Recreational Diving, Recreational Technical Diving and Snorkelling

Code of Practice

2024

Workplace Health and Safety Queensland
worksafe.qld.gov.au

Queensland Government

This Queensland code of practice has been approved by the Minister for State Development and Infrastructure, Minister for Industrial Relations and Minister for Racing under section 43 of the *Safety in Recreational Water Activities Act 2011* and commences on 1 August 2024.

Contents

Foreword

The *Recreational Diving, Recreational Technical Diving and Snorkelling Code of Practice 2024* (the code) is an approved code of practice under section 43 of the *Safety in Recreational Water Activities Act 2011* (SRWA Act).

An approved code of practice is a practical guide to achieving the standards of health, safety and welfare required under the SRWA Act and the *Safety in Recreational Water Activities Regulation 2024* (SRWA Regulation).

A code of practice applies to anyone who has a duty of care in the circumstances described in the code. In most cases, following an approved code of practice would achieve compliance with the health and safety duties in the SRWA Act, in relation to the subject matter of the code. Like regulations, codes of practice deal with particular issues and do not cover all hazards or risks which may arise. The health and safety duties require duty holders to consider all risks associated with the recreational activity, not only those for which regulations and codes of practice exist.

Codes of practice are admissible in court proceedings under the SRWA Act and SRWA Regulation. Courts may regard a code of practice as evidence of what is known about a hazard, risk or control and may rely on the code in determining what is reasonably practicable in the circumstances to which the code relates.

Compliance with the SRWA Act and SRWA Regulation may be achieved by following another method, such as a technical or an industry standard, if it provides an equivalent or higher standard of work health and safety than the code.

An inspector may refer to an approved code of practice such as providing recommendations when issuing an improvement or prohibition notice.

It is important to note the health and safety duties of persons conducting a business or undertaking, workers and others are outlined in the *Work Health and Safety Act 2011* (WHS Act), the *Work Health and Safety Regulation 2011* (WHS Regulation) and associated codes of practice. Although the WHS Act encompasses the health and safety of others, such as customers whose health and safety may be affected by a work activity, it does not specifically address the health and safety risks of recreational diving and recreational snorkelling, when the activity is conducted by a business or undertaking.

Specific duties for the health and safety of recreational diving and recreational snorkelling when the activity is conducted by a business or undertaking, are outlined in the SRWA Act, SRWA Regulation and this code. However, the WHS Act continues to apply, and must be complied with, in addition to the SRWA Act. The SRWA Regulation and this code may not outline every risk at your workplace (e.g. manual tasks risks), so you must ensure you are familiar with all relevant WHS legislation and codes of practice.

Scope and application

This code provides practical guidance to dive operators on how to comply with their health and safety duties when providing recreational water activities, in particular recreational diving, recreational technical diving and snorkelling.

How is the code organised

In providing guidance, the word ‘should’ is used in this code to indicate a recommended course of action, while ‘may’ is used to indicate an optional course of action.

This code also includes various references to provisions of the SRWA Act and SRWA Regulation which set out the legal requirements. These references are not exhaustive. The

words ‘must’, ‘requires’ or ‘mandatory’ indicate that a legal requirement exists and must be complied with.

All defined terms in the code are bolded and the definitions found in the dictionary in section 7 of this code.

1. Introduction

1.1 What is recreational diving, recreational technical diving and recreational snorkelling?

Recreational diving
Dive operators in Queensland conduct a range of recreational water activities including recreational diving, recreational technical diving and recreational snorkelling.

Recreational diving is underwater diving for recreation using compressed air, other than decompression diving.

Recreational diving, recreational technical diving and **recreational snorkelling** do not include diving or snorkelling in a swimming pool.

Recreational technical diving is underwater diving for recreation:
- using EANx or mixed gas; or
- that is decompression diving using compressed air or other gas.

Key risk factors for recreational diving include poor medical fitness, inexperience, inadequate skills, panic and decompression illness.

Recreational snorkelling is:
- free diving; or
- swimming for recreation using a snorkel and mask.

Recreational snorkelling in Queensland is usually conducted during tours or from vessels at reef or island locations. Tragically, more snorkellers than divers die in Queensland noting that more people snorkel than dive.

Common risk factors that contribute to snorkelling deaths include cardiac conditions, age, pre-existing medical conditions, weight and fitness. Other risk factors include inexperience, particularly for snorkellers who speak a language other than English and may have less experience in snorkelling and swimming, and hypoxic blackout. Hypoxic or breath-holding blackout (sometimes referred to as shallow water blackout) most often affects young males engaged in extended free diving and can occur at any depth.

1.2 Who has health and safety duties in relation to recreational diving, recreational technical diving and recreational snorkelling?

A person conducting a business or undertaking (PCBU) has the primary duty under the SRWA Act to ensure, so as far as reasonably practicable, the health and safety of persons to whom recreational water activities are provided.

A **dive operator** is a PCBU provides any of the following recreational water activities: recreational diving, recreational technical diving or recreational snorkelling.

Officers, such as company directors, have a duty to exercise due diligence to ensure that the business or undertaking complies with the SRWA Act and SRWA Regulation. This includes taking reasonable steps to ensure that the business or undertaking has and uses appropriate resources and processes to provide and maintain a safe work environment.

Workers have a duty to take reasonable care for their own health and safety and that they

do not adversely affect the health and safety of other people. Workers must comply with any reasonable instruction and cooperate with any reasonable policy or procedure relating to health and safety at the workplace.

Others at a place where recreational water activities are provided must take reasonable care for their own health and safety and take reasonable care that their acts or omissions do not adversely affect the health and safety of other people present at the place. In addition, they must comply, so far as the person is reasonably able, with any reasonable instruction that is given by the dive operator to allow the dive operator to comply with the SRWA Act (for example, a snorkeller following reasonable instructions such as to wear a stinger suit where there is a risk of marine stingers).

1.3 Risk management

The WHS Act and WHS Regulation require people who have a duty to ensure health and safety to manage risks by eliminating health and safety risks so far as is reasonably practicable, and, if it is not reasonably practicable to do so, to minimise those risks so far as is reasonably practicable.

Guidance on the general risk management process that must be followed is available in the WHS Act and the *How to Manage Work Health and Safety Risks Code of Practice 2021*.

To properly manage risks, a person must:

- identify hazards – find out what may cause harm.
- assess risks, understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening.
- control risks – implement the most effective control measure that is reasonably practicable in the circumstances and ensure it remains effective over time.
- review hazards and control measures to ensure they are working as planned.

This code outlines some control measures which can be used to manage risks related to recreational diving, recreational technical diving and recreational snorkelling. See section *2.2.2 Risk assessments for recreational diving, recreational technical diving and snorkelling.*

The PCBU (generally the dive operator) must:

- undertake risk management at their own workplace to ensure the control measures chosen are suitable for the workplace and the tasks and activities being undertaken; and
- ensure all diving/snorkelling is subject to coordination by a diving/snorkelling supervisor or other person or people who have been appointed for that purpose.

Diving/snorkelling procedures should be documented along with the responsibilities of lookouts, diving/snorkelling supervisor/s, dive instructor/s and other workers with respect to health and safety. It is important that responsibilities are clearly allocated and the diving/snorkelling procedures to be followed are known to all workers.

2. Control measures that apply to all activities

This section covers control measures that apply to all recreational diving, recreational technical diving and recreational snorkelling activities.

2.1 Ensuring no people are left behind

SRWA Regulation sections 13 to 17 apply if a dive operator provides a recreational diving activity, recreational technical diving activity or recreational snorkelling activity using a boat to transport one or more persons to a dive site to participate in the activity. These sections describe the requirement to count persons aboard the boat, the way to count persons and recording the count.

If a dive operator provides a recreational diving activity, recreational technical diving activity or recreational snorkelling activity using a boat to transport one or more persons to a dive site to participate in the activity, the dive operator must ensure each nominated crew member aboard the boat counts, in the way required under section 15 of the SRWA Regulation:

a) before the boat leaves for the dive site – the persons aboard the boat; and
b) if one or more additional persons permanently board the boat – each additional person who permanently boards the boat, as the person boards the boat; and
c) if one or more persons permanently leave the boat for alternative transport to shore or another vessel – each person who permanently leaves the boat, as the person leaves the boat; and
d) before the boat leaves the dive site – the persons aboard the boat.

Before the boat leaves the dive site, a nominated crew member must also compare that count with the last count under a), b), or c) to ensure both counts agree.

The dive operator must ensure that, if there are two or more nominated crew members aboard a boat, each crew member must:

a) carry out the count independently of each other nominated crew member; and
b) compare the crew member's count with the count of each other nominated crew member to ensure the counts agree.

If there is one nominated crew member aboard a boat, the crew member must carry out the count twice by:

a) using two different ways that require the persons counted to actively participate in the count; or
b) using a head count and one way that requires the persons being counted to actively participate in the count.

If the comparison shows the count does not match, a recount must be done. If the counts still do not agree, then the dive operator must ensure that procedures in the **emergency plan** are implemented (see *section 2.3* below).

Nominated crew member means:

- If there is only one worker aboard the boat – the worker; or
- Otherwise – at least two workers aboard the boat nominated by the dive operator.

Examples of ways that persons can actively participate in a count include:

- completion of a sheet of diver's/snorkeller's signatures
- a roll call
- a tagging and signing system.

A **dive site**, for a recreational water activity, means a place where persons may participate in the activity and includes the vicinity of that place.

The dive operator should ensure all people on board the boat are clearly informed of the counting process to be followed.
Each nominated crew member carrying out the counts must:

- Make a written record of each count; and
- verify each count record and comparison by:
  - signing each record; or, if the record is made electronically
  - by entering the crew member's name and a **unique identifier** in the record.

The dive operator must keep each record made for at least one year after the day the count is made.

An example head count record and active participation count record is Appendix 1 and on the WorkSafe website https://www.worksafe.qld.gov.au/your-industry/diving-and-snorkelling.

2.2 Supervision of divers and snorkellers in open water

Site supervision
An appointed dive/snorkel supervisor should manage the snorkelling/diving operation while snorkelling/diving is taking place. The dive/snorkel supervisor should have appropriate experience for the activity and area supervised (Note: Further information about the number and location of supervisory personnel is provided at *section 2.2.1*).

For recreational diving and recreational technical diving, the **dive supervisor** should remain at the surface.

The dive/snorkel supervisor appointed to supervise the dive site should be able to:
- swim and snorkel
- help and advise snorkellers/divers as they enter and exit the water
- effectively instruct snorkellers/divers and other people so that necessary information is delivered in a manner that enhances understanding and increases the likelihood of directions being followed
- recognise changes to risks because of snorkeller/diver abilities and behaviour and/or environmental conditions
- recognise hazards and risks of the marine environment.

2.2.1 Lookouts, guides and rescuers

SRWA Regulation Section 18: Requirement for lookouts

SRWA Regulation section 20: Requirements for lookouts and guides – rescue and first aid

A dive operator conducting a recreational diving, recreational technical diving or snorkelling activity for one or more persons must ensure that there is at least one person acting as lookout while persons are diving or snorkelling.

The dive operator may allow the activity to be provided with only one lookout if the dive operator or a worker on their behalf has:
- conducted a proper risk assessment of the risks involved in having only one lookout, having regard to circumstances where the lookout may need to conduct a rescue; and
- decides based on the risk assessment that it is reasonable for only one person to act as lookout.

Refer to *section 2.2.2 risk assessments for recreational diving, recreational technical diving and snorkelling*.

A person who acts as lookout, or is a guide, for the recreational water activity must:
a) be able to recognise relevant hazards
b) be able to recognise when a diver or snorkeller is in difficulty; and

c) be able to:
   i. rescue a diver or snorkeller in difficulty and provide first aid; or
   ii. direct a person who is immediately available and capable to rescue a diver or snorkeller in difficulty and provide first aid.

First aid includes cardiopulmonary resuscitation, oxygen therapy and oxygen resuscitation.

A person who acts as a lookout for the recreational water activity must:
a) be positioned out of the water where the lookout can see the whole area where the participants are diving/snorkelling; and
b) be solely engaged in being the lookout during the activity.

To ensure the lookout has proper visibility of snorkellers and divers to easily identify if a snorkeller or diver is in difficulty, the dive operator should consider:
- the particular dive site and conditions
- the proximity of the lookout to divers and snorkellers
- whether the lookout is in an elevated position
- the presence of other diving/snorkelling groups.

However, if the lookout is providing first aid or is conducting a rescue, the lookout does not need to be positioned out of the water or solely engaged in being a lookout.

The dive operator should ensure the lookout/s:
- is present for the whole time diving/snorkelling takes place, including the time entry to and exit from the water are occurring
- can easily differentiate between a snorkeller who is conscious and floating, and a snorkeller who is unconscious in the water
- scans the area under their supervision in an effective and efficient manner observing people who are diving/snorkelling
- if required, rescues a person diving/snorkelling, or directs a person who is immediately available and capable of rescuing a person diving or snorkelling, to rescue the person
- has a level of fitness so their own health and safety are not compromised if required to carry out or assist in a rescue
- if required, provides first aid including cardiopulmonary resuscitation and oxygen therapy or resuscitation or directs a person who is immediately available and capable of providing first aid, to do so
- observes divers/snorkellers when they are entering and exiting the water or are on the surface
- has access to binoculars and polarised sunglasses so that visibility across and into the water can be improved
- continually monitors the positions of the divers or snorkellers, looks for hazards or changes which may lead to problems, and identifies problems so that the recreational water activity can be adjusted as required, for example, tides, currents, marine animals, people skylarking, fatigue
- are not required to conduct lookout duties for extended periods of time without a break
- wears a brightly coloured shirt, wet suit or other identifying clothing or equipment so the lookout can be recognised easily by divers/snorkellers
- is part of a communication system which is appropriate to the site, and which allows for necessary communication with people diving/snorkelling and any other appropriate personnel so that effective and efficient transfer of information can occur. A communication system may include ordinary voice communication, a loud hailer, two-way radios, whistles or signalling.

In addition, for snorkelling, the dive operator should ensure the lookout/s:
- aims to keep people within the boundaries of the snorkelling site
- is aware of which people snorkelling intend to free dive and provide them with additional levels of supervision

- is aware of the risks of silent drowning and monitors snorkelling participants for movement that indicate they are actively snorkelling
- is aware of which people are at risk snorkellers.

2.2.2 Risk assessments for recreational diving, recreational technical diving and snorkelling

General dive and snorkel risk assessment

A general risk assessment should consider all aspects of the conduct of the dive/snorkel operation, including entries and exits, risk of separation, searches for divers/snorkellers, rescues and evacuations. Recreational diving and recreational snorkelling activities should be modified or cancelled where the assessment shows that normal control measures will not minimise or eliminate the risks faced by snorkellers/divers.

Risk assessment to determine number of lookouts, and number and location of supervisory personnel

The dive operator may assign the roles of supervisory personnel including lookout, dive/snorkel supervisor, rescuer, first aid and oxygen provider to one or more competent persons where the performance of these roles is not incompatible.

The dive operator may allow the activity to be provided with only one lookout if the dive operator or a worker on their behalf has conducted an assessment, and based on the assessment, made a determination that only having one lookout is reasonable in circumstances where the lookout may need to undertake a rescue.

The assessment to determine the number of lookouts, and number and location of supervisory personnel for the diving/snorkelling activity for a particular site should consider the following factors:

- the size, type and location of the dive/snorkel area and control measures already in place to minimise the risks to divers/snorkellers
  - how big the area is that needs to be covered by the lookout's supervision
  - whether the entire site can be seen by the lookout
- environmental conditions which could impact on the safety of divers/snorkellers, for example, if a strong current is running or is likely to run, then increased supervision may be necessary
- the number of people diving/snorkelling
- ability of divers/snorkellers to easily understand instruction and advice given about diving/snorkelling.
- the competence, experience, fitness and confidence levels of the divers/snorkellers
- the skills, abilities and experience of supervisory staff including lookout
- the type and effectiveness of equipment at the dive site, for example, rescue equipment and two-way radios.

If communication between the supervisory personnel and divers/snorkellers is difficult, this could increase the likelihood of an incident and increased supervision might be appropriate.

Environmental dive site risk assessment for recreational diving, recreational technical diving and snorkelling

The dive operator should document an environmental dive site risk assessment to assess environmental conditions for each dive site. The environmental dive site risk assessment should be conducted by the dive/snorkel supervisor or a competent person and include:

- wind strength
- surface conditions
- estimated visibility
- estimated current
- weather.

These environmental factors should be confirmed in-water by the dive/snorkel supervisor or a competent person. Environmental conditions should be monitored through-out the activity and controls implemented as necessary. See section *3.2 Supervision of divers in open water* for guidance on in-water risk assessments specific for recreational diving.

The lookout and supervisory personnel risk assessment and environmental dive site risk assessment may be conducted concurrently. Appendices 4, 5 and 6 provide examples of risk assessments which may be used. Appendix 4 is an example dive site and in-water risk assessment. Appendix 5 is an example of a risk assessment to determine lookouts and supervisory personnel. Appendix 6 is an example combined dive site, lookout and supervisory personnel risk assessment.

Word versions of these risk assessments are available on the WorkSafe website https://www.worksafe.qld.gov.au/your-industry/diving-and-snorkelling along with other useful material.

2.3 Emergency plans

An **emergency plan** for a dive operator means an emergency plan prepared under section 43 of the WHS Regulation.

SRWA Regulation section 16
If the counts do not agree the dive operator must ensure that each nominated crew member repeats the counts of all persons on board again. If after the recount, the counts still do not agree the dive operator must ensure that the relevant procedures in the dive operator's emergency plan are implemented.

The dive operator must ensure that an emergency plan is prepared and maintained for the diving/snorkelling vessel to deal with emergency situations.

The emergency plan must provide for the following:
- emergency procedures
- testing of the emergency procedures, including the frequency of testing
- information, training and instruction to relevant people in relation to implementing the emergency procedures.

Emergency situations to be covered by the prepared emergency plan should include:
- first aid
- rescue
- evacuation
- missing people
- non-agreed headcounts.

Further information regarding emergency plans can be found in the *Managing the Work Environment and Facilities Code of Practice 2021* at www.worksafe.qld.gov.au.

2.4 Rescue of a person diving or snorkelling

Procedures, equipment and personnel should be in place so that any rescue of a person diving/snorkelling can begin as soon as possible after a diver or snorkeller in difficulty is sighted and, if required, timely delivery of cardiopulmonary resuscitation and/or defibrillation. A lack of oxygen for as little as three minutes can lead to permanent brain damage.

The dive operator should ensure effective and efficient rescue and resuscitation procedures have been developed. When developing these procedures, consideration should be given to the following factors:

- the size, type and location of the diving/snorkelling site
- appropriateness of rescue procedures to the diving/snorkelling site
- adequacy of the communication system so that clear messages and information can be relayed to the appropriate personnel, including emergency services, with minimal delay
- location of lookouts/rescuers and their skills and fitness levels, for example:
    - rescuers should have knowledge and skills in diving/snorkelling and in the management of diving/snorkelling related incidents, injuries and illnesses.
    - rescuers should have a level of fitness, so their own health and safety are not compromised, and be dressed and equipped to maximise the likelihood of a successful rescue
- availability, locality and appropriateness of any rescue equipment such as rescue boards, tenders, flotation devices and ropes
    - any rescue vessels or equipment should be maintained in a ready condition and positioned so they can be used to reach a person diving/snorkelling in distress with minimal delay
    - an appropriate powered tender vessel should be maintained in a ready condition in the water for the purpose of rescue during a recreational diving or snorkelling activity
    - consideration should be given to how an unconscious person is to be removed from the water and the crewing required for the task
- identification of the search area and timely response for locating a missing diver, for example:
    - an emergency grab-bag should be kept in the tender which includes a weighted surface marker buoy
    - in the event of a lost diver, the surface marker buoy should be quickly deployed at the location where the separation occurred
    - dive instructors conducting non-certified dives in an area without a defined route, or in an area of low visibility, should carry an underwater lost diver marker system, such as a weighted surface marker buoy, or similar, to mark the position where the diver was last seen.

2.5 First aid and oxygen

Timely and appropriate use of first aid is an important factor in the treatment of diving/ snorkelling related injuries and prevention of deaths. Oxygen administration and defibrillation may be important parts of resuscitation and can also be used with any diver/snorkeller who is in respiratory or cardiac distress.

The dive operator should ensure:

- a first aid kit is available at the diving/snorkelling site. The contents of this kit should be sufficient to cater for the injuries that may occur and should include a pulse oximeter. Consideration should be given to the number of people diving/snorkelling and the nature and type of diving/snorkelling which is being undertaken.
- a person on the surface at the diving/snorkelling site should have undertaken current training in diving first aid including emergency oxygen administration.
- an oxygen system capable of providing a spontaneously breathing person with an inspired oxygen concentration of as near as possible to 100%. The equipment shall also facilitate oxygen enriched artificial ventilation of a non-breathing person. The person/s administering the oxygen should hold a current qualification in the correct use of the system.
- oxygen equipment and oxygen levels are checked daily by a person who has received training to carry out the checks correctly. Any other maintenance of the oxygen system should be carried out by an authorised service agent.
- sufficient oxygen is available to supply the injured person continuously until advised to cease oxygen administration by a medical practitioner, considering the location of the diving/snorkelling site and access to medical facilities.

2.6 Automated external defibrillators

Providing an automated external defibrillator can reduce the risk of fatality from cardiac arrest. The dive operator should ensure that an Automatic External Defibrillator (AED) and trained operator is available on the vessel or readily accessible at the dive or snorkel site (for example, located on the primary vessel, on the dive pontoon, or for shore-based snorkelling, on the shore or in a nearby location).

In circumstances where a dive operator determines it is not reasonably practicable to provide an AED, a documented risk assessment should describe all the matters considered in making this determination.

The AED should be located in an area that is known to all staff, clearly visible and readily accessible. The device should be clearly signed and maintained according to the manufacturer's specifications.

2.7 Instruction, advice and supervision of people who speak a language other than English

A person who speaks a language other than English is a person who cannot understand and speak any English, or whose grasp of the English language is such that they are not able to readily understand, or question instructions and advice given in English.

Information and advice should be given to a person who speaks a language other than English in a manner that ensures understanding by the person. This should occur through:

- the information being explained to the person snorkelling by an instructor who speaks the same language as the person who speaks a language other than English; or
- the use of an interpreter with a sound knowledge of the activity being undertaken and terminology to relay the instructor's instructions to the person who speaks a language other than English and translate the responses back to the instructor. The interpreter should be able to speak fluently to the instructor and the person who speaks a language other than English in languages they can both readily understand; or
- the use of instruction sheets written in a language the person who speaks a language other than English can read and understand.

Instruction sheets are available from the Workplace Health and Safety website https://www.worksafe.qld.gov.au/your-industry/diving-and-snorkelling.

The diver instructor should assess the understanding of the person who speaks a language other than English by having them demonstrate the required knowledge and skills. Diving should not proceed unless the instructor is satisfied the person can dive safely and has understood the instructions.

If communication between supervisory personnel and people diving or snorkelling is difficult, this may increase the risk of the activity and increased supervision therefore may be appropriate.

If an interpreter or instruction sheet is not available in the required language for a snorkeller who speaks a language other than English, close supervision (by a snorkelling supervisor) should be provided when the snorkeller first enters the water. In this instance, close supervision means having the snorkelling supervisor initially positioned close enough to the snorkeller so that, if necessary, the supervisor can readily give assistance to the snorkeller. Close supervision should be maintained until the supervisor is satisfied that it is no longer necessary.

2.8 Risks from moving vessels

The dive operator should ensure that the risks of a person diving/snorkelling being injured or killed by moving vessels is minimised or eliminated. In determining control measures, the following systems should be considered:

- propeller guards for dive operator's tender vessels operating in the area where diving/snorkelling is taking
- using buoys or markers to separate diving/snorkelling activity from vessel activity
- using appropriately sized and displayed flags (Code A or alpha flag) or lights to indicate diving/snorkelling activity (note: this control measure is only effective where the flag or lights are displayed where diving/snorkelling is taking place, not just in the vicinity)
- ensuring lookouts maintain a watch for approaching vessels and are part of a communications system to allow contact to be made with the approaching vessel in a timely manner
- ensuring diving/snorkelling workers are familiar with diving/snorkelling sites and are able to navigate competently
- adopting systems of work to minimise or eliminate the chances of these injuries occurring.

A "Code A" flag (sometimes referred to as an alpha flag) is the international marine flag indicating that there is a diver in the water and vessels should slow down and keep well clear, it also indicates that the vessel is unable to manoeuvre. Dive operators may also use a Code A flag if recreational snorkelling activities are being undertaken to alert other vessels that there are snorkellers in the water.

2.9 Marine jellyfish stings

This section has application to particular Queensland waters at particular times of year where people diving/snorkelling are at risk from severe marine jellyfish stings, particularly *Chironex Fleckeri*, *Irukandji (Carukia barnesi)* and related species.

The dive operator should ensure that people diving/snorkelling are advised of:

- the risks of marine jellyfish
- where to access first aid
- appropriate precautions (e.g. use of full-body stinger suits where appropriate).

The dive operator should undertake a risk assessment to determine the risk of marine jellyfish stings and consider whether protective swimwear should be provided. Further guidance on marine stingers is available in *section 6.6 Marine Stingers*.

2.10 Entry and exit from water

Risks associated with a person entering and exiting the water should be eliminated or minimised. The dive operator should ensure:

- all people engaging in diving/snorkelling are aware of the entry and exit location from the water
- entry and exit locations are free from obstacles and other hazards
- entry and exit locations are suitable for the fitness and physical capabilities of the people engaging in diving/snorkelling activities
- assistance, where applicable, is made available to people entering and exiting the water to reduce their physical exertion. This may include providing assistance in removing and stowing heavy equipment (note: additional physical exertion by a diver exiting the water may contribute to some types of physical strain or injury including the onset of decompression illness or a heart attack).

2.11 Charter vessel operation

If a PCBU hires out a vessel with workers (such as a vessel master) for the purpose of recreational diving, recreational technical diving or recreational snorkelling they should consider on a case-by-case basis whether they are providing a recreational water activity, as defined by the SRWA Act sections 7 and 8, and the applicability of the SRWA Act, the SRWA Regulation, and this code to the activity.

A PCBU that hires out a vessel for the purpose of a recreational water activity, should ensure that, before a charter commences, a checklist is sent to charterers outlining clearly what (if any) services are provided and what are not. It should be the responsibility of the charterer to sign and return this checklist, confirming that they have read and understood the services provided (if any) and if applicable, that they will provide all services and equipment required for the safe conduct of the activities in compliance with the SRWA Act, SRWA Regulation and this code.

Duty holders under the WHS Act and SRWA Act cannot transfer their duties to another person.

3. Control measures for recreational diving and recreational technical diving

This section covers control measures that apply to all recreational diving and recreational technical diving activities.

3.1 Medical fitness

Dive workers

The dive operator should request that workers advise the relevant person of any conditions in they may have which are contraindications to diving. Examples of temporary contraindicated conditions are colds, hay fever, ear infections and hangovers. Chronic conditions such as cardiac and respiratory conditions (among others) should be reported if diagnosed subsequent to the latest diving medical. Dive operators and workers with these conditions should not dive.

Entry-level certificate and non-certified divers - medical declaration

SRWA Regulation section 10: A dive operator must ensure a person participates in an entry-level certificate dive or non-certified dive only if:

a) the person has given the dive operator a declaration (a medical declaration) about the person's medical fitness to dive; and
b) the medical declaration is in the form approved by the regulator; and
c) for an entry-level certificate dive – the medical declaration indicates the person does not require an evaluation by a medical practitioner before participating in a dive; and
d) the dive operator or a worker on the dive operator's behalf:
    (i) has read the medical declaration; and
    (ii) does not know or suspect that the declaration is false or misleading; and
    (iii) has assessed the person's fitness to dive, having regard to the medical declaration; and
    (iv) has decided it is reasonable to allow the person to dive.

The SRWA Regulation requires that each entry-level certificate diver and non-certified diver must complete a medical declaration. The declaration must be read by the dive operator or a worker on their behalf such as a dive instructor. They must not suspect that the declaration is false or misleading and then make an assessment whether it is reasonable for the entry-level certificate or non-certified diver to dive.

For example, if a declaration by a non-certified diver discloses a medical condition, the dive operator should seek medical advice about the disclosure. In accordance with the medical advice, the dive operator may decide it is reasonable to allow the person to dive.

Any medical advice received should be recorded.

If the information on the approved form indicates the prospective diver has consumed alcohol within eight hours prior to diving, the person should not dive.

The dive operator should ensure that people undertaking non-certified dives are a minimum of 12 years of age. If the non-certified diver is under the age of 18 years, parental or guardian consent is required for that diver to undertake a non-certified dive. The parent or guardian should sign the medical declaration as a witness.

Medical declaration forms

For non-certified divers and entry-level certificate divers, the medical declaration must be in an approved form.

The medical declaration in the approved form for non-certified divers and the medical declaration for entry-level certificate divers is available on the WorkSafe website: https://www.worksafe.qld.gov.au/your-industry/diving-and-snorkelling.

The dive operator must keep a copy of each medical declaration for at least one year after the declaration is given to the dive operator.

Entry-level certificate divers – medical certificate

SRWA Regulation section 11: Entry-level certificate dive – requirement for medical certificate

1) This section applies in relation to an entry-level certificate dive provided by a dive operator if**:**
   (a) a person gives the dive operator a medical declaration; and
   (b) the medical declaration indicates the person requires an evaluation by a medical practitioner before participating in a dive.
2) The dive operator must ensure the person participates in an entry- level certificate dive provided by the dive operator only if the person has given the dive operator a medical certificate by a medical practitioner certifying that person is medically fit to dive.
3) The dive operator must keep a copy of a medical certificate given to the dive operator under this section for at least 1 year after the day the medical certificate is given to the dive operator.

The SRWA Regulation requires a person participating in an entry-level certificate dive to complete a medical declaration form in the approved form prior to participating in the dive. Where the medical declaration indicates a medical evaluation is required, the person should complete a medical evaluation with a medical practitioner and the dive operator must ensure the person provides a medical certificate by that medical practitioner certifying the person is medically fit to dive.

The medical certificate should be provided in English, preferably by a medical practitioner with experience in diving medicine, within the 90 days prior to the commencement of the initial training course.

The dive operator must keep a copy of each medical certificate for at least one year after the medical certificate is given to the dive operator.

The dive operator should ensure that people undertaking training for an entry-level certificate are a minimum of 10 years of age. If the diver is under the age of 18 years of age, parental

or guardian consent should be obtained for the diver to undertake training for an entry-level recreational diving certificate.

Certified divers
The dive operator should assess the certified diver's current medical fitness to dive. The following questions are an example of questions that may be asked of the diver to assess their current medical fitness to dive:

- Since completing your last dive medical assessment, have you suffered any illness or injury that may affect your ability to dive safely?
- Are you currently suffering any illness or injury?
- Are you currently taking any prescription medication (other than the contraceptive pill)?

If the dive operator has concerns regarding the medical fitness of a potential certified diver, they should not conduct diving for that person, unless:

- the diver seeks medical advice which advises diving can be undertaken
- a dive instructor or certified assistant accompanies the diver on a dive.

3.2 Supervision of divers in open water

In-water dive site risk assessment
A documented in-water dive site risk assessment should be performed by a dive instructor or competent person within an hour before a dive starts and again if there is a significant change in conditions during a dive. The purpose of an in-water dive site risk assessment is to verify the actual environmental conditions are consistent with the predicted conditions in the environmental dive site risk assessment.

The dive operator should implement a system to estimate the underwater vertical and horizontal visibility at the dive site. For example, visibility can be measured by:

- using a reference point such as marker on a boat or a line to the boat with a known measurement to determine horizontal visibility; or
- determining vertical visibility with a Secchi disc.

Dive procedures should be modified, or the dive cancelled where the assessment shows that normal control measures will not eliminate or minimise the risks faced by divers.

The lookout and supervisory personnel risk assessment, environmental dive site risk assessment, and in-water dive site risk assessment may be conducted concurrently.

Non-certified dives
In the event of multiple dive groups at the one site, the dive site risk assessment should consider the risk of dive group interaction underwater in determining the route for non-certified dives. The dive supervisor should ensure that divers can be easily identified underwater.

The dive supervisor should also consider the personal abilities, knowledge and confidence of individual dive instructors in evaluating the suitability of the dive site. Personal limitations of the dive instructor and the divers should result in the adoption of more conservative measures such as using certified assistants, diving in favourable conditions and reducing ratios of non-certified divers to instructors.

An example of a documented non-certified dive site risk assessment to assess environmental conditions and consider ratios of divers to instructors is provided at Appendix 4 and on the WorkSafe website https://www.worksafe.qld.gov.au/your-industry/diving-and-snorkelling.

Decision to cancel or modify non-certified dives
Commercial pressures should not impact the decision to reduce the ratios or cancel a dive. The dive supervisor should ensure the safety of all divers is paramount when making

decisions about proceeding with a dive, cancelling a dive or modifying a dive. The dive instructor or a competent person should have the authority to decide whether a non-certified dive should be cancelled or modified.

Non-certified divers – in-water supervision

SRWA Regulation section 21: A dive operator conducting non-certified diving for one or more persons must ensure that:

(a) each person doing non-certified diving is supervised in the water by a dive instructor or a dive instructor assisted by a certified assistant; and

(b) the dive instructor supervises no more than four non-certified divers at a time **or,** if the dive instructor is assisted by a certified assistant, no more than six non-certified divers at a time.

If a risk assessment shows that the abilities, fitness and confidence levels of divers, or environmental conditions at the dive site (for example, low visibility, strong current, or surface conditions) puts the health and safety of workers or non-certified divers at an unacceptable risk, then the ratios should be reviewed. In some instances, the number of non-certified divers being supervised by a dive instructor may need to be lowered from four to one (4:1) to either two to one (2:1) or one to one (1:1).

Reducing ratios following a risk assessment to 2:1 or 1:1 should result in the dive instructor and non-certified diver being able to maintain physical contact when swimming. Maintaining physical contact when swimming may include:

- holding hands
- linking arms
- holding tank valves.

While in the water, the dive instructor and/or certified assistant should always be positioned so they can make immediate physical contact with, and render assistance to, any non-certified diver.

Participants must be continually observed with only the brief, periodic interruptions needed to lead the dive and to provide assistance to individual divers. No dive should be conducted that allows the divers to swim in single file behind or in front of the dive instructor. Single file swimming with only one instructor at the beginning or end of the divers has been the cause of divers becoming lost.

Divers being supervised by a dive instructor only

When divers are being supervised by a dive instructor only, then the divers should swim closely:

- on each side of the instructor; or
- abreast with the instructor close in front of the divers, facing them and swimming backwards.

Dive instructors should ensure they can make eye contact with all divers when not maintaining physical contact.

Divers being supervised by a dive instructor and certified assistant

When divers are being supervised by a dive instructor and certified assistant, the divers should swim in a formation that allows the dive instructor or certified assistant to make immediate physical contact with, and render assistance to, any non-certified diver.

Techniques that reduce the likelihood of separation

Other techniques that reduce the likelihood of separation of non-certified divers from the instructor include:

- holding hands or linking arms

- minimising the distance swum and spending periods of the dive stationary on the sea floor
- remaining in the vicinity of the entry/exit point
- diving with certified assistants
- diving with people undertaking certified assistant training, videographers and photographers (note: utilising people undertaking certified assistant training does not change the ratio of dive instructor/s to non-certified divers, and the dive instructor remains solely responsible for the people undertaking the non-certified dive).

Supervision of mixed groups
Where mixed groups of divers (non-certified divers and other divers) are supervised by a dive instructor or a dive instructor and certified assistant, the total number of divers supervised should not exceed the maximum ratios.

Entry-level certificate divers – in-water supervision
This refers to entry-level certificate divers who have completed confined water training.

There should be a maximum of eight students with one dive instructor or a maximum of 10 students with one dive instructor and at least one certified assistant. If children aged 10–11 are participating in an entry level diving course, there should be a maximum of two children aged 10–11 with one dive instructor**,** and no more than four people in total in the group. This ratio should not be increased by adding a certified assistant.

While in the water, the dive instructor and certified assistant should always be aware of the locations of all students so that any student requiring assistance can be readily helped. Students should dive with a buddy (or buddies) at all times.

Certified divers – in-water supervision
Following the assessment of the divers, if the dive site assessment reveals the dive site conditions are outside the qualifications and experience of the certified diver, then in-water supervision by a dive instructor or certified assistant should be provided.

Diving workers – in-water supervision
The dive operator should ensure that dive workers do not dive alone without appropriate training and equipment.

3.3 Appropriate skills and knowledge

Dive workers
The dive operator should ensure dive workers are trained in the procedures required at any particular dive site and are qualified for the diving work they are doing.

All dive workers must be competent to undertake their designated duties. A competent person has acquired the knowledge and skills to carry out their duties through training, qualifications, experience or a combination of these.

The dive operator must provide suitable and adequate information, training and instruction to their dive workers, for example, lookouts should be trained in appropriate observation and monitoring techniques. This should include ongoing training and supervision of their workers to maintain and improve their competence to perform lookout duties, supervisor duties and guide duties.

A dive instructor should instruct non-certified divers and divers in training for a diving qualification.

The dive operator should ensure that a dive instructor has the knowledge, skills and ability to safely conduct diving and minimise the risks to other people’s health and safety. The dive instructor should be able to:

- assess potential divers
- ensure the diver is appropriately weighted and that all weights where possible are fitted to a quick release weight system
- provide the necessary instruction
- provide effective in-water supervision
- respond appropriately to problems or emergencies.

For non-certified diving the dive operator should ensure that the dive instructor is competent to conduct non-certified diving instruction. Evidence of a dive instructor's competency to conduct non-certified diving may be provided through documented training and assessment specific to non-certified diving from a dive training organisation, and through documented and assessed induction training conducted by the dive operator. This should be undertaken prior to the dive instructor commencing non-certified diving instruction.

The dive operator should implement a system to regularly review a dive worker's knowledge, skills, performance and abilities, for example, an annual performance review. The system should ensure the highest professional standards are maintained by dive workers.

When required, there should be a certified assistant to assist a dive instructor.

Non-certified divers

The dive operator should ensure the dive instructor assesses the knowledge, skills and abilities of potential divers and provides the necessary information and instruction to minimise the risks to the person's health and safety. Basic skills taught underwater to non-certified divers who are not helmet diving should include:

- mask clearing
- removing and replacing the regulator
- recovering and replacing the regulator.

Non-certified divers should also be taught how to inflate and deflate their buoyancy control device (BCD) while on the surface in the water.

These basic skills should be taught in suitable conditions where non-certified divers can easily keep their heads clear of the water, such as:

- shallow water
- where there is some form of support (such as a bar hanging from the side of the boat for the divers to hold onto)
- a platform on which the divers can stand.

Non-certified divers should be able to demonstrate understanding of these basic skills to the dive instructor. A dive instructor should be satisfied that the non-certified diver has understood and can repeat these basic skills in a controlled manner.

Non-certified divers should also be instructed and/or informed about:

- equalising the pressure in their ears
- never holding their breath on scuba, especially during ascent
- using appropriate hand signals
- in the event of diver separation:
    - the separated diver to use a controlled ascent procedure which includes exhaling on ascent, breathing normally and achieving and maintaining positive buoyancy on the surface including through inflating the BCD
    - all other divers – the dive instructor should use a controlled ascent procedure, linking arms to return all divers to the surface in the event of a missing diver/panicked diver situation
- maintaining physical contact (for example, holding hands or linking arms when swimming)
- availability of an alternate air source

- quick release mechanism for weight system.

Consideration should also be given to the following issues during information and instruction sessions:

- environmental conditions and marine life at the dive site (for example, depth, currents, visibility and behaviour of marine animals likely to be encountered)
- health and safety issues relating to the vessel (for example, entry and exit points)
- health and safety issues relating to dive site entry such as a beach, jetty, pontoon, riverbank
- location and roles of supervisory staff (for example, dive instructors, dive supervisors and lookouts)
- any other information required because the assessment shows the prospective diver needs such information to dive safely.

Entry-level certificate divers

Entry-level certificate divers should be trained through documented training procedures which comply with AS ISO 24801. A diver should not be awarded a certificate to dive unless they have successfully completed this training with a recreational dive training organisation.

Certified divers

The dive operator should ensure the dive supervisor ensures each diver is assessed as being competent prior to diving. Factors to be considered should include:

- when did the diver perform their last dive
- when was the recreational certificate awarded
- the diving experience, including experience in relevant environmental conditions, of the diver since the certificate was gained (for example, as contained in logbooks)
- the diver's current medical fitness to dive.

If there are doubts as to the competence of the diver to complete a particular dive, a certified assistant or dive instructor should accompany the diver on that dive or assess the diver during an assessment dive.

Certified divers should be advised of the following:

- boundaries of the dive site
- environmental conditions and marine life at the dive site (for example, depth, terrain, currents, visibility and behaviour of marine animals likely to be encountered)
- health and safety issues relating to the vessel (for example, entry and exit points)
- health and safety issues relating to dive site entry such as a beach, jetty, pontoon, riverbank
- location and roles of supervisory staff (for example, dive instructors, dive supervisors, and lookouts)
- to regularly monitor air levels in gas cylinders and the minimum air content required for safe return to the surface (this advice would need to take into account the depth of the dive and exertion levels, for example, when diving against a current)
- to dive in dive buddy teams
- not to dive to depths greater than that to which they have been trained or have experience (as recreational diving workers should not be required to dive beyond 40 metres, certified divers should be advised that if they get into difficulty beyond this depth, their rescue may put a recreational diving worker at unacceptable risk)
- their responsibilities as divers to dive safely and comply with the instructions of the dive operator or people acting on the dive operator's behalf
- emergency procedures such as recall, distress and rescue procedures, and use of signalling devices.

Solo diving should only be conducted under the following conditions:

- that the solo diving activities are authorised by the dive supervisor (note: dive operator should ensure that the dive supervisor is aware of the dive operator's policies,

procedures and qualifications applicable for a person to be authorised for solo diving)
- that the diver is appropriately qualified for the solo diving activities (note: a prerequisite for solo diving should include a minimum of 100 logged dives, a solo diving certificate or equivalent certification (such as a self-reliant or independent diver), including technical diving certifications that ensure the diver has been taught self-rescuer techniques, and be a minimum of 18 years of age)
- that the diver is suitably equipped for the solo diving activities (note: suitable equipment shall include all the equipment listed for certified divers plus a redundant gas system, an alternative ascent system, a redundant depth gauge and bottom timer and any additional equipment so specified by the dive supervisor)
- that suitable solo diving procedures are in place (note: suitable procedures may include all procedures listed for certified divers including intended depth, planned bottom time, planned total dive time and any additional procedure so specified by the dive supervisor).

Depending on certain factors, such as the competency of the divers, environmental conditions and the nature of diving being undertaken, consideration should be given to offering other advice such as:
- the increased risk of decompression illness from multiple ascents or multiple dives in any 24-hour period or because of a series of dives over a number of days with inadequate surface intervals to allow the nitrogen to off-gas
- the risk to health and safety from nitrogen narcosis at depth and the need to move to shallower water if this occurs
- the danger of maximum bottom time non-decompression diving
- the risks of decompression diving
- the need for safety stops
- the risks associated with flying or altitude exposure after diving
- the effects of dehydration
- the risks associated with exertion after diving
- the risks associated with diving while ill
- who to contact in the event of feeling unwell after diving.

3.4 Equipment for diving

The dive operator should ensure diving equipment supplied to divers is:
- suitable for the type of diving being undertaken and of sufficient quality to ensure it performs effectively for the wearer
- supplied in an appropriate size range to ensure a suitable fit
- inspected by a competent person to ensure the diver's fins are fitted properly or remedy the situation (for example, use a fin retainer strap)
- checked before diving starts to ensure it is in safe working condition
- cleaned and kept in good repair
- maintained in accordance with manufacturers' specifications.

Oral/nasal equipment (such as masks, snorkels and regulators) should be disinfected prior to use by another person. This equipment does not need disinfecting if the same person is using the equipment over a period of time.

Non-certified divers engaging in recreational diving
All non-certified divers, other than those doing helmet diving, should wear the following equipment:
- fins suitably fitted or where not possible provide a control (for example, using a fin retainer strap)
- mask
- compressed air cylinder and valve designed specifically for SCUBA
- buoyancy control device fitted with a power inflator device

- regulator fitted with an alternate air source or an alternative air supply
- submersible depth and cylinder pressure indicators
- quick-release weight system
- exposure protection, as appropriate to conditions.

Entry-level certificate divers engaging in recreational diving
All entry-level certificate divers should wear:
- all equipment recommended for non-certified divers
- a snorkel (attachable or attached to the mask)
- submersible timing device during open water dives
- a knife, dive tool or shears if there is a chance of entanglement
- emergency signalling equipment, including a high visibility signalling device (for example, a safety sausage)
- an audible signalling device (for example, a whistle).

Certified divers engaging in recreational diving
All certified divers should wear:
- all equipment recommended for non-certified divers
- a snorkel (attachable or attached to the mask)
- submersible timing device during open water dives
- a knife, dive tool or shears if there is a chance of entanglement
- emergency signalling equipment, including a high visibility signalling device (for example, a safety sausage)
- an audible signalling device (for example, a whistle)
- a lighted signalling device (for example, a glow stick) if diving is to take place close to dusk or after dark
- a torch, if night diving is being undertaken.

Diving workers engaged in recreational diving
All diving workers should wear:
- all equipment recommended for non-certified divers
- a snorkel (attachable or attached to mask)
- submersible timing device
- a knife, dive tool or shears
- emergency signalling equipment, including a high visibility signalling device (for example, a safety sausage)
- an audible signalling device (for example, a whistle)
- a lighted signalling device (for example, a glow stick) if diving is to take place close to dusk or after dark
- a torch, if night diving is being undertaken
- slate and writing instrument.

Identifying missing certified divers
Several significant incidents have occurred where certified divers have surfaced and drifted for extended periods before being located and rescued. Some divers were experienced, and all were unguided.

Divers drifting at the surface are at risk from drowning, dehydration, hypothermia and injuries such as stings and bites caused by marine animals.

The dive operator should undertake an assessment of the risks of certified divers surfacing and becoming separated from their surface support.

Environmental factors that have contributed to incidents have included:
- remote location of the dive site from search and rescue facilities
- currents in the vicinity of the dive site

- poor surface conditions, visibility and swell
- reflection of sunlight (for example, near dawn and dusk)
- proximity to dusk.

In deciding on control measures to minimise this risk, consideration should be given to the types and performance characteristics of any equipment supplied to divers to minimise the risk of separation from their surface support.

Equipment that may assist in monitoring the location of divers during a dive includes:
- surface marker buoys.
- delayed deployment surface marker buoys.

Equipment that may assist divers to signal their location, once they are on the surface, include:
- electronic signalling devices (for example, electronic position indicating radio beacon, personal location beacon or VHF position indicating radio beacons)
- high visibility signalling devices (for example, safety sausages, flags, kites, heliographs/mirrors, flares, water dyes)
- audible signalling devices (for example, whistles, air horns)
- high visibility, reflective and coloured dive equipment
- radar reflective devices
- equipment suitable to signal after dark (for example, strobe lights, high power torches). (Note: A lighted glow stick is not a sufficient lighted signalling device for anything other than searches in the immediate vicinity of a dive site.)

Divers equipped with several different devices have a greater likelihood of attracting attention, particularly in the event of one system failing or when different search techniques are employed.

Divers should be instructed, including by practical demonstration, about when and how to use any signalling equipment.

Dive workers and unguided certified divers who are diving in adverse environmental conditions and are remote from search and rescue facilities should consider utilising an appropriate electronic signalling device. Consideration should be given to electronic signalling devices if other risk factors (such as strong current, poor surface conditions and lack of other vessels) are significant.

The equipment should be of sufficient quality to ensure it performs effectively. Plastic film-type safety sausages can develop holes even when unused, and therefore cannot be properly deployed.

The equipment should be checked before diving starts to ensure it is in safe working condition. It should be inspected regularly to ensure it is in good condition and will perform effectively if used. It should be cleaned, kept in good repair and maintained in accordance with manufacturer’s specifications.

Other administrative controls to minimise this risk include:
- assessments of certified divers’ skills and experience
- providing thorough advice about conditions and navigation
- enhanced lookout effectiveness
- increased surface supervision
- monitoring dive safety logs
- developing and implementing emergency plans for missing divers.

3.5 Gas quality in gas cylinders

The dive operator should ensure that:

- Compressed gas cylinders are filled, tested, operated and maintained according to manufacturers' instructions and the *AS 3848.2 - Filling of portable gas cylinders - Part 2 Filling of portable cylinders for self-contained underwater breathing apparatus (SCUBA) and non-underwater self-contained breathing apparatus (SCBA) - Safe Procedures*.
- Water content in the cylinders is monitored and the cylinders are checked and cleaned at regular intervals to prevent or minimise corrosion of the inner surface and to clean out any residues of corrosion.
- On any day that compressed gas cylinders are being used, samples of the air in the cylinders are 'sniff' tested to ensure the air has no objectionable or nauseous odour.
- Cylinders contain:
    - Oxygen (21±1)%
    - not more than 5 ppm of carbon monoxide
    - not more than 600 ppm of carbon dioxide
    - not more than 0.5 mg/m3 of oil.
- Cylinders are not filled to a pressure that exceeds the lesser of the working pressure ratings of either the valve, yoke or cylinder.

Compressors used to fill compressed gas cylinders should:

- be designed specifically for the purpose of filling compressed gas cylinders used by underwater divers
- be tested for gas quality every three months
- be operated and maintained according to manufacturers' instructions
- be positioned to minimise potential for overheating and so only clean, uncontaminated gas is taken into the compressor
- have filters which are in sound working order, so they effectively remove contaminants to stop them from entering the cylinders
- be monitored for water content within the compressor system to minimise the risk of moisture related filter degradation.

3.6 Decompression management

All dives should be planned conservatively and consistently to one set of recognised dive tables. Recognised dive tables are generally taken to be:

- any tables approved by a recreational scuba or dive training organisation;
- DCIEM tables;
- Buhlmann tables; or
- any dive computer used in accordance with manufacturers' instructions.

Dive tables and computers should be used as guides only for planning and executing a dive because individual differences of divers, dive profiles and dive site conditions may require a more conservative approach. An individual diver's susceptibility to the symptoms of decompression illness is not accurately predicted in the computer algorithms and dive tables. It is recommended that divers stay well within the no-decompression limits of any tables or computers used and, where possible, dive computers are set to more conservative personal limits. For example, psychological factors such as anxiety, individual physiological responses to changing pressure levels and physical activity, stress, multiple dives over multiple days and the state of hydration of a diver are associated with decompression illness.

After each dive, the dive supervisor should assist divers where necessary in reviewing decompression calculations and computers so that a safe profile can be planned for the next dive.

Air travel after diving
The longer the period between diving and air travel, the less likely it is that decompression illness will occur.

All divers should be advised, that after diving, they should wait a minimum of 12 hours before flying in pressurised aircraft after a single no compression dive. Where divers have done multiple dives in a day, multiple dives for several consecutive days or have made dives that require decompression stops, the minimum time before flying in pressurised aircraft after diving should be extended to 24 hours or more.

3.7 Diving depths

Diving workers engaged in recreational diving
The dive operator should ensure recreational diving workers dive within any depth limits stated on their medical certificate, and when compressed air diving, should not be required to dive to depths in excess of 40 metres.

Non-certified divers engaging in recreational diving
The dive operator should ensure non-certified divers do not dive beyond 12 metres.

Entry-level certificate divers engaging in recreational diving
The dive operator should ensure entry-level divers in training do not dive beyond 18 metres, and that children aged 10–11 do not dive beyond 12 metres.

Certified divers engaging in recreational diving
The dive operator should advise certified divers they should not dive deeper than the depth to which they have been trained or have experience at.

These divers should be advised that if they get into difficulty beyond 40 metres, a recreational diving worker using compressed air may not be able to come to their assistance.

3.8 Ascent training

The dive operator should ensure that a dive instructor does not teach ascent training to more than one class (eight students to one dive instructor or 10 students to one dive instructor and one certified assistant) in any 24-hour period.

3.9 Dive safety log

SRWA Regulation section 22 and 23: If a dive operator is providing a recreational diving activity or a recreational technical diving activity, they must ensure a written dive safety log for the diving activity is kept as required. The dive operator must authorise a person, other than a participant in the diving activity to verify the dive safety log and must keep the dive safety log for at least one year.

A dive safety log for a diving activity must state the following information for each dive carried out during the activity:
(a) the name of each diver who participated in the dive;
(b) if the dive is conducted using a system involving pairs or groups of divers to ensure mutual safety, the unique identifier used to identify the divers in the pair or group;
(c) whether the dive is conducted using a dive computer;
(d) the name of a person authorised by the dive operator to verify the dive safety log for the diving activity;
(e) the date and location of the dive;
(f) for each dive carried out by a diver who participated in the dive -
    (i) the time the diver left the surface at the start of the dive; and
    (ii) the time the diver surfaced at the end of the dive; and

(iii) the period of time between the diver leaving the surface at the start of the dive and
(iv) surfacing at the end of the dive; and
(v) the maximum depth reached by the diver

(g) any incident, problem, discomfort or injury experienced or suffered by the diver who participated in the dive.

SRWA Regulation section 24: if the dive was done using dive tables—the dive safety log must also state for each diver;
(a) the repetitive dive group for the diver; and
(b) if the repetitive dive group and surface interval result in a repetitive factor—the surface interval and repetitive factor for the diver.

SRWA Regulation section 25: If the dive will use EANx (either with scuba or rebreather), the following additional information is required:
(a) oxygen content of the EANx
(b) maximum operating depth at which EANx can be used.

If the dive will use mixed gas (either with scuba or rebreather), the following additional information is required:
(a) if the mixed gas partly consists of nitrogen—the oxygen and nitrogen content of the mixed gas
(b) maximum operating depth at which the mixed gas can be used
(c) minimum operating depth at which the bottom mix can be used.

At the end of the dive, each diver must verify their return by signing their log entry. The completed log entries and the diver's signature must be verified by the authorised person and the master of the vessel used for the dive, or another authorised person. All verifications may be made by signing the dive safety log or by using a unique electronic identifier if the log is kept electronically.

All entries in the dive safety log must be made as soon as possible. The signature of the diver is an important check on whether the diver has returned to the boat. Accordingly, the signature needs to be made as soon as the diver has removed necessary gear and dried their hands.

The dive safety log must be kept for at least one year after the dive.

During a dive, the log should be monitored so that missing diver situations are quickly identified. For example, if a 40-minute bottom time dive is planned and an accurate 'time in' is recorded, then the dive supervisor should be organising a response to a missing diver situation if the diver is absent for more than the bottom time, ascent time and stop time, that is 45 minutes.

3.10 Diver's log

Entry-level certificate divers
The dive operator should ensure people doing an entry-level certificate complete a diver's log for their own records. The diver's log should include:

- date of dive
- operation number of the dive, that is, sequential numbering of each of the dives for any one day
- location and nature of dive site (for example, boat or shore diving);
- environmental conditions at the dive site
- time in
- time out

- maximum depth of the dive
- bottom time
- the decompression tables or computer followed by the diver
- any emergency or incident of special note which occurred during the dive (for example, failure of diving equipment or emergency decompression)
- any discomfort or injury suffered by the diver
- depth and duration of a safety stop.

Diving workers and certified divers
The dive operator should advise all diving workers and certified divers to complete a diver's log for their own records.

4. Control measures for recreational snorkelling

4.1 Assessing snorkellers

Before snorkellers enter the water, they should be assessed to determine whether they may be at risk. This process is subjective and relies on the knowledge and skills of the snorkel worker. The assessment is not designed to stop potential snorkellers from participating in snorkelling activities but to identify which individuals are at risk and providing them with additional attention. This is a vital part of ensuring their safety by providing them with appropriate advice, equipment and supervision.

A dive operator should consider a person's snorkelling ability, fitness, medical history and confidence levels. Lookouts, guides and snorkelling supervisors should be able to gauge a person's general ability, fitness and confidence levels through discussion with the person and/or observation. For example, in observing a somewhat anxious, elderly person going snorkelling, it would be prudent to give closer supervision to that person until the snorkelling supervisor was satisfied that this close supervision was no longer required. The lookout in scanning the snorkelling area may deem it appropriate to observe this person a little more closely than other snorkellers who appear to be at lower risk.

The assessment can be completed in a number of ways including by:
- asking the participating group questions;
- talking with snorkellers individually;
- using an assessment form; or
- observing individuals or the group (for example, walk throughs or as passengers board the vessel).

Snorkelling workers should observe and record whether any participants:
- are either an older (over 45 years old) or a very young person (under 12 years old);
- are overweight
- appear to be in bad health (for example, with respiratory problems or particularly unfit)
- exhibit stressed or anxious behaviour (for example, appearing to be jumpy, hesitant, overly excited, fidgety or have shaking hands)
- have mobility issues
- have difficulties in readily understanding instructions from the crew.

Some example questions that can be asked to help determine whether a person intending to snorkel is at risk include:
- Do you have any medical conditions?
- Are you currently taking any prescribed medication?
- Do you smoke?
- Have you snorkelled before?

- Can you swim 100 meters comfortably?

Where the dive operator identifies an at risk snorkeller they should:
- make sure all workers know who they are and why they are at risk; and
- implement controls for managing at risk snorkellers (see section 4.3).

4.2 Medical fitness

SRWA Regulation section 12: Advice about medical conditions
The dive operator must ensure that a person does not participate in recreational snorkelling activity unless the person is advised that:
(a) snorkelling can be a strenuous physical activity and may increase the health and safety risks for persons suffering from
  (i) any medical condition that may be made worse by physical exertion, for example,
  (ii) heart disease, asthma and other lung complaints; or
  (iii) any medical condition that can result in loss of consciousness, for example, some forms of epilepsy and some diabetic conditions; or
  (iv) asthma that can be brought on by cold water or saltwater mist, and
(b) the person should tell a worker aboard the boat if the person has any medical condition.

Older people are more likely to suffer from diagnosed and undiagnosed medical conditions that may be made worse by physical exertion (for example, heart disease and stroke). As exact ages of people intending to snorkel are sometimes not available, the dive operator should advise all people intending to undertake snorkelling that there is an increased risk to older people (generally over 45 years).

The dive operator should be aware that some people may panic while snorkelling, especially if they are not experienced and/or they get into difficulty. Panic or strenuous activity can aggravate some medical conditions and certain medical conditions, such as heart disease, may result in cardiac arrest and death. Similarly, epilepsy may lead to unconsciousness and drowning and some medical conditions (e.g. asthma) are made worse through exposure to cold water or saltwater mist. Some medications such as insulin, tranquillisers and pain killers are also risk factors.

An example of a method of providing advice about medical conditions to prospective recreational snorkellers is available at Appendix 2 and on the WorkSafe website: https://www.worksafe.qld.gov.au/your-industry/diving-and-snorkelling.

Declarations for at risk snorkellers
Where a person is identified as an at risk snorkeller, the dive operator may require the person to complete a declaration and request they advise the snorkel worker if they have any medical conditions. A sample declaration is provided at Appendix 3 and on the WorkSafe website: https://www.worksafe.qld.gov.au/your-industry/diving-and-snorkelling.

The completed declaration should be considered by the dive operator or someone on their behalf (such as a snorkelling supervisor) to determine what advice, equipment and supervision should be given to the person to assist in their safe participation.

4.3 Control measures for at risk snorkellers

Where a person is identified as an at risk snorkeller, the dive operator should ensure they:
- are easy to identify in the water to assist in providing closer supervision
- wear and/or use a flotation device; and
- snorkel in a buddy pair.

Where the person refuses to comply with any reasonable instruction by the dive operator or a worker on the dive operator's behalf, to use control measures for their safe participation, the dive operator should refuse to allow the person to participate in the snorkelling activity.

Snorkellers must comply, so far as the person is reasonably able, with any reasonable instruction that is given by the dive operator, or a worker on the dive operator's behalf, to allow the dive operator to comply with the SRWA Act and SRWA Regulation.

System for easy visual identification of at risk snorkellers
Operators should have a system in place to provide the lookouts with an easy visual identification of at risk snorkellers while they are in the water (for example, different coloured vests, wetsuits, snorkels, or noodles, or flotation jackets).

Snorkelling equipment is usually available in bright colours. Using the same colour snorkels, fins or masks, or attaching coloured ribbons is a simple way to clearly identify and easily supervise at risk snorkellers.

Flotation devices for at risk snorkellers
Flotation devices used for snorkelling include personal flotation devices, snorkel jackets, boards, life rings and tubes (such as noodles).

All at risk snorkellers should be directed to wear and/or use a flotation or other device which is able to support the snorkeller in a relaxed state. Snorkel workers should assist at risk snorkellers with these devices by demonstrating their use and advising that it will help them as a control to relax in the water.

Generally, all flotation devices can provide some support for snorkellers and minimise the stress of maintaining their position in the water. However, a panicking snorkeller will receive better flotation support from a personal flotation device compared to a noodle.

Snorkel guides should always have a flotation device on hand that can be given to a snorkeller who appears to be tired or distressed.

Snorkelling in a buddy pair
At risk snorkellers should, so far as is reasonably practicable, be directed to snorkel in a buddy pair and remain in a pair arrangement for the duration of their time in the water. People should be advised that, where they become separated from their buddy, they should attempt to locate their buddy in the first instance. Where an at risk snorkeller has been identified as snorkelling alone they should be directed by the snorkel worker to return to the vessel or to the snorkel supervisor until their buddy is located.

In addition, at risk snorkellers should also be directed to snorkel in an area which allows the lookout or snorkelling supervisor to offer closer supervision.

4.4 Supervision of snorkellers in open water

Snorkelling guides

SRWA Regulation 19: Guides for recreational snorkelling activities
Despite section 18, the dive operator may allow the activity to be provided without a person acting as a lookout only if:
(a) the dive operator or a worker on the dive operator's behalf:
    (i) conducts a proper risk assessment of the risks involved in not having a lookout; and
    (ii) decides, having regard to the risks, it is reasonable not to have a lookout; and
(b) the activity is supervised by a guide; and
(c) the guide is supervising no more than 10 snorkellers who participate in the activity; and
(d) while the snorkellers are snorkelling during the activity, the guide complies with the requirements stated in section 20.

A snorkelling guide takes a snorkeller or small group of snorkellers on a guided recreational snorkelling recreational activity. The guide should be either in the water with the snorkellers or in a vessel close enough to the snorkellers so communication between the guide and the snorkellers is easily maintained.

The snorkelling guide should:

- be able to swim and snorkel adequately
- carry out an assessment of snorkellers before commencement of the activity and through discussion with any prospective snorkeller, the guide should assess the health, fitness and snorkelling ability of the person
- before commencing the activity, require participants to demonstrate their ability to effectively clear their mask and snorkel of water and correct where necessary
- take small groups only on any snorkelling activity. In deciding the size of any snorkelling group, the guide should consider the health, fitness and snorkelling ability of the people and the environmental conditions
- ensure the snorkelling activity has a specific beginning and end so that snorkellers know when they are under the supervision of a snorkelling guide
- take a floatation device on the tour so that a snorkeller can use this to rest if required. The floatation device should be able to easily support at least one person
- take a head count regularly during the activity
- divide snorkellers into buddy pairs and request they look out for one another
- use a communication system with snorkellers, lookouts, snorkelling supervisors and any other relevant personnel so that effective and efficient transfer of information can occur. A communication system may include ordinary voice communication, two-way radios, whistles or signalling
- if required, rescue a snorkeller or direct a person who is immediately available and capable of rescuing a snorkeller, to rescue a snorkeller
- have a level of fitness so their health and safety are not compromised if required to carry out or assist in a rescue
- if required, provide first aid including cardiopulmonary resuscitation, and oxygen therapy or resuscitation or directs a person who is immediately available and capable of providing the first aid, to provide the first aid
- follow the procedures in relation to the co-ordination of supervision and of the rescue and resuscitation of snorkellers
- be aware of which snorkellers intend to free dive and provide them with additional levels of supervision.

Risk assessment to determine risks involved in not having a lookout and conducting the snorkelling activity with a guide only

It is preferable for dive operators to have a lookout for snorkelling activities to minimise risks. However, a dive operator may allow the snorkelling activity without a lookout if the dive operator or worker conducts a risk assessment of the risks involved in not having a lookout and decides that it is reasonable to have a guide only. If the recreational snorkelling activity is conducted with a guide only, the guide must supervise no more than 10 snorkellers. The risk assessment to determine if it is reasonable to have a guide only should include:

- an assessment of participants snorkelling ability to participate in the activity considering the health, fitness and snorkelling ability of the person
- the current and predicted weather and surface conditions
- an emergency plan that can provide a timely response to a snorkeller in difficulty, considering the size of the dive site and available personnel
- consideration not to allow a person to participate in the snorkelling activity, if the assessment suggests this person’s participation would pose an unacceptable health and safety risk to the person or to other people.

4.5 Appropriate skills and knowledge

Snorkel workers

All snorkelling workers must be competent to undertake their designated duties. A competent person has acquired the knowledge and skills to carry out their duties through training, qualifications, experience or a combination of these.

The dive operator must provide suitable and adequate information, training and instruction to their snorkel workers. This should include ongoing training and supervision of their workers to maintain and improve their competence to perform lookout duties, supervisor duties and guide duties.

There should be a snorkelling supervisor appointed whenever people are in the water and this snorkelling supervisor should have appropriate experience for the activity and area supervised.

Briefing snorkellers

Dive operators and workers may provide information and advice to snorkelling customers through a briefing, and this can be combined with:

- distributing brochures, signs and posters
- using illustrated charts, diagrams and site photographs
- showing safety films to snorkellers
- providing translated materials where required.

Key safety messages for all recreational snorkellers should include:

- there are serious risks associated with certain medical conditions, especially cardiac conditions
- snorkelling with a paired buddy improves your safety
- know your own ability and snorkel accordingly.

Key safety messages for at risk snorkellers should include:

- use a flotation device to reduce your physical exertion in the water
- snorkel with a buddy or as a part of a guided tour
- stay close to supervising staff or other support and signal if help is required.

The health and safety of snorkellers can be at risk if they have inadequate knowledge, skills or experience related to snorkelling. For instance, some people may panic while snorkelling. Panic can contribute to poor decision making, breathing difficulties and fatigue. Instruction and advice can help reduce the likelihood of snorkelling-related panic and accidents.

Before snorkelling, snorkellers should be given advice about the selecting and using snorkelling equipment including:

- how to adjust and fit masks, snorkels and fins
- how to clear water from the mask and snorkel
- how to use masks, snorkels and fins
- what to do in the case of equipment failure.

Where appropriate, demonstrations should be used to enhance understanding and those with little or no experience should be assessed on these skills before commencing.

Advice on the dive site and snorkelling environment

The dive operator should ensure advice on the dive site and snorkelling environment for snorkellers covers:

- the dive site and any relevant environmental conditions (for example, boating channels, marine animals, wind and tide strength and direction)
- location of lookout/s and snorkelling supervisors
- location and use of flotation devices such as buoys and rest stations

- practising snorkelling beside a platform, boat, or in shallow water before venturing further away
- snorkellers being aware of their own limitations in the water and taking these into account when snorkelling
- the location and availability of snorkel jackets, wetsuits or other flotation devices which can be used by snorkellers
- the communication system and signals between lookouts/snorkelling supervisors and snorkellers, for example, signals a snorkeller can use to indicate they require assistance, or how snorkellers are advised when to return to the vessel
- how to lift and keep the face clear of the water by moving into an upright position
- how to use the buddy system whereby two snorkellers ensure they are always snorkelling within a short distance of each other, and they watch out for one another
- if people have not snorkelled before, cannot swim, or have any concerns about snorkelling they should discuss these with a snorkelling supervisor prior to snorkelling
- abstaining from drinking alcohol prior to snorkelling
- managing the risks of sun exposure or hypothermia (if appropriate), using clothing, sunscreen, wetsuits and covering up from the wind on leaving the water.

If snorkellers intend to free dive (otherwise known as breath hold dive), the advice should also include:

- the risk posed to free divers of hypoxic blackout, which, if undetected, will lead to serious injury, unconsciousness, or death
- the risk of hypoxic blackout is increased significantly for free divers who hyperventilate by taking repeated deep breaths before descending or who do deep dives. Snorkellers should be strongly advised not to hyperventilate in this manner
- experienced free divers are at particular risk in that they do longer and deeper dives
- free divers should always dive in buddy pairs where one buddy remains on the surface and observes the other buddy whilst they are free diving
- free divers using weight-belts should be carefully weighted to ensure that they are neutrally or positively buoyant whilst at the surface. The weight belts should have a quick release mechanism and free divers should be familiar with its operation.

4.6 Equipment for snorkelling

The dive operator should ensure snorkelling equipment supplied to people snorkelling is:

- suitable for the type of snorkelling being undertaken and of sufficient quality to ensure it performs effectively for the snorkeller
- supplied in an appropriate size range (including children’s sizes) to ensure a good fit
- checked before snorkelling starts to ensure it is in safe working condition
- cleaned and kept in good repair
- maintained in accordance with manufacturers’ specifications.

Oral/nasal equipment (such as masks and snorkels) should be disinfected prior to use by another person, that is, it does not need disinfecting if the same person is using the equipment over a period of time.

All snorkellers should wear the following equipment:

- fins
- mask;
- snorkel (attachable or attached to the mask); and
- exposure protection, as appropriate to conditions.

5. Recreational technical diving – additional requirements

5.1 Recreational technical diving using EANx or mixed gas

This part of the code offers advice to dive operators including self-employed operators and workers in the recreational technical diving industry on how they can make recreational technical diving using EANx a safer activity. This part of the code must be read in conjunction with all other sections of this code. This part outlines some control measures which can be used to manage specific risks related to recreational technical diving using EANx or mixed gas.

Diving using gas other than air

The dive operator should ensure:

- recreational technical diving does not take place unless an EANx dive supervisor is present at the dive site
- if the diver is undertaking recreational diving using EANx, that the diver is a certified EANx diver, unless the diver is undertaking training for the purpose of certification as an EANx diver in accordance with this code
- if the diver is undertaking recreational diving using mixed gases, that the diver is a certified mixed gas diver, unless the diver is undertaking training for the purpose of certification as a mixed gas diver in accordance with this code
- oxygen partial pressure exposure times are not exceeded
- the diver has identified the maximum operating depth for the breathing gas being used
- before a breathing mixture is used, the diver conducts a gas analysis to verify the O2 content. The results should be recorded in the EANx dive safety log and on the cylinder
- divers comply with the requirements of the relevant recreational dive training organisation standards. Training agency standards are diver training standards developed by technical dive training organisations, such as PADI, SSI, RAID, TDI/SDI and NAUI, or those based on the minimum international standards recognised by the World Recreational Scuba Training Council.

Rebreathers should not be used for introductory experiences or non-certified dives in open water.

Requirements for EANx rebreather diving

The dive operator should ensure that EANx rebreather diving does not take place unless the EANx dive supervisor is present at the dive site. The dive supervisor should ensure each rebreather diver conducts the following checks/tests on their rebreather unit:

- check the rebreather unit scrubber is operational and not expired
- check the unit’s flow rate
- test the mouthpiece check valves
- check the bypass valve functions, if applicable
- conduct a positive pressure test
- conduct a negative pressure test
- analyse the gas supply
- check that the analyser is in test
- check the redundant gas supply system is working
- check the oxygen partial pressure monitor, if applicable.

Qualifications and experience of an EANx dive supervisor

The dive operator should ensure the EANx dive supervisor:

- is trained and certified by a recreational scuba training organisation to supervise diving;

and
- is qualified as an EANx diver.

Pre-dive checks and emergency procedures
The dive operator should ensure the divers are consulted about:
- the dive plan
- dive objectives
- maximum depth for the breathing gas
- loss of breathing gas procedures
- buddy separation procedures
- safety requirements
- emergency procedures, including the location of and contact procedures for the nearest recompression facilities
- checking the position and correct operation of their own equipment and that of their buddy
- omitted decompression procedures.

Manufacturers' recommendations and/or specifications
The dive operator should ensure manufacturers' recommendations and/or specifications are followed in respect of:
- pre-dive checks and emergency procedures
- carbon dioxide scrubbers.

Blending, testing, storage and use of EANx
If EANx is blended, tested, stored or used at the workplace, the dive operator should ensure:
- EANx gas mixing and EANx cylinder filling are carried out by a competent person
- all equipment associated with the filling or use of EANx is used in accordance with manufacturers' recommendations
- all scuba cylinders to be used for the storage of EANx are clearly marked "NITROX"
- prior to using an EANx cylinder, the O2 content in the cylinder is tested by the diver
- after testing, a tag/decal is completed by the diver and is attached to the cylinder showing:
  - oxygen percentage
  - maximum operating depth of the gas mixture
  - cylinder serial number, in case the tag is separated from the cylinder.

Blending, testing, storage and use of mixed gases
The dive operator should ensure:
- all gas blending is undertaken by a competent person in the blending of gases to produce underwater breathing mixtures
- all equipment associated with the filling or use of mixed gases is to be used in accordance with manufacturers' recommendations
- all cylinders to be used for the storage of mixed gas are clearly marked as to their contents
- prior to using a mixed gas cylinder, the O2 content in the cylinder is tested by the diver
- after testing, a tag/decal is attached to the cylinder showing:
  - oxygen percentage
  - calculated nitrogen percentage
  - calculated helium or other gas percentage
  - minimum operating depth of the gas mixture
  - maximum operating depth of the gas mixture
  - cylinder serial number, in case the tag/decal is separated from the cylinder.

5.2 Decompression diving (using air or other gases)

This section of the code offers advice to dive operators including employers, self-employed people and workers in the recreational technical diving industry, on how they can make decompression diving a safer activity. This part outlines some control measures which can be used to manage specific risks related to decompression diving.

Diver surface support station when doing decompression diving

Where decompression diving is taking place, the dive operator should ensure there is a diver surface support station, and that the following equipment is available from this station:

- emergency breathing gas positioned for use during decompression
- a device for the purpose of controlling position and maintaining ascent rate during decompression, for example, an ascent line
- a copy of each dive team's dive plan
- a copy of each diver's calculated gas consumption requirements for the dive, showing adequate gas supplies to safely complete the required dive profile without the use of the diver's redundant gas system.

Surface support

The dive operator should always ensure that when divers are in the water that there is on the surface:

- a person trained and competent in the operation of all emergency equipment on the diver surface support station;
- a person who is fully aware of the dive plan for each dive team; and
- if the station is a boat, a person capable of controlling the vessel.

The number of support personnel required should be determined during the risk assessment. Consideration should be given to all factors which influence the degree of risk, including the maximum number of divers in the water at any time, the prevailing conditions, the location and nature of the dive site and the level of experience of divers.

Equipment

The dive operator should ensure that all divers undertaking decompression diving are equipped with an alternate ascent system and a redundant gas system.

Maximum exposures to decompression diving

The dive operator should ensure dives are planned so that divers are not exposed to:

- oxygen in the mixture being breathed at any time more than of a partial pressure of 1.4 bar; and
- nitrogen in the mixture being breathed at any time more than a partial pressure of 5.0 bar while diving.

Prerequisites for divers doing decompression diving to depths of 40 metres or less on gas

The dive operator should ensure that any diver undertaking decompression diving on gas to depths of 40 metres or less has successfully completed:

- a course in decompression diving; or
- 10 logged decompression dives.

If a diver cannot meet either of these requirements and still intends to do decompression diving, the diver should be accompanied on any decompression dive by a dive supervisor or dive instructor competent in decompression diving on gas.

Prerequisites for divers doing decompression diving to depths over 40 metres on gas

The dive operator should ensure that any diver undertaking decompression diving on gas to depths over 40 metres has successfully completed a course in decompression diving.

6. Additional guidance on certain matters

The following provides information on certain important health and safety issues relating to diving/snorkelling and other general hazards relevant to dive operators.

6.1 Decompression illness

As a diver descends, the increased pressure means additional nitrogen from the gas supply will be dissolved in their body tissue. During ascent, the surrounding pressure decreases and the dissolved nitrogen begins to leave the body. As long as the ascent is sufficiently slow (with any required decompression stops), the excess nitrogen should remain dissolved and bubble formation minimised. The body tolerates a small amount of bubble formation, however, decompression sickness occurs if sufficient bubbles form to cause signs and symptoms. These bubbles can cause tissue damage and damage and block blood vessels, disrupting blood flow to vital organs.

Once these bubbles form, a further decrease in pressure such as travel over mountains or in aircraft will expand the bubbles.

Bubbles can also enter the circulation after a pulmonary (lung) barotrauma, described below. This is called arterial gas embolism (AGE). As the signs and symptoms of AGE are hard to differentiate from decompression sickness, and the first aid and treatment are identical, the term *decompression illness* is used to encompass both and simplify management.

Symptoms of decompression illness

Symptoms of decompression illness in divers include:

- extreme fatigue and malaise (feeling unwell)
- pain in the joints and muscles
- numbness and tingling
- headache
- weakness
- mottled red/purple rash
- dizziness and nausea.

Medical advice should always be sought if symptoms are displayed.

Factors which can contribute to development of decompression illness

Decompression illness can arise after any diving even when diving has been carried out within the limits of standard decompression tables. Susceptibility to decompression illness varies among individuals, however, some factors which can contribute to the development of decompression illness include:

- poor physical condition/fatigue
- divers with the condition ‘patent foramen ovale’
- fractures
- chronic injuries or recent bruises or strains
- obesity (overweight people are at higher risk)
- age (older people are at higher risk)
- cold (diving in cold conditions makes decompression illness more likely)
- dehydration
- heavy physical exertion before, during or soon after a dive
- drinking alcohol or taking certain drugs before or after a dive
- prolonged hot showers after a dive
- previous incidences of decompression illnesses
- depth (in general, the deeper the dive the greater the risk, although decompression illness has occurred in divers diving to depths of less than 10 metres);

- decompression diving
- carrying out free or buoyant ascent training
- multiple ascent diving
- multiple dives over multiple days
- prolonged dive times
- repetitive diving
- short surface intervals
- rapid ascent
- carbon dioxide excess
- increase in altitudes shortly after diving (for example, undertaking air travel or travelling over mountains).

6.2 Nitrogen narcosis

Nitrogen narcosis can result from breathing nitrogen under pressure. The effect increases with depth and affects individuals differently. Nitrogen narcosis affects reasoning, judgement, memory, perception, concentration and coordination. It may lead to over confidence, anxiety or panic depending on the individual, the circumstances and the depth. Survival instincts and responses may be suppressed. If the dive is unchallenging and uneventful, the narcotic effects of nitrogen narcosis may not be evident. A diver failing to follow instructions or the dive plan, or being inattentive to buoyancy, air supply or buddy signals may be suffering from nitrogen narcosis.

Diving on air at or beyond 30 metres significantly increases the risk of nitrogen narcosis. Nitrogen narcosis can develop when diving in shallower depths, but is less likely to be evident, that is, a diver may not be aware that they are affected by nitrogen narcosis and/or it may not be evident to an observer. Safe diving beyond 30 metres requires an awareness of the increasing risk of this condition and its symptoms, and the practices required to reduce the symptoms and the associated likelihood of an accident. Nitrogen narcosis is directly related to diving at depths and diminishes as a diver ascends to shallower water. If a diver begins to be affected by nitrogen narcosis, then immediate ascent to shallower depths, considering decompression requirements and safe ascent rates, is required.

Factors known to increase the effects of nitrogen narcosis include:

- fatigue or heavy work
- anxiety, inexperience or apprehension
- the diver feeling cold
- poor visibility
- carbon dioxide excess
- recent alcohol intake or use of sedative drugs (including sea sickness medications or marijuana).

6.3 Barotrauma

Barotrauma is an injury caused by pressure differences between air-containing cavities of the body and the environment. Examples of air-containing cavities at risk of barotrauma include the ears, sinuses, lungs and the face-mask cavity.

During descent in underwater diving, the external pressure is greater than the pressure within air-containing cavities. For example, if a diver cannot or does not equalise the ears during descent, then a perforated eardrum can result.

When a diver ascends, the external pressure is less than the pressure within an air-containing cavity, for example, the lungs. If the diver does not exhale on ascent and/or makes a rapid ascent, the lungs will expand as the volume of gas increases. It can result in lung tissue being so overstretched that it tears at its weakest point with gas escaping through this tear and entering surrounding tissues or the bloodstream. If the gas enters the

bloodstream, it may lead to arterial gas embolism which can result in stroke-like symptoms or other neurological conditions which typically appear within 15-20 minutes of surfacing.

As the greatest pressure changes occur near the surface, the diver is most at risk of barotrauma within the first 10 metres.

6.4 Panic

Panic is a contributor to many recreational diving and snorkelling deaths. As anxiety increases, panic can develop and a person diving or snorkelling reduces their capacity to think rationally and may focus on only one act or goal while forgetting about other important requirements. For instance, a panicked diver might focus on reaching the surface but forget to exhale during ascent.

Factors which can play a role in the development of panic include:

- equipment problems such as low air and ill-fitting equipment
- environmental hazards such as cold water, poor surface conditions, strong currents, deep diving, marine animals and poor visibility
- personal factors such as fatigue, medical or physical unfitness, seasickness, alcohol intake, inexperience, excessive general anxiety, phobias, diving accidents, dizziness or disorientation
- inadequate instruction and training of persons diving/snorkelling.

Effective explanation and training in relation to all relevant aspects of diving and snorkelling can help minimise the likelihood of panic. Additionally, it is important for a person diving/snorkelling to know their limitations and to stay within these. While the person displaying anxiety and lack of confidence may be readily noticed and can be more thoroughly trained, more carefully monitored, given more assistance or advised not to engage in diving/snorkelling, also at risk is the overconfident person diving/snorkelling who is out of touch with, or concealing their real capabilities and concerns.

6.5 Immersion Pulmonary Oedema (IPO)

IPO is a condition where the lungs fill with fluid, the person struggles to breathe and consequently the body struggles to get enough oxygen. It is caused by changes in hydrostatic pressure and breathing resistance when a body is immersed in water. People who suffer high blood pressure (hypertension) and other cardiac conditions are particularly susceptible to IPO.

Symptoms

The onset of IPO can be sudden and is usually precipitated by a feeling of breathlessness. Divers/snorkellers with breathing difficulties may have uneven or rapid breathing. Divers will often signal a problem with their regulator or ’out of air’ and may reject an alternate air source when provided. Snorkellers may move upright in the water and remove their snorkel from their mouths. Uncontrolled coughing is also an indicator that a person may be suffering IPO. It often starts as a small tickle in the back of the throat but is persistent and can’t be resolved. Sufferers of IPO may often cough up bloodstained frothy sputum. They may also describe a tightness in the chest and crackling and wheezing sounds may be heard from their lungs. The reduction in oxygen will often cause cyanosis (blueness of lips and tongue), confusion and people suffering IPO may appear to be intoxicated or function abnormally. IPO can be fatal and needs to be managed promptly.

Action required

The primary treatment is to remove the person from the water and place them on oxygen as quickly as possible to reverse the effects caused by immersion and increase oxygenation. If conscious, they should be kept in a comfortable position, often sitting or semi-reclined to assist their breathing. The person should be provided with high concentration oxygen as soon as possible. This should be delivered by constant flow rather than a demand valve to

reduce breathing resistance. IPO sufferers often improve when provided with oxygen. An individual who has experienced IPO should be taken to hospital for further assessment and treatment.

6.6 Marine stingers

Australia's marine and estuarine environment is home to some harmful jellyfish collectively known as marine stingers. The sting from marine stingers can cause discomfort, and some of the tropical waters' species such as the (multi-tentacled) box jellyfish and Irukandji can be lethal.

Caution must be exercised when entering Australia's tropical waters. Whilst marine stingers may be present throughout the entire year in tropical waters, the risk associated with dangerous jellyfish are higher during the marine stinger season that typically runs from November through to May.

Dive operators should supply protective swimwear when a marine stinger risk exists. Protective swimwear (such as full body lycra body suits or neoprene wetsuits) offers a high degree of protection against marine stings as well as sunburn. It is possible to be stung on exposed skin, such as hands, face and feet, but most stings occur on parts of the body that are typically covered by protective swimwear.

Protective swimwear designed specifically to reduce the incidence of a marine sting include the following properties:

- a mesh size no greater than 200 microns (1/5th of a millimetre);
- synthetic smooth fabrics as there is less of a chance that tentacles will stick, possibly leading to secondary marine stings
- coverage of over 75 per cent of the body's skin surface.[1]

Protective swimwear should also be regularly inspected for holes, loose threading, broken or damaged zippers and other signs of decreased effectiveness, and, where required, replaced or repaired.

Symptoms and treatment for marine stings

For information on symptoms and first aid treatment of marine stings, including stings from box jellyfish and Irukandji, visit the Australian Resuscitation Council and New Zealand Resuscitation Council website: https://www.anzcor.org/.

6.7 Sharks

Sharks live along the Queensland coast, including in the Great Barrier Reef, estuaries, rivers and canals. In Queensland, there are several species of sharks that are considered dangerous to humans, including tiger sharks (*Galeocerdo cuvier*), bullsharks (*Carcharhinus leucas*) and great white sharks (*Carcharodon carcharias*). There have also been shark bite incidents associated with several other species so any large sharks (over two meters in length) should be treated with caution.

It is not possible to completely remove the risk of a shark bite incident while diving or snorkelling but there are certain actions that can minimise the risk:

- diving or snorkelling at times other than dawn or dusk
- diving or snorkelling in clear water (avoid murky water, busy anchorages, estuary mouths or canals where possible)
- snorkelling or diving with another person
- follow local signage (may provide information on recent shark sightings or common locations where sharks are found in the area);
- be cautious in or avoid areas where there have been prior shark bite incidents

[1] https://lifesaving.com.au/safety-info/marine-stingers

- be cautions in or avoid diving or snorkelling where there is bait fish activity and/or diving birds;
- be cautious if fish are suddenly diving, dispersing or appearing agitated (this may indicate a shark is nearby);
- consider wearing a shark deterrent product which has been independently tested and verified
- avoid diving or snorkelling near where fish are being fed or where people are fishing, cleaning fish, throwing scraps into the water or burleying
- do not thrash or splash in the water
- avoid wearing reflective jewellery.

What to do if a large and/or aggressive shark is seen while diving or snorkelling
If divers or snorkellers encounter a large or an aggressive shark:
- keep body movements calm and controlled (erratic movement can increase the risk of a shark bite incident); and
- keep watching the shark and move to the nearest egress point as soon as possible.

6.8 Plant

In the recreational diving and snorkelling industry, plant includes compressors, scuba tanks, regulators, hoses, buoyancy control devices, life jackets, masks, snorkels, fins, wet suits, tenders, motors, rubbish bins as well as any machinery and equipment on board vessels, such as cranes, inflatable dinghies, outboard motors, kitchen equipment and appliances.

Injuries which can result from the use of or exposure to plant include lacerations, amputations, fractures, crush injuries, burns and bruising.

Control measures to prevent or minimise the risk of injury from plant
The dive operator should ensure:
- plant is being used properly and safely
- plant that has been modified has not created risks to people's health and safety
- plant is serviced, maintained and tested according to manufacturers' instructions and appropriate records are kept of this servicing, maintenance and testing
- operators are trained, and where required, hold current relevant certificates
- workers and visitors wear appropriate protective equipment if no other protection is possible
- adequate and appropriate guarding is installed to prevent people coming into contact with moving parts, for example, propeller guards are attached to the motors of tenders and rescue vessels
- health and safety information on plant from manufacturers, importers and suppliers is obtained when the plant is purchased and is available at or near where the plant is used.

For more information on how to manage the health and safety risks of plant, refer to the *Managing Risks of Plant in the Workplace Code of Practice 2021*.

6.9 Noise

Excessive noise can result in hearing loss. It can also create other problems such as stress leading to tiredness, irritability and headache. It can cause dizziness, raise blood pressure and increase heart rate. Noise increases the risk of accidents by disguising sounds of approaching danger or warnings and affects balance, concentration and communication among people.

Excessive noise is defined in two parts as noise in excess of the exposure standard, namely:
- an eight-hour exposure of 85 dB(A) which refers to an average of the total sound energy of 85 decibels received over eight hours; and

- a peak value of 140 dB (lin) which represents the upper limit of 140 decibels to which a person may be exposed at any time. This level of noise can cause immediate hearing damage.

If it is necessary to raise your voice to be heard by others who are less than a metre away, noise will most likely be a hazard at your workplace. On a vessel, however, wind may also make voices hard to hear.

Control measures to prevent or minimise the risk of exposure to noise
The dive operator should ensure:
- noise emission data are obtained from suppliers and that suitable plant with the lowest noise level is selected
- devices which will reduce noise, such as mufflers or specially designed mats under motors, are used where appropriate
- noisy equipment is separated from people by enclosing it, for instance, in a sound-proofed area
- regular maintenance on plant is carried out
- work practices are arranged so people spend a limited time in a noisy environment
- personal hearing protectors are provided. These should be supplied to people in the area where noise is excessive and when other measures to reduce the risk of hearing loss are not suitable. Training in the use of these protectors should be provided. The selection of hearing protectors should ensure they are appropriate to the wearers, the work environment and to the type of noise in the workplace
- areas where noise is excessive are signposted. These are areas that have noise levels above 85 dB (A) over an eight hour period. These areas should be signposted as “hearing protection areas” and the boundaries clearly defined. No person should enter a “hearing protection area” during normal operation, even for brief periods, unless appropriate personal hearing protectors are worn.

For more information on how to manage the health and safety risks of noise, refer to the *Managing Noise and Preventing Hearing Loss at Work Code of Practice 2021*.

6.10 Hazardous chemicals

Exposure to hazardous chemicals can lead to skin complaints, loss of feeling to fingers and toes, external or internal burns, respiratory complaints, cancer and death. Hazardous chemicals are used widely in workplaces and PCBUs should take care to identify what, if any hazardous chemicals are present.

Hazardous chemicals include:
- acidic or caustic cleaning products
- chlorine
- anhydrous ammonia (a refrigerant)
- flammable chemicals such as fuels, oils, gases and lubricants.

Control measures that must be implemented to prevent or minimise the risk of exposure to hazardous chemicals
If hazardous chemicals are used at the workplace, a PCBU (such as a dive operator) must:
- keep a register which contains a list of all hazardous chemicals used at the workplace and the current Safety Data Sheet (SDS) for each hazardous chemical used. SDSs can be obtained from chemical suppliers. Manufacturers, importers or suppliers of chemicals must show that the health and safety effects of the chemical have been established and they must make this information available
- undertake a risk assessment
- ensure all hazardous chemical containers are labelled so the contents can be readily identified and used correctly. A hazardous chemical must not be transferred from one container to another unless the new container is properly labelled. A hazardous

chemical should not be transferred if there is a risk that it will react with the new container or residue in the container
- make relevant information available to all people who could be exposed to a hazardous chemical. A copy of the SDS must be kept close to where any hazardous chemical is being used so a worker who may be exposed can easily refer to the SDS
- train all workers who may be exposed to a workplace hazardous chemical in the safe use of that hazardous chemical and keep records of this training.

Control measures that should be implemented to prevent or minimise the risk of exposure
A PCBU (such as a dive operator) should:
- remove the hazardous chemical, wherever possible, or replace it with a chemical which is less hazardous
- keep the work area well-ventilated by opening doors and windows and/or using extraction ventilation systems so vapours and dust are kept to a minimum
- provide proper storage facilities for hazardous chemicals
- have emergency planning arrangements in case an emergency involving hazardous chemicals occurs
- apply the precautions for use, and safe handling information from the relevant SDS.

For more information on how to manage the health and safety risks of hazardous chemicals refer to the *Managing Risks of Hazardous Chemicals in the Workplace Code of Practice 2021* and the *Labelling of Workplace Hazardous Chemicals Code of Practice 2021*.

6.11 Manual tasks

Manual tasks can lead to strains, sprains and serious long-term injuries to various parts of the body including the back, shoulders, arms and hands.

Manual tasks include lifting, carrying, lowering, pushing, moving, holding or restraining any object, as well as working in the same position or holding the same posture for long periods, particularly when bending or reaching is involved.

Manual tasks in the diving/snorkelling industry include:
- assisting people out of the water
- rescuing people in difficulty
- kitchen work/catering
- moving equipment such as oxygen cylinders and scuba tanks
- working in awkward positions, particularly in small spaces
- manual tasks carried out on unstable, moving surfaces or in adverse environmental conditions (for example, on a small inflatable vessel).

Control measures to prevent or minimise the risk of injury from manual handling
The PCBU (such as the dive operator) should ensure:
- mechanical handling equipment is used where possible (for example, tank trolleys, mobile gear crates, mobile belt loaders onto floating vessels, cranes on vessels for tender vessel and equipment transfers);
- tasks are varied or, where repetitive tasks are carried out for long periods, rest periods or tasks rotation are used to break-up any length of time spent on the repetitive activity (for example, split the filling of tanks with other tasks);
- items which are used frequently, are stored or shelved between knee and shoulder height (for example, stacking tanks on a boat in storage racking);
- the majority of tasks carried out by standing workers are at waist height and within easy reach;
- workplace layout is designed so twisting movements are kept to a minimum
- adequate training in the preferred methods of manual handling are provided and supervision is available to workers

- where mechanical aids and assistive devices cannot be used, team lifting can be used where workers are suitably selected and trained in the handling methods (for example, team handling of an inflatable vessel at the waterline onshore)
- incorporating an in-house work preparation program, such as an exercise program, to suit workers' tasks. The effective use of such a program would require expert advice.

For more information on how to manage the health and safety risks of manual tasks, refer to the *Hazardous Manual Tasks Code of Practice 2021*.

6.12 Confined spaces

Confined spaces present a risk to health and safety whenever a person has to enter them. A person whose upper body or head is within a confined space is considered to have entered the confined space. Confined spaces potentially contain many hazards, which are often invisible and cannot be detected without special equipment. These hazards include:

- lack of oxygen
- toxic gases, vapours and fumes
- flammable or explosive gases, vapours and fumes
- mechanical equipment.

Control measures to prevent or minimise the risk of injury from confined spaces

Training

A PCBU (such as a dive operator) must ensure all people required to carry out work within a confined space are provided with training in:

- the hazards associated with the confined space
- risk assessment procedures
- risk control measures
- first aid and emergency and rescue procedures
- selection, use, fit and maintenance of personal protective equipment.

Control measures that must be implemented

Before a person enters a confined space to carry out work, a dive operator must:

- ensure a competent person undertakes a risk assessment
- issue an entry permit
- isolate the confined space
- ensure the confined space is tested and monitored for:
  - safe oxygen levels
  - toxic gases, vapours and fumes
  - flammable or explosive gases, vapours and fumes
- ensure that before a person enters a confined space, the space has a safe level of oxygen, atmospheric contaminants are reduced to a level below the relevant exposure standards, the space is free from extremes of temperature and the concentration of flammable contaminants is at a safe level
- where it is not possible to provide a safe oxygen level or reduce atmospheric contaminants to a safe level - ensure people entering the confined space wear suitable personal protective equipment, including supplied air respiratory equipment
- ensure that where the risk assessment indicates a risk to health and safety, no-one enters the confined space unless a stand-by person is present outside the space
- ensure that appropriate signs and protective barriers are erected to prevent entry of people not involved in confined space work.

Once work in the confined space has been completed, the dive operator must ensure all people have left the confined space before authorising the confined space to be returned to service.

For more information on how to manage the health and safety risks of confined spaces, refer

to the *Confined Spaces Code of Practice 2021*.

6.13 Workplace environment

Workplace environment is a broad term and includes:

- floor surfaces, building and fixtures, lighting and electrical fittings in your workplace, air quality and temperature, water temperature and surface conditions, and marine animals
- general housekeeping at the workplace (for example, making sure that aisles and exits are not obstructed);
- an emergency plan so that people can respond quickly and effectively to any incident that happens in the workplace
- other work environment issues (for example, infectious diseases, violence, sun and wind exposure, working at heights or in confined spaces).

Given the range of risks which can be associated with the work environment, injuries or diseases can differ markedly. For instance, slips, trips and falls can result in sprains or fracture, while extremes of temperature can result in heat stress or hypothermia.

Environmental factors

Environmental factors can also increase the risk of injury related to manual tasks in the diving/snorkelling industry. These factors include:

- cold water temperature
- excessive heat
- wet surfaces while handling equipment
- moving and unstable surfaces (for example, vessels)
- pontoons
- poorly lit engine rooms.

Control measures

Control measures to prevent or minimise the risk of injury from the workplace environment include:

- elimination/substitution of the hazard (for example, replacing slippery flooring with non-slip flooring);
- engineering controls (for example, keeping the hazard and people apart by putting a locked door on a confined space);
- administrative controls to adjust the time and conditions of a person's exposure to the risk (for example, rotating tasks so people do not spend too long in hot or cold conditions)
- providing personal protective equipment when other ways of controlling risks cannot be used (for example, providing appropriate thermal protection for cold water dives).

For more information on how to manage the health and safety risks of the workplace environment, refer to the *Managing the Work Environment and Facilities Code of Practice 2021.*

6.14 Further guidance material

Workplace Health and Safety Queensland develops guidance material to assist duty holders discharge their legal duties under:

- the WHS Act
- the WHS Regulation
- the SRWA Act
- the SRWA Regulation.

This material includes practical advice on how to manage the risks associated with the activities of the business or undertaking and make the activities of the business or undertaking healthier and safer.

Guidance material takes various forms and includes guidelines, guides, safety or hazard alerts and fact sheets. Guidance material is not legislation and are therefore not mandatory, however, duty holders are encouraged to follow the advice to assist in discharging legal duties.

Workplace Health and Safety Queensland has developed a specific landing pages on its website (www.worksafe.qld.gov.au) for industries and occupations. The Diving and Snorkelling industry landing page contains up to date information, including guidance material, relevant for people engaged in the diving and snorkelling industry.

7. Dictionary

Alternative ascent system — A highly visible buoyancy device such as a delayed surface marker buoy that provides a submerged diver with an ascent line that the diver may follow to the surface and use to complete any decompression requirements.

AS — Australian Standard.

Authorised person — For a dive safety log for a diving activity, means a person authorised by the dive operator under section 22 of the SRWA Regulation to verify the dive safety log for the activity.

Bottom time —The time between a diver leaving the surface at the start of a dive and starting the final ascent.

Bottom mix — A gas mixture that can be breathed at the deepest point of a dive.

Certified diver — A person who holds a certificate in recreational diving issued by a recreational dive training organisation.

Certified assistant — A person who holds a current qualification from a recreational dive training organisation that qualifies the person to assist a dive instructor.

Competent person — A person who has acquired through training, qualification or experience the knowledge and skills to carry out the task.

Confined water — Water which offers pool-like conditions, good visibility, and water which is shallow enough so that all divers can stand up with their heads well clear of the water.

Decompression diving — Diving that requires a diver to take a planned stop during the final ascent to decompress.

Dive instructor — A person who holds a current qualification as a scuba instructor from a recreational dive training organisation that qualifies the person as a scuba instructor.

Dive operator — A person who conducts a business or undertaking that provides any of the following recreational water activities:
(a) recreational diving;
(b) recreational technical diving; or
(c) recreational snorkelling.

Dive site — For a recreational water activity:
(d) means a place where persons may participate in the activity; and
(e) includes the vicinity of the place mentioned in paragraph (a).

Dive supervisor — The person appointed to supervise the diving area whenever divers are in the water. The person should hold a minimum of a current certified assistant qualification from a recreational dive training organisation and should have appropriate experience for the activity and area. The dive supervisor and snorkel supervisor can be undertaken by two separate people.

Dive team — The maximum number of divers in the water with the same dive plan.

Dive time — The time between a diver leaving the surface at the start of a dive and surfacing at the end of the dive.

Diving first aid — A current qualification received for training in:
- first aid and emergency oxygen administration to injured divers
- dive accident management
- field clinical assessment.

EANx — A mixture of oxygen and nitrogen in which the volume of oxygen in the mixture is at least 22 per cent.

Entry-level certificate dive — Is a recreational diving activity provided:
(f) for one or more persons who are not certified divers; and
(g) as an initial training course in which a person who successfully completes the course is given a certificate in recreational diving by a recreational dive training organisation.

Emergency plan — For a dive operator, means an emergency plan prepared by the dive operator under section 43 of the WHS Regulation.

Hazard — A situation or thing that has the potential to harm a person. Hazards at work may include noisy machinery, a moving forklift, chemicals, electricity, working at heights, a repetitive job, bullying and violence at the workplace.

Helmet diving — A non-certified dive, undertaken in a free flow gas supplied helmet, including helmets integral to underwater vessels.

Initial training course — Is a training course in recreational diving developed by a recreational dive training organisation that substantially complies with:
(a) AS ISO 24801, part 1: level 1 – supervised diver; or
(b) AS ISO 24801, part 2: level 2 – autonomous diver.

ISO — International Organization for Standardization

Mixed gas — An underwater breathing mixture other than compressed air or **EANx**.

Nominated crew member — In relation to a boat used to provide a recreational water activity, means:
(a) if only one worker is aboard the boat – the worker; or
(b) otherwise – at least two workers aboard the boat nominated by the dive operator providing the activity.

Non-certified dive — Is a recreational diving activity:
(a) for one or more persons who are not certified divers, regardless of whether another person who participates in the activity is a certified diver; and
(b) in accordance with an introductory scuba experience or introductory educational diving program developed by a recreational dive training organisation.

Open water — Any body of water which is subject to wind, swell, current and waves and which can be used for diving/snorkelling.

PPO_2 — Partial pressure of oxygen.

Rebreather — A semi-closed or closed circuit self-contained underwater breathing apparatus.

Recreational diving — Is underwater diving for recreation using compressed air, other than decompression diving, but does not include diving in a swimming pool.

Recreational diving activity —Recreational diving provided by a dive operator as a recreational water activity.

Recreational dive training organisation — An organisation engaged in the certification of recreational divers through documented training procedures that substantially comply with AS ISO 24801.

Recreational snorkelling is –
- free diving; or
- swimming for recreation using a snorkel and mask but does not include snorkelling in a swimming pool.

Recreational snorkelling activity — Recreational snorkelling provided by a dive operator as a recreational water activity.

Recreational technical diving — Does not include diving in a swimming pool, and is underwater diving for recreation if –
- EANx or mixed gas is used; or
- it is decompression diving using compressed air or other gas

Recreational technical diving activity —Recreational technical diving provided by a dive operator as a recreational water activity.

Redundant gas system — An additional gas storage and delivery system that contains sufficient gas to allow the diver to return from the furthest point of the dive achievable on the current gas and ascend to a point where another gas supply is available. This should take into consideration the possibility of ascent line loss.

Repetitive dive — A multiple dive when the surface time between dives is less than 12 hours.

Repetitive dive group/pressure group — A letter of the alphabet or number, given by dive tables, that represents an estimate of the amount of residual nitrogen in a diver's tissues immediately on surfacing at the end of a dive.

Repetitive factor — A letter of the alphabet or number, given by the dive tables, that represents an estimate of the amount of residual nitrogen in a diver's tissues as decided by the repetitive dive group/pressure group and the surface interval.

Required way — For a person to verify an entry in a dive safety log is:
(a) by signing the log entry
(b) if the log is kept electronically – by entering the person's name and unique identifier in the log entry.

Residual nitrogen — Nitrogen in excess of the amount normally present in a diver's tissues, that is dissolved in the diver's tissues.

Risk — The possibility that harm (death, injury or illness) might occur when exposed to a hazard.

Scuba — An open circuit self-contained underwater breathing apparatus.

Snorkeller — A person who participates in a recreational snorkelling activity.

Snorkel supervisor — The person appointed to supervise the snorkelling area when snorkellers are in the water. The person should have appropriate experience for the activity and area supervised. The snorkel supervisor and dive supervisor can be undertaken by two separate people.

Surface interval — The time a diver spends on the surface between two successive dives.

Technical dive training organisation — An organisation engaged in the certification of recreational technical divers through documented training procedures.

Training agency standards — Diver training standards developed by technical dive training organisations, such as PADI, SSI, RAID, TDI/SDI and NAUI, or those based on the minimum international standards recognised by the World Recreational Scuba Training Council.

Time in — The time a diver goes below the surface at the start of a dive.

Time out — The time a diver surfaces at the end of a dive.

Underwater diving — Does not include snorkelling or free diving.

Unique identifier — For a person or document, means a particular code, letter, number, mark or combination of those things, used to identify the person or document, including in an electronic form.

Appendix 1: Example record for a count of persons

Example record for a head count

	Departure for dive site	**Permanent changes:** **Arrivals or departures**	**Departure from dive site 1**	**Departure from dive site 2**
Crew 1 Name	Total on Board: Signature	Arrival No: Depart No: Total on board: Signature	Total on board: Signature	Total on board: Signature
Crew 2 Name	Total on board: Signature	Arrival No: Depart No: Total on board: Signature	Total on board: Signature	Total on board: Signature

Example record for a count system requiring persons to actively participate in the count – Signature sheet or crew member to mark off names after each person's acknowledgement

Name	**Departure for dive site**	**Permanent changes:** **Arrivals**	**Permanent changes:** **Departures**	**Departure from dive site 1**	**Departure from dive site 2**
1. Name					
2. Name					
Total on board					
Crew 1 Name	Total Signature	Total Signature	Total Signature	Total Signature	Total Signature
Crew 2 Name	Total Signature	Total Signature	Total Signature	Total Signature	Total Signature

Appendix 2: Example form of providing advice about medical conditions to prospective recreational snorkellers

I have been advised to tell the lookout, snorkelling supervisor or snorkelling guide if I have **any medical conditions**.

I declare I have been advised snorkelling can be a strenuous physical activity and may increase the health and safety risks to me if I am suffering from:

A. Any medical conditions that may be made worse by physical exertion. For example heart disease, asthma, and other lung complaints.
B. Any medical condition that can result in loss of consciousness. For example some forms of epilepsy and some diabetic conditions.
C. Asthma that can be brought on by cold water or salt water mist.

I have been advised that snorkelling can be a strenuous physical activity even in calm water and older people are at an increased risk of death and injury due to a higher incidence of medical conditions made worse by physical exertion, such as heart disease and stroke.

Please note if you have been identified as an **at risk snorkeller** you will be required to:

- wear and/or use a flotation device that will support the wearer in a relaxed state
- wear a particular colour snorkel or vest that will allow the crew to provide closer supervision
- snorkel in a buddy pair.

Name	Signature	Date

Appendix 3: Example declaration form for a person who is identified as an at risk snorkeller

This declaration form helps dive operators and workers identify individuals who may be at risk when participating in recreational snorkelling. It is not designed to stop anyone from participating but ensures you are provided with additional attention and control measures for a safe experience.

Rate your swimming ability:

☐ First time or non-swimmer
☐ Nervous about swimming
☐ Cannot swim the length of a 50 metre pool comfortably
☐ Can swim the length of a 50 metre pool comfortably
☐ I have not snorkelled before
☐ I have snorkelled before (if so, how long since your last snorkel? ……..)

Snorkelling can be a strenuous physical activity and may increase the risks to the health and safety of a person suffering from:

- a medical condition that may be made worse by physical exertion, for example, heart disease, asthma and other lung complaints; or
- a medical condition that can result in loss of consciousness, for example, some forms of epilepsy and some diabetic conditions; or
- asthma that can be brought on by cold water or saltwater mist.

For this reason, it's very important you declare **any** medical conditions you have. This helps the crew to make suitable arrangements for your safety.

If you suffer from any of the following you should take precautions and inform the crew of your medical conditions:

	Yes	**No**
Allergies/anaphylaxis		
Asthma or wheezing		
Diabetes		
Emphysema		
Epilepsy		
Fainting, seizures or blackouts		
Heart disease/heart condition of any kind		
High or low blood pressure		
Mobility Issues		
Recent head injury or concussion		
Shortness of breath (especially when exercising)		
Medication		

Other:

Please note if you have been identified as an at risk snorkeller you will be required to:

- wear and/or use a flotation device that will support the wearer in a relaxed state
- wear a particular colour snorkel or vest that will allow the crew to offer closer supervision
- snorkel in a buddy pair.

Signature _____ Date _____ Date of birth_____

Parent's or guardian's signature for minors

_____

Appendix 4: Example of an environmental dive site and in-water risk assessment

Dive information	
Date:	Dive site:
Location:	
Dive supervisor:	Signed:
Dive instructors:	

Forecasted/predicted environmental conditions:	
Tide predictions	**Tide Predictions for Australia, Bureau of Meteorology**
Time/height -	High tide: Low tide:
Weather forecast	**Queensland Forecast Areas Map, Bureau of Meteorology**
Winds:	
Seas:	
Swell:	
Weather:	

Environmental dive site and in-water risk assessment						
Conditions:	**Ratings**					**Score:**
Wind strength	0-10kts **(1)**	10-15kts **(2)**	15-20kts **(4)**	20-25kts **(8)**	25+kts **(12)**	
Surface conditions	Calm **(1)**	Slight **(2)**	Moderate **(4)**	Rough **(8)**		
Visibility	15-20m+ **(1)**	10-15m **(2)**	5-10m **(10)**	3-5m **(21)**	1-3m **(33)**	
Current		Slight <1kts **(2)**	Moderate 1-2kts **(4)**	Strong >2kts **(8)**		
Overall Score:						

TO BE COMPLETED AND SIGNED BY A COMPETENT PERSON					
		Ratios			
Signature	**Overall score**	**Normal**	**Revise**	**Reduce**	**Cancel**
		Score = 1-11	**Score =12-23** Consider reducing ratios and maintaining contact	**Score = 24-29** 2:1 – maintain contact **Score = 30-36** 1:1 maintain contact or cancel	**Score = 37+**

Appendix 5: Example risk assessment to determine lookouts and supervision

Dive information				
Date:			Dive site:	
Location:				
Dive supervisor:			Signed:	
Dive instructors:				
Crew:	Pax:	Snorkellers:	Intros:	Certs:

Lookout supervision risk assessment						
Conditions:	**Ratings**					**Score:**
Total snorkellers	<20 **(1)**	20 – 50 **(2)**	50-80 **(4)**	80 – 100 **(8)**	100+ **(12)**	
Percentage of at risk snorkellers	0-2% **(1)**	2-5% **(2)**	5-10% **(4)**	10-20% **(8)**	>20% **(12)**	
Number of diving groups	0 **(1)**	1 **(2)**	2-3 **(4)**	3-5 **(8)**	5+ **(12)**	
Environmental Risk Score	1-11 **(1)**	12-23 **(2)**	24-29 **(4)**	30-36 **(8)**	37+ **(12)**	
Ability to see all participants during all activities	100% **(1)**	100-95% **(2)**	95-80% **(4)**	80-75% **(8)**	<75% **(12)**	
Overall Score:						

TO BE COMPLETED AND SIGNED BY A COMPETENT PERSON					
		Supervision			
Signature	**Overall score**	**Normal**	**Revise**	**Increase**	**Cancel**
		Score = 1-11	**Score =12-23** Consider appointing additional staff to assist	**Score = 24-29** Appoint additional staff or second lookout **Score = 30-36** Appoint a second lookout	**Score = 37+** Consider staggering activities, appointing additional lookouts, or cancelling

Appendix 6: Example combined dive site, lookout and supervision risk assessment

Dive and snorkel site risk assessment			
Date:	Crew:		Pax:
Snorkellers:	Non-certified divers:		Certs:
Site – 1	2		3
Dive Supervisor: Snorkel Supervisor:		High tide: Low tide:	
Forecasted/predicted environmental conditions			
Wind	Surface conditions	Visibility	Current
Actual environmental and in-water conditions			
Site 1 – Wind	Conditions	Visibility	Current
Normal operation -			
Controls required -			
Site 2 - Wind	Conditions	Visibility	Current
Normal operation -			
Controls required -			
Site 3 – Wind	Conditions	Visibility	Current
Normal operation -			
Controls required -			
Risk assessment considerations and comments			
Known site for activities? Y/N	**S1**	**S2**	**S3**
Lookout required to perform a rescue? Y/N	**S1**	**S2**	**S3**
Lookout can easily see all participants? Y/N	**S1**	**S2**	**S3**
Crew numbers and experience:			
People who speak a language other than English:			
At risk snorkellers:			
Are in-water snorkel guides available? Y/N			
Non-certified divers:			
Unguided certified divers:			
Site depths			
Overall environmental conditions expected:			
Additional comments to manage risk			