their website: [www.batteryworld.com.au](http://www.batteryworld.com.au) ; or
- disarmed by following the manufacturer's instructions.

The documentation that comes with EPIRBs often contains information about how to disarm the beacon safely. A list of distress beacons, with simple instructions to disarm them, can also be found at: [www.beacons.amsa.gov.au/maintenance/disposal.asp](http://www.beacons.amsa.gov.au/maintenance/disposal.asp)

Once disarmed, check with your local waste management facility for an environmentally friendly method of disposing of the battery.



# REQUIRED: Radios

In an emergency communication is vital and a marine radio is essential. Mobile telephones, although useful as a backup communications system, cannot replace a marine radio.

## Radios – who must carry one?

You must carry a marine band radio if you go more than 4 nautical miles from the shore in unprotected waters.

## Types of marine radios

There are three types of marine radios and the choice of radio is up to you, it can be 27MHz, VHF or HF. If you have a 27MHz radio, this is still acceptable, until the phase out period reaches its end.

### 27 MHz

These are cheap, easy to operate transceivers and are common in small boats. Their range is essentially line-of-sight and they are prone to interference noise. These radios are good for boat-to-boat communications and are monitored, at least during daylight hours, by most volunteer marine rescue groups. The emergency and call up channel is channel 88. Leave the radio on this channel to monitor any emergency traffic and respond to calls. Establish communications on channel 88, and then switch to another channel to have your conversation. Channel 86 is a supplementary distress frequency.

These radios are being phased out over a 5 year period due to:

- them not performing as well as other radios.
- the coverage by search and rescue organisations being significantly less.

After this 'phase out' period, 27MHz radios will no longer be acceptable as a piece of mandatory safety equipment for a registerable vessel to use, when operating more than 4 nautical miles from shore in unprotected waters.

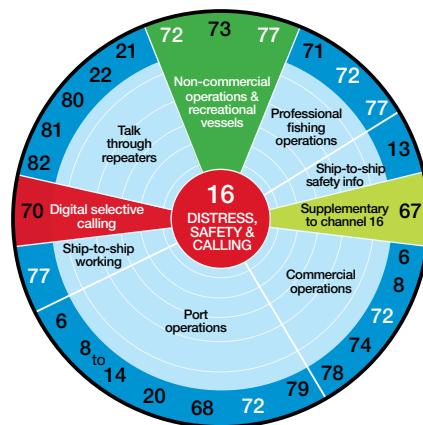
### 27 MHz marine radio channels



## VHF

These radios are a little more expensive but also easy to operate. Their range is line-of-sight (extended by high aerials and repeater stations) with a very high quality signal. The emergency and call up channel is channel 16. Leave the radio on this channel to monitor any emergency traffic and respond to any calls. Establish communications on channel 16, then switch to another channel to have your conversation. Channel 67 is a supplementary distress channel. Rescue groups monitor the distress channel and their own working channel. VHF radios have a dual watch capability where channel 16 and another channel can be monitored at the same time.

### VHF marine radio channels



## MF/HF

These radios have a much greater communication range (thousands of nautical miles) for vessels travelling long distances from shore. They are much more expensive and difficult to operate. Reception is not always reliable and can be of low quality.

A 24 hour, 7 day a week service operated from the Western Australia Water Police Coordination Centre in North Fremantle monitors the 4125, 6215 and 8291 kHz distress and calling frequencies. This HF service covers WA coastal waters within 200 nautical miles of the shore. The Water Police also broadcasts relevant WA navigation warnings on 8176 kHz.

The Water Police monitor and provide local weather and navigation warning broadcasts on VHF channel 16 and 67 at 0718 and 1918 Western Standard Time (WST). Severe weather warnings, when issued, are broadcast every two hours. This VHF service only covers Perth metropolitan waters within 20 nautical miles of the shore.

## Distress call

The distress call 'Mayday' may be used only if the vessel is threatened by grave and imminent danger – for example, sinking or on fire – and immediate assistance is required. This distress call has absolute priority over all other transmissions and may be transmitted only on the authority of the skipper or the person responsible for the safety of your vessel.

A Mayday call on one of the distress frequencies will attract the attention of land stations and other vessels in your area. Stay calm, explain the problem and give position and distress information clearly.

## Distress or urgency

When transmitting a distress or urgency message, stay on VHF channel 16 and do not change unless directed to by the local marine radio station – the rescuing vessel will communicate with you on that channel.

- Specify the nature of assistance you need.
- Follow directions of rescuers.
- Follow any instructions marine rescue or the rescuing vessel give you.
- Notify marine rescue if the situation changes or the danger has passed.

## Making a distress call

The distress call 'Mayday' maybe used only if the vessel is in grave and imminent danger and immediate assistance is required. The urgency call 'Pan Pan' should be used when use of the distress call cannot be justified but a very urgent message concerning the safety of your vessel or a person needs to be transmitted. The safety call 'Securite' should be used if you wish to broadcast an important navigational warning.

A distress call is made on the distress channels:

- 16 using a VHF radio;
- 88 using a 27Mhz radio (until end of 5 year phase out period); or
- 4125 using a HF radio.

## A Mayday call

A Mayday call on one of the distress channels will attract the attention of land based radio stations and other vessels in your area. Stay calm, and explain your distress information clearly using the 3Ps:

- position;
- problem; and
- people (the number of on board).

### Example of the Mayday procedure

"Mayday, Mayday, Mayday"

"This is [vessel registration]" (spoken three times)

"My position is ... [details of the your vessel's position]"

"My problem is ... [nature of distress]"

"I have [number] people on board".

This call can be repeated as often as necessary until answered. If no answer is received on distress frequencies, repeat the call on any frequency likely to attract attention.

## Pan Pan urgency call

The Pan Pan urgency call should be used when the Mayday distress call cannot be justified but there is an urgent message to transmit concerning the safety of the vessel or the safety of a person (for example, mechanical breakdown, medical emergency or a man overboard).

### Example of the Pan Pan procedure

"Pan Pan, Pan Pan, Pan Pan"

"Hello all stations, hello all stations, hello all stations"

"This is [vessel registration]" (spoken three times)

"My position is ... [details of the vessel's position]"

"I require... [details of assistance required and other information]".

Pan Pan urgency calls can be made on a distress frequency or any other frequency likely to attract attention.

## Securite safety call

The Securite (Saycure-e-tay) safety call is used if you wish to broadcast an important navigational warning; however, a safety call is more likely to be made by a coast station or VMR group and may include important strong weather warnings.

### Example of the Securite safety call procedure

"Saycure-e-tay, Saycure-e-tay, Saycure-e-tay"

"Hello all stations, hello all stations, hello all stations"

"This is ... [vessel registration]" (spoken three times)

"A hazard exists ... [details of the warning or announcement]".

## Licensing requirements

Operators of 27 MHz marine radios do not need to be licensed. Operators of VHF and MF/HF marine radios must hold a Long-Range Operators Certificate of Proficiency or Short-Range Operators Certificate of Proficiency. Courses for this qualification are run by some RST providers, maritime colleges and marine rescue groups.

Encourage others on board to get a working knowledge of the radio for emergency use.

Vessels fitted with MF/HF marine radio must hold an individual station licence (renewable each year). This will allocate a radio call-sign to that vessel.

## Operating procedure

Standard radio procedures are used internationally. These are explained on the Australian Communication Managements Authorities website: [www.acma.gov.au](http://www.acma.gov.au)

## Which channels to use and when

Always listen on the distress channel and if you need to make a call, you can use this channel first and then switch to a working channel. When the call is finished, resume listening on the distress channel (and the working channel if needed using the dual watch function, if fitted).

## Mobile phone is no substitute

Mobile telephones, although useful as a backup communications system, cannot replace a marine radio for the following reasons:

- Other vessels in the area cannot hear emergency calls made on mobile telephones. A radio call is broadcast and nearby vessels tuned to the frequencies can provide a quicker response than vessels called from the shore.
- Mobile telephones are difficult to locate using direction finding equipment; whereas a marine radio is much easier for searchers to locate.
- Marine radio provides better coverage with fewer shadow areas.
- Marine radio batteries are heavy duty and last longer than mobile telephone batteries.
- There is no need to remember phone numbers.

However, if your radio is unusable – you are in a life raft, or sitting on an upturned vessel – a mobile phone will be most welcome.

## Unauthorised use of radios

Marine radios have a very serious purpose. Falsely indicating distress rightly carries a severe penalty, but it also wastes a lot of time and resources – possibly weakening the ability to respond to a genuine emergency. When you are not using your vessel, removing your equipment and giving it secure storage will help prevent unauthorised use.

## Radio use – rules and operating hints

The radio's squelch control not only removes background noise, it also weakens incoming signals. Tune it until it just suppresses the background noise.

Listen before transmitting to avoid interfering with another station calling on the same frequency.

Always use your call sign and/or the name of your vessel for identification.

For normal (non-distress/urgency) messages, ask to switch to a working channel once you have contacted the other station.

Keep your message brief and clear.

Stop transmitting when requested to do so by a local marine radio station.

Always return your radio to either VHF channel 16 or 27.88 MHz when you have completed a call on another frequency.

Do not transmit unnecessarily or allow children to play with the radio.

## Radio problem checklist

The following items should be checked if radio communications cannot be established.

- Is the correct frequency/channel selected?
- Is the volume (AF gain) adjusted correctly?
- Is the squelch adjusted correctly?
- Is the RF gain set to maximum sensitivity?
- Power supply – is the battery fully charged?
- Antenna – are the leads and whip intact, not corroded, have proper earthing and connections in good order?

If these checks have been completed and there is still no response, another channel or frequency should be tried. Shore station operators are busy on other circuits or handling emergency communications. In all circumstances, listen before transmitting.

## Logging on and off

### Let someone know before you go

This is so vital that it is one of the items included in the practical assessment.

Giving trip details to a responsible person puts duties on two people, the person to actually do something if you do not contact them by the nominated time, and you. You must make that contact when you return, and you must stick with the trip plan unless you are able to make contact during the day and advise of any change.

Some people choose to notify a neighbour or relative. If you do, you must accept that this person may not have much marine understanding. It would be best to write the plan down, and go through it with them. At the end of the plan make sure you write that they must ring the police if you don't make contact at the agreed time.

The most common responsible person, is the duty officer at your local marine rescue group, contacted by radio.

Skippers are advised to log on and off every time they go out on their boats with their nearest radio station – typically a MR group, Australian Coast Radio Monitors (ACRM) base or Water Police.

**Remember to  
LOG ON  
LOG OFF!  
every trip**

with the local Marine Rescue group

### Logging on procedure

Logging on is a simple process and you'll know you've told someone responsible when you're due to arrive back and they will take the appropriate action if you haven't called in by then. If you change your planned time, call the radio station again and advise them of your change in plans.

#### Example of the radio call

**You say:** "MR Station, MR Station, MR Station - This is [vessel registration (3 times)] OVER"

**MR Station will reply:** "This is MR Station please go to channel [xx] OVER"

**You say:** "Going to channel [xx]" (Change to channel xx and wait for MR to call you)

**MR Station will call you:** "[vessel rego (3 times)] OVER"

**You say:** "MR Station this is [vessel rego] I wish to log on" and supply them with the:

- vessel's name, registration number or call sign;
- departure time and location;
- destination;
- trip intentions;
- number of people on board;
- amount of fuel carried; and
- estimated time of return.

### Logging off procedure

It is very important to remember to log off with the radio station that you logged on with, to avoid a search being initiated.

#### Example of the radio call

**You say:** "MR Station, MR Station, MR Station - This is [vessel registration (3 times)] OVER"

**MR Station will reply:** "This is MR Station please go to channel [xx] OVER"

**You say:** "Going to channel [xx]" (Change to channel xx and wait for MR to call you).

**MR Station will call you:** "[vessel rego (3 times)] OVER"

**You say:** "MR Station this is [vessel rego] I wish to log off"

**MR Station will say:** "Thank you for logging off"

**You say:** "This is [call sign or vessel rego] thanks OUT"



## **RECOMMENDED:** **Bailer or bilge pump**

All vessels are recommended to carry some form of bilge pump or bailing equipment to provide a means of removing unwanted water from their vessel.

### **Bailers**

A strong bucket with two metres of rope attached makes an excellent addition to your safety gear list. As a safety item, it is useful both for bailing water out and fighting fires.

### **Bilge pumps**

The necessity and effectiveness of a bilge pump will vary according to the size of the vessel and its compartments. Therefore, the onus is on the skipper to determine if one is required, and if so, what characteristics the pump should have.

A bilge pump may be manually or power operated and should be capable of pumping 4 kilolitres per hour. If you fit an electric bilge pump with an automatic switch it must have an indicator to show when the pump is working. Check its operation regularly and keep it well maintained.

The bilge pump's suction pipe should be protected by a strainer to prevent choking. Clean bilges reduce the possibility of blocked pumps.



*A bilge pump can be manually, electrically or mechanically operated*

# RECOMMENDED: Fire extinguishers

Although not required by law, it is recommended that vessels, particularly those fitted with an inboard engine or with cooking, heating or cooling systems that use flames, carry an approved fire extinguisher.

## Types of fire extinguisher

The extinguisher (provided it is made to Australian Standards) can be foam, dry powder, carbon dioxide or vaporising liquid.

Most boats carry a dry powder extinguisher, which is a good “all-rounder”. Some vessels with enclosed engine rooms also have a built-in smothering gas or water mist system.

A fire bucket or your bailer will do a fine job in extinguishing burning solids. Water is not suitable for use on electrical or cooking oil fires and should not be used in these circumstances.

## Using an extinguisher

Fire extinguishers are quickly discharged (approximately 10 seconds for a 1kg dry powder) so care must be taken to use them effectively.

- Ensure the extinguisher is correct for the type of fire.
- Always keep an emergency exit behind you.
- Stay low to avoid the effect of heat and smoke.
- Direct the extinguisher stream at the base of the fire.
- Move the stream in a side to side sweeping motion.
- If fire gets to the point where you cannot control it, retreat and isolate the area.

**Fire extinguisher usage chart**

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

*Notes: Limited indicates that the extinguishant is not the agent of choice for the class of fire, but that it will have limited extinguishing capability.*

## Serviceable condition

Fire extinguishers should be inspected at least every six months. All extinguishers other than carbon dioxide have a pressure gauge indicating their state of charge, and a security seal on the trigger.

Extinguishers should be recharged if the security seal is broken or if the gauge is not in the green sector of the scale and as soon as possible after use. Tap the gauge lightly to make sure that the needle is not stuck.

Carbon dioxide extinguisher needs to be checked by weight. If the loss is more than 10 per cent of the net weight of the contents, it needs to be recharged.

The dry chemical (powder) extinguisher should be periodically taken off its bracket and shaken. This is to prevent the powder inside from compacting.

Check the nozzle is clean and clear, clean out if necessary.



*Check the gauge is in the green*



*Keep fire extinguishers in an accessible location*

## RECOMMENDED: Anchors

It is recommended that an efficient anchor and line is carried at all times.

The anchor should be of a type that will hold in all seabeds and with enough line to suit the depths in which you usually operate.

### Choosing an anchor

Provided it is a type that will hold in all seabeds, the choice of anchor is up to you. Most people choose one of the following high holding power designs:

#### Danforth

This is the most common type for trailer boats that do not stow the anchor below a bowsprit. It has excellent holding power in most bottoms, especially sand, and is modest in price.



#### Plough or CQR

This is more expensive than the Danforth because of its more complex construction. Its holding power is similar, but it has a better reputation for holding in mud. Also, it is better suited for self-stowing under a bowsprit.



#### Bruce or spade

This is the best of all for bowsprit stowage and is gaining in popularity; however, for small boats, where the anchor is stowed within the boat, it is very cumbersome.



#### Admiralty pattern

The sailors' cap badge anchor looks old fashioned, but it is the best at piercing weed beds and it also works well in mud. Weight for weight it is one of the best all round anchors, but it can be inconvenient to stow.



#### Reef or grapnel (optional/additional)

The grapnel or reef anchor is too specialised to be acceptable as a vessel's sole anchor. Unlike a normal anchor, which can be difficult to retrieve from rock, this will straighten out under a heavy load and withdraw. For anchoring on a rocky bottom, it is a useful extra.



## Anchor lines

An anchor line may be all chain, or rope with a piece of chain (pennant) joining it to the anchor. The chain is necessary for its weight, it allows a more horizontal pull on the anchor and acts as a shock absorber. It also reduces chafe of the rope.

The best anchor rope is nylon because it has a lot of stretch and great strength; next best is polyethylene silver line.

The table below shows the length of anchor line and chain pennant suggestions for the length of vessel.

Boat length	Anchor rope		Chain pennant	
	Diameter	Length	Diameter	Length
Up to 5 m	8 mm	50–70 m	6 mm	3 m
5–8 m	10 mm	75–100 m	6 mm	6 m
8–12 m	12 mm	100–125 m	6 mm	10 m

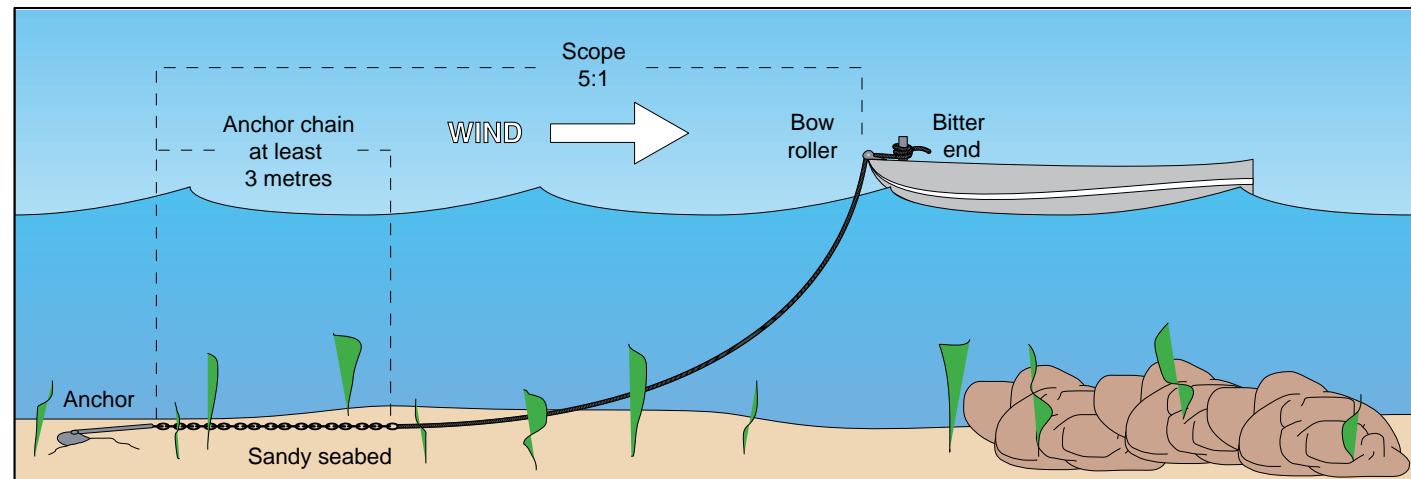
## Securing the anchor line

The chain pennant should be secured to the anchor and anchor line with shackles. The shackle pin should be moused (secured with twitching wire) to prevent the pin coming free accidentally.

The very end of the anchor line (bitter end) must also be secured to the anchor mount point within the vessel to prevent the loss of the anchor.



Anchor shackles should be secured



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

## Preparing to anchor

### Weather

Check both the existing and forecast weather before anchoring. This could influence whether you will use more anchor line, or even decide to move elsewhere. Strengthening winds blowing on shore (technically giving you a lee shore) should especially influence your decisions.

### Selecting a site

If you have a choice of bottom in which to anchor (in other words it is not an emergency), sand is ideal, firm mud next best. It is better not to anchor on a weed bed both for environmental reasons, and because most anchors find it difficult to grip.

Check that when you have let your line out you will have enough room to swing to wind or tide without hitting the bottom or other vessels.

If you are in a tidal area, ensure that you will have enough depth at low water.

### The scope

The critical element of anchoring is to have enough line out – enough scope is the jargon. The scope is the ratio of the length of line used for the depth of water.

The recommended minimum is five times the depth of water, and seven or nine is better. Strong current or wind or a choppy sea put more load on the line and make a bigger scope more desirable.

Recommended scope	
Weather condition	Scope
Calm	5:1
Fair	7:1
Moderate	9:1

## Lowering

Having selected a spot to anchor and determined that there is enough line, at low speed turn your vessel to face the wind (on a low wind day face the current, if any). Put the motor in neutral, and then into reverse for long enough to get the vessel moving astern. Lower the anchor (do not throw it) to the bottom, and pay out the line as the vessel moves astern with the wind.

## Setting

When enough line has been paid out, secure the line to the anchor securing point on the vessel and let the weight of the vessel set the anchor. A short, gentle application of reverse can help bed the anchor in.

## Monitoring

Once the anchor has set and bedded in, you should take a few bearings or line up some objects (transits) to check that the anchor is not dragging.

If you notice that you are drifting off the bearing and you suspect that the anchor is dragging, place your hand on the line and feel for any signs of the anchor bouncing along the bottom. This should confirm or reject any suspicions you may have.

If the anchor is dragging and you have enough room, try paying out more line. In most cases by decreasing the angle between the anchor and the vessel (letting out more line) will be all that is required to get the anchor to bite.

## Retrieving the anchor

There is no need to over exert yourself by pulling the vessel up to the anchor: let the motor do the job while you – or your winch – retrieve the line. You may need to indicate to the driver which way to steer.

## Snagged

When the line is vertical, it may be necessary to secure the anchor line and let the engine power break the anchor out of the bottom. If the anchor will not break out, slacken the line, back off, and approach the anchor from different directions.



Use the buoyancy of the hull to assist when retrieving a snagged anchor

## Keep rope and chain tidy

Your anchor and its line (rope and chain) are part of your safety gear and should be ready to run at any time. A common problem with free running is the way the rope is coiled.

Coil the rope and chain clockwise (rope may develop kinks otherwise) into the line well or the dedicated box – ready for instant use. It is best to secure the anchor away from the line to prevent it passing through a loop and tangling.

If you coil the rope on the deck or ground and then drop it into the line well or box, you must make sure that when the anchor is dropped it will be taking rope from the top of the coil – this may require you to turn the coil over. Taking the rope from the bottom of the coil will cause kinks and tangles.

## Anchor rules and regulations

### Channels and leads

Anchoring is prohibited in any channel, fairway, passage or leading lines unless you are in distress or obtain the permission of DoT.

### Submarine cables

Anchoring is prohibited in the vicinity of telephone, submarine and power lines laid on the seabed. These anchoring prohibited areas are marked on marine charts and must be complied with.

### Mooring areas

Anchoring is not recommended in mooring areas. You could foul your anchor on the moorings and, because the spacing of moorings is usually only a little more than needed for the vessels on them to swing clear of each other; you would be likely to hit other vessels.

### Ports

Ports have individual rules for small craft using their waters. The overwhelming intent is to avoid any conflict with large commercial vessels, so ensure that you do not anchor anywhere near where these vessels pass.

## Additional safety equipment

Charts, compass, water, food, extra clothing, tools and spares, extra line for the anchor, sun protection and the items listed below are some of the items you should consider adding to your equipment list.

### Tool kit

Your motor's handbook will detail other checks and small repairs you can make. Carry at least enough tools to carry out all these things.



Toolbox

### First aid kit

Every vessel should have a suitable first aid kit on board. A simple kit can be purchased and supplemented with sunburn cream, seasickness tablets and a pair of side cutting pliers for removing fish hooks. Make sure it contains adequate wound and burn dressings.

The kit should be kept in a sturdy, watertight plastic container, clearly marked and secured in a position where anyone on board can reach it if necessary. A booklet giving basic first aid methods is an essential addition to the kit.

### Fire blanket

Especially if your vessel has a galley, there may be times when a fire blanket is better than an extinguisher. Extinguishing a pan of burning oil or fat is one example.



Fire blanket

### Life buoy

Larger vessels may carry one or more life buoys, or something similar, stowed ready for throwing if a person goes overboard. It is easy to lose sight of someone in the water and in poor weather can take time to get back to them. Life buoys may have attachments including life buoy lights and buoyant lines. A light is a useful attachment.



Life buoy

### Torch

A buoyant and waterproof torch is best, and you should also carry spare bulbs and batteries. This does not substitute for navigation lights. All vessels should display navigation light(s) at night in accordance with the collision regulations.



Waterproof torch

### Life raft

Inflatable life rafts are expensive, but are wonderful insurance for larger vessels on longer trips or travelling well offshore. They are the most efficient means of evacuating passengers and crew from a sinking vessel, and are standard equipment on commercial vessels.

## Safety Equipment self-test questions *(answers on page 118)*

**Q1.** Where should safety equipment, such as flares, EVDS and lifejackets be stowed in a vessel?

- In readily accessible positions protected from the sea and weather.
- In locked compartments.
- Away from passengers who might accidentally damage them.
- No particular place as long as they are on board the vessel.

**Q2.** What items of safety equipment **MUST** be carried on a registerable vessel operating in unprotected waters, more than 4 nautical miles from the coast?

- Two Orange and Two Red hand held flares or EVDS.
- GPS enabled EPIRB or PLB.
- HF or VHF marine radio.
- All of the above.

**Q3.** Fire extinguishers are recommended to be carried for?

- Vessels propelled by an inboard motor or with cooking, heating or cooling systems that use flames.
- Vessels propelled by an outboard.
- Vessels without a fire blanket.
- Vessels propelled by an electric motor.

**Q4.** When anchoring a vessel, you should consider:

- The length of anchor line.
- The proximity of other vessels.
- Any drift.
- All of the above.

**Q5.** How many lifejackets must be carried on board a vessel in unprotected waters?

- One for each person.
- Four.
- Six.
- At least one.

**Q6.** Other than using your radio in a distress situation, what is the most effective way of attracting attention at night?

- Waving arms up and down.
- Letting off an orange smoke flare.
- Using an EVDS or Red handheld flare.
- All of the above.

**Q7.** When should you activate your EPIRB or PLB?

- When the motor has cut out and it won't restart.
- Only where human life is in grave and imminent danger.
- If you have run out of fuel.
- All of the above.

**Q8.** When must an approved marine band radio be carried?

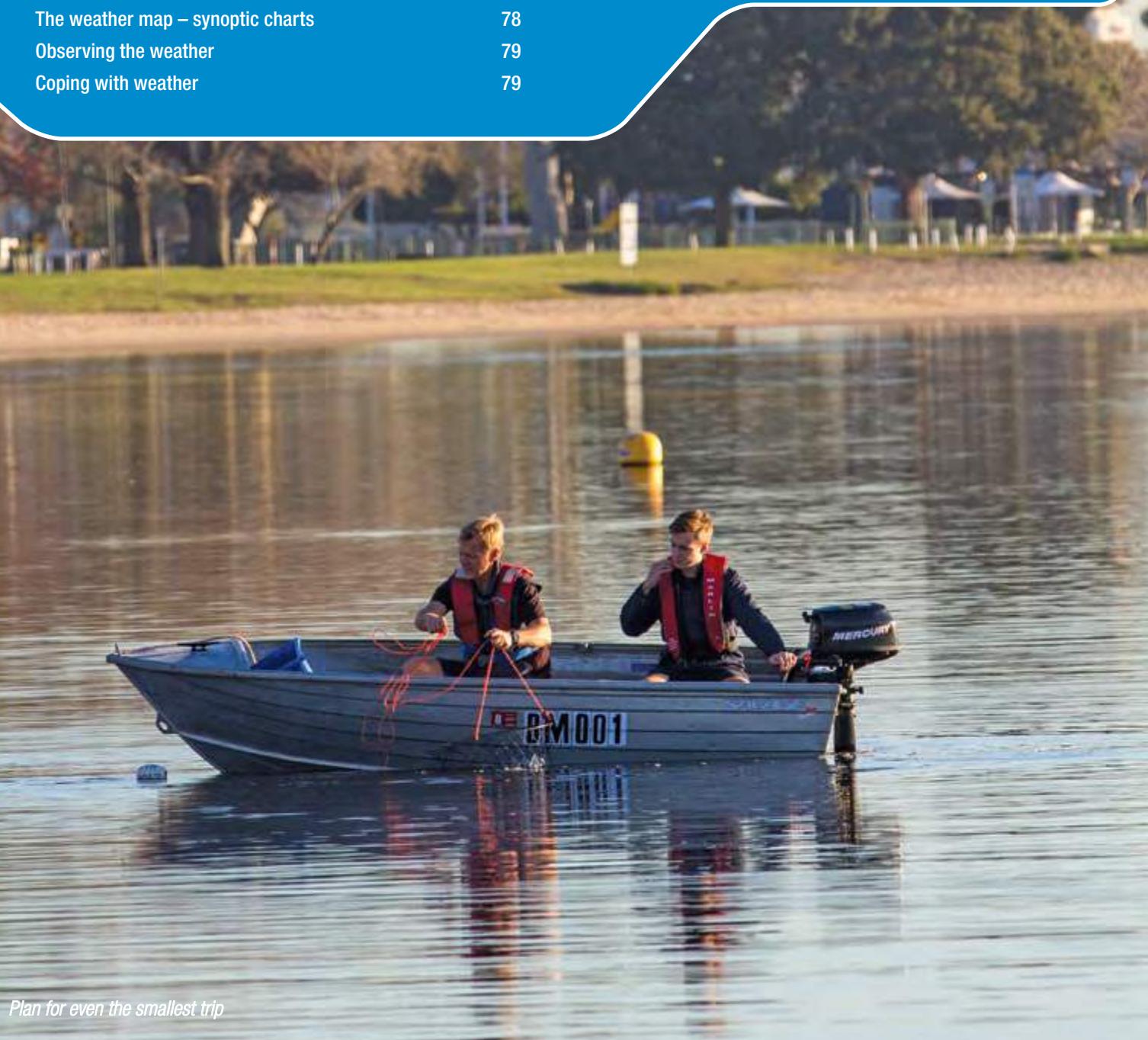
- On all vessels on all waters.
- On all registerable vessels operating beyond 4 nautical miles from shore.
- On all non-registerable vessels operating beyond 4 nautical miles from shore.
- On all vessels operating in unprotected waters.

**Q9.** What do the words "Pan Pan" indicate when said at the start of a radio message?

- A very urgent message follows concerning the safety of a vessel or person.
- A vessel is in grave and imminent danger.
- A navigational warning is about to be announced.
- All of the above.

## Safe Operations

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*Plan for even the smallest trip*

# Safe Operations

The skipper of a recreational vessel must take responsibility for the safe operation of the vessel and for the care and safety of the passengers and crew. In addition, skippers are expected to ensure that:

- the vessel is operated within the relevant regulations.
- the safety equipment on board is in good working order.
- the condition of the vessel is well-maintained and safe (hull, deck, engine conditions, fuel systems, electrical systems etc.)
- adequate preparation has been carried out for the trip (safe navigation, weather/wind/wave/tide conditions, safe loading etc.)
- the vessel is navigated safely (collision rules, anchoring etc.)
- all persons on board understand and comply with required emergency procedures.

At the end of this section, skippers should know how to reduce the risks of incidents at sea through the application of safe boating.

## Trip Planning

Plan for even the smallest trip – the safety and success of any boating trip depends as much on the preparation of what you do before you leave as on what you do once you are at sea. Planning starts with confidence in yourself, and in a seaworthy vessel.

### Vessel

A skipper needs to ensure the vessel is seaworthy, in good condition, suitable and properly equipped for the planned trip, and accept the responsibility that goes with the job of skippering. Before you go boating, you will need to consider and check a number of details to formulate a safe plan.

### Suitability

Some vessels should never go outside of sheltered areas – their size, hull shape and general design do not suit them to the exposed ocean. Seek the advice of experienced people on the capabilities of your vessel. Make sure your vessel is fit for purpose and is capable of making the trip you have planned.

### Motor check

The maintenance section of this workbook explains the typical service and checks your motor will need. Before each trip, a good idea for outboard motors – particularly older ones – is to attach a flushing device and test start the motor (before leaving home).

### Fuel for the trip

Fuel consumption measured in litres (L) varies greatly, especially with a change in the sea conditions. Aim to carry about 50% more fuel than you expect to use for your planned trip. Allow 25% out, 25% return and 50% reserve:

Trip out is 25 L, trip back is 25 L = ..... 50 L.

Carry 50% of 50 L in reserve = ..... 25 L.

Total = ..... 75 L.

If this means you have to carry spare fuel in a portable container, use an approved one and make sure you have a means of transferring the fuel, such as a pump or funnel.

You can work out your likely fuel consumption from your vessel's history. Record the hours the motor runs for on a trip and the litres needed to top up the tank; divide the hours run into the litres used and this gives you a litres per hour (L/h) consumption rate.

To calculate the minimum litres needed for a trip; multiply the litres per hour by the estimated duration of the voyage.

#### For example:

If you travel for 2 hours and require 10 litres to top up the tank (10 L divided by 2 h = 5 L/h) your fuel consumption is 5 litres per hour.

If you intend to travel on a 4 hour voyage and use 5 L/h (5 L/h multiplied by 4 h = 20 L) you will require 20 litres for the voyage.

Don't forget to include a 50 per cent safety margin to your final figure.

## Stability

Stability is the measure of a vessel's eagerness to return to the upright after being heeled by an external force such as wind or waves or by an internal influence such as shifting cargo.

A vessel's stability is affected by the total load, by how the load is distributed, and by how securely it is stowed. The imaginary point at which the whole mass of the vessel, its load and crew is balanced is known as the centre of gravity (G). G is not a permanently fixed point but can be moved as a result of the placement of weight on or within the vessel.

Movements in G directly affects the stability of the vessel. If G moves up, (your passengers move from the deck to the flybridge), the vessel becomes less stable. If G moves down, (if they move back down to the deck level), the vessel becomes more stable.

Vessels that return quickly to the upright are described as "stiff" and are regarded as very stable, with a low G. Although stable, their motion can be violent and uncomfortable for passengers and can place undue stress on the vessel structure.

Vessels that are slow and sluggish to return to the upright are described as "tender" and are regarded as unstable with a high G. A tender vessel may be in danger of failing to respond from an external force and capsizing.

Placing weight up high in a vessel will raise G and result in a more tender vessel. Placing weight low down in the vessel will lower G and result in a stiffer vessel.

Passengers are part of the load, and their movement can affect stability, especially in smaller boats.



*The movement of passengers can affect the vessel's stability*

## Danger signs of an unstable vessel

The vessel is tender, has a long period of roll and is slow to return to the upright.

The vessel develops a state of loll where it will prefer to lie at an angle as it has little stability in the upright position. This is not the same as a list where a vessel will lie at an angle due to more weight being placed on one side than the other.

## Correcting a tender vessel

The main objective when correcting a tender vessel is to lower G by shifting weight downwards. Care should be taken while doing this as a tender vessel is in an unstable condition and sudden shifts may have adverse results.

## Correct loading

Ensure that the total load, including the number of people on board, is within the specifications of the vessel – check the Australian Builders Plate (ABP).

Heavy items must be stowed low, and all items must be distributed evenly so as not to cause a change in trim of the vessel (not dip the stern or the bow).

No items may be stowed where they can shift with the vessel's motion. Scuba cylinders for instance, which are heavy and likely to move if unrestrained, have caused stability problems and outright damage.

Any gear that is not possible to stow securely must be restrained by straps or rope lashings.

Water in the vessel can endanger stability, both through increasing the total load on board and through a phenomenon called free surface effect. Water free to move around the vessel has an effect on stability out of all proportion to its quantity.

Once loaded, ensure adequate freeboard for the prevailing weather conditions and any unexpected deterioration in weather conditions.

## Overloading

Overloading is dangerous and seriously reduces the stability and safety of the vessel. Overloading a vessel reduces freeboard, making it less able to resist waves and more likely to be swamped.

For vessels that don't have an ABP or handbook recommending a maximum complement of people, use this table as a guide.

Length of vessel	Maximum number of people onboard
Less than 3 m	2
3 m to less than 3.5 m	3
3.5 m to less than 4.5 m	4
4.5 m to less than 5 m	5
5 m to less than 5.5 m	6
5.5 m to less than 6 m	7

The maximum carrying capacity stated in the table above is an example and determined for a vessel operating in good conditions.

A reduction in the maximum number of persons must be made in adverse conditions or when on the open sea. The capacity of a person is assessed at 75 kg per person with an additional allowance of 15 kg per person for personal gear. A reduction in the number of persons must be made when equipment and supplies exceed total weight allocated.

## Australian Builders Plate (ABP)

Vessels built after mid 2006 must carry the ABP, giving vital safety information to their owners – or to help prospective owners make buying decisions.

One item sometimes overlooked is motor weight. Makers are now quoting maximum outboard weight as well as maximum power. This is just one of the safety items included on the ABP.

The plate must be clearly visible, and includes information on the:

- maximum engine power;
- maximum number of people to be carried;
- load weight; and
- vessel's buoyancy performance.

## Buoyancy

Almost all new trailer boats less than 6 metres have flotation – sealed air chambers or foam – to give support if the vessel is swamped. How much flotation and where it is placed determine how effective the buoyancy will be.

### Basic flotation

This is enough flotation to prevent the vessel and its maximum load from sinking when swamped. It does not necessarily support its passengers safely – it may float at any attitude and just give them something to cling to while waiting for help.



*A vessel with basic flotation*

### Level flotation

When swamped, a vessel with this flotation will float upright and level (unless it has been capsized), and support its maximum load and its designed complement of occupants. This could allow the vessel to be bailed or pumped dry, and vastly improves the prospects of survival.



*A vessel with level flotation*

## Passengers and crew

Ensure you have sufficient skills, experience and number of crew on board for the current and forecasted conditions. If you have passengers with you, you will need to consider the following:

- Have you undertaken a trip in the area before?
- Is the trip appropriate to the ages of your passengers? Children may fret on a long trip; first timers may be nervous going far offshore.
- Is anyone prone to seasickness?
- Are there any special medical problems? Do they have their medication with them?
- Who will you advise of your trip plan to activate a search if you do not return on time?

Passengers and crew should be provided with a safety briefing that includes:

- what to do in an emergency;
- what safety equipment is carried;
- where the safety equipment is stored; and
- how the safety equipment works.

## Clothing

It is always colder on the water, and because of reflection, the sun is stronger – extra jumpers, waterproofs and sunscreen are always worth carrying.

Even on hot summer days you should carry at least a spray jacket, and preferably a jumper as well. These are even more important for children.

Clothing should not restrict your movements or significantly reduce your buoyancy. If it's cold and you need to bulk up, wear a buoyancy garment.

Check your ability to swim or float in your clothes – try it out in shallow water.

## Fatigue

There are many factors that may contribute to fatigue while boating. Boat and engine noise, sun, glare, vibration, wave action, wind, temperature and the availability of food and water all add to the effects of a long day awake on the water.

Fatigue will affect your ability to make good decisions and compromise your capacity to be a responsible master.

## Exposure and dehydration

It is essential to protect yourself and others aboard your vessel from the elements such as heat, cold, sun, wind, rain and water.

## Fresh drinking water

This is an essential on any vessel. Carry more than you think you will need, and replace the water frequently. Do not completely fill the container – you want it to be capable of floating.

## Provisions

Food is not nearly as important as water, although children may have a different view, but it would certainly be a comfort when waiting for assistance. Low protein food is better as it does not make you so thirsty.

## Navigation

### Local knowledge

In addition to complying with the general boating regulations and requirements, it is important to find out if there are any special local rules. Seek advice on local conditions and carry the appropriate chart of the area in which you will be navigating. DoT produces a large range of regional boating guides that provide local rules and regulation for popular Western Australian boating locations. Boating Guides are available on DoT's website: [www.transport.wa.gov.au/imarine/boating-guides.asp](http://www.transport.wa.gov.au/imarine/boating-guides.asp)

### Nautical charts

Nautical charts provide detailed information including depths, tidal streams, navigation hazards and anchorages. They are essential when operating in unfamiliar areas.

With a chart and a compass you can work out your position (very important if you need to give your position to rescuers) and find a course back to shore if rain, fog, or smoke obscure the land. Charts are available for free on DoT's website: [www.transport.wa.gov.au/imarine/nautical-charts.asp](http://www.transport.wa.gov.au/imarine/nautical-charts.asp)

### Global Positioning Systems (GPS)

These devices give an instant latitude and longitude position. They are invaluable for giving your position when using a radio to advise a shore station or other party of your position. You should also carry a chart and compass as back-up.

### Depth sounder

A depth sounder can be a useful aid to navigation by confirming your position with the chart's depth details.

# Weather

You go boating for pleasure, and there is not much pleasure in doing it in bad weather. You need to be able to cope with unexpected changes in the weather, but even more importantly you need to know the range of conditions that you and your vessel can safely manage, and the conditions that will keep you at home. Learn how to read the weather map. By following it daily you get the feel for trends in the weather and can use it for planning ahead.

The Bureau of Meteorology recommends five vital weather safety checks to making sure you keep informed of conditions that could affect you.

1. Are warnings current for your boating area?
2. Are there weather conditions affecting safe navigation and comfort?
3. What are the wind trends?
4. What are the wave conditions?
5. When is the next high and low tide?

## Sources of weather information

### Internet

For the most current and a full range of weather information visit the Bureau of Meteorology's website: [www.bom.gov.au/marine](http://www.bom.gov.au/marine)

The Bureau's "MarineLite" webpages provide quick and light-weight downloads for satellite Internet and marginal mobile coverage: [www.bom.gov.au/marine/lite](http://www.bom.gov.au/marine/lite)

### Marine radio

Weather and navigation warnings covering the Perth metropolitan waters (within 20 nautical miles) are broadcast on VHF Channels 16 and 67 at 0718 and 1918 WST by the Western Australia Water Police.

The Water Police also broadcast weather information for the Broome, Geraldton and Esperance regions.

Volunteer marine search and rescue groups operate within normal recreational boating hours. They provide weather information on VHF channels 16 and 67 and/or on 27.88 MHz.

In addition to VHF radio there is also an HF service available 24 hours a day. Frequencies vary according to the time of day, but there are always four to choose from.

**Daytime** (7 am–6 pm): 4149 and 16528 kHz

**Night-time** (6 pm–7 am): 2056 and 6230 kHz

**Anytime:** 8113 and 12362 kHz

**Note:** 27MHz radios are being phased out over a 5 year period and it will be a requirement for registerable vessels to carry a VHF or HF radio when operating more than 4 nautical miles from shore in unprotected waters.

### Recorded telephone services

The Bureau of Meteorology has recorded services for coastal waters forecasts and warnings.

**Services include:**

WA Marine Service: 1900 926 150

WA Tropical Cyclone Information: 1300 659 210

WA Coastal Marine Warnings: 1300 659 223



The most current weather information is on the Bureau of Meteorology's website

## Know what the forecast is telling you

Wind can change direction and strength very quickly. It is important to understand the following terms when reading a weather report.

- **Wind speed** over the water is given in knots. When wind is mentioned in forecasts it refers to the average wind over a 10 minute period at a height of 10 m.
- **Gusts** are increases in wind speed lasting for just a few seconds. They typically range 30–40 per cent greater than the average wind speed.
- **Squalls** are a sudden large increase in wind speed (usually accompanied by a change in wind direction) that lasts several minutes and then suddenly dies.

### The Bureau of Meteorology warnings

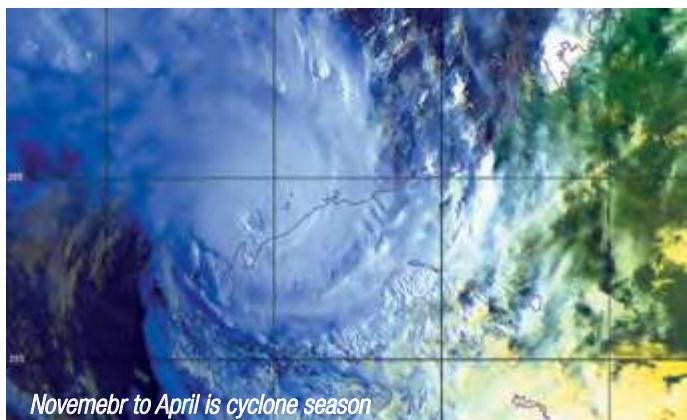
<b>Strong wind warning</b>	For winds averaging more than 25 knots and up to 33 knots
<b>Gale warning</b>	For winds averaging 34 knots and up to 47 knots
<b>Storm warning</b>	For winds averaging 48 knots or more

## Cyclones and severe weather

The north-west of Australia is one of the most cyclone prone coasts anywhere in the world. The cyclone season extends from the months of November through to April, but most of the coastal impacts occur between January and March.

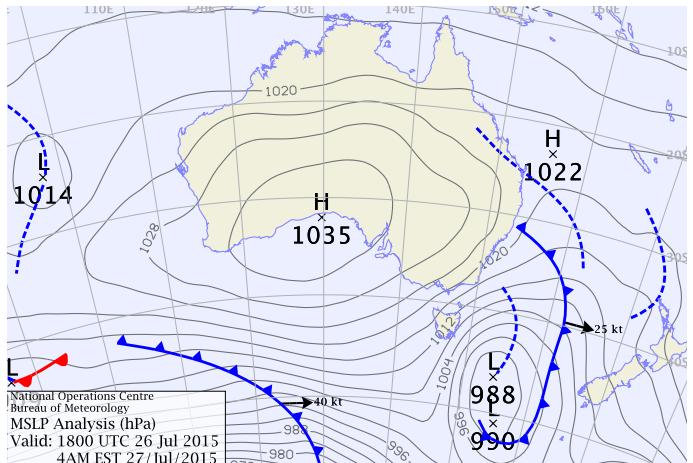
No vessel should be at sea within several hundred nautical miles of a cyclone.

On average, during the cooler months of May to November, the south-west of Western Australia experiences about 10 weather events where wind gusts of up to 55 knots may be recorded.



## The weather map – synoptic charts

The weather map (also called a synoptic chart) provides a good visual overview of approaching weather such as cold fronts – high pressure and Tropical Cyclones. These charts do not provide specific details about wind strength or wave height, but they are a useful tool to help identify trends in what is happening now and what is likely to happen over the next few days



A synoptic chart as supplied by the Bureau of Meteorology

### Winds

Wind is caused by the movement of air from high pressure to low pressure systems, but it does not flow directly from one to the other. Instead it flows almost parallel to the pressure contour lines (called isobars) that you find on weather maps. In the southern hemisphere, this flow is in a clockwise direction around low pressure systems and anticlockwise around highs.

Wind strength can be inferred from the number of isobars and their closeness to each other – the closer they are the windier it will be.

The primary reason that mariners are interested in wind speed and direction is because winds generate waves. Wave height depends on wind speed, length of time the wind blows (duration) and how far over the water it blows (fetch). Wind off the land will produce smaller waves inshore because of the limited fetch; they will also be steep and close together – a feature of short fetch. If you operate in the shelter of islands you will also get smaller waves than the forecast, which assumes no shelter. A common mariners' rule of thumb is when you start seeing white caps, the wind strength has reached around 15 knots.

## Cold fronts

Cold fronts are drawn on a synoptic chart as a bold curved line with spikes on the front – commonly associated with winter lows. Weather often associated with frontal features is squalls and rain within the passage of the front followed by showers behind the front. The wind typically changes direction at the front (shown by the bend in the isobars) and strengthens. The wind change is often west to north-westerly ahead of the front, tending south-westerly behind.

## Sea and land breezes

Local winds such as sea breezes are a common occurrence at many coastal locations throughout Western Australia. Sea breezes are a near shore event caused by the heating of the land during the day. Their strength will be partly dependent on the existing (synoptic) wind. On the west coast sea breezes come from the south-west, so they will be opposed and weakened by a synoptic north easterly. The further towards south the synoptic wind, the more it will assist and strengthen the sea breeze.

## Sea (wind) waves

The waves caused by the wind currently blowing (the wind you can feel) are called 'sea waves'. A 15 knot wind (not a sea breeze) will typically produce sea about 1.5 metres high. The waves created from a seabreeze generation zone are often lower than the waves of large scale synoptic winds; however, if the sea breeze blows from a similar direction to the existing wind, it will join forces and build bigger waves.

It is important to note that the forecast wave height refers to the height of the average wave. Occasionally waves will line up and you could experience the odd wave up to twice as high.

## Swell

Swell is the waves caused by winds from far away. The time in seconds between wave crests is called the swell period. Swells with a longer time difference between each wave crest will have a greater physical distance between each wave crest. A higher swell period value indicates higher energy of the waves when they reach the coast.

The southern and west coasts regularly receive long period swells with heights between 2 and 3 metres.

## Observing the weather

Forecasts tell you the expected weather – keeping your own eye on approaching weather can confirm the forecast or can tell you that something unexpected is about to happen, or that local conditions look like being worse than predicted.

Keep your senses open to:

- drops in temperature;
- a rising swell;
- solid cloud appearing;
- barometer falling; or
- wind changing.

In fact almost any change can mean deteriorating weather approaching.

## Coping with weather

Have an alternative trip planned for the day in case the weather is unfriendly. You may choose to operate inside the river, reefs or islands instead of outside.

Use your radio to keep up-to-date on forecasts, the weather can change quickly.

Trim your vessel, by moving passengers or using power trim, to suit the direction of the sea. With a planing vessel, generally you trim the bow down a little for a head sea, and trim it up for a following sea.

A lowering of speed or a small change in course can make a big difference to the softness of ride.

If conditions deteriorate, put on lifejackets.

## Factors affecting visibility

Poor visibility can have a disturbing effect on your orientation, whether you are on the open ocean or an inlet. It also requires you to slow down and keep an even better lookout.

The Bureau's marine forecasts include an indication of conditions that lead to reduced visibility or lightning risk, such as heavy rain, thunderstorms, fog and smoke.

## In summary: know the conditions

The weather has the capacity to limit where you go, the load you can carry safely, whether you should take inexperienced people with you or if you should stay home. Before you set off, get the latest weather forecast and review the five vital safety checks – knowing the likely conditions will help you decide where the safest and most sheltered spots are.

## Tides

In areas of larger tides, especially the north-west of the State, the times and ranges of the tides can determine whether launching and retrieval is possible.

Metropolitan boaters often fail to consider tides because the local range is so small. In other parts of the State, tides are large enough to make ramps unusable at certain times. The currents created by tide – known as tidal streams – can run as fast as 10 knots in the Kimberley.

### Sources of tide information

Tide predictions for the next seven days and the months ahead are available on the Bureau of Meteorology's and DoT's websites. It is recommended to take the tide predictions with you.

### Tide predictions

The tide predictions provide a forecast of the time and height of high and low water for a particular day at a particular place.

The height of the tide in metres and decimals is referenced from a theoretical datum (reference point). On charts, depths are shown measured from this datum.



*Check the tides before boating, especially in the north-west of the State*

### Chart datum

As the level of the sea is constantly rising and falling, the depths shown on charts must have a common level from which they are measured. This level is the lowest predictable level to which the tide is likely to fall. It is known as chart datum.

Chart datum is not a horizontal surface but may be considered as such over a limited local area. It is the level so low that the tide will not frequently fall below – usually defined in terms of the approximate lowest low water level. All soundings on a navigational chart are referenced to chart datum.

To be able to calculate the total depth of water, you must add the depth obtained on the chart to the tide height at that time and place.

### The weather's effects on the tide

Prolonged winds or barometric pressure can cause differences between the predicted and the actual tide. Low-pressure systems tend to raise sea levels and high-pressure systems tend to lower them. In general, wind will raise the sea level in the direction towards which it is blowing.

## Safe Operations self-test questions *(answers on page 118)*

**Q1.** As part of your trip plan you should ensure

- Your vessel is suitable for the trip.
- The weather and tides are favourable.
- That all your safety gear and extras are on board, in good shape and in reach.
- All the above.

**Q2.** The recommended additional fuel to carry for a boating trip is

- 10 % more fuel than you expect to use.
- 20 % more fuel than you expect to use.
- 50 % more fuel than you expect to use.
- 100 % more fuel than you expect to use.

**Q3.** Which is the most up-to-date weather forecast available?

- Bureau of Meteorology.
- The newspaper.
- Last night's television news.
- AM/FM radio.

**Q4.** Which of the following wind warnings indicates that the average wind speed is expected to be 25 to 33 knots?

- Strong wind warning.
- Gale warning.
- Storm warning.
- Sea breeze.

**Q5.** When about to undertake a recreational boating trip, on what occasion is it advisable to inform relatives, friends or local authorities of your travel plans and estimated time of arrival at destination or return?

- Whenever bad weather is forecast.
- If travelling overnight.
- On every occasion.
- When you go boating alone.

**Q6.** When loading your vessel with passengers and equipment for a day's outing, you should:

- Distribute the load evenly in the vessel.
- Ensure adequate freeboard for the prevailing weather conditions and unexpected deterioration in weather conditions.
- Restrict passengers to the recommended limit.
- All of the above.

**Q7.** If a vessel is full of water and it has basic flotation it will

- Sink straight away.
- Have enough flotation to prevent the vessel and its maximum load from sinking.
- Take three hours to sink.
- Stay well above the water.

**Q8.** A low pressure system rotates in which direction?

- Clockwise.
- Anti-clockwise.
- Always north.
- Vertically.

**Q9.** Which of the following may be signs of bad weather?

- Wind shifts.
- Increases in swell.
- Cloud build-up.
- All of the above.

## Emergencies

**83**

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*Check for leaks and damage after a grounding*

# Emergencies

Well-prepared boaters seldom have big problems at sea. These are the people who are ready to cope with the unexpected and usually avoid emergencies. But accidents still occur to the most thoughtful of people, and you need to be ready to deal with them.

At the end of this section, skippers should have knowledge of how to prevent and deal with some of the more common boating emergencies.

## Assisting others

When you are not actually using your radio, you are required to keep it tuned either to the distress frequency or marine rescue's working frequency. This is because you must stay available to assist others. It is a legal obligation to offer help if you hear a radio distress call or see distress signals or a burning boat.

The traditions of the sea also say that you should respond to urgency radio calls or to other requests for assistance that fall outside the distress category.

You are not obliged to offer a tow to other vessels. You can offer to stand by until marine rescue turns up.

## Leadership

The safety equipment you have to carry, and the logical extras, will go a long way towards relieving most problems. But you need thought and action as well. A prime requirement is for the skipper to be the skipper – to set an example by getting on with the job decisively and logically.

## Lifejackets

Make your passengers as safe as possible. This will almost certainly include putting on lifejackets, and may involve moving people to a different part of the vessel, or even preparing them to abandon the boat.

Check to make sure there is no danger of the emergency getting worse, for instance, a parted fuel line assisting the start of a fire.

Check what informal means you have of easing the emergency. As an extreme example, on more than one flooding boat, skippers have put cooling water intakes into the bilge and used the engine itself as an extra pump.

## Send distress signal

Decide as quickly as possible if your emergency needs outside help, then waste no time asking for it. The radio is usually the best way, but waving of arms may be appropriate for a nearby vessel, an emergency position indicating radio beacon (EPIRB) or personal locator beacon (PLB) for more accurate vessel locations and electronic vessel distress signal (EVDS) or flares for visibility. Depending on equipment accessibility, even the flashing of a mirror can attract the attention of a vessel or aircraft within visible range.



## Distress signals

### Radio

The radio is usually the best means of calling for any kind of help. You are able to specify what kind of help and the level of urgency. It is also best for signalling distress. It has longer range than visual signals, can continue sending as long as there is battery power, and it lets you state your exact position – marine rescue can also home in on the signal.

### EPIRB

This is the device that will call for help even after a vessel has sunk. It can only send a distress message with few other details, but once activated it works with no assistance from you.

### Flares / Electronic visual distress signal (EVDS)

Red hand-held flares and orange smoke flares are short range – you need to see a potential rescuer before you fire one.

EVDS can be carried in lieu of flares (see page 54) to assist in the final stages of a rescue, in conjunction with a GPS enabled EPIRB or PLB.

### Other distress signals

Other internationally recognised distress signals include:

- a gun or other explosive signal fired at intervals of about a minute;
- continuous sounding of a fog horn;
- waving – slowly raising and lowering outstretched arms;
- smoke and or flames on a vessel;
- a Mayday radio signal;
- the international code flags N over C;
- a red parachute flare or a red hand-held flare; and
- an orange smoke flare.

### Phone

A mobile phone is not accepted as a substitute for a radio, but it can be a useful back up. If you have to abandon your vessel, leaving the radio behind, you should certainly take your phone with you.

## Capsize

Capsizes are a major cause of boating deaths.

These are among the most common capsizing factors:

- gross overloading, or poor distribution of load;
- broaching when running with a following sea – this is made more likely by the vessel not having the bow trimmed up;
- free surface effect due to water in the vessel or shifting load;
- poor driving technique;
- being caught by breakers on the seaward side of a reef (usually on days of bigger than normal swell); and
- being caught by wind and waves with the occupants on one side pulling pots.

### Stay with vessel if possible

As always, safety of the passengers is the first priority. If the vessel capsizes, make sure everyone is there and make sure they stay with the vessel. A well prepared vessel with level flotation should have enough buoyancy to keep afloat if upturned.

If you can, turn the vessel upright and bail it out. This is difficult with a dinghy – it may well be impossible with a larger vessel. If you cannot right the vessel and get inside it you should try to get as much of yourselves as possible onto the hull – you will lose less body heat.

If you are unable to right the vessel, abandon the vessel only as a last resort. Stay close to the vessel to improve your chances of being sighted by the rescue vessel. Do not remove your lifejacket, and if you are in the water, stay together in a Huddle or HELP position (see page 88).

Do not try to swim ashore unless it is very close and a suitable landing place exists. Distances can be deceptive. Your vessel is easier to spot in the water than a person alone.



*Always stay with the vessel*

## Sinking

Most trailer boats have flotation to cope with flooding, and seldom sink. Larger vessels without flotation usually take some time to sink. Having lifejackets quickly accessible, safety items and emergency provisions in a watertight drum, and water in a floating container should allow enough time to take these essentials with you.

Before abandoning the vessel, attempt to send a Mayday message and activate your EPIRB. Do not remove any clothing – if there is time, it is better to put more on.

To keep everybody together, and to conserve body heat, adopt the huddle position described under hypothermia in the Emergency section (page 88).

## Grounding

Grounding is very common, with results ranging from minor scraping to sinking, injuries to fatalities. Speed and the type of bottom hit are often all that cause the difference.

### Running aground

If you do run aground, look after your passengers. Coming to a sudden stop can cause serious injuries. You may need to call for medical assistance.

Assess the damage. Is the vessel leaking? If you are outboard or stern drive powered, raise the leg and check for propeller damage.

If the vessel appears serviceable, check for depth around the vessel by probing with a boat hook or even getting over the side. Pushing off may be the best option for getting the vessel clear, although you may need to wait for the tide to rise.

If the vessel is unseaworthy or hard aground call for assistance.

## Prevention

This is a thoroughly preventable type of emergency. Knowing where you should be and where you actually are, and keeping a good lookout are key.

Plan your trips using a chart, and take the chart along. Ensure you will have enough water depth throughout.

Make sure you can identify all the navigation marks, and bear in mind that not all of them have lights at night.

Whenever in doubt about your position or the identity of a navigation aid, slow down.

## Breakdown

Well-maintained motors are unlikely to break down, and most breakdowns consist of the motor refusing to start rather than simply stopping.

### Outboard not starting

Not everything in this list applies to every outboard motor, but it is the basis of a simple troubleshooting routine.

- Ensure kill switch is correctly attached.
- Does the tank have fuel?
- Is the air vent clear?
- Are the fuel lines un-kinked and connected?
- Is the fuel bulb hard? If not, squeeze continually.
- Does the choke close fully?
- Check the carburettor air intake.
- Is the motor cranking fast enough? Check battery connections.
- Wait five minutes and try again.
- Battery flat? Start with rope around flywheel.
- Broken starter cord? Start with rope around flywheel.
- Change spark plugs.
- Change fuses.

Several of the above are also logical checks to make if the motor stops.

If you are unable to restart the motor, you should, if possible, anchor to hold your position and keep the bow facing into the sea. Unless your vessel is drifting into danger or has other problems, breakdown is not a reason for making a Pan Pan or Mayday call. You should call marine rescue services for assistance.



Poorly maintained motors are more likely to breakdown

## Fire

Fire prevention is preferable to fire fighting. Fires involving LP gas are invariably catastrophic, and petrol fires usually so – essentially, they are explosions rather than fires. Besides these, vessels are prone to the same types and causes of fires as you get ashore.

### Some causes of fires

The most common causes of fire are:

- overheated oil on galley stove;
- overloaded or incorrectly wired electrical system;
- poor engine room housekeeping – rags in contact with turbocharger or exhaust system;
- leaking fuel or gas lines; or
- poor refuelling technique.

Correct installation, good housekeeping, regular maintenance and good fire prevention technique can prevent most of these.

### Housekeeping

Locate your extinguishers where they are most accessible – not near the source of a potential fire – and check and maintain them.

### Engine room ventilation

There are vessels on the water powered by petrol engines with substandard conversions to marine use. They may have inadequate means of preventing stray sparks, have second-rate fuel systems, or be in compartments with poor ventilation.

When buying a used vessel with an inboard or stern drive motor, have the motor and installation checked by a marine mechanic.

Fuel vapour is heavier than air, and will not leave a compartment without assistance. Consider having power ventilation installed.

### Technique

Develop a consistent routine for starting your engine. For inboards and stern drives this should always include entering the engine room or opening the motor box, checking for leaks and sniffing as low in the bilge as you can reach. The human nose is good at detecting minute concentrations of flammable vapour.

### Keep your vessel well maintained

Have the installation and maintenance of all electrical, gas, diesel and petrol equipment carried out by qualified tradesmen.

Frequently make your own checks for leaks in fuel and gas systems.



*Fires at sea can be particularly dangerous*

## Refuelling precautions

Refuelling is the most likely time for fuel spills.

When refuelling:

- turn off everything that uses electricity, gas or liquid fuel;
- send passengers ashore;
- take portable fuel tanks out of the vessel;
- have a fire extinguisher near the refuelling point;
- know how much fuel you need to take and so reduce the chance of overfilling (leave space to allow for expansion of the fuel);
- if your fuel tank is metal, there must be electrical continuity between the mouth of the fuel filler pipe and the tank;
- the hose nozzle must stay in contact with the filler mouth while the fuel is flowing; and
- check the bilge for spillage and for the smell of fuel – do not start the engine until all fuel smell has gone.

## LPG appliances

LPG systems, a prime candidate for fires, must be correctly installed by a licensed gas fitter. As with petrol, the vapour is heavier than air, so the cylinder must be stowed above deck in a place where vapour spills will run over the side.

When you have finished cooking with an LPG stove, turn off the gas at the cylinder and let the gas jets keep burning until they go out. Then turn them off.

## Fighting a fire

The most important consideration is human life, the vessel is secondary.

- Raise the alarm and make a head count.
- Make an appropriate radio call or use an EPIRB/PLB if required.
- Get someone to take charge of the safety gear and move the passengers as far as possible from the fire.
- If the fire is within an enclosed space, close all openings to reduce air supply to the fire.
- Close off fuel lines and gas lines.
- Try to put out the fire with extinguishers, fire blanket, water buckets or whatever is appropriate. The best way to deal with burning items may be simply to throw them over the side.

When the fire is apparently out, still keep an eye on it and on adjoining spaces; fires can restart.

## First aid

Knives, fishing gear, venomous sea life, galleys and engine spaces – as well as a range of potential accidents – provide endless opportunities for injury on board. It makes a lot of sense to take a first aid course. Back up the training by carrying a suitable first aid kit.



*A good first aid kit is always recommended*

## Seasickness

## Preventive measures

Check whether your passengers are prone to seasickness. If they usually take medication for it, make sure they take it at the recommended time. Ways to limit seasickness include:

- non-medication remedies, such as eating ginger or wearing an acupuncture band are popular;
- avoid greasy food and alcohol before and during the trip;
- sit in the lowest motion part of the vessel, usually near the stern; and
- stay in the open air.

## If seasickness strikes

Often, people are only prone to seasickness in a stationary vessel. If a bad bout comes on, try getting underway again.

Bad seasickness can dehydrate people quickly.  
Encourage a seasick person to continually sip water.

## Hypothermia

This is the result of major heat loss from the body, causing a lowering of the body's core temperature. Immersion in cold water multiplies the rate of heat loss by many times, and being in wet clothes in cold wind can, over time, also cause hypothermia. Hypothermia is a life-threatening condition, most common in survivors of capsizes or sinkings, and it is made worse by physical exertion like swimming or treading water. Greatest heat loss is from the head, the armpits and from the crotch.

### Huddle or HELP position – lessening the effect

If at all possible get out of the water, or at least get out as much of yourself as you can by climbing onto a capsized hull.

If in the water, wearing a lifejacket allows you to protect the heat loss areas.

The Heat Escape Lessening Position (**HELP**) puts your legs together and drawn up, your upper arms tight by the sides of your chest, and your head back.



The **Huddle** position is adopted by a group of people. Clustering close together in a circle, ribs touching and with arms around each other greatly reduces heat loss.



### Signs of hypothermia

Usually the circumstances will suggest the possibility of hypothermia if the victim seems drowsy and is cold to the touch.

Other signs include:

- faint, slow pulse;
- shallow breathing;
- confusion, with slurred speech; and
- dilated pupils.

### Treating hypothermia

Your aim should be to prevent further heat loss, and gradually warm the victim.

- Remove the person from the cold inducing environment.
- Protect the person from cold wind.
- Remove wet clothing if practical.
- Warm the victim with dry blankets, towels or skin-to-skin contact.
- Warm the area of high heat loss, that is, head and neck, sides of chest, armpits and groin. Do not warm, rub or massage limbs.
- Observe the person for deterioration in condition.
- Manage an unconscious person by placing them in the lateral position, making sure their airway is clear. Continue warming procedures.
- Do not give the person alcohol.
- Do not allow the person to walk around.
- Seek medical assistance.

## Emergencies self-test questions *(answers on page 118)*

**Q1.** Your vessel capsizes 4 nautical miles off the mainland shore. In most circumstances if a vessel capsizes it is best to:

- Swim away from the vessel.
- Try swimming to the shore as a group.
- Send the strongest swimmer to get help.
- Stay with the vessel.

**Q2.** Most vessel groundings can be avoided by:

- Planning your trips using a chart.
- Knowing what navigation marks look like and mean.
- Slowing down if you are unsure of a situation.
- All of the above.

**Q3.** If you are out in a motor boat in calm weather and the motor cuts out unexpectedly, you should first:

- Fire flares.
- Radio Mayday.
- Drop the anchor and assess your options.
- Swim for shore.

**Q4.** Fuel vapour will not leave a compartment without assistance due to:

- Fuel vapours being the same weight as air.
- Fuel vapours being lighter than air.
- Fuel vapours being heavier than air.
- All of the above.

**Q5.** After a period of being exposed to cold water the most likely effect on the body will be:

- Hunger.
- Hypothermia.
- Dehydration.
- Thirst.

**Q6.** Who is responsible for the safety of all on board a recreational vessel?

- The owner or their representative.
- The most experienced person on board.
- Any qualified person.
- The skipper.

# Chapter 10

## Practical Assessment

### Proving your practical skills

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*Checking POI before assessment*

# Practical Assessment

To receive an RST you must demonstrate both understanding (the theory assessment) and ability (the practical assessment) to a standard set by DoT.

This section explains the skills you have to demonstrate to an approved RST assessor in order to pass the practical assessment.

## Proving your practical skills

The assessment criteria (listed below each task title) are the skills you need to demonstrate to your assessor to pass the practical assessment.

During the assessment, the assessor will be watching you skipper your vessel. To pass, you have to successfully demonstrate at least 56 out of the 62 criteria (six wrong or less).

At any stage of the assessment unsafe skippering that puts the vessel, its passengers or other water users in immediate danger is considered unacceptable and will result in immediate failure.

All criteria must be demonstrated in one continuous assessment. If you fail to demonstrate more than 6 criteria, the assessment maybe stopped and you will have to book another assessment on another day.

The assessment will take about 30 minutes, but could be longer if a number of people are being assessed.

During the assessment the assessor will give directions to dock, complete a man overboard, etc. At all times follow the collision regulations and safe boating practices.

If at any stage you don't understand the instruction from the assessor, let them know and they will run through it again. The assessor can repeat instructions but they can't tell you how to skipper once the assessment has started.

The assessor will be recording information as you go. If they write something down do not assume you have made a mistake – they record your overall performance. You will be provided feedback on how you went at the end of the assessment. This is a good opportunity to pick up advice on where you can improve your skippering for the future.

If English is your second language, you have a hearing problem or for any other reason you may have difficulties in understanding or performing the assessment tasks, it is important that you point this out to your assessor prior to the assessment so they can ensure there are no misunderstandings.

RST assessments can be undertaken on a vessel supplied by an assessor or you can use a registered recreational vessel if it complies with the *WA Marine Act 1982* and is capable of performing the practical assessment tasks. Additional crew are permitted (if required) for the safe operation and handling of your vessel during your assessment.



*Always operate the vessel safely and within the rules and regulations*

## Task 1 – The vessel is safely operated within the rules and regulations

Criteria: During the performance of all tasks, you must obey the relevant marine safety rules, regulations relating to:

1. Minimising the vessel's impact on others and the environment.
2. Applying marine safety rules and regulations.
3. Ensuring that the vessel and equipment are maintained to a good working condition.
4. Monitoring the safety of the vessel and people on board at all times.

This task is assessed throughout your entire assessment. All through the practical assessment, you must operate your vessel safely, and obey any local and general marine safety rules. Although the assessor may ask you to carry out certain manoeuvres, you are still the skipper of your vessel and are responsible for your own and your passengers' safety. You should not undertake any manoeuvre that you believe to be unsafe. Unsafe skippering is unacceptable and will result in immediate failure at any stage during the assessment.

The criteria listed above are covered in the earlier sections of this workbook. You will be expected to use this knowledge while you are operating your vessel during all assessments.

### You will be required to demonstrate the following:

1. Minimising the vessel's impact on others and the environment.

You will be required to drive your vessel in a way that does not adversely affect other water uses or cause a nuisance, and consider the affect that your vessel may have on other vessels or people such as excess wash or noise.

- Keep a good distance from wildlife to minimise any disturbance and ensure your vessel's wash is minimised to reduce the risk of causing damage to the shoreline.
- Arrange to store garbage, waste or oily bilge water on board until they can be discharged responsibly when back on land.

2. Applying marine safety rules and regulations.

During the entire assessment and performance of all tasks it is the skipper's responsibility to ensure the vessel is navigated in accordance to the rules and regulations applicable to the area of operation. Some things to consider are:

- keeping a lookout and determine whether action is needed under the collision rules;
- navigating in narrow channels, travel on the starboard side as far as practicable and pass oncoming vessels port side to port side;
- keeping within any speed limit restrictions;
- ensuring you have the required safety gear for the area of operation; and
- checking the vessel is registered and displaying a current registration sticker.

3. Ensuring that the vessel and equipment are maintained to a good working condition.

The assessor will require your vessel and its equipment to be in good working condition. If the vessel breaks down or becomes unseaworthy during an assessment, the assessment will be stopped and you will have to complete the practical assessment later.

Safety gear must be in a serviceable condition and stowed where it is easily accessible.

4. Monitoring the safety of the vessel and people on board at all times.

Throughout your assessment, you should give similar levels of attention to the skippering job that you should to the driving of a car. You are responsible for the safety of the vessel, crew and passengers by:

- ensuring that the depth of water is appropriate;
- ensuring the vessel is safe to operate;
- assessing sea state and deciding on appropriate speeds and direction;
- ensuring the vessel is not taking water;
- directing passengers to sit in places that best aid their safety and the vessel's trim; and
- ensuring passengers do not endanger themselves by, for example, having hands on the gunwale when berthing.

## Task 2 – Skipper checks the suitability and condition of the vessel's mooring/berthing equipment and secures the vessel

Criteria: The skipper checks the condition of the mooring lines and the soundness of the berthing equipment to ensure they are acceptable to use and then secures the vessel by:

1. Checking berthing/mooring lines are in good condition.
2. Checking berthing/mooring equipment is sound and secure.
3. Securing the vessel using the mooring lines and cleats.

The assessor will ask you to show that your vessel's mooring lines and berthing equipment are in good condition and secure your vessel alongside. You should move around the vessel pointing out the condition of the mooring lines and the soundness of the berthing equipment that you will be using to secure the vessel to ensure they are acceptable to use and then secure the vessel.

All cleats and bollards etc. must be sound and all lines, splices, metal shackles and associated hardware must be in good condition to meet the RST standard.

### You will be required to demonstrate the following:

#### 1. Checking berthing/mooring lines are in good condition.

You will need to check your lines for damage or wear and point out any weaknesses identified. Ropes must be in good condition and appropriate for the vessel you are securing. Any ropes that are found to be not suitable must not be used to secure the vessel.

#### 2. Checking berthing/mooring equipment is sound and secure.

You must check the securing points that you intend to use to secure the vessel for any movement, cracking and wear that may significantly reduce their strength. Securing points that are found to be in a poor condition must not be used to secure the vessel. The vessel may be secured by tying the lines to boat rails and other fittings as long as they are sound and secure.

#### 3. Securing the vessel using the lines and cleats.

You will be required to secure your vessel, while in the water, alongside a jetty, a pen or a mooring using the cleats and ropes. You only need to secure the vessel so that no harm comes to it for the period the assessment is taking place. If this means a single bow line secured to the jetty on its own will suffice, then that is appropriate for the assessment.

Lines with eye splices are allowed if they are available on the vessel. If the vessel is secured prior to the assessment commencing, the vessel will need to be unsecured and re-secured by you for the assessment. If a bridle is used, both ends connected to the vessel must be unsecured during the assessment.

#### Securing your vessel in a pen

If your vessel is secured in a pen, the lines need to be attached so your vessel will not impact with the jetty. Depending on your vessel design and pen layout you could have a combination of bow and stern lines as well as springs, these lines will also usually have counter weights that apply pressure on the vessel holding it in position. Indicate to the assessor the condition of the lines, line splices, metal shackles and all associated hardware from the pen posts to the securing points on the vessel.

All lines, splices, metal shackles and associated hardware must be in good condition.

#### Securing your vessel on a mooring

If your vessel is secured to a mooring you need to indicate to the assessor the condition of the lines, line splices, metal shackles and all associated hardware from the mooring to the securing points on the vessel. All lines, splices, metal shackles and associated hardware must be in good condition.



Securing the vessel

## Task 3 – Skipper conducts a safety briefing to all on board identifying the type and location of the vessel’s required safety equipment and wearing requirements for the area of operation and verbally check that the information is understood

**Criteria:** Communicate your knowledge of your vessel’s required safety equipment and wearing requirements for the area of operation and ensure that the information is understood by all persons on board by:

1. Identifying the different types of required safety equipment.
2. Identifying the location of the required safety equipment and wearing requirements.
3. Verbally checking that the information relating to the required safety equipment and wearing requirements is understood by all passengers on board.

If you have ever been on a charter boat or ferry you will have received a briefing from the skipper at the start of the trip, this briefing would be a model for the briefing you will be required to give.

The assessor will ask you to conduct a safety briefing for the area that you will be operating in. You should move around the vessel and point out all of the required safety equipment and wearing requirements for the area of operation. Once you have delivered your safety briefing you will need to ensure that the information is understood.

### You will be required to demonstrate the following:

1. Identifying the different types of required safety equipment and the wearing requirements.

You need to show all the required safety equipment and the wearing requirements required for the area you will be operating in.

If your vessel does not carry the required safety equipment for the area you propose to operate in for the RST practical assessment, the assessment will not continue. Check the Safety equipment section in this workbook to know what must be on board and any requirements before the assessment.

2. Identifying the location of the required safety equipment and wearing requirements.

You need to point out the location all the required safety equipment and wearing requirements for the area you will be operating in. Safety equipment should be located in an accessible place at all times. *Note: Criteria 1 and 2 will usually be carried out simultaneously.*

3. Verbally checking that the information relating to the required safety equipment and wearing requirements is understood by all passengers on board.

You need to confirm with all people on board that the safety briefing was understood. You will need to ask the passengers and crew if they understand or have any further questions. This will indicate if your briefing was adequate.



*Conducting a safety briefing*

## Task 4 – Skipper prepares and starts motor safely

Criteria: Demonstrate the pre-checks and safe starting of an engine by:

### Fuel System

1. Checking for fuel fumes (inboards only)
2. Checking fuel lines are connected and fuel cocks opened (if applicable).
3. Checking the amount of fuel.

### Cooling System

4. Checking coolant levels are sufficient (if applicable).
5. Checking engine cooling intakes are open/clear.

### Electrical System

6. Checking safety lanyard is securely connected (if applicable).

### Starting Engine

7. Ensuring motor is in neutral
8. Immediately prior to starting, ensuring that it is safe to start.
9. Starting the motor.

During this task, you must demonstrate that you know how to run through the pre-start checks and safely start the engine. The assessor will ask you to conduct your pre-start checks and start your motor. You should conduct the pre-checks relative to your vessel and start your motor.

Not all the criteria listed above will relate to your vessel, and you will only need to demonstrate what applies to your vessel. Your assessor will be familiar with your vessel and will know which criteria apply.

Note: Criteria 1 to 8 of this task must be completed prior to starting the motor.

### You will be required to demonstrate the following:

#### 1. Checking for fuel fumes (inboards only).

Ensure engine compartments and other confined areas such as bilges are free of fumes or fuel vapour. If you smell fuel or if the vessel is fitted with a fume detector that indicates danger, find the problem, make sure it is fixed and ventilate adequately prior to starting the engine.

#### 2. Checking fuel lines are connected and if fitted, fuel cocks open (if applicable).

Ensure fuel lines are connected from the fuel tank to the engine. If fuel cocks are fitted, you will need to ensure that they are turned to the open position to enable the fuel to flow to the engine.

#### 3. Checking the amount of fuel.

Fuel tanks will be either portable or built into the structure of the vessel. Check to ensure that there is enough fuel in the tank to start the motor. Portable fuel tanks will normally have a fuel level indicator on them, while the level of fuel for an inbuilt tank may be indicated on a fuel gauge located near the helm.

#### 4. Checking the coolant levels are sufficient (if applicable).

Fresh water cooling systems will have a coolant header tank that holds a reserve of coolant. This is normally mounted on the front of the engine and is usually fitted with a filler cap and a level indicator. You will need to have a look at the indicator to ensure the coolant level is within operational limits. Do not attempt to open the filler cap when the engine has been running as in a pressurised system hot water may spray out and cause serious injury.

#### 5. Checking the engine cooling intakes are open and clear.

On an outboard motor, the intakes will be located on the leg of the motor below the waterline. Plastic bags or seaweed are some objects that may stop the water from being drawn up and affect the engine's cooling system. You will need to lift the motor leg or look over the back of the vessel to ensure that the intakes are clear.

Inboard motors will have a raw water intake, a

freshwater system or both. Raw water systems suck water from a sea strainer and deliver the water through the engine coolers before discharging either directly overboard or through the exhaust system. If the vessel has this type of system, you will need to check that raw water intake sea cocks are open.

#### 6. Checking the safety lanyard is securely connected (if applicable).

If the vessel is fitted with a safety lanyard, you will need to physically check that it is properly inserted and securely connected. If the lanyard is not fitted correctly it will stop the motor from starting. Although advisable, for the purpose of the assessment, you will not be required to connect the lanyard to yourself.

#### 7. Ensuring the motor is in neutral.

The gears must be checked to ensure that the motor is in neutral prior to starting. Most engines won't start if they are in gear, but if they do, it may cause the vessel to move suddenly, possibly causing an injury.

#### 8. Immediately prior to starting, ensuring that it is safe to start.

Inspect the area near the propeller and engine machinery to ensure the area is clear before starting the engine. Propellers pose a risk that is easily ignored because they are under the water; out of sight and out of mind. Only attempt to start the engine if it is safe to do so.

#### 9. Starting the motor.

Once criteria one to eight have been satisfied you are now ready to start the motor. This will require turning a key or pulling a starter cord depending on the motor that you are starting. You must successfully start the motor to pass.



Starting the motor

## Task 5 – Skipper advises a responsible person of the voyage plan

Criteria: Communicate by radio or other means, a voyage and vessel details to a responsible person by notifying them of:

1. Vessel name, registration number or call sign.
2. Departure time.
3. Departure location.
4. Destination.
5. Trip intentions.
6. Number of people on board.
7. Amount of fuel carried in litres.
8. Estimated time of return.

Vessels carry several means of indicating distress or otherwise asking for help, but good boating sense says having someone ashore who knows about your trip plan gives an extra level of safety. If something goes badly wrong, and you are unable to use your distress equipment, a search will still get underway.

Giving trip details to a responsible person puts responsibilities on two people, the person to actually do something if you do not contact them by the nominated time, and you. You must make that contact when you return, and you must stick with the trip plan unless you are able to make contact during the day and advise of any change.

The most common responsible person that skippers log on with is the duty officer at the local marine rescue group. Some people choose to notify a neighbour or relative. If you do, you must accept that this person may not have much marine understanding. It would be best to write the plan down, and go through it with them. At the end of the plan, make sure you write that they must ring the police if you don't make contact at the agreed time.

The authorised assessor will ask you to log on for a voyage. You will be required to demonstrate that you know how to log on. This can be done by writing the information down, simulating a radio call or by other means. Regardless of your choice of how you choose to log on, you must include each of the eight points listed to successfully meet the RST standard.

### You will be required to demonstrate the following:

#### 1. Communicate the Vessel name, registration number or call sign.

You will need to identify the vessel by its name, registration number or call sign. It does not need to be, the actual vessel being used; you can make one up, for the purpose of the assessment. The vessel's identity provides valuable information recorded on DoT's registration system that can assist in a search.

#### 2. Departure time.

Give the departure time as a time, in hours and minutes for example, 0715 or 7.15 am. Providing information like "departing in 15 minutes" or "shortly" will not be recorded as a pass.

#### 3. Departure location.

A departure location should be a recognisable landmark such as a mooring area, launch ramp or marina. In the event that your vessel is reported overdue, the departure location may provide important information and confirm you are overdue as the boat's trailer will still be in the car park.

#### 4. Destination.

Knowing where you intended to go will greatly assist if you are reported overdue. If you are going to a number of locations, it does not hurt to mention them all; the more information the better.

## 5. Trip intentions.

This describes the activity that you will be undertaking such as fishing, diving or cruising the bays. Should you require any assistance, knowing the activities that you plan to undertake can assist in a search.

## 6. Number of people on board.

This can be broken down into adults and children or given as a total number of people on board.

## 7. Amount of fuel carried in litres.

The volume of fuel reported can be used by rescuers to determine if the vessel could have run out of fuel, or what the maximum distance from the point of departure might be.

The volume of fuel should be provided in reasonably accurate terms. The words “plenty” or “enough” would not assist in the case of a search and rescue operation. The RST assessment requires the quantity of fuel carried to be quoted a reasonably accurate terms using litres.

## 8. Estimated time of return

Give the time of return as a time in hours and minutes for example 1430 or 02:30 pm. Providing information like “returning in a couple of hours” or “shortly” will not be recorded as a pass.

Note: You are not required to give a return destination only the time is required.

An example of demonstrating your knowledge by simulating a radio call is:

*“Marine rescue, this is AB150 over.”*

When Marine Rescue acknowledges your call, you say:

*“Marine rescue, this is AB150 departing Fremantle Boat Harbour at 0750 to go fishing at Carnac Island, three people on board, 120 litres of fuel, estimated time of return is 1430, over.”*

When Marine Rescue acknowledges, you say:

*“Thank you marine rescue, out.”*

*Note: You will be assessed on the information that you have given to meet the criteria and not your simulated radio procedure.*



*Letting someone know your voyage plan*

## Task 6 – The skipper safely departs a berth

**Criteria:** Safely depart a berth by demonstrating:

1. Checking that it is safe to perform the manoeuvre.
2. Allowing for the effects of wind/current.
3. Departing with little or no impact.
4. Not impeding other vessels.
5. Using appropriate engine revs.
6. Demonstrating smooth and timely use of gears.
7. Mooring lines are stowed/replaced/secured.

During this task, you must demonstrate that you understand how to depart a berth safely; this could be from a jetty, pontoon, vessel or pen.

The assessor will ask you to depart the berth. You should depart the berth without interfering with other vessels or people, with little or no impact to the berth, using appropriate revs and smooth use of gears to successfully to meet the RST standard. Once departed you must ensure that mooring lines are secured or stowed.

### You will be required to demonstrate the following:

#### 1. Checking that it is safe to perform the manoeuvre.

Before departing the berth, have a good look around to ensure it will not interfere with other water uses – look around. Inspect the area around the vessel to ensure the area is all clear before departing. You should only attempt to depart the berth if it is safe to do so.

#### 2. Allowing for the effects of wind/current.

Wind/currents can have a dramatic effect on the handling of a vessel. During the assessment, depending on conditions, you will need to allow for their effects. Additional power and the method you choose to depart are some things that you will need to consider to counteract their impact on the vessel.

#### 3. Departing with little or no impact.

You must show that you have control of the vessel by having little or no impact with the berth while departing. Allowing for the swing of the stern and keeping the revs down will minimise any impact on the berth.

#### 4. Not impeding other vessels.

Extra traffic and a limit of space often cause a bottle neck of vessels around a berth. You must anticipate all traffic movement and ensure your vessel does not impede other vessels on or around the berth.

#### 5. Using appropriate engine revs.

You will need to use appropriate engine revs for the prevailing conditions to demonstrate that you are a competent skipper and that you have control of the vessel. Match your engine revs to the manoeuvre you are doing. You should not have to make excessive changes to the engine revs in order to complete your manoeuvre. This task should be undertaken using low engine revs with the vessel travelling at a minimum speed.

#### 6. Demonstrating smooth and timely use of gears.

Gear changes and the timing of the selection should be smooth and made in ample time to allow for a smooth departure.

#### 7. Mooring lines are stowed/replaced/secured

The mooring lines must be stowed inside the vessel or tied off so they can't trail in the water and foul the propeller. This can be done by the skipper or by another person under the direction of the skipper.

The following are examples of the manoeuvring procedures for departing a berth on three different types of vessel.



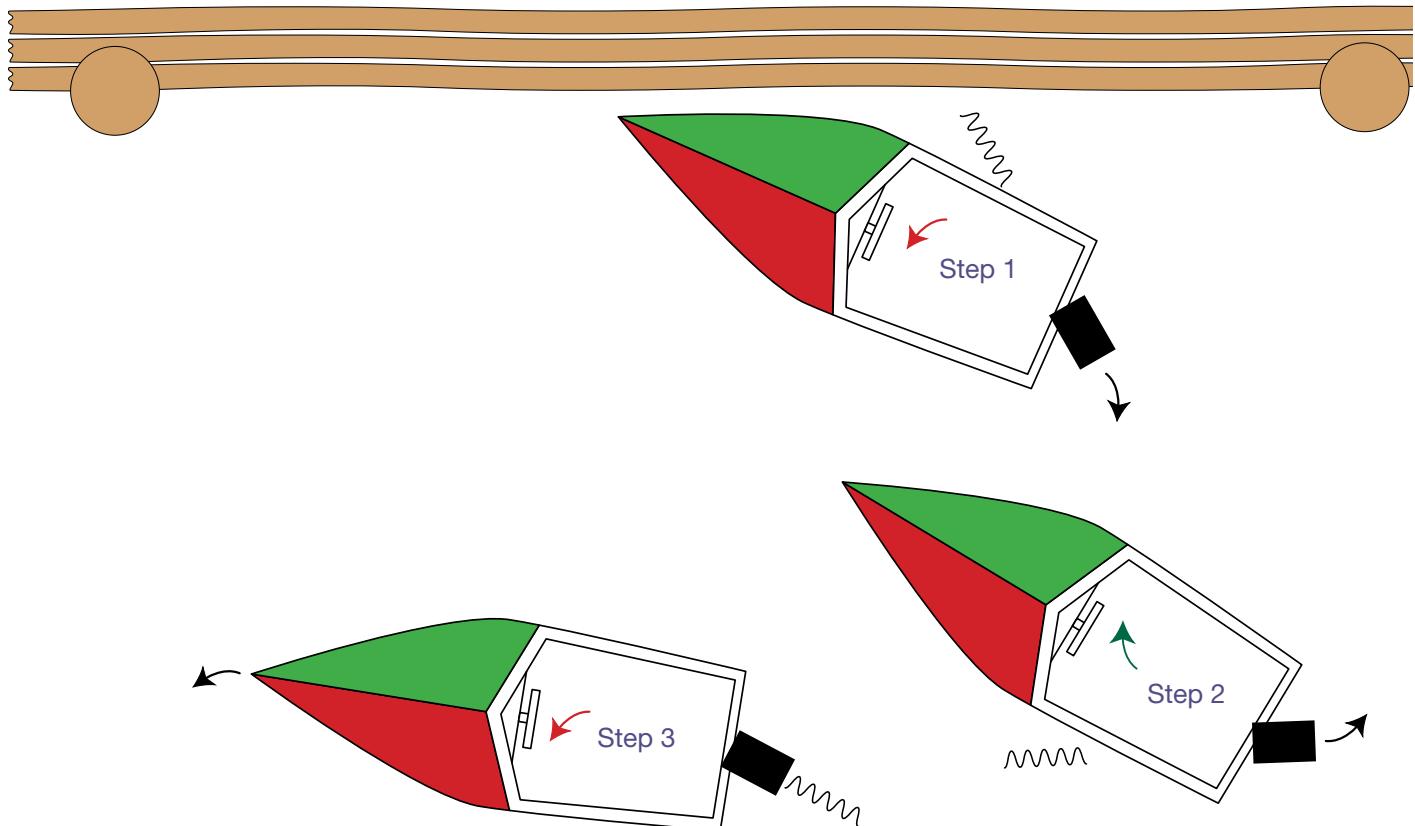
*Departing a berth*

### Outboard leg (outboard or stern drive motor)

**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 in reverse. Put the motor in reverse and apply very little throttle. Unless wind or current is pushing the vessel onto the berth, the stern will move out and the bow will not scrape on the berth. If the vessel is being pushed on, you may need to straighten the wheel a little as the vessel moves astern, this will protect the bow from hitting the berth.

**Step 2:** Once the bow of the vessel is clear of the jetty and while still in reverse, turn the wheel fully toward 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 wish to go and engage forward propulsion.



## Single shaft

The single shaft's rudder needs a flow of water over it before it will turn the vessel. Therefore releasing the lines and going astern will usually not be very successful, particularly if wind or current is pushing the vessel onto the berth. The commonest way of getting off uses a spring.

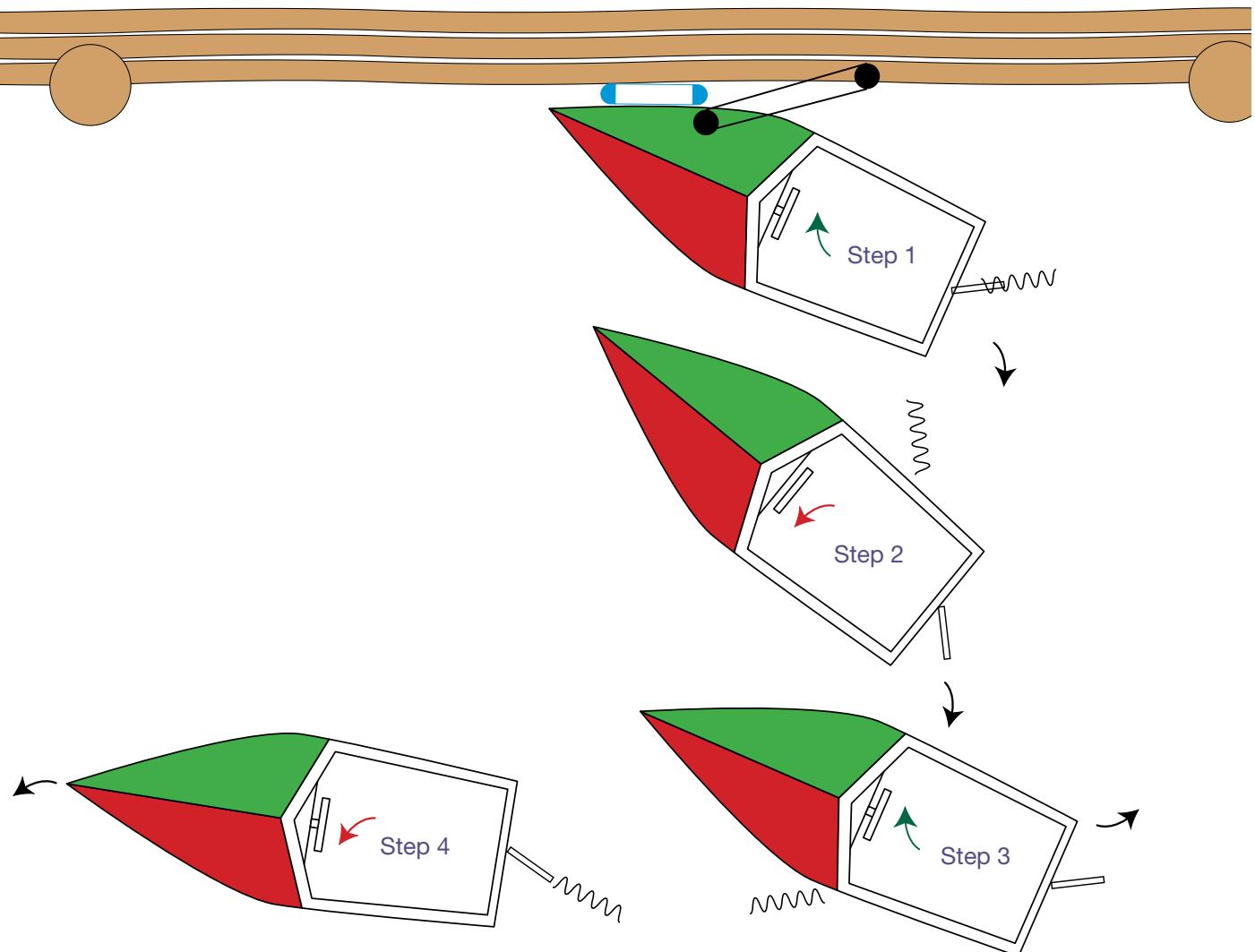
**Step 1:** Remove all berthing lines except a spring leading aft from well forward. Consider putting a fender between the berth and the shoulder of the bow. Turn the wheel fully towards the berth.

Put the motor into forward gear and apply a small amount of throttle. The vessel will try to move forward but the spring stops it. There is now a good flow of water past the rudder, so 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 of the vessel is clear of the jetty and while still in reverse, turn the wheel fully toward the berth, this will straighten the vessel by swinging the stern towards the berth and the bow away from the berth.

**Step 4:** When the vessel is parallel to the berth turn the wheel in the direction you wish to go and engage forward propulsion.



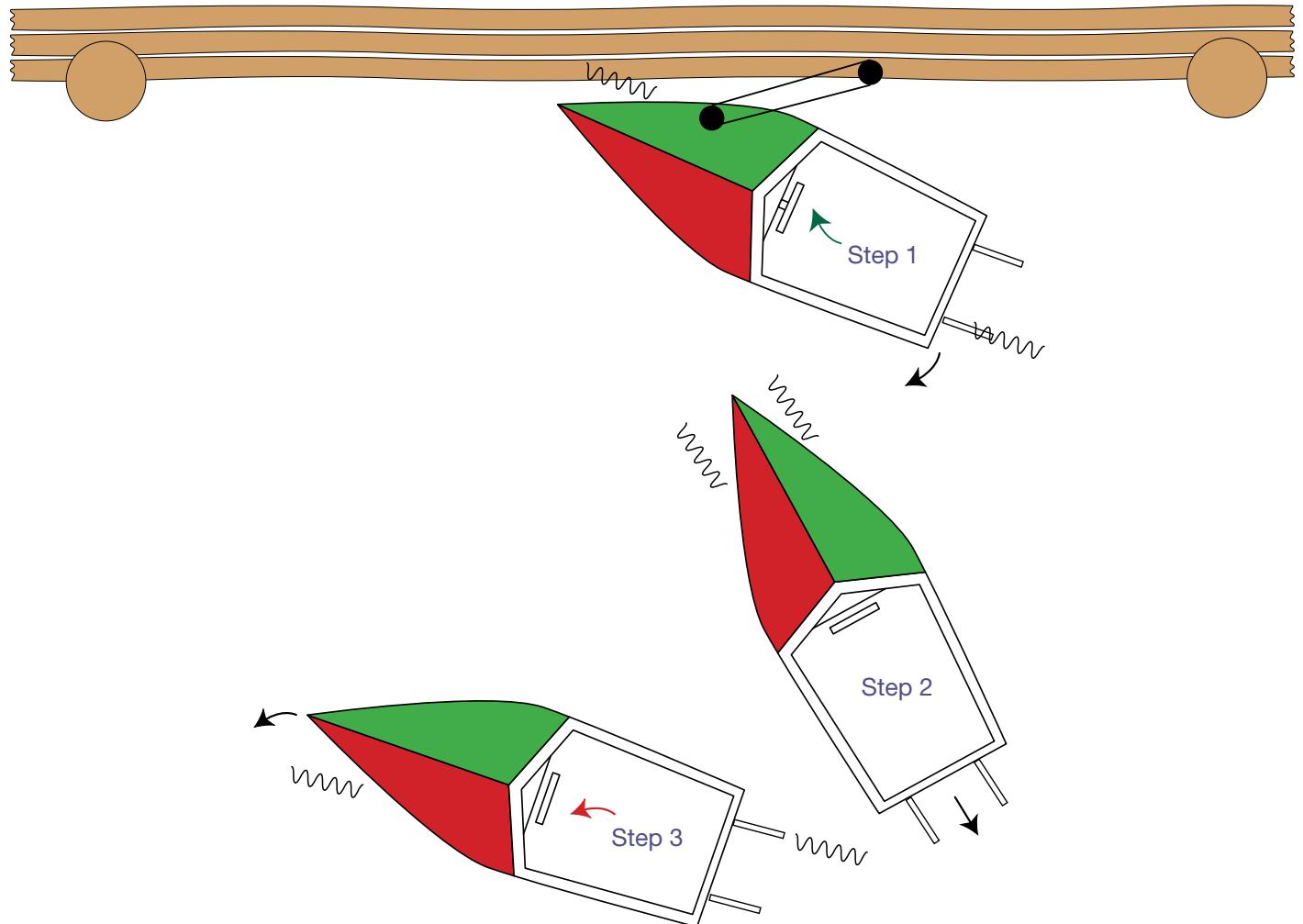
## Twin shaft

A similar manoeuvre can be made with twin shafts. Most close quarter manoeuvring with twin propeller vessels is probably best done entirely with the engines.

**Step 1:** When swinging the stern out, go forwards on the engine further from the berth and 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 clear of the jetty, go forwards on the engine closest to the berth. When the vessel is pointing in the direction you wish to go, go forwards on both engines.



## Task 7 – Safely retrieve a simulated man overboard

**Criteria:** Demonstrate your competent manoeuvring of the vessel to retrieve a simulated man overboard (MOB) by:

1. Turning the vessel towards the simulated MOB.
2. Simulating the throwing of a flotation aid.
3. Ensuring a visual watch is maintained on the simulated MOB.
4. Completing turn so as to retrieve the simulated MOB from down wind/current.
5. Approaching at an appropriate speed.
6. Positioning the vessel down wind/current of simulated MOB.
7. Turning the engine off before retrieving simulated MOB.
8. Ensuring the simulated MOB is retrieved.

For this task you will be picking up a standard RST MOB float; however, throughout the exercise you must show as much care as if it were a real person. The overriding consideration is to not endanger the simulated person in the water; far more important than speed of recovery.

During this task, you must demonstrate that you understand how to manoeuvre your vessel competently and safely to retrieve a simulated MOB float.

The assessor will drop a simulated MOB (large white RST float) overboard and shout “man overboard”. You will be required to demonstrate the eight criteria listed above.

*Note: In relation to the assessment of Task 1 – as the MOB is a simulated person you should not drive a vessel over 8 knots within 50 metres of a person in the water.*



*Retrieving the simulated MOB*

**You will be required to demonstrate the following:**

**1. Turning the vessel towards the MOB.**

On hearing “man overboard”, you should immediately turn the vessel hard towards the side that the MOB fell, this swings the stern away from the MOB and puts a greater distance between them and the propeller.

**2. Simulating the throwing of a flotation aid.**

The skipper must simulate the throwing of a buoyant aid such as a lifejacket for the MOB to cling to himself or assign a crew member to do it. This is especially important in a larger vessel or rough water that may take some time to get back to the person.

**3. Ensuring a visual watch is maintained on the simulated MOB.**

Ensure that someone keeps visual contact with the MOB. The skipper can allocate this task to a crew member or the assessor.

**4. Completing turn so as to retrieve the simulated MOB from down wind/current.**

Make a turn well clear of the MOB and manoeuvre to a position to approach from down wind or into the current, whichever is strongest.

**5. Approaching at an appropriate speed.**

Drop speed to the minimum needed to maintain steerage.

**6. Positioning the vessel down wind/current of the simulated MOB.**

You must judge the point where and when you put the motor in neutral, the vessel will drift ahead and stop alongside the MOB. There must be no use of the engine within one vessel length of the MOB.

**7. Turning the engine off before retrieving the simulated MOB.**

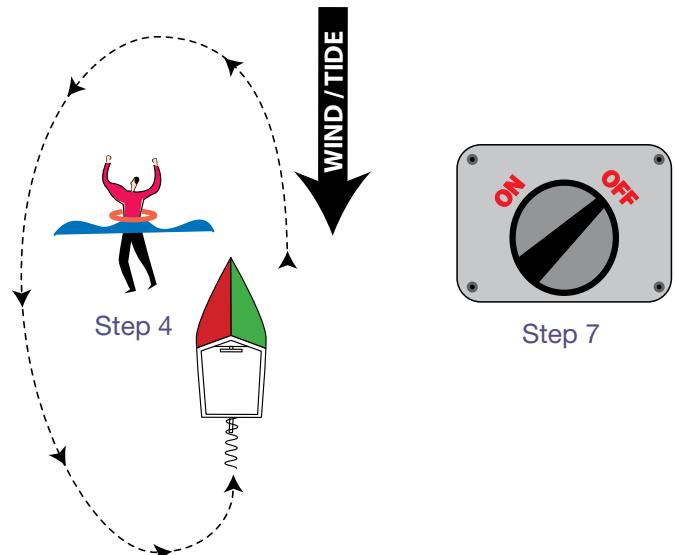
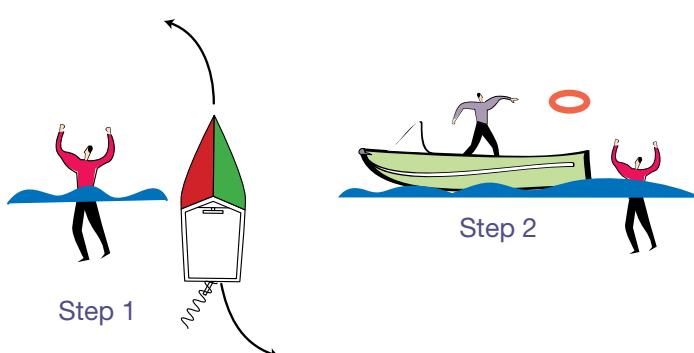
Propeller strike is a real potential danger when navigating close to a person in the water. The engine must be stopped prior to retrieving the MOB.

**8. Ensuring the simulated MOB is retrieved.**

Once the engine is turned off, it is safe to retrieve the MOB. The MOB may be retrieved by the skipper or by a crew member under the direction of the skipper. Usually for a person to be retrieved from the water and to get back into a vessel they will climb in over the stern, either using a ladder or other device.

The MOB can be retrieved from the bow, side or stern to pass the assessment,

If the skipper or crew fail to retrieve the MOB after the skipper has instructed them to do so, the criteria has not been met.



## Task 8 – Determine position by using navigational marks, transits and other landmarks

**Criteria:** Demonstrate your ability to record and communicate the vessel's position using landmarks and navigational aids by:

1. Notifying the assessor of the two objects that align to form the transit used to fix the vessel's position.
2. Using the transit to steer a steady course for 30 seconds.

When close to the coast, mariners are more interested in estimating or establishing their position with reference to natural landmarks and navigation marks than they are in using navigational electronics. Actually seeing a reef gives you a much better feel for your vessel's safety than viewing the same thing on a screen!

One of the best ways of using landmarks to fix your position is by using transits. Even without a chart they give a position you can send to another vessel or to a marine rescue organisation. If you have a chart, you can quickly plot your position on it.

Your assessor will ask you to identify the objects that you will be using as a transit and steer a steady course along it. You might be able to align a couple of channel markers or perhaps a conspicuous house roof and a large tree. Once you have identified the transit, notify the assessor of the objects that you intend to use, and make your way along it for 30 seconds to successfully to meet the RST standard.

### You will be required to demonstrate the following:

1. Notifying the assessor of the two objects that align to form the transit used to fix the vessel's position.

The principle of transits is looking for natural objects, navigation marks, conspicuous buildings and the like that line up or nearly line up to your current location. If you have two different pairs of objects more or less in line, where the two lines cross is your position. You will need to point out the two objects that you have chosen to form a transit.

2. Using the transit to steer a steady course for 30 seconds.

You have probably often used a specialised kind of transit – leading marks, where you are able to steer an accurate course by keeping a pair of lights or shapes one above the other. In the assessment, you will need to steer a steady course along the transit that you have identified. If you find you are going off course, steer towards the bottom (lower) mark and they will line up again.



## Task 9 – Perform a controlled stop at approximately 5 knots

**Criteria:** At a speed of approximately 5 knots, demonstrate your ability to safely stop the vessel within two boat lengths by:

1. Checking that it is safe to perform the controlled stop.
2. Shouting a relevant warning to the crew.
3. Reducing engine revs.
4. Engaging neutral gear.
5. Engaging reverse gear.
6. Using appropriate revs to stop the vessel.
7. Stopping the forward motion of the vessel within two boat lengths.

The most likely time to need to make a controlled stop is when travelling at low speed in a congested area, when an alteration of course would be impractical. An example might be encountering a swimmer when passing through a mooring area. This skill requires you to show that you can safely stop your vessel at a speed of 5 knots, using reverse gear, within two boat lengths. The assessor will ask you to bring your vessel to approximately 5 knots travelling in a straight line and then tell you to stop.

### You will be required to demonstrate the following:

1. Checking that it is safe to perform the controlled stop.

Look behind you to make sure that during the demonstration of the manoeuvre you will not be hit from the side or astern by another vessel.

2. Shouting a relevant warning to the crew.

Stopping your vessel suddenly may put passengers at risk. You will need to warn them that you are about to stop suddenly by telling them to hold on. Vessels are often noisy so you may have to yell this out in order to make sure they have heard you.

3. Reducing engine revs.

Moving the gear/throttle lever straight from ahead to astern can badly damage your gear box, so firstly go back to neutral to allow the engine revs to drop before you engage reverse.

4. Engaging neutral gear.

Engaging neutral for a short period allows the engine revs to drop to idle, this eliminates the chance of damaging the gear box when you select reverse.

5. Engaging reverse gear.

Almost all outboard motor controls have a button that has to be squeezed before the lever can be moved out of neutral. With lever controls, make a movement into reverse. If you have the button, squeeze it and make a positive movement into reverse; doing it slowly will cause excessive wear to the gear box's dog clutch.

6. Using appropriate revs to stop the vessel.

With either single or twin levers, make a controlled increase in revs to stop the vessel. With outboards or stern drives, especially, be careful not to put on too much throttle. Putting on too many revs astern can simply make your propeller lose all grip; or, put another way, will do little towards stopping your vessel. Practise will soon tell you the right amount.

7. Stopping the forward motion of the vessel within two boat lengths.

Although the steps may seem agonisingly slow, they are simply designed to suit the way motors and gear boxes work. In fact, this totals to a quick sequence, easily allowing a stop within two boat lengths.



*Emergency stop*

## Task 10 – Vessel is safely navigated and secured alongside a berth

**Criteria:** Demonstrate your competent manoeuvring and securing of the vessel by:

1. Checking that it is safe to perform the manoeuvre.
2. Not impeding other vessels.
3. Selecting the appropriate side of the vessel to come alongside as a result of wind/current observations.
4. Approaching the berth at an appropriate speed.
5. Approaching the berth at an appropriate angle.
6. Demonstrating smooth and timely use of gears.
7. Using appropriate engine revs.
8. Arriving at the berth with little or no impact to vessel and structure.
9. Securing the vessel appropriately with mooring lines.

All these manoeuvres require practise and need you to have a feel for how your vessel behaves. A good way to practise and develop the feel is by putting your vessel alongside an anchored foam float, or by imagining the jetty is actually two to three metres wider than it actually is. Mistakes here cause no damage. Remember that even the most experienced of people, the Rottnest ferry skippers for example, will tell you that the slower you do it the more time you have to correct errors.

During this task you must demonstrate competent manoeuvring of your vessel to put it alongside a berth and once there you must secure it to successfully meet the RST standard. The assessor will ask you to safely navigate and secure the vessel alongside a berth.



## You will be required to demonstrate the following:

### 1. Checking that it is safe to perform the manoeuvre.

Before approaching the berth, have a good look around to ensure you will not interfere with other water users. Inspect the area around the vessel to ensure the area is all clear before berthing and only attempt to berth vessel once it is safe to do so.

### 2. Not impeding other vessels.

Extra traffic and a limit of space often cause a bottle neck of vessels around a berth. You must anticipate all traffic movement and ensure your vessel does not impede other vessels on or around the berth.

### 3. Selecting the appropriate side of the vessel to come alongside as a result of wind/current obs.

Assess the wind and current, you are interested in the combined result of both. The easiest way to determine this is to look at nearby moored vessels – they will swing until their bows point into the combined wind/current. It is usually easier to berth with your bow pointing in that same direction. If there is negligible wind or current, or it does not more or less run along the length of the berth, you can choose which side to put alongside to suit your steering-propulsion system. Wind and currents can have a dramatic effect on the handling of a vessel.

### 4. Approaching the berth at an appropriate speed.

When berthing your vessel you should drive at the slowest possible speed you can while still maintaining steerage. Too slow and the wind/current will take over and you will not be able to hold your line or start your swing to come alongside, too fast and you risk hitting the jetty and damaging your vessel.

### 5. Approaching the berth at an appropriate angle.

The angle you approach a berth depends on a number of factors. In an ideal situation with the wind/current running parallel to the berth an angle of 45 degrees is usually the most appropriate and you commence your swing to put your vessel alongside about two boat lengths away.

### 6. Demonstrating smooth and timely use of gears.

Just prior to coming alongside you should place your vessel in neutral and be ready to place it in reverse to slow/stop the vessel as it comes alongside, the vessel should stop alongside the point of the berth you were aiming at. During docking, you maybe required to move in and out of gear a number of times. Ensure these movements are smooth and made in ample time.

### 7. Using appropriate engine revs.

Set your speed early, it should be the slowest at which your vessel will still steer without being exceptionally sluggish in response to the wheel. You will need to use appropriate engine revs for the prevailing conditions and that you have control of the vessel. Match your engine revs to the manoeuvre you are doing.

You should not have to make excessive changes to the engine revs in order to complete your manoeuvre. This task should be undertaken using low engine revs with the vessel travelling at a minimum speed.

### 8. Arriving at the berth with little or no impact to vessel and structure.

You must show that you have control of the vessel by having little or no impact with the berth while berthing. Allowing for the swing of the stern and keeping the revs down will minimise any impact on the berth.

### 9. Securing the vessel appropriately with mooring lines.

Securing the vessel to the berth will confirm your ability to position the vessel close enough to the berth to be secured. The vessel only has to be secured well enough to allow changeover of skippers, etc. You only have to use an amidships line or by having a spring line with the motor in gear may suffice.



## Outboard leg

If it is powered by outboard or stern drive your vessel will turn in either direction, going ahead or astern, equally well. The sketch shows a vessel coming alongside with the starboard side to the jetty. This system uses the principle that the stern does nearly all the turning (while the bow barely moves), and it moves in the direction the propeller is pointing.

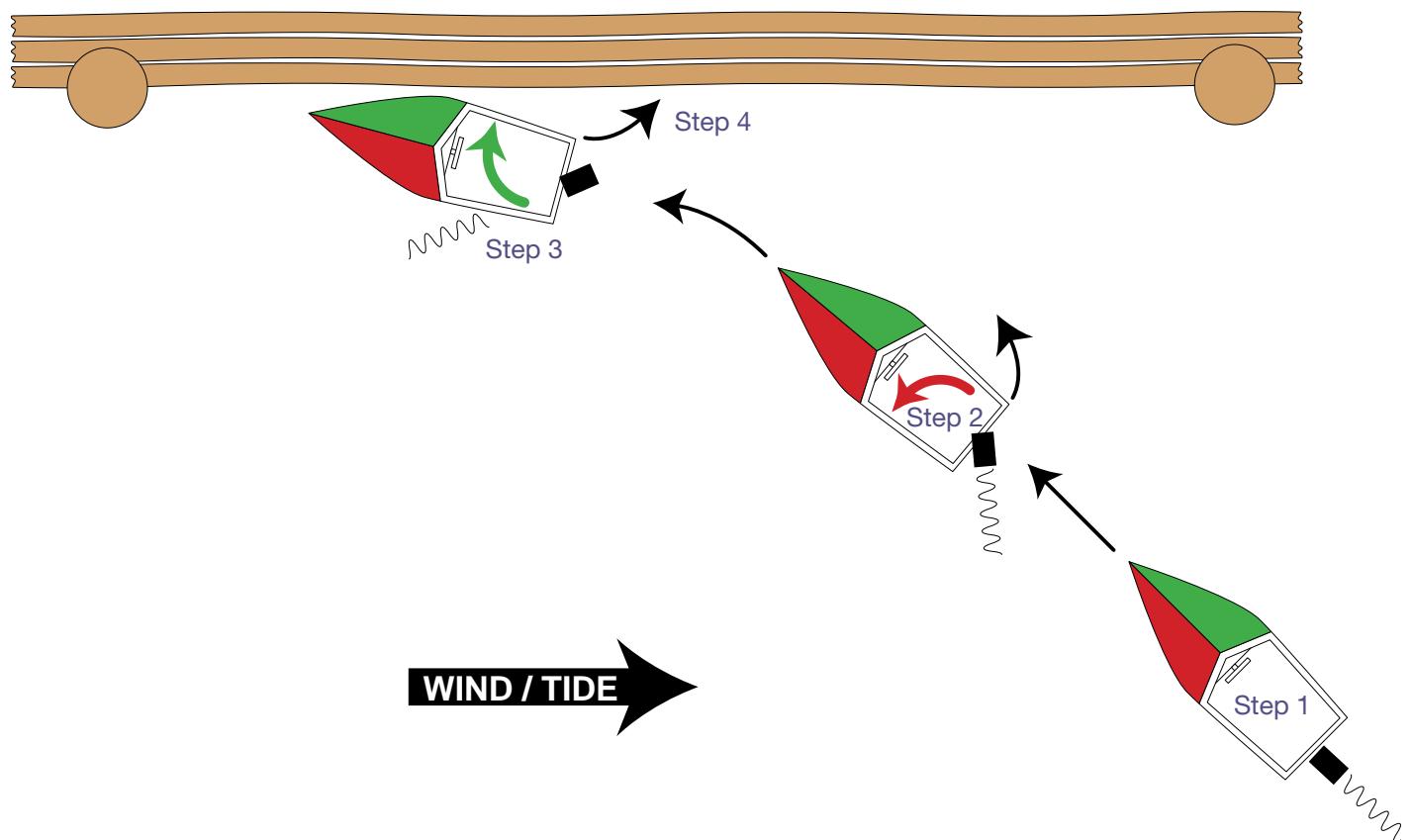
**Step 1:** Set a slow speed, aim for a spot at the berth where you intend ending up and hold the course. You should be travelling at an angle to the berth of somewhere between  $30^\circ$  and  $45^\circ$  degrees.

**Step 2:** When you are two to three boat lengths from the berth, turn the wheel to port (away from the berth) to start the stern swinging towards the berth. The steeper your angle of approach, the more you turn the wheel. This action will do most of the work towards putting you alongside; your actions at Step 3 and 4 will just finish it off.

**Step 3:** With the bow's shoulder getting close to the berth, put the motor in neutral and turn the wheel to starboard (towards the berth). This may feel unnatural, but it will not cause the bow to swing towards the berth because outboards have very little turning effect in neutral.

**Step 4:** Immediately after you have turned the wheel, put the motor in reverse. This will achieve two things; it will stop the vessel moving ahead and because the propeller is now pointing towards the berth, it will pull the stern in to the berth. Once this is achieved, put the motor in neutral.

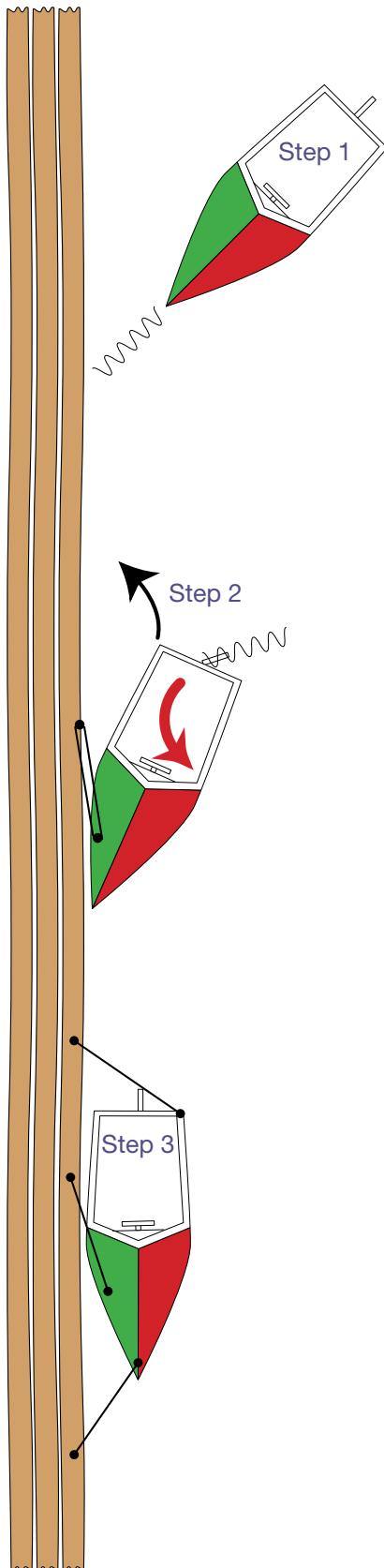
You will be tempted to combine the actions at Step 3 and 4 – to turn the wheel at the same time as you are putting the lever to neutral. This temptation will be stronger if you are travelling faster than minimum steerage speed, or you leave the action at Step 3 a bit late.



## Single shaft

Almost all single-engine vessels have a right-handed propeller. For these vessels the port side is easier to put alongside because the stern tends to kick to port when the engine is going astern. The opposite applies to left-handed propellers. This description assumes a right-handed propeller.

If wind or current are affecting you adversely, if you have to put a single shaft vessel's non-favoured side alongside, or if the vessel's manoeuvrability is not good, you can use a spring to help bring the vessel alongside (as in step 2 below).



**Step 1:** Make a shallow angle approach and use reverse to stop the vessel with the bow's shoulder almost touching the berth.

**Step 2:** Attach a spring from the vessel's forward end to the berth. Turn the wheel away from the berth and select forward gear and idle speed. The vessel will come alongside.

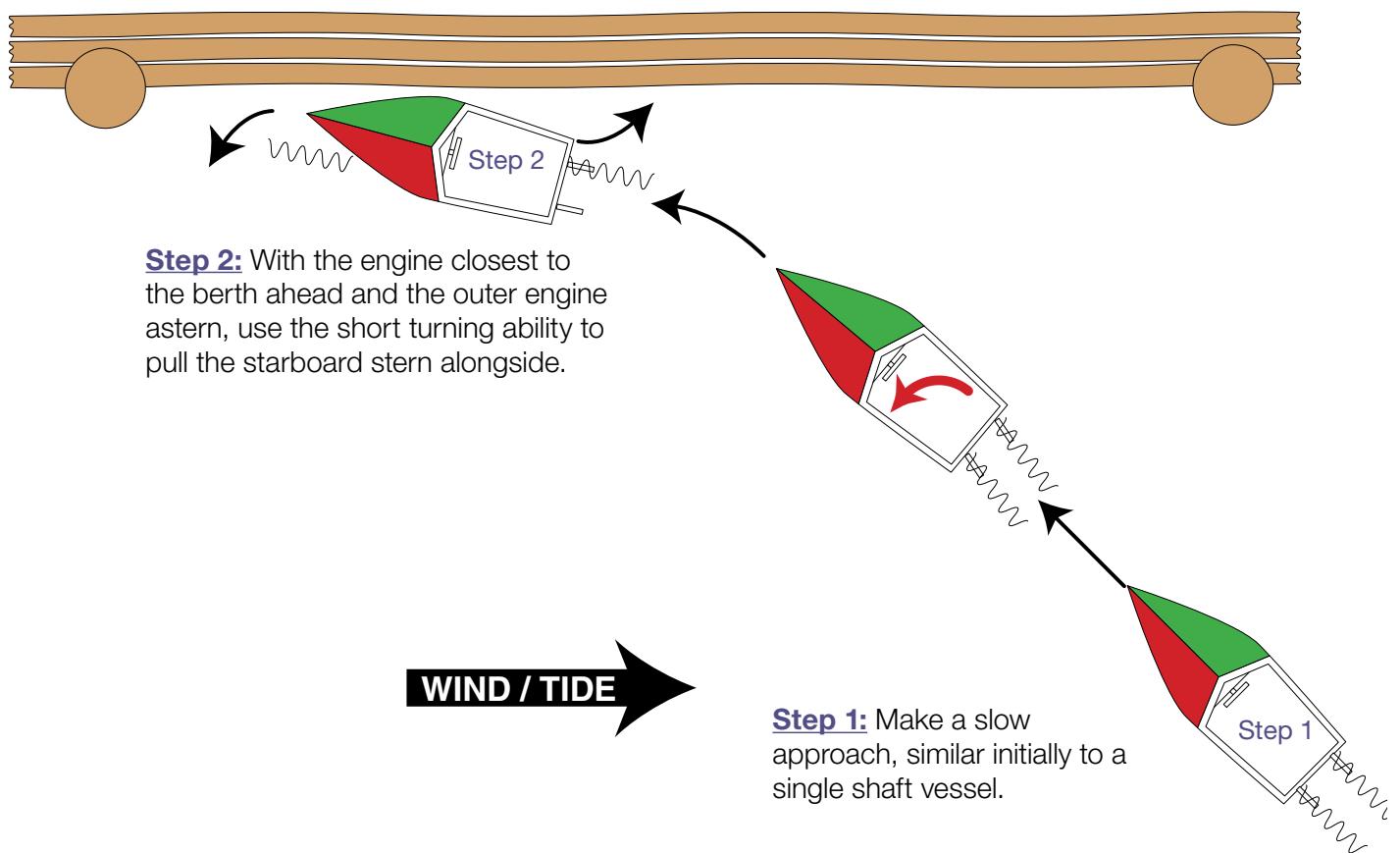
**Step 3:** Once the stern is alongside, the vessels can be secured with the appropriate mooring lines.

## Twin shaft

Invariably, a vessel with twin shafts (a twin propeller vessel) has the propellers outward turning. This means that, moving ahead or astern, it is set up to give you the best engine assistance with turning. Twin screw vessels give you great manoeuvrability, and the only limitation they have is that, just like single screw, the bow stays more or less motionless while

the stern does all the turning.

A great advantage with twin shaft vessels is that they have a short turning circle and no preference for putting one side or the other alongside.

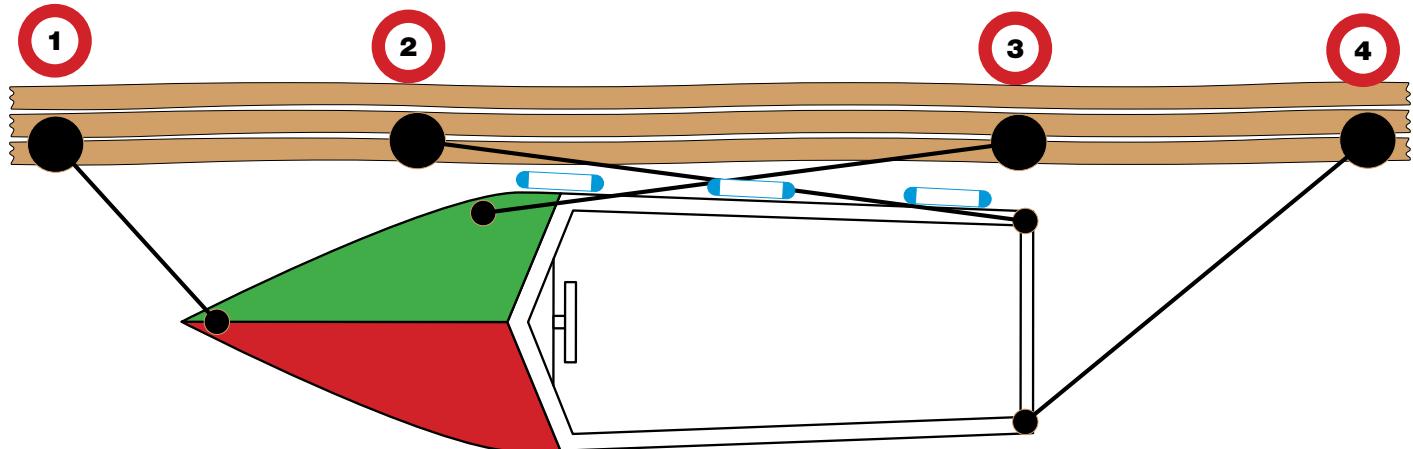


## Securing the vessel with berthing lines

Depending on the size of the vessel you will need a number of specific lines to adequately secure your vessel. Smaller boats may need only a bow and stern line.

### Mooring lines:

1. Bow line
2. Stern (aft) spring
3. Bow (forward) spring
4. Stern line



## Task 11 – Skipper advises a responsible person of safe return

**Criteria:** Communicate by radio or other means the vessel's safe return by notifying of:

1. Providing the vessel's name, registration number or call sign.
2. Advising the responsible person of the vessel's safe return.

It is crucial that when you return from your trip you notify the responsible person you left your trip plan with. This can be done in the assessment by writing the information down, simulating a radio call or by other means. Regardless of your choice of how you choose to log off, you must include the two points listed above.

To demonstrate the skipper knows how to and can log off, the assessor will ask you to log off for your voyage.

If you choose to demonstrate your knowledge by simulating a radio call, your radio routine will be similar to this:

*"Marine rescue, this is AB150 over."*

When Marine Rescue acknowledges your call, you say:

*"Marine rescue, this is AB150 we have safely returned from our voyage and are signing off, over."*

When Marine Rescue acknowledges, you say:

*"Thank you marine rescue, out."*

### You will be required to demonstrate the following:

1. Providing the vessel's name, registration number or call sign.
2. Advising the responsible person of the vessel's safe return.

You will need to identify the vessel by a name, registration number or call sign. It does not need to be the actual vessel being used; you can make one up for the purpose of the assessment.

Confirm that you have returned safely.



*Advising the responsible person of the vessel's safe return*



*Receiving an RST Interim Certificate*

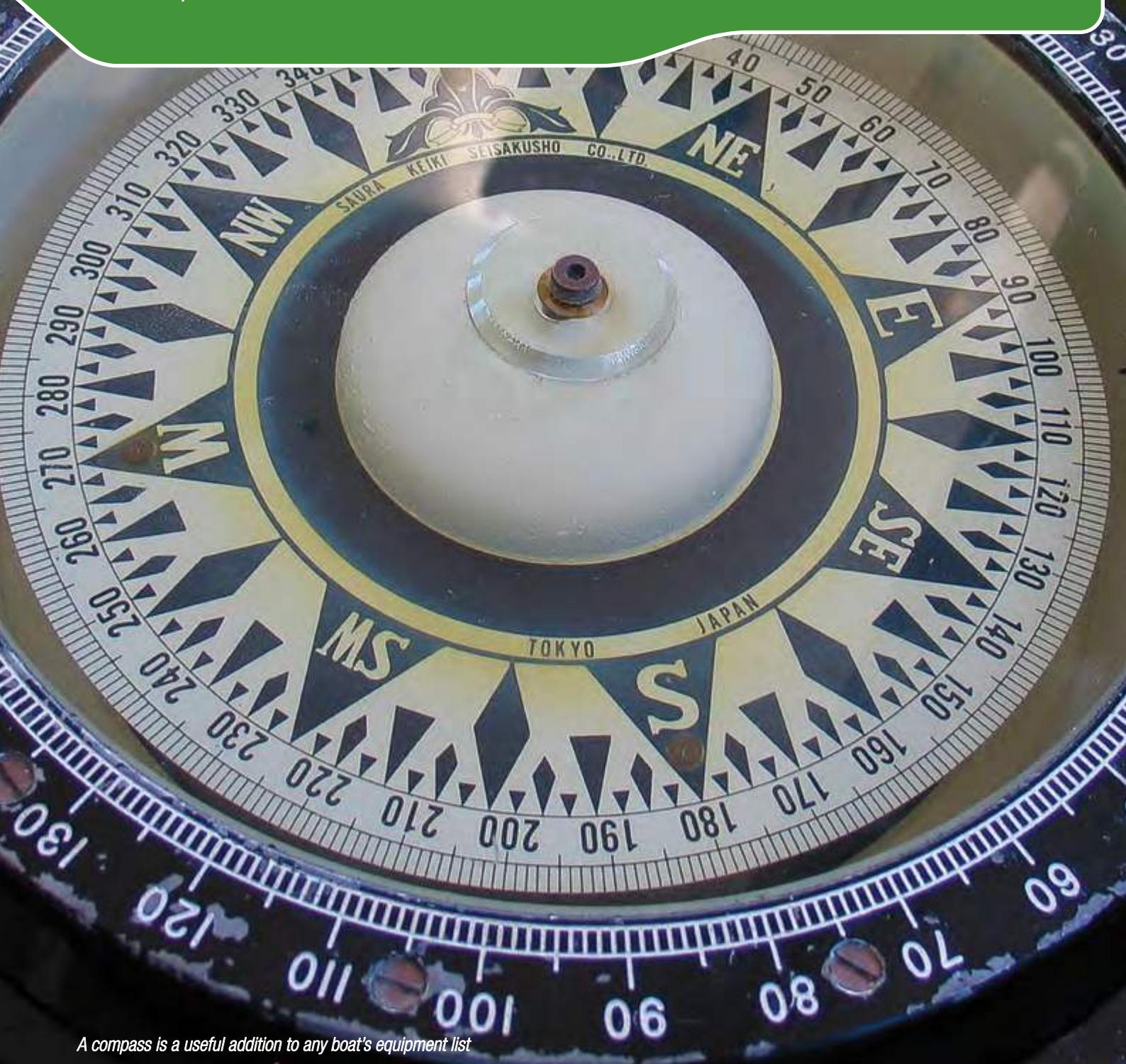
# Chapter 11

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- Acronyms
- General shipboard directions

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*A compass is a useful addition to any boat's equipment list*

# Appendices

## Glossary

Getting the words right. Jargon is often used to obscure meaning and to make the user look more knowledgeable. In boating, jargon has always been used for the opposite reason, clarity. The right words pass a quick and clear message. There is a lot of marine jargon, but just having a working knowledge of it will be useful. Make yourself familiar with the glossary included in this workbook.

### abaft

Towards the rear of a ship or boat.

### abeam

At right angles to the centreline of the boat.

### aft

Towards the stern or behind the boat.

### ahead

Towards the bow or in front of the boat.

### astern

In the driving sense, to put the engine in reverse.

### beam

The width of the boat.

### berth

The place alongside a jetty or wharf where the boat is secured.

### bilge

The compartment at the bottom of the hull of a ship or boat where water collects so that it may be pumped out of the boat at a later time.

### bitts

The piece of hardware on a boat's foredeck to secure a mooring line.

### bollard

The equivalent of bitts on a jetty or wharf.

### bow

The front of a boat.

### bulkhead

A boat's equivalent of a wall, separating compartments.

### cabin

A compartment for passengers or crew.

### cable

The line attached to an anchor. It may be all chain or a combination of chain and rope.

### capsize

To overturn a boat.

### chine

The intersection of the bottom and sides of a boat.

### cleat

A fitting to which lines are made fast.

### compass

An instrument containing a magnetized pointer which shows the direction of magnetic north and bearings from it.

### current

The horizontal movement of water, generally permanent or semi-permanent. Currents caused by tidal movements are called tidal streams.

### draught

The depth of water a boat draws.

### ebb

A falling tide or the stream it makes.

### fairway

Any navigable channel.

### fathom

A distance of 6 feet (approx. 2 metres).

### flood

A rising tide or the stream it makes.

### following sea

A sea travelling in the same direction as the boat.

### fore-and-aft

In a line parallel to the keel.

### freeboard

The minimum vertical distance from the surface of the water to the gunwale.

### give way

Changing speed or direction to avoid another boat.

### give-way boat

The boat required by the rules to get out of the way of another.

### gunwale

The upper edge of a boat's sides.

### hatch

An opening in a boat's deck fitted with a watertight cover.

### headway

The forward motion of a boat.

### helm

A tiller or wheel for steering a ship or boat.

### hull

The main body of a boat.

### hypothermia

A condition in which a person's core body temperature is dangerously low due to exposure to severe cold.

### IALA

The International Association of Lighthouse Authorities (IALA for short) is a non-profit organisation founded in 1957 to collect and provide nautical expertise and advice.

### inboard

More toward the centre of a boat.

### isobar

Line on a weather map joining places of equal air pressure.

**keel**

The bottom of a boat's centreline.

**king wave**

Unusually large wave made when a sea wave and swell peak at the same place.

**knots (speed)**

A speed of 1 nautical mile per hour (about 1.8 kilometres per hour).

**latitude**

The distance north or south of the equator measured and expressed in degrees.

**leads**

Pairs of marks which, when lined up, indicate the centre of a channel.

**lee**

The side sheltered from the wind.

**lee shore**

The shore onto which the wind blows.

**leeward**

Downwind side of your boat.

**leeway**

The sideways movement of the boat caused by wind.

**longitude**

The distance in degrees east or west of the meridian at Greenwich, England.

**making way**

Boat underway and moving through the water.

**midships**

Approximately in the location equally distant from the bow and stern.

**mooring**

An arrangement for securing a boat to a mooring buoy or a pier.

**nautical mile**

One nautical mile is equal to 1.151 statute mile or 1.852 kilometres

**neap tides**

Tides half way between full and new moons when there is the smallest rise and fall of tide.

**port side**

The left hand side of a boat looking forwards.

**protected waters**

The waters contained in any lake, river or estuary, or by any breakwater, but does not include the waters of Cambridge Gulf or Lake Argyle.

**PWC**

Personal water craft (jetski).

**quarter**

The sides of a boat aft of amidships.

**rudder**

The underwater vertical plate that steers sailing craft and shaft driven power boats.

**rules of the road**

The international collision avoidance rules.

**running lights**

Lights required to be shown on boats underway between sunset and sunrise.

**sailing boat**

A sailing boat is only classified as a sailing boat when propelled by sails only. A boat under sails but propelled by engines is classed as a power-driven boat.

**scope**

The ratio of length of anchor cable in use to the vertical distance from the bow to the bottom of the water.

**screw**

A boat's propeller.

**scuppers**

Drain holes in the sides above the deck.

**sea room**

A safe distance from the shore or other hazards.

**sea state**

The combination of wind, waves and swell.

**secure**

To make fast, to tie up.

**set**

Direction toward which the current is flowing.

**sidelight**

Lights to be shown at night when underway, showing an unbroken light over an arc of 112.5° degrees from right ahead to 22.5° degrees abaft the beam.

**sounding**

A measurement of the depth of water.

**spring tides**

Tides at new and full moons with the largest rise and fall of tide.

**squall**

A sudden, violent wind often accompanied by rain.

**stand on**

To continue on the same course and speed.

**stand-on boat**

The boat that has right-of-way when meeting another boat.

**starboard side**

The right side of a boat looking forwards.

**stem**

Where the sides of a boat meet at the bow.

**stem the tide**

Go forward against the current.

**stern**

The back of a boat.

**swell waves**

The regular longer period waves that are generated by the winds of distant weather systems.

**telltale**

The stream of water from an outboard motor indicating that cooling water is circulating.

**tidal range**

The difference in height of water between high and low tides.

**tide**

Rise and fall of the sea caused by the gravitational pull of the sun and moon.

**tiller**

A bar or handle for turning a boat's rudder or an outboard motor.

**transom**

The stern of a square-sterned boat.

**transit**

A transit occurs when a navigator observes two fixed reference points that are in line with the navigator. This creates a position line.

**trim**

Fore and aft balance of a boat.

**underway**

Not at anchor or made fast to the shore or ground; if you are drifting you are underway.

**unprotected waters**

All waters other than the waters contained in any lake, river or estuary, or by any breakwater, but includes the waters of Cambridge Gulf and Lake Argyle.

**wake**

Trail of water disturbance left by a moving boat.

**wash**

The water disturbance which causes damage, injury or annoyance to others and which is created as a boat moves through the water.

**wave height**

The vertical distance between the top of the crest and bottom of trough.

**way**

Movement of a ship through the water such as headway, sternway or leeway.

**windward**

Toward the direction from which the wind is coming.

**yaw**

To deviate temporarily off course, as when running with a quartering sea.

## Acronyms (in alphabetical order)

**ABP**

Australian Builders Plate

**AMSA**

Australian Maritime Safety Authority

**EPIRB**

Emergency Position Indicating Radio

Beacon

**EVDS**

Electronic Visual Distress Signal

**G**

centre of gravity

**GPS**

Global Positioning System

**HELP**

Heat Escape Lessening Position

**IALA**

International Association of Lighthouse Authorities

**MOB**

man overboard

**PFD**

personal flotation device

**PLB**

personal locator beacon

**POI**

proof of identity

**PWC**

personal water craft

**RST**

Recreational Skipper's Ticket

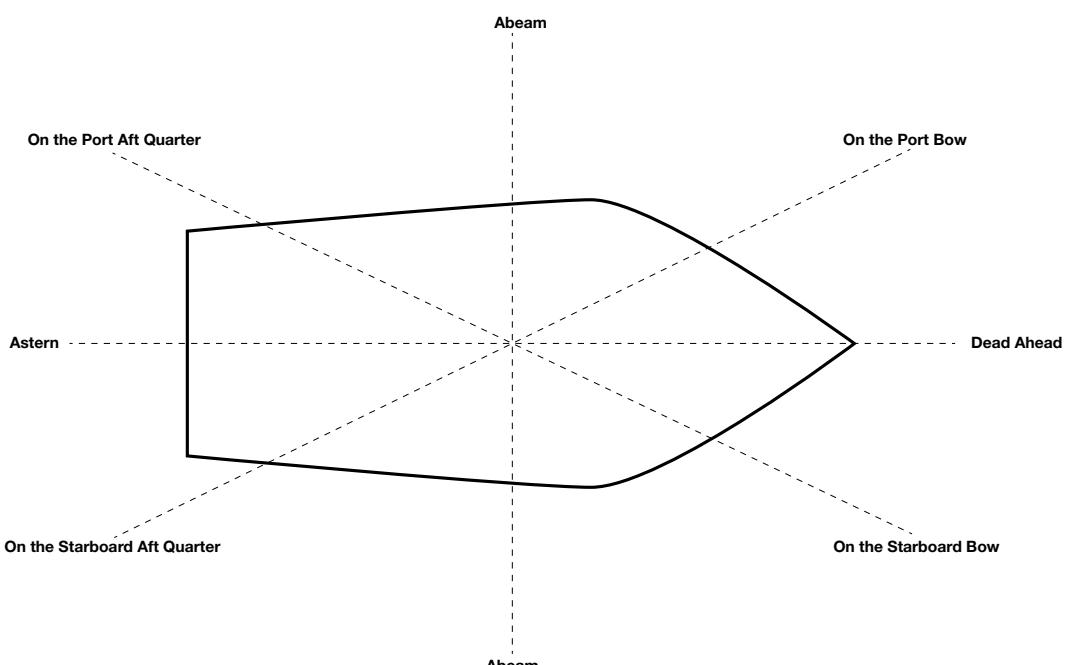
**VMR**

Volunteer Marine Rescue

**WST**

Western Standard Time

## General shipboard directions



## Notes:

# Answers to the self-test questions

Rules and Regulations 1-C, 2-C, 3-C, 4-C, 5-B, 6-B, 7-B, 8-A, 9-C.

Collision Avoidance, Navigation Lights and IALA Buoyage: 1-B, 2-D, 3-C, 4-B, 5-A, 6-A, 7-D, 8-D 9-B.

Maintenance: 1-C, 2-D, 3-D, 4-A, 5-D.

Safety Equipment: 1-A, 2-D, 3-A, 4-D, 5-A, 6-C, 7-B, 8-B, 9-A.

Safe Operations: 1-D, 2-C, 3-A, 4-A, 5-C, 6-D, 7-B, 8-A, 9-D.

Emergencies: 1-D, 2-D, 3-C, 4-C, 5-B, 6-D.

# Recreational Skipper's Ticket Letter of Consent

## Director General

Department of Transport

I hereby consent that \_\_\_\_\_  
*Family Name* \_\_\_\_\_ *Other Names* \_\_\_\_\_

Who resides at No. \_\_\_\_\_ Street \_\_\_\_\_ Suburb \_\_\_\_\_

May be issued with a Recreational Skipper's Ticket.

I declare that I am the legal       **Father**       **Mother**       **Legal Guardian**  
*(Please tick the appropriate box).*  
of the above-mentioned person.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



*Always carry your Recreational Skipper's Ticket when boating*

# Is your safety equipment in date?

*All safety equipment must be in date!*



## Safety equipment must be in date!

All prescribed flares carried on vessels operating in unprotected waters in WA **must be in date**.

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My Recreational Skipper's Ticket assessment was conducted by:

Authorised Provider details:

Authorised Assessor details:

Date of assessment:

Certificate Number:

Phone:

Email:

## Contact

Recreational Skipper's Ticket  
Maritime  
Department of Transport  
Marine Safety: 13 11 56  
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