Reef Check Australia

Dive Policy and Procedures

REEF CHECK

AUSTRALIA

Reef Check Australia
Dive Policy & Procedures

Table of Contents

1. Overview

Reef Check Australia (RCA) is committed to industry leading standards of safety and health.

This manual has been developed to provide policies and procedures which enable RCA diving activities to be conducted in a safe and healthy manner and to manage exposure to hazards and risks associated with diving activities.

This is an active document, as we are committed to continuously improving the management and standards of health and safety for all of our activities.

The requirements detailed in this manual apply to all persons involved with all RCA controlled diving activities. It is a condition of all involvement in those activities that these requirements are followed.

This manual addresses safe diving practices as required in applicable government requirements and guidance. This manual applies together with other relevant requirements in the RCA Work Health and Safety Plan.

This plan applies to activities which are conducted by RCA. This plan does not apply to RCA Affiliates under the Reef Check Australia Affiliation Program. Affiliated third parties are responsible for the management of their own activities and risk management including health and safety.

Relevant Documents

Work Health and Safety Act 2011 (Qld)
Electrical Safety Act 2002 (Qld)
Safety in Recreational Waters Activities Act 2001 (Qld)
Transport Operations (Marine Safety) Act 1994 (Qld)
Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (Cth)
Public Health Act 2005 (Qld)
Food Act 2006 (Qld) and Food Production (Safety) Act 2000 (Qld)
Workplace Health & Safety Occupational Diving Work Code of Practice 2005 (Qld)
Queensland Workplace Health and Safety Recreational Diving, Recreational Technical Diving and Snorkelling Code of Practice 2018

DCIEM Diving Manual - Part 1: Air Decompression Procedures and Tables 1992; Defense and Civil Institute of Environmental Medicine, North York, Ontario Canada

Standards Association of Australia. The following Diving Standards (guidance):

- AS2299.1 (2007) – Occupational diving operations – Part 1 Standard operational practice
- AS2299.2 (2002) – Occupational diving operations – Part 2 Scientific diving
- AS2815.1: 2008 – Training and certification of occupational divers – Part 1 Occupational SCUBA diver - Standard
- AS2815.5:2013 – Training and Certification of occupational divers – Part 5 Dive Supervisor
- AS2030.1 – Gas Cylinders
- AS3848.2 Filling of portable gas cylinders - Filling of portable cylinders for self-contained underwater breathing apparatus (SCUBA) and non-underwater self-contained breathing apparatus (SCBA) - Safe procedures .
- AS4005.1- Withdrawn

Reef Check Australia HSE Management Plan
Reef Check Australia Code of Conduct

2. Obligations and Responsibilities

General Obligations

Diving can be a hazardous activity. Education, training and team cooperation can reduce risks associated with diving. All participants must follow the guidelines and procedures outlined in this manual and the Reef Check Australia HSE Management Plan during Reef Check Australia activities to reduce risks.

The key points outlined below are designed to provide divers and dive teams guidelines and considerations while operating in the field for in water activities. All divers are responsible for their own safety by abiding with these policies and procedures, and not putting other divers at risk.

All divers shall:

- Consider safety first at all times;
- Abide by RCA Dive Policy and Procedures and the RCA HSE Management Plan;
- Actively and thoughtfully participate in the risk assessment process;
- Dive within their own ability, experience and limits;
- Work cooperatively and considerately with their team;
- Follow instructions from the Reef Check Trainer, Team Leader or other appropriately appointed dive supervisor;
- Have appropriate and well-maintained personal dive equipment;
- Ensure they are medically, mentally and physically fit for each dive;
- Check equipment before entering the water;
- Apply their dive skills and training in a responsible manner;
- Maintain close contact with their dive buddy, monitoring their own air supply, and inform their buddy at regular intervals of air supply status;
- Maintain their own dive logs;
- Notify their Reef Check Trainer, Team Leader or other appropriately appointed dive supervisor if they do not feel capable of diving or performing a task at any time;
- Notify their Trainer, Team Leader or Dive Supervisor as soon as possible of any diving-related injury.

Legislative status of RCA in water activities

1. Limited scientific diving

Some Reef Check Australia diving activities are managed as “diving work” which is “limited scientific diving”, within the meaning of the Work Health and Safety Regulation 2011 (many of our core survey activities fall within this scope). This means that volunteers engaging in these activities may have the status of a ‘worker’ under the Work Health and Safety laws. Their safety and health must be protected as detailed under those laws, and they are obliged to meet the duties of a worker as well.

All Reef Check Australia diving activities must be conducted so as not to operate outside the scope of the definition of limited diving, as defined below by the Work Health and Safety Regulation 2011. Limited diving does not involve any of the following:

- Diving to a depth below 30m;
- The need for a decompression stop;
- The use of mechanical lifting equipment or a buoyancy lifting device;
- Diving beneath anything that requires the diver to move sideways before being able to ascend;
- The use of plant that is powered from the surface;
- Diving for more than 28 days during a period of 6 months.

All Reef Check workers including volunteer workers are expected to be familiar with their obligations under these requirements. For further information refer to the Reef Check Australia WHS Plan and the relevant Reef Check training programs.

2. Recreational activities

Other Reef Check diving activities may not involve diving work at all. Some participants join into Reef Check activities on a recreational basis only without signing up as a volunteer worker (many public participants in our basic community clean-up participants fall within this scope and some participants in our training programs also fall into this category). These participants are not 'workers' but are still protected as and must meet the duties of an 'other' under Work Health and Safety laws and Safety in Recreational Waters laws additionally apply.

All Reef Check dive participants must complete appropriate participant / volunteer / employment agreements including the relevant liability paperwork for the activity they are undertaking.

3. Diver Competency, Requirements & Roles

Specific diver competencies, requirements and roles are outlined for the various Reef Check Australia dive activities in the following section. Reef Check Australia has adopted the training and certification requirements in AS2815.1 as applicable for our volunteer workers and AS4005 series as applicable for recreational activities.

3.1 Clean-Up Diver

A Clean-Up Diver is a recreational diver participating in underwater clean-up activities with Reef Check.

Criteria:

- **Competency:** PADI Advanced Open Water diver (or equivalent) and 18 years of age or older.
- **Experience:** Must have available logged proof of 25 dives, and one logged dive within the last year.
- **Medical Fitness:** Currently fit and healthy to dive. To complete Participant Diver Medical Questionnaire.
- **Equipment Servicing**: Must supply the required diving equipment (Section 6.1). Divers are responsible for ensuring that their equipment is safe and maintained as specified by manufacturers' requirements.
- Clean-up divers must be supervised by a Divemaster or equivalent.

3.2 Reef Check Course Participant

A Reef Check Course Participant is a diver who is currently enrolled in the Reef Check Training Course. The role of a Course Participant is to actively engage in the Reef Check Training Course by listening, asking questions and gaining competency in the knowledge and skills required to be a Volunteer Surveyor.

The Reef Check diver training course is a PADI Distinctive Specialty and is regulated by the Queensland Workplace Health and Safety Recreational Diving, Recreational Technical Diving and Snorkelling Code of Practice 2011. For this reason, the Reef Check diver training course is classified as a recreational dive activity.

Criteria:

- **Competency:** PADI Advanced Open Water diver (or equivalent) and 18 years of age or older.
- **Training:** Enrolled in the Reef Check Australia Training Course (this includes the PADI Reef Health Surveyor Distinctive Specialty certification).
- **Experience:** Must have logged proof of 25 dives, and one logged dive within the last year.
- **Medical Fitness:** Currently fit and healthy to dive. To complete Participant Diver Medical Questionnaire.
- **Equipment Servicing**: Must supply the required diving equipment (Section 6.1). Divers are responsible for ensuring that their equipment is safe and maintained as specified by manufacturers' requirements.
- **Evidence of emergency health cover:** (e.g. Queensland ambulance cover, DAN dive insurance, private health cover).
- Reef Check Course Participants must have in-water supervision by a Reef Check Trainer or Team Leader.

3.3 Reef Check Volunteer Surveyor

The role of a Volunteer Surveyor is to collect Reef Check data following the Reef Check protocol. The diver must demonstrate that s/he has acquired, through training, qualifications or experience, specific knowledge and skills relevant to the diving being undertaken.

Criteria:

- **Competency:** PADI AQF Rescue Diver (or equivalent). A recreational Rescue Diver certificate that has been issued under the Australian Qualifications Framework.
- **Training:** Completed the Reef Check Australia Training Course. Proof of training is gained from completion of a Reef Check Australia Training course.
- **Experience:** Must have logged proof of 30 dives, relevant to the shallow reef diving carried out by RCA, plus at least one logged dive in the last 12 months.
- **Medical Fitness:** A current Certificate of Medical Fitness to Dive (Occupational Dive Medical AS2299). The certificate must not be more than one year old and cannot have been replaced or revoked.

- **Evidence of Equipment Servicing**: Reef Check participants are responsible for supplying required diving equipment (Section 6.1). Divers are responsible for their equipment maintenance and regular servicing, and must provide Reef Check Australia with service reports showing current equipment servicing (including Regulator with secondary air source and Buoyancy Compensator Device), as dictated by manufacturers specifications.
- **Evidence of emergency health cover:** (e.g. Queensland ambulance cover, DAN dive insurance, private health cover).
- Volunteer Surveyors must have in-water supervision by a Team Leader (or equivalent).
- New Volunteer Surveyors shall be buddied with an experienced Volunteer Surveyor, Team Leader or Instructor for their first 2 Reef Check surveys.

3.4 Reef Check Visiting Volunteer Surveyor

A Visiting Volunteer Surveyor collects Reef Check data following the Reef Check protocol. This category is ONLY for overseas visitors who are competent to undertake general diving work but are not able to demonstrate their competency to dive in the ways prescribed under the general diving work competency option. The diver cannot be permanently resident in Australia.

The diver must demonstrate that s/he has acquired, through training, qualifications or experience, specific knowledge and skills relevant to the diving being undertaken.

Criteria:

- **Competency:** PADI Rescue Diver (or equivalent).
- **Training:** Completed the Reef Check Australia Training Course.
- **Experience:** Must have logged proof of 60 relevant dive hours.
- **The criteria for Medical Fitness, Evidence of Equipment Servicing and Evidence of Emergency Health Cover is the same as for Reef Check Volunteer Surveyors.**
- **Restrictions:** Reef Check Visiting Volunteer Surveyors cannot dive more than 28 days per 6 month period without further qualification.

Visiting Volunteer Surveyors must have in-water supervision by a Team Leader (or equivalent). New Visiting Volunteer Surveyors shall be buddied with an experienced Volunteer Surveyor, Team Leader or Instructor for their first 2 Reef Check surveys.

3.5 Reef Check Team Scientist

The role of the Team Scientist is to monitor the research activities on a survey expedition and confirm accuracy of collected data. The Team Scientist will examine collected data after a dive and discuss any irregularities with the Volunteer Surveyor who collected it. The team scientist may be responsible for laying out the transect tape for the survey site and can act as a Volunteer Surveyor during a dive to collect data.

Criteria:

- **Competency:** PADI AQF Rescue Diver (or equivalent).
- **Training:** Completed the Reef Check Australia Training Course. Proof of training is gained from completion of a Reef Check Australia Training course.
- **Experience:** Must have logged proof of 30 dives, relevant to the shallow reef diving carried out by RCA.
- **The criteria for Medical Fitness, Evidence of Equipment Servicing and Evidence of Emergency Health Cover is the same as for Reef Check Volunteer Surveyors.**
- Marine Biology training and proven experience with reef monitoring.

Volunteer Surveyors must have in-water supervision by a Team Leader (Divemaster or equivalent), or hold this qualification. New Team Scientists shall be buddied with an experienced Volunteer Surveyor, Team Leader or Instructor for their first 2 Reef Check surveys.

3.6 Reef Check Team Leader

The role of the Team Leader is to monitor the in-water activities of recreational divers and volunteer surveyors, supervise the dive safety of the survey team, and guide participants to follow the Reef Check plans and relevant regulations on a survey expedition.

Criteria:

- **Competency:** Current and Insured PADI Divemaster, Assistant Instructor or Instructor (or equivalent certification).
- **Training:** Completed the Reef Check Australia Training Course & Reef Check Australia Team Leader Training.
- **Experience:** Must have logged proof of 50 dives and recent diving experience (at least four dives logged in the past 12 months, or at least 6 dives logged in the past 18 months including at least one dive in the past 6 months).
- **The criteria for Medical Fitness, Evidence of Equipment Servicing and Evidence of Emergency Health Cover is the same as for Reef Check Volunteer Surveyors.**
- **First aid:** Evidence of current training in first aid, CPR and administration of medical oxygen.

3.7 Reef Check Trainer

The role of the Reef Check Trainer is to deliver knowledgeable training in and out of water for Reef Check course participants. This includes Reef Check theory sessions, in-water supervision of course participants, supervision of skill practicing and survey tool use, verification of course participant competency, dive safety of the training team, and ensuring that all participants follow the Reef Check Dive Procedures on a training dive.

Criteria*:*

- **Competency:** Current and Insured PADI Open Water SCUBA Instructor or Certified Reef Check Australia recognised Trainer with Reef Check Surveyor Specialty.
- **Training:** Completed the Reef Check Australia Training Course, PADI Reef Health Surveyor Course & Reef Check Australia Team Leader Training.
- **The criteria for Medical Fitness, Evidence of Equipment Servicing and Evidence of Emergency Health Cover is the same as for Reef Check Volunteer Surveyors.**
- **First aid:** Evidence of current training in first aid, CPR and administration of medical oxygen.
- Marine Biology tertiary training and proven experience with reef monitoring.

3.8 Reef Check Dive Officer

The role of the Dive Officer is to assess the adequacy of the risk assessment and field activity plan for each survey proposal and ensure they comply with the Reef Check Australia Scuba Diving operations Manual and AS2299.2 where applicable. They may restrict, prohibit or suspend any diving proposal which they consider to be unsafe. They are responsible for ensuring the reporting of dive incidents/accidents in conjunction with the team leader responsible for the dive.

Criteria*:*

- **Competency:** Current and Insured Divemaster or equivalent (or above).
- **Training:** Completed the Reef Check Australia Training Course, PADI Reef Health Surveyor Course & Reef Check Australia Team Leader Training.
- **Significant experience** in undertaking Reef Check Australia reef health survey dives.
- Ability to positively collaborate and develop high level working relationships with peers and team members.
- Good communication and negotiation skills.

4. Risk Management and Safety Briefing Procedures

Reef Check Australia's WHS Management Plan details our risk management requirements. In applying those, Reef Check diving activities employ a standardised Risk Management Guide that uses a hazard identification, mitigation and risk assessment. This process shall include identification of perceivable hazards, assessment of their associated risk levels and the relevant risk control measures employed in order to mitigate such risks.

The RCA standardised guide adopts the relevant requirements of:
AS2299.1 (2007) – Occupational diving operations – Part 1 Standard operational practice
AS2299.2 (2002) – Occupational diving operations – Part 2 Scientific diving

A hazard is something with the potential to cause harm. Risk is the likelihood that the harm will occur from exposure to the hazard.

4.1 Risk Management through Hazard Identification, Mitigation and Risk Assessment

The Team Leader is responsible for leading the hazard identification, mitigation and risk assessment in accordance with the RCA Risk Management Guide (Appendix A) and monitoring dive team safety during RCA activities. However, it must be noted that risk assessment and management is the responsibility of all team members. If conditions, logistics, equipment, or participants are considered by any member of the team to create or contribute to an unsafe working situation, then the activity must not continue until the situation is corrected to the satisfaction of the entire team.

Factors of consideration in the risk assessment include:

- Environmental conditions:
    - strength and direction of wind
    - current and tide
    - visibility
    - entrapment hazards
    - depth at site
    - water temperature
    - time of day
    - underwater terrain
    - atmospheric temperature and humidity
    - contaminants
    - isolation of the dive site
- Task related factors that consider the complexity of the diving task
- Hyperbaric/physiological factors:
    - frequency of diving, including repetitive diving, multi-day diving
    - depth of dive
    - duration of dive
    - breathing gas
    - exertion required to reach dive site or conduct task
    - excessive noise
    - immediate pre-dive fitness (prior dives, prior physical exertion, fatigue, recent illness)
    - altitude exposure
- Associated activity factors:
    - manual handling
    - boat handling
    - dive platforms
- Other hazards:
    - dangerous marine animals
    - movements of other boats
    - hazards peculiar to the dive locations
    - use or presence of hazardous chemicals, biological pollutants or explosives.

- Emergency response factors, including what should be an assessment of what would be required in case of an emergency. The assessment should include consideration of:
    - the location and availability of appropriate emergency systems
    - emergency response procedures given current conditions

These will be addressed using a formatted risk assessment matrix, dive briefing and relevant control measures (included in the Appendix B). Please note that the list is not exclusive and other hazards not otherwise identified should be considered in Risk Management Guide.

For RCA activities please note different risk assessments should be undertaken depending upon whether the dives are being conducted from a commercial diving boat or independently from the shore and vary with the type of activity that is taking place.

4.2 Carrying out a Hazard Identification, Mitigation and Risk Assessment

The following procedure describes how risks associated with perceivable hazards involved with particular planned activities are assessed and how controls for these risks are implemented.

RCA's Risk Management Guide (Appendix A) shall be reviewed for each survey location during the planning stage for each survey event. On the day of the planned survey event, this document shall be reviewed by the Team Leader, on-site, with all survey participants present, prior to conducting surveys for each survey location. The Risk Management Guide shall be reviewed to accommodate: any change or alteration in dive procedures, any change in environmental conditions, any change in survey team roles or any other change to conditions which may impact the planned activities.

All survey participants shall participate in the hazard identification, mitigation and risk assessment process. Any identifiable hazards not already listed must be recorded on the Risk Management Guide, along with the appropriate control procedure for each hazard. The associated risk shall then be assessed using the Risk Assessment Matrix.

Upon completion of the Risk Management Guide, each survey participant must acknowledge their understanding of the hazards and risks associated with the planned activity, and the risk control procedures to be employed to address any hazards identified. **Every member of the survey team must feel comfortable with the outcome of the risk assessment before activities can commence.**

Risk Assessment Matrix

The risk level for each identified hazard may be determined by using a Risk Assessment Matrix (Appendix B). The Risk Assessment Matrix is a tool which allows the ranking of risks. The Likelihood of a hazard occurring, coupled with the Consequence of such an event occurring will determine the Risk Score. The Risk Score labels the risk as one of four categories: Extreme Risk (E), High Risk (H), Moderate Risk (M) and Low Risk (L).

An activity which has been ranked as Moderate risk or above, may be reduced to a Low Risk (L) through risk control strategies. Risk control strategies for Moderate, High or Extreme Risks must be approved by Management.

Activities may only commence or continue when the Risk Score is L . Specific monitoring or procedure may be required. **Moderate, High and Extreme Risk activities are not permitted without sufficient control measures in place**. This procedure shall be carried out before **and** after the implementation of control measures – in order to determine the need (if any) of control measures, and to assess the effectiveness of any control measures employed.

Appropriate control measures should be applied to risks, using the hierarchy of controls in the order listed.

- **Elimination:** where the level of risk cannot be controlled to an acceptable level, no diving should take place. e.g. foul weather
- **Substitution**: where the risk can be controlled by performing the task using alternative methods of diving, consideration should be given to using these alternative methods. e.g. Snorkel vs SCUBA
- **Design**: plant and procedures should be designed to minimise risk. e.g. use tender to minimise surface swim
- **Isolation:** persons should be isolated from the identified hazards. e.g. exposure suits
- **Administrative:** every dive plan should seek to minimise the degree and duration of the diver's exposure to risk. e.g. plan to avoid prolonged exposure to sun, wind, cold/hot temperatures

The Team Leader must deliver a comprehensive safety briefing, as per the Reef Check guidelines (see Section 4.3 and Appendix D), based on the risk assessment. The safety briefing shall be acknowledged by all participating divers by signing the dive log.

4.3 Safety Briefing

The RCA Risk Management Guide must be reviewed by the Team Leader before choosing to dive at a particular location. It is the responsibility of all team members to actively participate in the risk management process and verify that they feel comfortable to dive.

If diving is acceptable, then the Team Leader shall deliver a safety briefing (Appendix D) to divers, which incorporates a review of the factors within the RCA Risk Management Guide. The Team Leader shall remind divers to dive safely and comply with the instructions they are given by the boat crew, the Reef Check Team Leader and Team Scientist.

Reef Check team members shall be present for all relevant briefings. After delivering the dive safety briefing and addressing any questions, then the Team Leader and all members of the team shall sign to indicate that team members understand and agree to the dive plan. This must be completed before each dive.

Additionally, when on a commercial vessel, divers are advised of the dive &/or boat briefing by relevant boat crew. The Leader Team Leader should remind buddy pairs to perform a thorough, pre-dive buddy check.

If a diver does not feel capable of a dive at any time they should notify the Team Leader. If environmental conditions are not ideal for a survey, the Team Leader or team member(s) may choose to abort the survey.

4.4 Medical Fitness

Before any diving activity occurs, it is the responsibility of the Reef Check Team Leader to ensure that each team member has a current certificate of medical fitness to dive and to check that any activity to be performed falls within the limits of the certificate. This is completed as part of the Field Activity Plan prepared for the survey.

All persons involved in any RCA in-water activity must be fit to perform the required activities and it is the responsibility of each person to escalate any concerns to their leader before performing any activity. If participants have particular health issues/concerns (e.g. allergies or medication requirements) they must advise the team leader. It is also important to consider any contraindications for diving e.g. colds, hay fever, ear infections, hangovers.

5. Dive Procedures

5.1 Dive Plan

A dive plan (Appendix C) will be submitted to Reef Check Australia management at least three days prior to diving activities. The dive plan will include:

- the method of carrying out the diving activities;
- tasks and duties of each person involved in the dive;
- the diving equipment, breathing gases and procedures to be used in the dive;
- dive times, bottom times and dive profiles;
- hazards relating to the dive and measures to be implemented in the control of risks associated with those hazards;
- emergency procedures.

5.2 Dive Tables

All RCA diving activities shall employ the use of DCIEM (Canadian Defence and Civil Institute for Environmental Medicine) Short Standard Air Decompression Tables for dive planning. Reef Check Australia does not allow decompression diving and shall monitor that divers remain within DCIEM tables.

The Team Leader will record Volunteers' dive details from their computer and calculate DCIEM tables based on depth, bottom time and surface intervals. The Team Leader will calculate pressure groups, required surface intervals and allowable dive times based on DCIEM tables and follow the guidance of the most conservative calculation.

Note: Dive tables are only a guide for the physiological processes involved with breathing compressed gases at depth and do not take into account many factors that can affect an individual's susceptibility to decompression illness, e.g., age, sex, physical fitness, recent illnesses, etc.

During dive planning, the amount of time required to evacuate a patient from the dive site to a recompression chamber must be considered. This evaluation should take into account:

1) the time from when the diver exits the water to when they are able to be placed inside the recompression chamber;
2) the mode of transport that can reliably be available for patient evacuation (this should be the mode of transport used to access the site (i.e. car/boat, NOT assuming availability of air or road emergency evacuation).

Repetitive Group Limits for Diving Depending on Level of Recompression Chamber Support
(based on the DCIEM Air Decompression Tables)

Depth (m)	Maximum Bottom Time	
	Chamber access within 2 hours	Chamber access more than 2 hours away
6	H (K)*	G (I)*
9	H (K)*	G (I)*
12	H (J)*	E (H)*
13-18	No deco limits	One repetitive group less than DCIEM limits

* The dive times listed in brackets/italics are potential allowable extensions of bottom times where low hazard, safe profile, single ascent single dive of constant depth are conducted. The application of these times must be confirmed with the RCA DO before diving.

5.3 Dive Computers

Dive computers will be used by all survey team members to record dive information and details. Divers should be familiar with the operation & displays of their computer. All divers will dive under the plan of the Team Leader, who will be using DCIEM tables to plan and monitor all dives. Each member of the dive team shall follow the advice of the more conservative plan.

5.4 Safety Stop

A safety stop shall be performed if divers descend below 10m depth. This requires divers stop their ascent at 3-5 metres for at least 3 minutes before surfacing after a dive.

Note: A Safety Stop should be forgone if it increases the risk of other hazards or if divers are in an emergency situation, however divers should still practice ascent rates of no faster than 18m per minute wherever possible.

5.5 Ascent Rate

Divers are required to ascend slowly at a recommended rate of no more than 18 metres per minute.

5.6 Surface Watch

A surface watch is mandatory for all Reef Check dives. The surface watch must:

- Be positioned out of the water where the lookout can see the whole area where the diving is taking place;
- Be solely engaged in being the lookout;
- Be responsible for completing the Dive Log ;
- Be able to recognise relevant hazards and divers in difficulty;
- Be able to either:
    - Rescue a diver (demonstrated through proof of Rescue Diver certification); or
    - Direct a person who is immediately available and capable of rescuing a diver.
- Be able to either:
    - Provide first aid including expired air resuscitation, oxygen resuscitation and external cardiac compression; or
    - Direct a person who is immediately available and capable of providing the first aid.
- The surface watch must have a means of communication with an emergency team, e.g., phone or radio.

The surface watch may be a member of the boat crew on a commercial vessel.

5.7 Dive Flags

Dive Flags are required for all RCA diving activities. Boating traffic are required to stay at least 50m away from a dive flag. Additional dive flags may be used where deemed appropriate (e.g. elevated levels of boat traffic).

5.8 Buddy Distance

All Reef Check divers are required to dive in buddy pairs of two or three, and to remain in a group as a team throughout the dive. The following are distances for diving procedure:

- A buddy pair should remain as close together as necessary to facilitate immediate assistance to each other, should the need arise. Closer proximity should be applied to low visibility situations.
- The dive team will dive in sequence under the direction of the Team Leader.

If a diver loses contact with their buddy or the team they are to search for 1 min underwater by looking 360° to search for diver and bubbles, then ascending slightly for better view; if no contact is made, the diver must surface to continue search and reunite. Solo diving is not permitted on RCA survey dives.

5.9 Team Roles

The Team Leader verifies that each team member feels comfortable with their survey role, and that relevant tasks are within their capability and dive experience. It is the responsibility of the divers to confirm that they are comfortable with the tasks they are allocated. Factors to be taken into account include:

- Volunteers' last dive and their last Reef Check dive
- The diving experience of the Volunteer Surveyor since the dive certificate was gained and since the Reef Check training certificate was gained, for example, as contained in log books. Volunteers with less than 2 Reef Check dives shall dive with a more experienced Volunteer, Divemaster or Instructor.
- It is the responsibility of the Volunteer to know their own level of experience and fitness and to let the Leader know if they do not feel fit enough to do the survey in the current conditions.

If there are doubts as to the competence of the diver to complete a particular dive, the Team Leader shall accompany them or assess them during an assessment dive.

5.10 Monitoring air consumption

Each diver is responsible for monitoring their own air supply and informing their buddy at regular intervals of air supply status. Divers should check their air gauge at the end of every 20m transect length as a minimum. Divers should return after a dive with at least 50 bar of air in their SCUBA tank.

5.11 Head Counts

All Reef Check dive participants must sign the dive log form as soon as practicable. This verifies that they are back on board the boat or back to shore. The Team Leader shall also conduct a head count prior to departing the site.

5.12 Diver's Log

Apart from completing the RCA dive log (Appendix E), Volunteers are also responsible for keeping their own logged record of RCA dives.

5.13 Surface Intervals

Surface intervals will be calculated by the Team Leader using DCIEM tables. The minimum surface interval between dives should be no less than 30 minutes.

5.14 Dive Restrictions

Reef Check Australia has employed the following restrictions to ensure the safety of divers:

- No Reef Check survey should be conducted below 12m and no RCA diver is to descend below 18m depth.
- No RCA surveys will be conducted at night; any dive should be finished before dusk.
- RCA does not allow solo diving; all divers are to dive in dive buddy pairs and with the team.
- RCA does not allow decompression diving or surface air supply dives.
- RCA does not allow the use of any underwater tools other than those which the diver has been trained to use in the Reef Check Training Course (e.g. underwater slates & recording sheets, underwater cameras, plumb line, transect tape and emergency signalling device).

5.15 Boating Requirements

Reef Check utilises commercially registered vessels for all boat-based diving. The vessel crew have a responsibility to provide boat safety equipment (including an oxygen resuscitation kit) and are ready and able to work with Team Leaders to give assistance quickly and efficiently in an emergency. Safety equipment and procedures are reviewed and discussed with Reef Check Team Leaders and shared with the dive team to ensure safety measures are understood. The vessel must display a dive flag while diving is taking place from that vessel.

6. Equipment and Maintenance

6.1 Equipment

Reef Check divers must provide their own dive equipment (except for the compressed gas cylinder, weight system, and weights). All Reef Check participants are responsible for supplying required diving equipment (as listed in the AS/NZS 2299 Occupational Diving Operations - Part 1 Standard Operational Practice). Those without appropriate equipment will not be permitted to take part in RCA survey activities.

Equipment used must include the following at a minimum:

- Mask, snorkel and fins
- Compressed gas cylinder and valve
- Regulator and alternate air source
- Submersible pressure gauge
- Exposure suit appropriate for the local diving environment
- Buoyancy control device and low pressure inflator mechanism
- Weight system and weights
- Complete instrumentation, including a means to monitor depth and time underwater.
- Knife/divers tool
- **Emergency signalling device (including both a safety sausage and whistle)**
- **Dive computer**

6.2 Maintenance

Reef Check divers are responsible for equipment maintenance and regular servicing. Reef Check Volunteer Surveyors (and above) must provide Reef Check Australia with service reports, issued by an equipment servicing agent, detailing the servicing of equipment as specified by manufacturers specifications. Invoices or other receipts are not acceptable forms of evidence of equipment servicing. The status of currency of gear service records is conducted as part of the Field Activity Plan preparation.

Equipment that requires regular servicing includes:

- Regulator and alternate air source
- Buoyancy control device and low pressure inflator mechanism.

7. Emergency Procedures

7.1 Emergency Action Plan

The Emergency Action Plan (EAP) outlines what to do in case of emergency and lists relevant emergency contact information (See Appendix F). A copy is stored in the RCA field survey pack. Each RCA diver must be familiar with the Emergency Action Plan and know where it is located. If diving aboard an operator vessel the Team Leader shall inquire about the operator's Emergency Action Plan and inform the team of its whereabouts.

For any incident requiring medical treatment, an Incident Report Form (Appendix G) must be completed by the Team Leader. A summary of events leading up to the incident must be included in this report form.

7.2 Separated Buddy Procedures

Where divers are buddied together and lose contact with each other during the dive, divers perform the following procedure;

1. Immediately upon noticing contact has been lost with their buddy, each diver should circle 360 degrees looking for the buddy, or their exhaust bubble trail (often easier to see if looking up slightly).
2. If visual contact is not made after following the above procedure, each diver should slowly ascend 3 – 5 metres, and repeat the procedure.
3. If contact is not re-established after 1 minute, each diver should surface (at a rate of no more than 18 metres/minute) and signal to the surface watch.
4. At the surface, attempt to locate the bubbles of the missing buddy.
5. If contact is made at the surface, the dive may recommence or be terminated, at the discretion of the Team Leader or boat staff.
6. If a diver is still missing after his/her buddy surfaces, then surface watch should be notified immediately.

7.3 Lost Diver Procedure

If the Dive Team or dive team member has not surfaced 5 minutes after their buddy has surfaced, the following procedure should be followed:

1. Note last known position of the lost diver(s)
2. Notify Volunteer Marine Rescue by radio immediately.
3. A lookout should continue to look for the diver by scanning the area in a 360 radius. If the lookout spots the diver, they should keep visual contact.
4. Assess the degree of urgency, consider: time overdue, planned dive profile, conditions and possible decompression & air status.
5. Check that the diver has not left the area or boarded near-by boats.
6. If missing diver, recall all divers. (A Recall Signal must be established prior to anyone entering the water, it is normally 3 long engine revs or continuously hitting a metal object underwater and for snorkelers air horn or whistle.)
7. Buoy the area where the diver was last seen.
8. If bubbles are sighted, then snorkelers/divers can be sent to investigate in buddy pairs, provided it is safe to do so.
9. A coordinated search should be instigated, provided it is safe to do so, and continued until either the diver(s) and/or further assistance arrives. Search should consider effects of current, tides any other relevant environmental factors. All searches should be conducted in buddy pairs.
10. Any qualified divers with full cylinders (>170 bar) to conduct underwater search if safe and available
11. Maintain contact with Volunteer Marine Rescue.
12. The search should continue as long as it is safe to do so, and continued until either the buddy is located or further search assistance arrives.
13. If a diver from the dive team returns but others are still missing, then question the diver to determine:

- Any obvious problem
- When & where diver(s) was last seen, what he/she was doing, direction he/she was swimming
- Maximum depth reached
- Last known air pressure and likely air consumption rate
- Divers likely action in the event of a buddy separation
- Where you surfaced relative to the position you last saw the other diver

14. Continue as described above until additional help and support arrive.
15. If lost diver is sighted, keep your eyes on the diver. Ensure that rescue activities do not endanger anyone else.

7.4 Diver Recovery Procedures

1. Keep the person in sight at all times.
2. Boat rescues: Do not waste time pulling up anchor, attach a life jacket or a float to the anchor line. Release the anchor line so it will act as a search marker buoy.
3. When approaching snorkeller or diver by boat, use safe boating practices.
4. Shore-based rescues: Shore based surface watch should be ready to initiate rescue procedures, with mask and fins at the ready.
5. Drop victims weight belt & scuba unit (if necessary) before recovering the victim.
6. (if practical retrieve scuba unit as well for possible future investigations).
7. Maintain contact with Volunteer Marine Rescue.
8. Return to the point of departure ASAP.
9. Begin First Aid, CPR and /or Oxygen Treatment as required.
10. Do not leave any one behind without boat support.

7.5 Emergency First Aid Response, including Suspected Decompression Illness

When completing a dive plan, there must be a procedure for transporting divers to the nearest acceptable and available recompression facility and consideration of distance to medical treatment must be considered during activities. Plans must realistically estimate the time necessary for the transportation of a diver to the recompression facility in the event of an accident (such time taken as the time from when the diver leaves the water to the commencement of his/her recompression in the chamber).

Many diving medical problems require immediate hyperbaric treatment if they are to be successfully resolved. In the field, or during transport to a recompression facility, the best first aid that can be administered for injuries/illnesses such as DCI or air embolism (and others) is oxygen delivered at as close to 100% as possible for a spontaneously breathing patient and a concentration exceeding 50% oxygen to a non-breathing patient.

Reef Check Australia Team Leaders have been trained in first aid response. In case of an emergency, they shall lead the team to complete the following steps:

1. Assist the injured diver immediately by providing first aid and seek appropriate medical assistance for the patient. Follow any directions you are given by the medical professional. Provide as close to 100% oxygen as possible for ALL suspected DCI injuries.
2. Recall all divers/swimmers to the boat or shore.
3. Ensure other members of the dive team are not at risk and that all divers are present.
4. If possible, recover the injured diver’s equipment and separate it from other equipment for expert examination. Do not disassemble equipment. The Team Leader and/or boat crew may decide not to recover equipment if doing so would be unsafe or cause undue delay.
5. Ensure no other equipment has been left in a dangerous position.
6. Organise evacuation to the nearest hospital or recompression chamber as dictated by the circumstances, the casualty's condition and medical advice.
7. Contact Reef Check Australia management as soon as practically possible.

8. Ensure the diver's dive record sheets, dive computer and (if possible) their logbook is available for the doctor, particularly if recompression is required. Record the details of the incident, including where the accident occurred and the sequencing of treatment.
9. When the immediate emergency has passed and all necessary steps have been taken to assist the casualty, a full record of the incident must be compiled. To help with this process, personnel involved in the incident should endeavour to make notes on what happened as soon as possible after the incident, obtaining details from other divers, noting exact times etc.
10. The buddy of any diver who develops symptoms of decompression sickness, even on a dive apparently carried out according to the tables, may also develop symptoms at a later time and require recompression. In such a situation, the dive buddy should be kept under observation for at least 24 hours after the incident.

8. Appendix

Contents

Appendix A. Risk Management Guide: Hazard Identification, Mitigation and Risk Assessment (Basic Template)

Reef Check Australia Risk Management Guide: Hazard Identification, Mitigation and Risk Assessment

Prior to field activities, use the Risk Management Guide to conduct a hazard identification, mitigation and risk assessment for EACH SITE you are visiting, based on available information.

Once on-site, review the Risk Management Guide to assess environmental conditions on the day and determine if additional hazards or risks must be considered and outline mitigation and response. Discuss with team. Determine if activities can proceed. This document must be reviewed and completed each time there is a significant change to the occupational diving work or the environmental conditions at the site.

Region:	Reef Name:	Site Name:
Type of activity (clean-up, survey, training):		
Date of pre-assessment:	Completed by:	Additional on- site considerations? YES NO
Date of on-site assessment:	Completed by:	Additional on- site considerations? YES NO

If yes, outline additional on-site considerations below.

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
LEVEL OF DIVER COMPETENCE					
Training and Experience (Consider safety issues from divers lack experience or skills to safely undertake activities on SCUBA)				Divers must demonstrate their competence to participate in the task through their dive qualification and demonstration of relevant sound knowledge and skills.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
LOGISTICAL/TRAVEL					
Driver fatigue during travel to/from site (consider early trip hours, lack of sleep, post-activity-fatigue)				Minimise fatigue by planning on departure time that suits all travelling members, participants appropriately prepare for trip (sufficient rest, food, wellness etc), participants share driving responsibilities as appropriate, participants plan travel according to activities. If fatigue occurs, appropriate actions could be a change in driving responsibilities, participants stop to rest, participants decide to stay overnight to avoid late driving, group conducts ongoing assessment based on conditions and participants	
Poor road Conditions (consider: weather, poor bitumen surfaces, road works, road closures, non-paved road surfaces, poor weather conditions)				Group will monitor road condition reports and seek local knowledge about road conditions. Drive to suit conditions, self-assessment of relevant driving experience in current road conditions (change in drivers may be required). Abort trip if unsafe.	
Wildlife interactions (consider wildlife on road)				Seek local advice regarding seasonal or daily wildlife considerations, drive to suit conditions, be particularly cautious at times of day when wildlife interactions may be more likely (i.e. dawn/dusk). Abort trip if unsafe.	
Driver responsibility (consider careless/wreckless driving practices)				Vehicle should be in good working condition, driver should obey local traffic laws, be mindful of road conditions, be attentive and rested, notify others if need to rest. Change drivers or abort trip if unsafe. Management should be notified of unsafe driving practices.	
Flights to location				Reputable airlines are to be selected for travel. Abort trip if unsafe.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
ENVIRONMENTAL CONDITIONS					
Strength & direction of wind: (Consider that wind speed may pick up or change direction from original forecast or during trip)				Determine if waiting will allow wind to decrease and the dive to continue or move to a sheltered site. Reef Check trips do not go out in more than 25 knots of predicted wind. Do not dive in winds that make diving conditions unsafe. Assess conditions on site and decide to continue or abort.	
Current & tide (Consider that some sites are more current prone and currents may pick-up during the dive)				If the area is tidal, plan to dive at slack tide. Check currents before diving to ensure appropriate visibility and that currents are safe and do not require excess exertion. Do not dive in currents where divers cannot easily swim. Wait until slack tide or current subsides or move sites.	
Underwater visibility (Consider water visibility may be affected by sedimentation or particulate matter)				Team Leader should discuss with dive operator if visibility is suitable for diving. Assess if survey can safely be carried out if divers reduce distance between buddy teams. If not, abort dive. Wait until conditions allow for safe diving, or move sites.	
Water temperature (Consider: dive activities may take place during winter months)				Divers need to provide appropriate personal protection (for above and underwater) Cool water & air temperatures taken into account during dive planning, allowing divers to maintain comfortable body temperature.	
Time of Day				All surveys completed in daylight, if the sun is setting, divers will be recalled.	
Temperature & humidity (Consider gear set up time and surface interval)				Participants are asked if they are fit and comfortable to dive. Water & air temperatures taken into account during dive planning, allowing divers to maintain comfortable body temperature and divers use appropriate PPE. Extreme temperatures should be considered in the dive plans to make sure participants are not too hot or cold. Abort dive if conditions are not safe.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
ENVIRONMENTAL CONDITIONS					
Isolation of dive site (Consider emergency response access)				All Reef Check sites accessible are from shore or a commercial dive boat. All surveys have O2 and first aid kit on site. EAPs include first aid and contact information for relevant local authorities to call for emergency situations. Generally dives are within 2hrs of medical treatment, if they are not, then additional risk assessments and mitigation strategies are required.	
Depth of dive				All Reef Check dives 18m or less, participants must carry dive computer and monitor depth throughout dive. If divers exceed 18m they must ascend and discuss dive planning with Team Leader.	
Underwater terrain/ Entrapment Hazard: (Consider that some reef sites have more complex structures than others or site structure on known site may have changed)				Surveys are typically in flat reef areas with no penetration of caves or structures. Abort dive if conditions are not safe.	
Dive site entry/exit (Consider entry/exit point with slippery surfaces or surf for shore dives and surge issues on boat entries)				Only dive in conditions where safe dive entry and exit can be carried out. Assess that conditions are safe before commencing dive entry. Abort dive if conditions are not safe.	
Contaminants (Consider biological or chemical contaminants)				Surveys are not conducted in areas of known contamination (biological or chemical etc). Local conditions to be discussed with dive operators or other authorities. Abort dive if conditions are not safe.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
TASK-RELATED CONDITIONS					
Diver is unclear about tasks or confused about their survey role				Team Leader to deliver dive briefing to clarify diver roles and communications. Team members to ask questions if unsure. Use slates or hand signals to communicate underwater. Abort dive if necessary.	
Diver entanglement				Divers are required to carry a dive knife/tool in case of entanglement. Entangle diver should remain calm and still, remove entanglement if possible, otherwise cut entanglement to free diver. Caution when using dive flag on a float as well as how transect tapes are carried and laid out)	
Conducting underwater activities (consider task loading and awareness of their surroundings)				Divers have suitable credentials to participate in activities. Divers shall regularly monitor air levels in air cylinders at the end of EVERY 20m transect AT A MINIMUM, keep buddy informed, return to the surface with no less than 50 bar, taking into account the depth of the dive and exertion levels, e.g., when diving against a current)	
Buoyancy (Consider proximity to reef benthos)				Divers are experienced and have been trained to carry out protocols. Divers will be reminded of marine hazards such as urchins, corals and stonefish and be mindful of where they put arms and legs.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
HYPERBARIC/PHYSIOLOGICAL HAZARDS					
Frequency of Diving				Diving activities will follow DCIEM tables and Repetitive Group Limits listed in Dive Policy and Procedures. Abort dives if planning shows they exceed DCIEM table allowances.	
Duration of dive: (consider if survey dive takes longer than expected due to conditions)				Participants must adhere to agreed bottom time. Dive planning allows safe ascent & safety stop. At end of dive, divers must slowly and safely ascend to surface, watching for surface hazards. Diver recall to begin if team has not returned at pre-agreed time.	
Breathing gas				Breathing gas is supplied by reputable dive operations, divers should try breathing gas before commencing dive to test for evident contaminants. If divers feel unwell, or display signs of contaminated gas then immediately abort dive.	
Exertion required to reach site: Currents				Supervisor is informed by local crew about conditions and activities are planned based on tides as appropriate. Participants must be comfortable with surface or underwater swim to site or not participate or supervisor will cancel dive. If conditions are not suitable pre-dive, then abort planned dive. If participants are already in the water, abort dive, come to surface and inflate safety sausage, blow whistle and signal surface watch if far away.	
Exertion required to reach site: Surface swims				Surface swim distance must allow for safe and practical rescue. All divers must be comfortable to undertake swim (before and after dive). Abort dive if there are concerns about surface swim. Diver should inflate safety sausage, blow whistle and signal surface watch if far away.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
HYPERBARIC/PHYSIOLOGICAL HAZARDS					
Exertion required to conduct dive (Consider currents or swell that may require additional exertion)				Check tides, currents and swell before commencing dive. Divers have responsibility to indicate if exertion is too great. Abort dive if participants are not able to safely carry out their duty in conditions.	
Excessive Noise				Dives take place on reef sites with limited potential for loud underwater noises (not construction sites). If there is potential for loud noise, supervisor must assess. Dive to be aborted if conditions are not safe.	
Immediate pre-dive fitness: (Consider anxiety, poor fitness, illness, sea sicknesses etc)				Divers maintain a level of fitness and undergo regular dive medicals to ensure they are fit to dive. Team Leaders should discuss symptoms and assess signs, as well as consider experience levels to help determine if diver is fit to dive. Divers should only choose to dive if they feel fit and capable. Fitness considerations must take into account prior dives, prior physical exertion, fatigue, recent illness, hydration etc	
Tired Diver/Diver cramp				Diver should stop activity, try to stretch cramped area, signal buddy to help relieve cramp. If condition worsens end dive, surface and tow diver back to boat/shore.	
Altitude exposure				Dive activities are not conducted at altitude. During pre-dive briefing, participants are reminded of altitude and diving guidelines. No trips are planned that allow diving and travelling to altitude. Divers must wait recommended period before travelling to altitude.	
Dive computer failure				Signal team, abort dive. Use DCIEM tables to calculate dive parameters. Divers may not dive without a dive computer.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
Diver runs out of air				Regular equipment maintenance and servicing to ensure working order. Closely monitoring air consumption. Signal out of air to buddy and switch to buddy's alternate; abort dive. Dive buddies should remain close enough that they can provide immediate help in case of emergency.	
ASSOCIATED ACTIVITIES HAZARDS					
Manual Handling (Consider survey equipment and dive equipment can be heavy)				The entire team helps with transporting dive and survey equipment. Divers should be cautious about how they lift heavy items (SCUBA tanks etc)	
Boat Handling (Consider hazardous boating practices or conditions)				Reef Check only conducts diving activities from commercial vessels that are in-survey and operated by boat driver with appropriate training for the vessel)	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
OTHER HAZARDS					
Dangerous marine animals				Seek local knowledge about current conditions prior to dive planning. Precautious are advised in dive briefing. Divers are required to wear full stinger suits to minimize exposure. Divers are trained for a high competency of buoyancy skills and taught to stay off the bottom. If injury occurs, abort dive, get diver back to boat/shore and administer first aid. Team leaders have been trained in first aid.	
Non-associated boat traffic				Dive flag used on all vessels and divers should try to surface close to the vessel. On shore dives or dive with excessive boat traffic, team carries surface marker. Divers look and listen upon surfacing. Be cautious if in high traffic area, only surface near dive boat or dive flag. Ascend slowly.	
Equipment malfunction underwater				Divers are required to perform a thorough pre-dive buddy check before each dive to check that all dive and survey equipment is working properly. Remain calm and still, signal buddy/TEAM LEADER to replace or fix problem, abort dive if cannot be resolved.	

Identified hazard A hazard is something with the potential to cause harm.	**Assessed consequence**	**Assessed Likelihood**	**Assessed Risk** Risk is the likelihood that harm will occur from exposure to the hazard.	**Risk Control (Mitigation)**	**Assessed Risk After Control**
EMERGENCY RESPONSE FACTORS					
Diver loses buddy				Divers maintain close buddy distance with added precaution in reduced visibility situations. Search for no more than 1 minute before slowly ascending to surface to reunite.	
Buddy pair loses group				Dive group maintains close buddy distance with added precaution in low visibility situations. Pair searches together for no more than 1 minute then slowly ascends to surface to reunite with group.	
Lost diver/pair not on surface after minute of searching				Safety watch appointed to keep a lookout for divers, all divers trained in rescue procedures. Signal safety watch tell them you have a lost diver/pair and where and when you last saw them, refer to Emergency action Plan.	
Location and Availability of Emergency Personnel				Team Leaders are trained to deliver first aid and oxygen treatment for divers. Emergency medical support will be contacted immediately. Site is within ___ hours of medical attention.	
Location and Availability of Emergency Equipment				First aid kit and oxygen supply sufficient for 2 divers to reach next level of medical care to be present on Reef Check trips.	
Emergency Response Procedures- including communications				Location has immediate mobile phone and/or radio contact. (Or additional planning is required). Contact appropriate medical support to advise on further action using contacts list in Emergency Action Plan.	

Appendix B. Risk Management Matrix

Assessment of Consequences

LEVEL	DESCRIPTION	EXAMPLE
1	**Major**	Extensive or life threatening injuries, emergency protocols enacted, loss of production capability, emergency services required.
2	**Moderate**	Medical Treatment required, emergency services required, person is not able to continue work.
3	**Minor**	First aid required, person may / may not be able to continue work.
4	**Insignificant**	No injuries, person able to continue work.

Assessment of Likelihood

LEVEL	DESCRIPTION	EXAMPLE
A	**Almost certain**	Is expected to occur in most circumstances.
B	**Likely**	Will probably occur in most circumstances.
C	**Possible**	Might occur at same time.
D	**Unlikely**	Could occur at same time.
E	**Rare**	May occur only in exceptional circumstances.

Risk Analysis Matrix

Likelihood	CONSEQUENCE			
	Major 1	Moderate 2	Minor 3	Insignificant 4
A Almost certain	E	E	H	H
B Likely	E	H	H	M
C Possible	E	H	M	L
D Unlikely	H	M	L	L
E Rare	H	M	L	L

Risk Score

Symbol	Risk	Management
E	**Extreme Risk**	Immediate action required
H	**High Risk**	Senior management attention needed
M	**Moderate Risk**	Management attention needed
L	**Low Risk**	Activity may commence/ manage with routine practices

Activity should only commence or continue when risk score is Low. Should the risk score change during activities, then actions should be taken to reduce the risk to Low .

Risk Control strategies

Appropriate control measures should be applied to risks, using the hierarchy of controls in the order listed.

- **Elimination:** where the level of risk cannot be controlled to an acceptable level, no diving should take place. e.g.; foul weather
- **Substitution**: where the risk can be controlled by performing the task using alternative methods of diving, consideration should be given to using these alternative methods. e.g.; shallow water; Snorkel vs SCUBA
- **Design**: plant and procedures should be designed to minimise risk. e.g.; use tender to minimise surface swim
- **Isolation:** persons should be isolated from the identified hazards. e.g.; exposure suits for thermal protection
- **Administrative:** every dive plan should seek to minimize the degree and duration of the diver's exposure to risk. e.g.; plan to avoid prolonged exposure to sun, wind, cold/hot temperatures

NOTE: Almost every aspect of dive planning falls into this administrative category.

Administrative controls include:

- training, supervision, experience and selection of employees, including
- staffing levels;
- provision of an appropriate diving operations manual;
- organisation and planning before, during and after the dive;
- selection of appropriate plant; and
- selection of the appropriate form and level of communication.

Appendix C. Field Activity Plan

To be submitted to Reef Check Australia management a minimum of three days prior to trip for approval.

TRIP LOCATION

Trip Coordinator:			
Team Leader(s):			
Location of activities:			
Reef Name(s):			
Is this a new site location?			
Start Date:		End Date:	

PLANNING CONSIDERATIONS

	YES	NO	COMMENTS
Have you consulted with relevant local operators and/or authorities about conditions?			
Are there conditions of note? (low visibility, stingers, dangerous marine animals etc)			
If relevant, have you notified permit or area managers of your intended trip?			
Have you checked required documents for activity participants and are they current and will they be current on the date of the dive i.e. medical, gear service, FA and O2 (if surface watch)?			
Are tides suitable for the planned activities?			
Are current weather forecasts suitable for the trip?			
Are there sufficient oxygen supplies for 2 patients to be treated until you can access medical care?			
Is there a first aid kit available on site?			
Have you discussed trip activities with all participants so they understand plans, activities and any costs?			
Have you reminded team members about equipment requirements			
Have you discussed plans for travel arrangements to site with all team members?			
If relevant, have you asked team members about dietary requirements?			

DESCRIPTION OF DIVE ACTIVITIES

Indicate details of proposed dive/snorkel plans below for <u>each day</u> of activities (copy and paste this table as many times as necessary depending on the number of days).		
Date:		
Site Name(s):		
Type of Diving (Snorkel, SCUBA):		
Proposed number of dives/day:		
Site Access (Shore, Boat):		
Are you travelling with a dive/snorkel operator? (Y/N)		
Vessel Operator/Tank hire:	Name:	Contact #:
Maximum distance to access site (estimate of surface swim etc):		
Main working depth:		
Intended maximum depth:		
Expected visibility:	<5m 5-10m >10m	
Level of exertion:	LOW MEDIUM HIGH	
Other comments:		

RISK MANAGEMENT

Activities and protocols (Reef Check Survey Dive, Clean-Up Dive, Training Dive etc):	
Equipment to be used:	
Is a completed Risk Management Guide submitted with this Field Activity Plan? (Y/N)	
Location of nearest medical assistance:	
Time it will take to get assistance to the site – under worst case conditions:	
Where is the closest hyperbaric chamber?	

FIELD ACTIVITY TEAM

Qualifications index for team (Qualifications verified prior to trip)	Scientific diver **S**	Instructor . **I**	Divemaster . **DM**	AQF Rescue **AR**	Rescue Diver **R**	Adv. Open Water **AOW**	First aid . **FA**	CPR + Oxygen **O2**

Activities index	Snorkeller **SN**	Clean Up Diver **CD**	Survey Diver in-training **SDT**	Survey Diver **SD**	Team Leader **TL**	Trainer **TR**	Surface Watch **SW**

Team Member Names:	Qualifications (Tick)								Activities (Tick)						
	S	I	DM	AR	R	AOW	FA	O2	SN	CD	SDT	SD	TL	TR	SW

Approved by Diving Officer: YES NO	DO Name:	Date of Approval:

Appendix D. Safety Briefing

DIVE PLANNING

- ☐ If relevant, check with dive operator or boat crew regarding any local knowledge, current conditions and dive plans.
- ☐ Lead team to undertake the Risk Management Guide process.
  - Review the Risk Management Guide and Re-evaluate the site, conditions and changed factors on-site.
  - Ask the team: "*Are there any additional hazards or risks that you can think of*?"
  - Discuss perceived hazards, mitigation strategies and risks.
  - It is the responsibility of all team members to actively participate in the risk assessment and to verify that they feel comfortable to dive.
- ☐ **Are all team members comfortable to carry out planned activities?**

DIVE BRIEFING

- ☐ Deliver a dive brief prior to any Reef Check in-water activity with ALL participants present
- ☐ Review of environmental, physiological, activity, task-related and other considerations (including unique factors identified in the Risk Management Guide process):

ENVIRONMENTAL

- ☐ Dive site entry and exit points & considerations
- ☐ Depth of site (divers should not go beyond 18m and no Reef Check survey should be conducted below 12m)
- ☐ Details of expected 'in water' conditions, including currents, visibility, seafloor conditions etc and potential impacts on diving activities
- ☐ Visibility: buddy and Team Leader proximity to be closer in reduced viz
- ☐ Marine life: site specific hazardous marine life to consider (urchins, sharks, stonefish etc)
- ☐ Water temperature: divers can abort at any time if they feel cold

PHYSIOLOGICAL

- ☐ Check immediate pre-dive fitness (prior dives, prior physical exertion, fatigue, hydration)
- ☐ Dive planning (Maximum dive time, reminder for slow ascent 18m/min, 3 min safety stop at 5m)
- ☐ Air consumption (Regularly monitor air levels in air cylinders at the end of EVERY 20m transect AT A MINIMUM, keep your buddy informed, return to the surface with no less than 50 bar, taking into account the depth of the dive and exertion levels, e.g., when diving against a current)
- ☐ Exertion required to reach dive site or conduct task (Are all divers comfortable with surface swims, currents, swell etc?)
- ☐ Check immediate pre-dive fitness (prior dives, prior physical exertion, fatigue, hydration)

TASK-RELATED

- ☐ Tasks: Objectives of the survey and the assigned tasks, roles, equipment of each team member—ask does everyone feel comfortable with their role? Does anyone have questions?
- ☐ Buoyancy control: be mindful while hovering near the reef
- ☐ Task loading: be aware of your survey role, but also be alert to your surroundings and buddy
- ☐ Communication techniques: review of hand signals, use of dive slates
- ☐ Other reef users e.g. boat traffic, reef tourists
- ☐ Dive termination procedures (Aborting dives: Option to safely abort dive AT ANY TIME, tell your Team Leader, consider low air/minimum air limits, time in water, fatigue, cold) **CONSIDER SAFETY FIRST!**

EMERGENCY RESPONSE

- ☐ Location of surface watch
- ☐ Lost contact procedure (buddy or team) – search for 1 min underwater by looking 360°searching for diver and/or bubbles at the last location the buddy/group was sighted, if no contact, surface to reunite
- ☐ Dive recall signal
- ☐ Location of emergency action plan in Survey Pack
- ☐ Does everyone have required dive equipment, including safety sausage, whistle and dive knife?
- ☐ Confirm surface watch and their location
- ☐ Review of tasks of each dive team member and relevant equipment—ask does everyone feel comfortable with their role? Does anyone have questions?
- ☐ Buddy pairs shall perform a thorough, pre-dive buddy check

CONFIRMATION OF SAFETY BRIEFING

☐ **Each team member must sign the dive log to indicate they have heard and understand the briefing.** The Team Leader will sign the dive log to verify that all survey team members were present and heard and understood the briefing and took part in the HIMRA. This must be completed before each dive.

DIVE DEBRIEF

☐ Team members to report their dive information and sign the dive log as soon as practicable
☐ Team Leader will conduct a head count to ensure all team members are present and complete the dive log
☐ Reminder to divers that they should keep a record of their dives
☐ Check the health of divers and record details of any issues or incidents, including discussions of risk controls
☐ Review activity outcomes and check underwater data collection sheets to ensure completeness
☐ Check that there are no further questions from volunteers about findings
☐ Post dive reminders regarding including altitude, heavy work, exercise or showering restrictions
☐ The Team Leader (or designated representative) will check that all dive equipment is accounted for
☐ Thank relevant dive operator crew

Appendix E. Dive Log

Reef Check Australia Dive Log

Location		Vessel/ Operator		Date		Team Leader		The Risk Management Guide must be completed by the Team Leader/Dive Supervisor, reviewed on-site and agreed to by all participating divers before diving may continue. Divers indicate their agreement by signing the in the Dive Briefing Signature area below.
High Tide Time		Surface Conditions:	CALM CHOPPY	Air Temperature	°C	Dive Briefing completed		
Tide Range		Current Strength:	LOW MED HIGH	Water Temperature	°C	Visibility		
Max Depth		Significant Factors changed from original Risk Assessment?	YES or NO	Note: If YES, then additional hazrds, risks and control measures must be reviewed in the Risk Management Guide before continuing.				

Dive Plan	Site Name:					Dive Plan	Site Name:		
	Dive 1	Depth	Duration		Surface Interval	Dive 2	Depth	Duration	Surface Interval
End of Dive Head Count:			Completed by:			End of Dive Head Count:		Completed by:	

Dive 1

Divers Name	Dive Briefing signature	Buddy initials	Surface Interval	Rep Dive Factor	Air In	Time In	Time Out	Air Out	Max Depth	Bottom Time	Rep Dive Group	Head Count Signature

Dive 2

Dive Briefing signature	Buddy initials	Surface Interval	Rep Dive Factor	Air In	Time In	Time Out	Air Out	Max Depth	Bottom Time	Rep Dive Group	Head Count Signature

Incidents: (e.g. problems, discomfort, injury ect)

Note: Contact Reef Check Management regarding any issues requiring medical attention prior to continuing your dives. The purpose of this form is for Reef Check to keep a record of your dives and to help you plan your dives safely.

Appendix F. Incident Report Form

Reef Check Australia Incident Report Form

Contact numbers	
Diver Emergency Service (Australia)	1 800 088 200
Diver Emergency Service (International)	61 8 8212 9242
Townsville Hospital	07 4796 1111
Royal Brisbane & Womens Hospital Hyperbaric Unit	07 3646 0241

Name of Diver:	Name of buddy (or buddies):
Date:	Location:
Type of illness or injury suspected:	Reported By:

Report on Signs and Symptoms	
Time(s):	

First Aid Provided	
Time(s):	

Name of Doctor Contacted and their comments (as required)	
Time(s):	

Follow-Up Report (as required)

Date:	Location:
Type of illness or injury suspected:	Reported By:

Additional Information	
Time(s):	

Name of Doctor Contacted and their comments	
Time(s):	

Appendix G. Emergency Action Plans

Missing Diver Emergency Action Plan

STOP, THINK, ACT

If dive team or diver has not surfaced by the agreed time, then the following procedure should be put into action.

PROCEDURES

- Note last known position of the lost diver(s)
- Notify Volunteer Marine Rescue by radio immediately!
- Assess degree of urgency
- Place lookout at highest possible observation point
- Check that the diver has not left the area or boarded near by boats.
- If missing diver, recall all divers.
- If safe, use snorkellers to look for missing diver or their bubbles.
- Buoy the area where the diver was last seen.
- If a diver from the dive team returns then question them to collect information about the dive
- Any qualified divers with full cylinders (2700 psi or 170 bar) to conduct underwater search if safe and available
- Maintain contact with Volunteer Marine Rescue

FACTORS TO CONSIDER:

- Time overdue
- Planned dive profile
- Conditions
- Possible decompression & air status

A LOOKOUT SHOULD:

- Scan 360 degrees
- Look for bubbles and along the shoreline.
- Consider current movement and possible changes.
- Once the diver is spotted, do not lose sight of the diver!

QUESTIONS FOR RETURNING DIVERS:

- Any obvious problem
- When & where missing diver was last seen, what he/she was doing, direction he/she was swimming
- Maximum depth reached
- Last known air pressure and likely air consumption rate
- Divers likely action in the event of a buddy separation
- Where you surfaced relative to the position you last saw the other diver

Diver/Snorkeller Recovery Emergency Action Plan

STOP, THINK, ACT

The following procedure should be used to safely retrieve a snorkeller or diver from the surface while not endangering other people.

PROCEDURES

- Keep the person in sight at all times
- Boat rescues: Do not waste time pulling up anchor, attach a life jacket or a float to the anchor line. Release the anchor line so it will act as a search marker buoy
- When approaching snorkeller or diver by boat, use safe boating practices
- Shore-based rescues: Shore based surface watch should be ready to initiate rescue procedures, with mask and fins at the ready.
- Drop victims weight belt & scuba unit (if necessary) before recovering the victim (if practical retrieve scuba unit as well for possible future investigations)
- Maintain contact with Volunteer Marine Rescue
- Return to the point of departure ASAP
- Begin First Aid, CPR and /or Oxygen Treatment as required
- Do not leave any one behind without boat support

GOLDEN RULES:

Do NOT endanger anyone else
Do NOT leave anybody behind
Do NOT panic

SAFE BOATING

- Sound air horn to alert people to move clear of the boat and motors
- If there are other people available appoint a look out at the bow of the boat, to warn the snorkel / dive guide and to warn them to keep clear of the boat.
- Look out for divers and snorkellers surfacing
- Approach at a safe speed, be careful not to run into anyone
- Be careful boat is not blown or swept by current into a dangerous area. (reef edge)
- Place the motor into neutral when you are close to and are recovering the person.

First Aid & Evacuation Emergency Action Plan

STOP, THINK, ACT.

PROCEDURES

- SAFELY search/recover victim(s) to boat or shore
- Provide immediate First Aid (Provide as close to 100% oxygen as possible for ALL suspected DCI injuries)
- Seek emergency medical assistance immediately and follow instructions
- Recall other divers/snorkellers
- Ensure that all team members are present and safe
- Isolate victim's equipment, if possible and safe to do so
- Ensure that no equipment has been left in a dangerous condition
- Organise evacuation to the nearest hospital or vacant recompression chamber as dictated by the circumstances, the casualty's condition, or medical advice (NB. If you ring the DAN, confirm whether they will organise the evacuation)
- Monitor victim's buddy for signs and symptoms
- Compile incident report

Follow DRSABCDS:

D – Danger
R – Response
S – Send for help
A – Airway
B – Breathing
C – Compression/CPR
D – Defibrillation
S – Shock Management
Serious Bleeding Management

Items to include in communication:

- Name of victim(s)
- Overview and severity of incident
- Victim's condition
- First aid intentions
- Intended next steps
- Requests for assistance from other dive boats
- Agreement on future communications

Ask a helper to:

- Contact RCA management
- Record as many details about the incident as possible (dive time, dive location, buddies, first aid treatment, conditions etc)
- Collect known details about victims activities for past 48 hours (dive history etc) and any known medical history
- Record contact information for all people on site

QUEENSLAND EMERGENCY CONTACTS

EMERGENCY CONTACT INFORMATION
Diving Emergency Services/DAN 1 800 088 200
Flying Doctor/Ambulance 000
Queensland Emergency Services (07) 4722 1060
VHF EMERGENCY CHANNEL 16

HYPERBARIC CHAMBER & COAST GUARD/VOLUNTEER MARINE RESCUE		
Townsville Hospital Hyperbaric Medical Unit (TOWNSVILLE) The Townsville Hospital, 100 Angus Smith Drive Douglas QLD 4814 (07) 4796 2080 or (07) 4433 2095 (07) 4433 1111 After hours		
Royal Brisbane and Womens Hospital Hyperbaric Unit Ground Floor, Ned Hanlon Building, Cnr Butterfield St & Bowen Bridge Road, Herston QLD 4029 (07) 3646 0241		
	Coast Guard/Volunteer Marine Rescue	**Chamber**
AIRLIE BEACH	**VMR Whitsundays** (07) 4946 7207	**Townsville**
BRISBANE	**VMR Stradbroke Island** (07) 3409 9338	**Brisbane**
CAIRNS	**Coast Guard Cairns** (07) 4051 2192	**Townsville**
GOLD COAST	**VMR Southport** (07) 5591 1300	**Brisbane**
GLADSTONE	**VMR Gladstone** (07) 4946 3333	**Townsville**
HERVEY BAY	**VMR Hervey Bay** (07) 4128 9666	**Brisbane**
PORT DOUGLAS	**Coast Guard Port Douglas** (07) 4099 5392	**Townsville**
TOWNSVILLE	**Coast Guard Townsville** (07) 4771 4831	**Townsville**
SUNSHINE COAST	**Coast Guard Mooloolaba** (07) 5444 3222	**Brisbane**