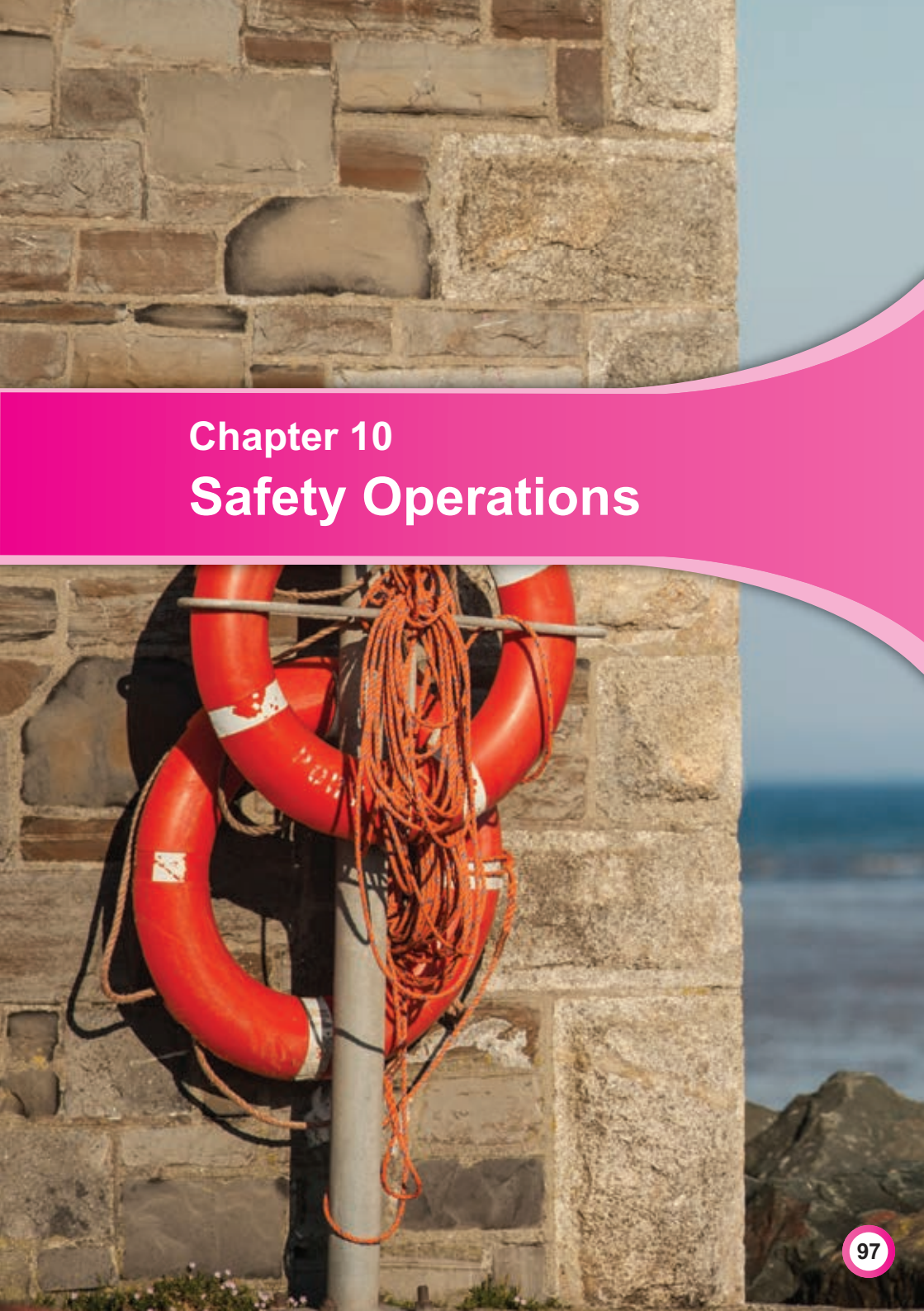


Chapter 10
Safety Operations

Chapter 10 provides basic guidance on safety on marinas and maintenance of equipment.

10.1 Tendering operations to moored craft

There are instances where boats are moored offshore due to tidal or draft restrictions and access to them is achieved by the use of a smaller tender launched from shore. In such instances, **where a tender is used to access and board a moored vessel, the following precautions should be taken:**

- Crew must wear a PFD/lifejacket at all times for the operation of boarding the tender, transit to and boarding of the moored craft.
- It is recommended that operators carry a waterproof handheld VHF radio.
- Persons under the influence of alcohol or drugs should not participate in tendering operations.
- Ensure the tender is in good condition and suitably equipped. If using an inflatable dinghy type, check the tubes are correctly inflated and the dinghy is a multi-tube type capable of remaining afloat in the event of failure of any single tube.
- Be aware of tidal and wind conditions prior to commencing any tendering operation.
- If launching directly from shore, ensure that the launch point is a safe departure point, can be safely accessed and is not subject to excessive surf.
- Tenders other than inflatable types should have additional buoyancy fitted. This may be in the form of dedicated buoyancy tubes, polyethylene foam block or integral buoyancy chambers built into the boat.
- All tenders should, if utilising an outboard engine, also carry a set of oars or paddles and be fitted with a suitable painter.
- The tender should not be overloaded by either personnel or equipment. Many tenders are fitted with a manufacturer's instruction plate on the transom identifying the maximum number of persons or equipment, or combinations of each, a tender may safely carry and the maximum power of any outboard engine that may be safely fitted to the boat – do not exceed these figures.
- Suitable means of boarding the moored vessel should be provided, e.g. boarding ladder, access gates on railings, etc.

10.2 Marina Safety

While the use of a marina facility offers benefits of increased convenience and comfort to boat operators, it should be noted that a marina is a potentially dangerous

location. Many marinas are located in deep water that is subject to strong tidal streams, are exposed to strong winds and are fitted with a minimum of protective barriers. Strong tidal streams can present a danger in the event of an accident.

Take note of speed limits and "no wake areas" in harbours, approaching marinas or near swimming areas.

Users are encouraged to observe the following precautions when using and moving about on marina installations:

- Wear suitable non-slip footwear.
- Be aware of the surface condition of decks, particularly if wet.
- Do not obstruct marina walkways or finger berths with gear/trolleys.
- Ensure that boat operations that involve coming alongside and departing marina berths are controlled, and do not jeopardise crew members in the process of berthing the boat. A short step and not a long jump is the required transit from boat to berth.
- Instruct all crew on deck to wear a PFD/lifejacket when bringing a boat on/off a marina berth.
- Do not leave children unattended on a marina facility.
- Ensure children are wearing a suitable PFD/lifejacket at all times when they are on a marina.
- Avoid wearing a knapsack, haversack, ruck sack or back pack while on a marina as these can prove dangerous in the event that you fall into the water.
- When using shore power electricity supplies, always

ensure trailing leads are in good condition, fitted with suitable plugs/sockets, are correctly supported and do not present a trip hazard.

- Only connect to power pedestals in accordance with the provider's instructions.
- Report any noted defects to the marina management.
- Observe all management safety instructions.
- Be aware of the dangers of moving about on a marina whilst under the influence of alcohol.
- Take note of lifebuoy locations and pontoon boarding ladders when entering or departing a marina.

10.3 Slipways

- Make visual inspection of the slipway surface to ensure it is free of material (e.g. reeds, seaweed/substances such as oil or grease) that may cause loss of traction for a towing vehicle or a slip hazard for personnel.
- Make sure there is sufficient water depth to float off the craft before the trailer reaches the end of the slipway.
- Be sure the vehicle in use has the traction and power to cope with launching from a slipway with a steep gradient. If in doubt, go elsewhere.
- The use of a four wheel drive vehicle is recommended if launching a boat trailer.
- Know where the life-saving appliances are located.
- Where possible, do not conduct a launching alone.

- Have a plan should the trailer and vehicle slip into the water adjacent to the slipway, i.e. windows open, buoyancy aid available but not worn.
- Do not allow any passengers to remain in the vehicle while launching or recovering a boat.
- Note and follow any warnings or safety instructions posted by the owner of the slipway.
- Report any safety concerns regarding the condition of the slipway to the owners.

10.4 Beach launching

Launching/recovering craft from any beach, particularly one subject to surf, can be a dangerous exercise and should always be approached with caution.

- Seek local advice on suitable and safe launching sites.
- Be aware that conditions may deteriorate dramatically between departure and return, dependent on tidal and weather conditions.
- Always be aware of the effects of wind versus tide in the area.
- Study the local weather forecast prior to any attempted departure.
- Be aware of the force of breaking waves on a boat and the potential damage by slamming into the surf.
- Do not launch if the surf height exceeds 0.5 m, unless using specialist craft and with suitable training.
- Always wear a suitable PFD/lifejacket and ensure all loose gear is correctly secured.
- Ensure sufficient experienced crew are available. Do not attempt to launch short-handed.
- Advise a responsible person ashore of your plans, including departure and return times, launch locations and intended destinations. Always inform them of your safe return.
- Check with the relevant local authority/local Beach Bye-Laws that there is no prohibition on beach launching.

10.5 Maintenance

10.5.1 Rigging

Rigging components on a sailing craft are subject to extreme loadings. If these are set up incorrectly in the beginning and adjusted subsequently, the fluctuations in load can result in fatigue failure of stays, spreaders or masts, despite the use of modern materials.

Rigging demands constant attention and inspection on an ongoing basis. While a boat is in service, it must be recognised that despite the use of materials such as stainless steel, components such as shrouds and terminals will not last indefinitely and must be replaced. On many boats greater than 6 metres in length, current practice is not to

remove the mast at the end of the season. Consequently, rigs remain in place for many years without proper inspection.

The following maintenance of a vessel's rigging should be undertaken:

- A competent person should inspect all elements of the rigging visually. This should be done annually. As this may involve undertaking a masthead inspection working at height, only individuals experienced in working aloft and using a suitable Bosun's Chair or equivalent should undertake this work.
- Shrouds should be examined for signs of damaged, distorted or kinked wire strands.
- Stay wire end terminals should be visually inspected – rolled or swaged ends are prone to splitting. Norseman or Staylock terminals can be opened and inspected internally if required. Ensure turnbuckles are not distorted or damaged.
- Be aware of the age of your vessel's shrouds. A regularly used craft should consider stay renewal every 7-10 years depending on usage. Keep a record of renewal dates. It is advisable to renew stays on a rolling basis, changing a section every year.
- Always renew with suitable material, size and terminals. It is recommended to have this work done professionally.
- Be aware of the correct procedure to tune rigging.

10.5.2 Inboard engine operation and maintenance

On craft fitted with inboard engines, prior to proceeding to sea the following procedures should be undertaken:

- Check oil and coolant levels.
- Inspect all bilges for leaks.
- Ensure all sea valves are open.
- Ensure adequate fuel is carried on board.
- While the engine is running, inspect for any fuel leaks.
- Prior to leaving the dock, ensure an adequate cooling overboard discharge is present.
- Check that the engine operates ahead and astern prior to departure from the berth or mooring.
- Battery electrolyte levels should be checked on a regular basis throughout the season.
- Propeller shaft systems, including regular greasing of bearings and inspection of leakage rate at glands, should also be included in an owner's maintenance routine.

10.5.3 Outboard engines

On craft fitted with outboard engines, the following procedures should be followed:

- The Engine Unit should be serviced at the start of each season by a qualified technician.
- Ensure the unit cooling system is flushed with fresh water prior to lay up at the end of the season.
- Prior to departure, check the condition of the propeller/shear pin assembly if fitted.
- Be aware of the correct starting procedures before departing, in particular how to avoid flooding the engine.
- If using a two-stroke engine, always ensure the correct oil/fuel mixture is used.
- Engines should be correctly mounted onto the boat's transom; in addition a safety lanyard should always be attached.
- The use of a "kill cord" with the unit is recommended at all times.

10.5.4 Annual engine maintenance

Prior to the start of each season, owners should undertake the following annual maintenance procedures:

- Oil and filter change.
- Fuel tanks drained of water (ensure they are filled with fuel prior to lay up) and fuel filters renewed.

- Inspect all cooling pipes, and check levels of anti-freeze fitted in cooling systems. Examine all exhaust lines for wastage or leaks.
- Inspect impellers on Sea Water Cooling systems (Jabsco pumps).
- Check condition of any starting battery systems.
- Examine condition of underwater anodes.
- Inspect condition of propeller shaft cutlass bearings.
- Check operation of all sea water hull shut-off valves.

10.5.5 Minimum spare parts

For Inboard Engine

- Fan belt set.
- Oil/fuel filter set.
- Spare Jabsco sea water pump impeller and gaskets.
- Spare change of engine oil.
- Spare jubilee clips to suit hoses on board.

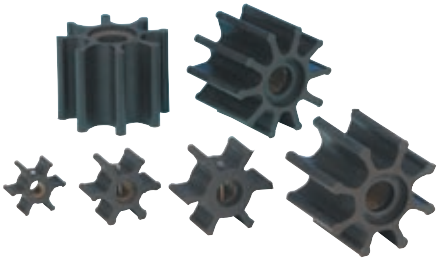
For Outboard Engine

- Spark plugs (in case of petrol engines).
- Spare Shear Pin (if relevant).

10.5.6 Tool Kit

Craft should carry a suitable and relevant tool kit comprising of the following suggested items:

- Screwdriver set.
- Spanner set applicable to each craft.
- Adjustable spanner.
- Torch.
- Spark plug spanner (in the case of petrol engines).
- Junior hacksaw and spare blades.
- Pliers and vise grips.
- Can of WD40 release oil, if relevant.



10.6 Liquefied/Liquid Petroleum Gas (LPG)

Many recreational craft are fitted with Liquid Petroleum Gas (LPG) installations and appliances, primarily in the form of cookers. LPG is supplied in pressurised cylinders and is usually propane, butane or a mixture of the two gases.

When handled incorrectly, the dangers associated with LPG

systems include fire, explosion, burns and asphyxiation, due to gas leakage from the system or accumulation of gas following flame failure in an appliance. Such incidents have caused loss of life and material damage on recreational craft.

It is essential that **all** installation and **any** planned maintenance or repair work is undertaken by a qualified technician to an approved standard – (ISO 10239:2014 Small Craft – Liquefied Petroleum Gas (LPG) Systems), and in accordance with the manufacturer's instructions.

Gas Cylinders should always:

- Be handled with care. Never lift a gas cylinder by the cylinder valve;
- Be stowed outside in order that any leakage may disperse quickly to the open atmosphere;
- Be stored upright and secured against movement;
- Where stowed in lockers on deck, have adequate drainage ports provided to allow the gas (which is heavier than air) dissipate safely.

The following safety devices should be fitted to any LPG system:

- Manual isolation valve on the cylinder;
- Fixed pressure regulator located within the storage locker to provide a fixed working pressure to the consuming device;
- A pressure relief device located on or adjacent to the cylinder;
- An automatic safety gas cut out device located on the cylinder or adjacent to it, to cut off the gas supply in the event of a loss of pressure due to a gas leak;
- A manual shut-off valve located adjacent to the appliance, but easily accessed for the purpose of operation;
- Gas detectors, located in the space appliances are situated. Detectors should be located in bilge areas or at floor level to detect accumulating gas leakage. Alarms should be audible and arranged to automatically cut off the gas supply from the bottle;
- Carbon Monoxide alarms and local fire alarms should also be fitted in spaces containing cookers;
- All gas safety isolation and safety devices should be clearly marked to indicate their function and the open and closed positions.

Only appliances designed for use in a marine environment should be installed on a vessel. The cooker should be fitted with a gas shut-off. Systems should be subject to annual maintenance by a qualified technician and all onboard alarms and shut-offs should be checked at least monthly when the vessel is in use.

Appliances should be securely fixed to the craft. Where a cooker is mounted on a gimball arrangement, its freedom to move should not be restricted.

A means of exhaust ventilation should be fitted to the space where a LPG appliance is fitted, with suction ducting located at floor level or in bilge areas. Extraction fans should be located external to the space.

Emergency Action

In the event of a gas leak being detected, the following actions should be taken:

- Isolate the gas supply at the bottle;
- Extinguish all flames and cigarettes. Do not operate any electrical equipment or switches;
- Ventilate the space, being aware that as the gas is heavier than air, it will sink into bilges;
- Be aware of the location of all fire extinguishing equipment;
- Do not operate the system until the fault has been corrected by a qualified technician.

Further information and advice is contained in Marine Notice No. 37 of 2017 (Use of liquefied petroleum gas (LPG) installations and systems on merchant vessels, fishing vessels, pleasure craft and other marine craft).

10.7 Commissioners of Irish Lights

The Commissioners of Irish Lights (CIL) perform an important role in safety at sea through their Aids to Navigation (AtoN) which include radio aids such as Differential GPS (DGPS), Radar Beacons (Racon) and Automatic Identification Systems (AIS), as well as more traditional visual aids such as lighthouses, buoys and beacons. Further information can be found at www.irishlights.ie.

10.7.1 Smart Weather Buoys

Smart Buoys currently provide the mariner with traditional visual navigational information as well as internet-accessible environmental information from around the coast of Ireland, including:

- Sea state (Wave Height, Wave Period)
- Weather conditions (Wind Speed, Wind Direction, Gust Speed, Gust Direction)
- Water Temperature.

Information and data feedback from the smart weather buoys around the coast are available at http://www.irishlights.ie/environment/smart-buoy-sensors.aspx.