Dive Operations Procedures
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1. OVERVIEW
These Diving Procedures aim to achieve Edith Cowans University’s goal in providing and maintaining, so far as is reasonably practicable, a safe and healthy work environment for its workers, students, volunteers and visitors. This extends to minimising the risks associated with diving activities.

Safety at ECU is everyone’s responsibility and the University’s health and safety performance is dependent on the commitment of all workers, students and visitors to actively participate and enthusiastically strive to achieve a safe and healthy working environment.

2. SCOPE
This document is the School of Science’s (SSCI) Diving Procedures Manual. It is intended to provide the minimum requirements for all diving operations undertaken under the auspice of The School of Science. This includes all staff, students, volunteers and collaborators from external organisations.

3. DEFINITIONS
Competent Person - A person who has acquired, through training and experience the knowledge and skills, enabling that person to safely perform a specified task.

Scientific Diving - Diving performed for the purpose of professional scientific research, natural resource management or scientific research as an educational activity.

4. PERSONNEL AND RESPONSIBILITIES
4.1 DIVE OFFICER
The School of Science shall appoint a Dive Officer who is an experienced and appropriately trained scientific diver.

4.1.1 Qualifications of a Dive Officer
The Dive Officer shall:
   a. Be qualified to a level equal to or exceeding that specified in AS2815.1;
   b. Have at least 100 hours of underwater scientific diving experience; and
   c. Satisfy any other reasonable requirements as specified by the organization.

4.1.2 Responsibilities of a Dive Officer
The Dive Officer shall:
   a. Develop, review and manage the School’s Dive Operation Procedures;
   b. Ensure all divers are aware of their responsibilities;
   c. Ensure all dive operations are conducted in accordance with this manual;
   d. Be familiar with any legislation and guidelines which may apply to the diving operations;
   e. Have the power to restrict, prohibit or suspend any diving operations, program or practice which they consider unsafe;
   f. Have the power to acquire such additional safety practices, procedures or equipment as they think is necessary in any diving operation; and
   g. Assess diver’s competencies and record the evidence used in the assessment.
4.2 DIVE COORDINATOR
The Dive Officer shall appoint a Dive Coordinator who is responsible for all dives and dive team safety under supervision.

4.2.1 Qualifications of a Dive Coordinator
The Dive Coordinator;
   a. Shall be a Scientific diver;
   b. Shall have experience in the diving techniques, equipment and procedures used in the diving operation to be performed;
   c. Shall have at least 15 hours of experience as a Scientific Diver; and
   d. Shall satisfy any other reasonable requirements specified by the Dive Officer.

4.2.2 Responsibilities of a Dive Coordinator
The Dive Coordinator;
   a. Shall ensure an approved Risk Assessment Management Plan is available for the intended activity;
   b. Shall ensure a dive plan is lodged with the Dive Officer in a timely manner.
   c. Shall be present at all times during dive operations;
   d. Shall be able to recognize and manage dive emergencies;
   e. Shall record all dives on the SSCI dive log;
   f. Shall ensure all diving operations, under their supervision, are carried out in accordance with this Diving Manual;
   g. Shall report all equipment damage and defects; and
   h. Shall report all incidents and accidents.

4.3 DIVE LEADER
When a team is in free swimming SCUBA mode, before each dive, the Dive Coordinator shall appoint a Dive Leader to take charge of the underwater part of a diving operation. The Dive Leader shall be the most experienced diver and/or the person in charge of the research.

4.3.1 Qualifications of a Dive Leader
The Dive Leader;
   a. Shall be a scientific diver or a visiting scientific diver; and
   b. Shall have adequate knowledge and experience of the diving techniques and equipment to be used.

4.3.2 Responsibilities of a Dive Leader
The Dive Leader shall;
   a. Take responsibility for any decisions as the dive proceeds;
   b. Conduct the dive in accordance with this manual and, as far as possible, in accordance with the pre-dive plan; and
   c. Terminate the dive in accordance section 10.2 of this manual - TERMINATION OF DIVE.

4.4 DIVER CLASSIFICATION
Every diver shall be classified as a restricted scientific diver, a scientific diver, a visiting restricted scientific diver or a visiting scientific diver for the purpose of scientific diving under the auspice of the SSCI.
4.4.1 Scientific Diver
A Scientific Diver can perform dives in accordance with their training and competency.

4.4.1.1 Requirements of a Scientific Diver
A Scientific Diver;
   a. Shall hold a minimum of “Rescue Diver” or equivalent certification with an accredited diving agency.
   b. Shall have at least 15 hours of experience as a Diver.
   c. Shall be competent and trained to levels appropriate for the dive operation;
   d. Shall be competent to safely carry out the work required for the dive operation;
   e. Shall be certified as “medically fit” to dive in accordance with the requirements of AS/NZS 2299.1
      by a medical practitioner appropriately trained in underwater medicine, within 12 months prior to
      diving; and
   f. Shall be a certified First Aider and Oxygen Provider.

4.4.1.2 Responsibilities of the Scientific Diver
A Scientific Diver shall;
   a. Dive safely within the limits of their capabilities and training;
   b. Ensure they are medically, physically, and mentally fit for each dive;
   c. Ensure that they are familiar and dive in accordance with the pre-dive plan; and
   d. Maintain effective two-way communication with each buddy at all times;

4.4.2 Restricted Scientific Diver
4.4.2.1 Requirements of a Restricted Scientific Diver
A Restricted Scientific Diver;
   a. Shall be competent and trained to the level of “Open water”;
   b. Shall have at least 15 hours of logged dive experience;
   c. Shall be competent to safely carry out the work required in the dive operation;
   d. Shall be certified as medically fit to dive in accordance with the requirements of AS/NZS 2299.1 by
      a medical practitioner appropriately trained in underwater medicine, within 12 months prior to
      diving; and
   e. Should be a certified First Aider and Oxygen Provider

4.4.2.2 Responsibilities of a Restricted Scientific Diver
A Restricted Scientific Diver shall;
   a. Dive safely within the limits of their capabilities and training;
   b. Ensure they are medically, physically, and mentally fit for each dive;
   c. Ensure that they are familiar and dive in accordance with the pre-dive plan; and
   d. Maintain effective two-way communication with each buddy at all times while in the water.

4.4.2.3 Restrictions on a Restricted Scientific Diver
A Restricted Scientific Diver shall not;
   a. Act as a standby diver;
   b. Dive deeper than 12 m;
   c. Dive as a restricted diver other than for a single initial period of up to 12 months; or
   d. Use pneumatic or hydraulic tools, or lift bags.
4.5 DIVE ATTENDANT
The Dive Coordinator shall appoint a Dive Attendant to assist on the surface during a dive operation.

4.5.1.1 Qualifications of a Dive Attendant
The Dive Attendant;
   a. Should be a registered diver;
   b. Should be a certified First Aider and Oxygen Provider;
   c. Shall be familiar with the equipment and the requirements of the work;
   d. Shall be familiar with this Diving Manual; and
   e. Shall be familiar with communication and emergency procedures.

4.5.1.2 Responsibilities of the Dive Attendant
The Dive Attendant shall;
   a. Record dive information;
   b. Maintain a constant vigil during the dive;
   c. Recover divers, and their equipment and samples;
   d. Tend to a diver whilst that diver is in the water; and
   e. Provide support until the diver is in a fundamentally stable position or de-geared.

4.5.2 Standby Diver
A Standby Diver shall be present on all dives. The Standby Diver may act as a dive buddy.

4.5.2.1 Qualifications of a Standby Diver
The Standby Diver shall;
   a. Shall hold a minimum of “Rescue Diver” or equivalent certification with an accredited diving agency
   b. Be competent and trained to levels appropriate for the dive operation;
   c. Be competent to safely carry out the work required in the dive operation;
   d. Be certified as medically fit to dive in accordance with the requirements of AS/NZS 2299.1 by a
      medical practitioner appropriately trained in underwater medicine, within 12 months prior to
      diving; and
   e. Be a certified First Aider and Oxygen Provider.

4.5.2.2 Responsibilities of a Standby Diver
The Standby diver shall ensure they are able to renderer immediate assistance to the diver.

5. DIVER REGISTRATIONS
All divers shall be registered before any diving activities are undertaken- see Appendix 1-3. At the time of
registration all divers shall provide copies of certification, medicals and a log of dive experience to the Dive
Officer.

6. FIRST AID
On all dive operations, there shall be sufficient current and suitably qualified First-Aid personnel to
administer first-aid for any reasonably foreseeable emergency. With no less than two trained in First Aid
and Oxygen administration immediately available at all dive sites.

As minimum first aiders, shall be able to control bleeding, administer oxygen to breathing and non-breathing
patients, carry out cardiopulmonary resuscitation and care for an unconscious patient.
First aid and oxygen resuscitation equipment shall be immediately available on all dive sites.

Sufficient oxygen shall be carried to ensure medical evacuation to a hypobaric or ambulance facility.

Procedures for dive emergencies can be found in the SSCI- Emergency Procedures manual.

SSCI divers are responsible for maintaining a current First Aid and Oxygen Provider Certificate. Proof of certification shall be filed with the Dive Officer.

7. EMERGENCY SERVICES
   The Dive Coordinator shall ensure effective communication is immediately available to contact emergency service and that the approach is made clear and available in the dive plan;
   a. The location of the nearest emergency medical and hyperbaric facility;
   b. Appropriate plans for emergency transportation of an injured diver.

8. SMOKING DRUGS AND ALCOHOL
   Diving shall not be undertaken while the diver is under the influence of any intoxicants, within 8 hours of consuming any intoxicants or if the diver is under the influence of any intoxicants that may impair their mental or physical capacity.

Smoking is not permitted on any School dive platform or within 50 meters of any dive equipment.

9. WORKING WITH OTHER ORGANISATIONS
   Where SSCI divers are working under the aegis of other organizations, then the SSCI- diver will normally be bound by that organizations diving code. For such operations, the organisations Diving Manual and dive plan shall be forwarded to the SSCI Dive Officer. The SSCI- diver shall not undertake the diving operation without the SSCI Dive Officers authorisation.

   When divers from another organisation are undertaking diving operations under the auspice of The School of Science they shall meet the requirements outlined in this manual.

   A person certified to dive under a foreign organization is recognized and allowed to dive under the auspice of The School of Science provided they present satisfactory documentary evidence of qualifications, a dive medical and are registered as a diver under the auspice of the foreign organisation.

10. DIVING PROCEDURES
   10.1 REFUSAL TO DIVE
   A Diver may refuse to dive, without fear of reprisal, whenever they feel it is unsafe for them to make the dive.

   The diver shall refuse to dive if, in their judgement, conditions are unsafe or unfavourable, or if they would be violating their training or the procedures outlined in this manual.

   10.2 TERMINATION OF DIVE
   A dive shall be terminated;
   a. In accordance with the pre-dive plan;
   b. At the request of termination;
   c. When a diver loses contact with their dive buddy;
d. When a diver begins to use their reserve gas supply;

e. When a diver becomes aware of any signs of equipment malfunction;

f. When a diver becomes aware of any sign or symptom of distress; or

g. When a diver becomes aware of any unusual or unplanned situation which threatens the health or safety of any dive team member.

10.3 COMMUNICATION

A communication system appropriate to the task and situation shall be established and maintained for the duration of all dive operations between divers, and the dive team and the surface attendant.

10.3.1 Emergency Communication

All dive operations shall have a suitable and reliable means of communication to the relevant authorities in the event of an emergency. SSCI recognises marine radios, mobile phones or satellite phones as suitable means of communication.

10.3.2 In-water Communication

When in free swimming SCUBA mode the diver shall;

a. Maintain visual contact with their dive buddy; and

b. Wear a scuba rattle or air horn that is used to alert their dive buddy.

For tethered dive operations the diver shall use;

a. Line signals; or

b. Through-water or in-water communications.

10.3.3 Diver Recall

In the event of a diver recall the Dive Attendant shall;

a. Sound long blasts of the air horns;

b. Continually rev the outboard engines; or

c. Bang on the vessel hull until the divers are recalled.

10.4 DIVE RESTRICTIONS

No dive shall be planned or undertaken that;

a. Is a decompression dive;

b. Exceeds 30 metres;

c. Is outside the divers training;

d. Is deemed unsafe by the Dive officer, Dive Coordinator or the Diver; or

e. Uses Surface Supply Breathing Apparatus (SSBA).

10.5 PERSONNEL REQUIRED

There shall be enough personnel to carry out any dive operation safely. A person may fill more than one role (i.e. the Dive Coordinator can also be a Dive Leader, Dive attendant, standby diver or a diver).

The minimum for a dive team in free swimming SCUBA mode is three.

10.6 DECOMPRESSION TABLES

Canadian Defence and Civil Institute of Environmental Medicine (DCIEM) tables shall be used for planning and control of all dive operations. A dive computer shall only be used to assist the dive.
10.7 **PRECAUTIONARY DECOMPRESSION STOPS**
If safe to do so, the divers shall carry out a precautionary decompression stop at the end of each dive over 9m using the schedule that would be applicable if they had just exceeded the no-decompression limits for the dive. If precautionary decompression stops are to be carried out, they should be included in the dive plan.

10.8 **ACCENT RATE**
The diver’s accent rate shall not exceed 18 meters per minute.

10.9 **LOW VISIBILITY**
In addition to diving procedures outlined in the manual any dive operation undertaken in visibility (less than 2m), the Dive Coordinator shall ensure divers are tethered to their buddy or the surface. Zero visibility diving operations are not permitted unless prior approval from the Dive Officer.

10.10 **DEPTH OF WATER**
Before all diving operations, the maximum depth of water at the site and the maximum possible depth to which the diver could be exposed shall be ascertained by reliable means.

10.11 **WATER TEMPERATURES**
All divers shall have suitable equipment to maintain a safe temperature.

10.12 **DIVE PLATFORMS**
All dive platforms, including vessels shall;
   a. Be safe and suitable for the intended dive operation; and
   b. Have suitable means, appropriate to the dive platform, by which a diver can enter and exit the water or an injured diver can be retrieved safely.
   c. Non-SSCI dive platforms shall be assessed and the documented evidence filed with the Dive Officer.

10.13 **SHORE DIVING**
The entry and exit location for all shore diving operations shall;
   a. Be safe and suitable for the intended dive operation; and
   b. Have suitable means by which a diver can enter and exit the water or an injured diver can be retrieved and evacuated safely.

10.14 **DIVE FLAG**
All dive operations shall display an appropriate dive flag. In addition, dive operations that may exceed 50 meters from the dive platform or are in high boat traffic areas shall also display a second dive flag at the diver’s location.

11. **AVAILABILITY OF RECOMPRESSION SUPPORT**
Depending upon the availability of emergency recompression;
   a. Bottom time shall be determined by reference to Table 1
   b. Repetitive group limit shall be determined by reference to Table 2
### TABLE 1: TIME LIMITS FOR DIVES, DEPENDING ON LEVEL OF RECOMPRESSION CHAMBER SUPPORT

<table>
<thead>
<tr>
<th>Maximum Dive Depth</th>
<th>Maximum bottom time, min</th>
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<tbody>
<tr>
<td></td>
<td>Column A</td>
</tr>
<tr>
<td></td>
<td>(chamber within 2 h)</td>
</tr>
<tr>
<td>M</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>No Limit</td>
</tr>
<tr>
<td>6</td>
<td>240 (400)</td>
</tr>
<tr>
<td>9</td>
<td>180</td>
</tr>
<tr>
<td>12</td>
<td>120</td>
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<tr>
<td>30</td>
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### TABLE 2: LIMITS FOR REPETITIVE DIVES, DEPENDING ON LEVEL OF RECOMPRESSION CHAMBER SUPPORT (BASED ON DCIEM TABLES)

<table>
<thead>
<tr>
<th>Maximum Dive Depth</th>
<th>Maximum repetitive group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Column A</td>
</tr>
<tr>
<td></td>
<td>(chamber within 2 h)</td>
</tr>
<tr>
<td>M</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>No limit</td>
</tr>
<tr>
<td>6</td>
<td>G(J)</td>
</tr>
<tr>
<td>9</td>
<td>H</td>
</tr>
<tr>
<td>12</td>
<td>H</td>
</tr>
<tr>
<td>12 to 30</td>
<td>DCIEM no deco limits</td>
</tr>
</tbody>
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#### 11.1 FLYING AFTER DIVING

No diver shall fly for:

- a. 24 hours after a single dive to ≤50% of the DCIEM no-decompression limit;
- b. 48 hours after one or more dives to ≥50% of the no decompression limits; or
- c. 72 hours after repetitive diving over multiple days, extreme exposures, or any other adverse events.
11.2 REPETITIVE DIVES
A repetitive dive is any dive conducted within 18 hours of a previous dive or that has a repetitive dive factor greater than 1.0, when calculated using DCIEM tables.

Divers performing repetitive dives over multiple days must have a 24 hr break from diving every third day, except where using repetitive dive profiles involving less than three dives per day, in which case a 24 hr break must be taken on the fifth day.

DAILY LIMITS
Repetitive dives shall not exceed limits outlined in table 3.

TABLE 3: DIVE DEPTH AND LIMITS

<table>
<thead>
<tr>
<th>Depth of dive (m)</th>
<th>No. of dive per day</th>
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<tbody>
<tr>
<td>&lt;9m</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>24-30</td>
<td>2</td>
</tr>
</tbody>
</table>

11.3 NIGHT DIVES
In addition to diving procedures outlined in the manual, any night diving operation the Dive Coordinator shall ensure:
   a. The entry and exit points are adequately and distinctively illuminated;
   b. Each diver has two suitable underwater light sources;
   c. Each diver is familiar with the torch signals to be used; and
   d. Each diver carries and is able to navigate with an underwater compass.

12. EQUIPMENT FOR DIVING
12.1 EQUIPMENT STANDARDS
1. All dive equipment necessary for the safe conduct of a dive operation shall be of approved design appropriate for the task.
2. All regulators, SCUBA cylinders, buoyancy compensator and gauges shall be serviced or repaired according to manufactures requirements by a suitably trained dive technician, as required or annually.
3. Equipment shall not be changed in any way the might impair its safe use or the purpose it was originally designed.

12.2 DIVE EQUIPMENT
12.2.1 SCUBA Kit
Each Open-circuit SCUBA kit shall consist of;
1. A demand regulator;
2. An alternate air supply- i.e. octopus;
3. A buoyancy compensator of an approved design that is inflatable orally and from a compressed air cylinder;
4. An air cylinder;
5. Dive safety knife;
6. A watch or elapsed-time indicator;
7. A depth gauge which shall incorporate a maximum depth indicator.
8. A submersible pressure gauge for measuring breathing gas pressure in the cylinder;
9. A safety sausage and whistle; and
10. An air horn or scuba rattle.

12.2.2 Equipment for SCUBA Divers
For SCUBA diving operations, equipment shall include the following:

a. Face mask;
b. Swimming fins;
c. Snorkel for surface swimming;
d. Weight belt with a quick-release closure; and
e. Wetsuit or protective clothing appropriate for the conditions of work and the temperature of the water.

12.2.3 Dive Safety Knife
A dive safety knife shall be worn by each diver on all dive operations. This knife shall not be used as a work tool.

12.2.4 Thermal Protection
All divers shall wear suitable thermal protection appropriate to the surface and in-water conditions to prevent over heating or becoming uncomfortably cold.

12.2.5 Suitable Footwear
All dive team members shall wear suitable footwear i.e. dive booties or enclosed non-slip shoes. Thongs or open-toed shoes are not permitted during any part of the dive operation.

13. DANGEROUS MARINE CREATURES
Emergency procedures for an injury involving a dangerous marine creature is located in the SSCI-Emergency Procedures Manual.

13.1 BLUE RINGED OCTOPUS
For all marine fieldwork, including rocky shores or in estuarine habitats, instructions on how to identify, the dangers of, and first aid treatment for a blue ringed octopus must be given to each team member.

A Blue Ringed Octopus will be deemed present when any research that is likely to create a suitable habitat, such as PVC sediment traps, are used.

13.2 CROCODILES
All fieldwork in waters inhabited by crocodiles shall follow the “Working Safely in Estuarine Crocodile Habitats Procedures” - See- SSCI Field Manual
13.3 JELLY FISH

13.3.1 Irukandji or Box Jellyfish
A stinger suit shall be worn during stinger season in areas where Irukandji or box jellyfish occur.

Diving shall not be permitted in areas where there are large numbers of Irukandji or box jellyfish.

13.3.2 Other Jellyfish
A diver shall cover exposed areas of skin as far as reasonably practicable. Divers should avoid areas where there are large numbers of jellyfish.

13.4 CONESHELLS
For all tropical marine fieldwork, instructions on how to identify, the dangers of, and first aid of a coneshell must be given to each team member.

13.5 SEA SNAKES
For all tropical marine fieldwork, instructions on how to identify, the dangers of, and first aid treatment of a sea snake must be given to each team member.

13.6 SHARK MANAGEMENT
1. Diving is prohibited, for 24 hours within a 5nm radius, in areas where a dangerous shark or an unknown species of shark, over 2.5m, has been sighted.
2. Diving is prohibited, within a 5nm radius, in areas closed by the authorities.
3. The Dive Attendant shall monitor shark alert warnings and terminate the dive in accordance with point (1).
4. The Diver shall terminate the dive where a dangerous shark or an unknown species of shark, over 2.5m, has been encountered.
5. Where there is a risk of shark encounters, each diver shall wear an electronic shark deterrent.

If you see a shark;
- Remain calm;
- Do not rush to the surface as the shark is likely to follow;
- Attract the attention of your buddy;
- Keep the shark and the other diver in view;
- Ensure that your Shark Shield is turned on;
- During ascent, prepare for quick entry into the vessel by undoing all harness attachments etc.; and
- Be aware of your breathing and ascent rate.

14. ENRICHED AIR NITROX (EANx)
- Only divers with Nitrox qualifications shall be permitted to use Nitrox. Qualifications are to be filed with the Dive Officer.
- The EANx mix shall not exceed 40%.
- All scuba cylinders to be used for the storage of EANx shall be clearly marked "NITROX".
- The Dive Coordinator shall calculate the EANx equivalent air depth then calculate the decompression schedule using the DCIEM tables- as for any air dive.
- A dive should not be planned to exceed an oxygen partial pressure of 1.2 atm.
- The Dive Coordinator shall terminate dives when the partial pressure of oxygen exceeds 1.4 atm. This depth shall be discussed in the dive brief.
The dive coordinator shall indicate the Central Nervous System dose (CNS) and the Unit Pulmonary Toxicity Dose (UPTD) for each diver.

The CNS exposure should NOT exceed 80%.

A diver should not incur more than a maximum of 300 UPTDs per 24hr period.

Single dive times and 24 hour limits, outlined in table 4, shall not be exceeded.

Before each dive the diver shall analyse the cylinder gas to verify the $O_2$ content and record it on the dive log.

The Dive Coordinator shall discuss the signs and symptoms of Oxygen toxicity- such as visual disturbance, ears ringing, euphoria, nausea, tingling, irritability and dizziness before each dive.

### TABLE 4: NOAA OXYGEN EXPOSURE LIMITS

<table>
<thead>
<tr>
<th>PO$_2$ atm</th>
<th>Maximum Single Dive Limit (min)</th>
<th>Maximum Daily Limit (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>45</td>
<td>150</td>
</tr>
<tr>
<td>1.5</td>
<td>120</td>
<td>180</td>
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<tr>
<td>1.4</td>
<td>150</td>
<td>180</td>
</tr>
<tr>
<td>1.3</td>
<td>180</td>
<td>210</td>
</tr>
<tr>
<td>1.2</td>
<td>210</td>
<td>240</td>
</tr>
<tr>
<td>1.0</td>
<td>240</td>
<td>270</td>
</tr>
<tr>
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<td>300</td>
<td>300</td>
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<tr>
<td>0.8</td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td>0.7</td>
<td>450</td>
<td>450</td>
</tr>
</tbody>
</table>

15. **DIVE APPROVAL**

Any work either on snorkel or under pressure is not permitted unless prior approval is obtained from the Dive Officer- see Appendix 4.

16. **PRE AND POST DIVE CHECKLIST**

The pre and post-dive check list (Appendix 5) shall be completed prior to and after all dive operations. The complete checklist shall be submitted to the Dive Officer in a timely manner.

17. **PRE DIVE RISK ASSESSMENT**

At the dive site before every dive, the Dive Coordinator, Divers, Dive Attendants and any non-diving support personnel shall conduct a pre-dive risk assessment and record it in the SSCI-dive log.

18. **DIVE BRIEF**

Before each dive the Dive Coordinator shall brief the diver team.

A dive briefing should include, but not be limited to:

- The objectives of the operation and the assignments of each member of the dive team;
- The intended working depth of the operation, and the topography of the site;
- Conditions to be expected in the operating area;
- Communications procedures;
- Any special equipment or considerations;
- Anticipated hazards;
- Lost Buddy procedures;
- Conditions controlling the termination of the dive (time, remaining air supply, etc.);
- Emergency response plan; and
- Solicit questions to ensure understanding of tasks and assignments.

### 18.1 Pre-Dive Equipment Inspection

The diver shall personally check equipment to ensure its working efficiency before a dive commences. Pre-dive checks shall be documented in the dive log.

Checks shall include but not limited to;

- Is air supply turned on;
- The tank content;
- Any leaks;
- Operation of second stages;
- Operation of 2nd regulator (occy);
- Torn regulator mouthpieces;
- Inflator operation;
- Dump valve operation; and
- Security of tank in BCD harness.

### 19. Dive Log

The diver shall personally check equipment to ensure its working efficiency before a dive commences. Pre-dive checks shall be documented in the dive log.

Checks shall include but not limited to;

- Is air supply turned on;
- The tank content;
- Any leaks;
- Operation of second stages;
- Operation of 2nd regulator (occy);
- Torn regulator mouthpieces;
- Inflator operation;
- Dump valve operation; and
- Security of tank in BCD harness.

### 20. Record of Diving

#### 20.1 Employer’s Record of Divers

SSCI shall maintain records of all divers involved in the organization’s diving operations and records of the evidence used in assessing the diver’s competencies and fitness to dive.

#### 20.2 Diver’s Record

All SSCI divers shall keep and maintain a permanent record of all diving undertaken for School business.

### 21. Snorkeler

No formal qualification is required but the snorkeler shall be competent to perform the intended task. The Dive Officer or delegate shall assess the snorkeler’s competences.
21.1 SNORKELER REQUIREMENTS

The snorkeler;
1. Shall complete the Emergency Contact Health and Fitness form. The complete form shall be filed with the Dive Officer;
2. Shall have a working knowledge of these procedures;
3. Shall be able to swim 500m with fins in <20 mins and 200m without fins in < 5 mins; and
4. Shall have a minimum of 5 hours snorkelling experience.
5. Should hold a current First-aid certification

21.2 SNORKEL COORDINATOR

The Snorkel Coordinator may control the dive from the surface or in the water. In addition to fulfilling the requirements of a Snorkeler, the Snorkel Coordinator;
1. Shall hold a current First-aid certification
2. Shall limit breath holding to < 5m
3. Shall terminate any dive that is considered unsafe.
4. Shall conduct a pre-dive risk assessment.
5. Shall ensure all First-Aid equipment is immediately available.

21.3 SNORKEL TEAM SIZE

There shall be enough personnel to carry out any snorkel operation safely.

The minimum for a snorkel team, conducting work within a low risk area, within 20m of shore and a safe entry and exit point is 2, for all other snorkel operations the minimum number is 3.

21.4 SNORKEL FIRST-AID

On all snorkel operations, there shall be sufficient current and suitably qualified First-Aid personnel to administer first-aid for any reasonably foreseeable emergency. With no less than two trained First Aiders immediately available at all dive sites.

22. INVESTIGATION OF ACCIDENTS AND INCIDENTS

In addition to existing legal requirements to record and report incidents, accidents and injuries, SSCI shall investigate and document all diving-related incidents, accidents and injuries. Appropriate action to prevent further occurrences should then be taken. The investigation report should contain the following;

a. A summary of all aspects of the event occasioning the injury or accident, specifying -
   1. The name and address of the injured diver
   2. The date, location and time of the incident
   3. Details of the diving experience of the injured diver
   4. Full details of the incident and cause (if known) or possible contributing factors
   5. The nature of the injury sustained by the diver; and
   6. The Dive Coordinators recommendations to prevent a recurrence.

b. Full narrative statements from all persons (including the Dive Coordinator, Diver and Dive Attendant) engaged in the relevant diving operation and who can detail any information pertinent to the occurrence of the incident.

c. Such medical reports, in relation to the diver, as are available, being reports compiled both before and after the occurrence of the incident.
d. Full details of the type of diving apparatus used by the diver, in particular noting the condition of such equipment immediately after the incident including, in the appropriate case—
   1. Whether cylinder valves were opened or closed and to what extent;
   2. Remaining pressures in cylinder;
   3. The position of the emergency supply valve; and
   4. The type of breathing gas used.

e. In any case where component malfunction was likely or was suspected to have been a likely cause of a serious accident, then this equipment should be immediately sealed.

f. In any case where a fatality has occurred, all equipment should be left in the condition that it was in at the time of the accident until it has been investigated by the relevant authorities.

NOTE: Notwithstanding the above, the breathing gas supply should be isolated to retain the remaining gas. During such isolation, the number of turns, any undue force or other actions required to isolate the gas supply should be noted and recorded.

23. REFERENCE DOCUMENTS
   ❖ Edith Cowans University’s Incident Reporting and Investigation Guidelines 2016
   ❖ Edith Cowan University’s Hazardous Substances Procedures Manual.
   ❖ AS 2299.2-2002: Occupational Diving Part 2: Scientific Diving
   ❖ AS 2815.1-2008: Training and certification of occupational divers - Occupational SCUBA diver – Standard
   ❖ University of Western Australia- 2017 Scientific Diving Manual
   ❖ South Australian Code of Practice 1997- Tuna farm Diving

24a. APPROVAL HISTORY

<table>
<thead>
<tr>
<th>Procedures endorsed by:</th>
<th>SSCI Local OSH Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date First endorsed:</td>
<td>Friday 21 September 2018</td>
</tr>
<tr>
<td>Endorsement recorded - Q3 OSH Committee Meeting Minutes:</td>
<td>SSCI\Shared (\staff\share) (Z:) &gt; OSH &gt; 2018 &gt; Q3 &gt; Q3 2018 SSCI Local OSH Committee Meeting MINUTES</td>
</tr>
<tr>
<td>Procedures Approved by:</td>
<td>Andrew Woodward - Executive Dean</td>
</tr>
<tr>
<td>Date Approved:</td>
<td>Friday 21 September 2018</td>
</tr>
<tr>
<td>Revision History:</td>
<td>V1 - January 2019</td>
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</table>

24b. CONTACT DETAILS

<table>
<thead>
<tr>
<th>All Enquiries Contact:</th>
<th>The Dive Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone:</td>
<td>08 6304 5557</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:r.czarnik@ecu.edu.au">r.czarnik@ecu.edu.au</a></td>
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</tbody>
</table>
# Risk Register

<table>
<thead>
<tr>
<th>Section</th>
<th>Activity description</th>
<th>Mechanism</th>
<th>Hazard</th>
<th>Consequence</th>
<th>Likelihood</th>
<th>C</th>
<th>Risk Class</th>
<th>Preventative controls</th>
<th>L</th>
<th>C</th>
<th>Risk Class</th>
<th>Comment</th>
</tr>
</thead>
</table>
| Administration   | Approval of dive procedures | Dive Officer only approval       | Dive Officer accepting best practices risks that is not theirs.        | Legal compliance                   | Likely     | Disruptive | Moderate   | a. Dive committee to endorse procedures  
b. Associate Dean to approve                                                                                                                | Rare  | Disruptive | Low       |                                                                                                                                                                                                                       |
| Administration   | Managing documents   | Ineffective document management system | Incomplete records                                                   | Legal compliance                   | Likely     | Disruptive | Moderate   | a. Dive Officer in collaboration with Administration offer to develop and manage effective document management procedures  
b. Annual internal audit of documents                                                                                                           | Rare  | Disruptive | Low       |                                                                                                                                                                                                                       |
| Administration   | ECU diving activities | Improper diving protocols        | Generic diving hazards and task specific hazards                      | Personal injury, legal complications | Likely     | Catastrophic | Extreme    | c. Dive committee to endorse procedures  
d. Executive Dean to approve procedure  
e. Develop and maintain a Diving Manual  
f. Dive induction  
g. Pre dive assessment  
h. Dive plan  
i. Dive approval  
j. Project RAMP                                                                                                                   | Rare  | Catastrophic | Substantial | Dive committee to endorse procedures Executive Dean to approve procedures                                                                                         |
| Administration   | Registering a new diver | Inadequate assessment of new diver | a. Dive does not meet SSCI diver requirements  
b. Non competent diver | Personal injury, equipment damage | Likely     | Catastrophic | High       | a. SSCI diving general requirements  
b. Dive induction (theory and skills test) delivered and assessed by Dive Officer or delegate  
c. New Diver Evaluation sheet sign off  
d. Statement of understanding sign off form.                                                                 | Rare  | Catastrophic | Low       |                                                                                                                                                                                                                       |
| Administration   | Planning for a dive  | Inadequate Planning              | a. Dangerous dive profile-Decompression schedule not met  
b. Unprepared and under equipped dive operation  
c. Medically unfit divers | Personal injury, equipment damage, environmental damage | Likely     | Catastrophic | High       | a. SSCI Dive plan approval  
b. Pre-dive check list  
c. SSCI Dive plan approval and diver qualification records  
d. Pre-dive check list, Pre and post dive paper                                                                 | Rare  | Catastrophic | Low       |                                                                                                                                                                                                                       |
## Administration

<table>
<thead>
<tr>
<th>Dive activities</th>
<th>Limited resources, time, funds, personal and equipment</th>
<th>Operational pressure, Pressured/ hurried decisions</th>
<th>Personal injury, equipment damage</th>
<th>Almost certain</th>
<th>Catastrophic</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>d. Information unavailable, incomplete records</td>
<td>e. Unknown hazards at dive site</td>
<td>f. Unknown task specific hazards</td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Administration Dive activities

- a. Prolonged strenuous work
- b. Over exertion

<table>
<thead>
<tr>
<th>Fatigue</th>
<th>Personal injury</th>
<th>Likely</th>
<th>Catastrophic</th>
<th>Extreme</th>
</tr>
</thead>
</table>

### Administration Dive activities

- a. SSC1 Fatigue management guidelines
- b. 12 hour work day limits
- c. Personal and team monitoring
- d. Termination of dive guidelines

### Health Dive activities

<table>
<thead>
<tr>
<th>Accident</th>
<th>Time /distance to medical aid</th>
<th>Personal injury</th>
<th>Likely</th>
<th>Catastrophic</th>
<th>Extreme</th>
</tr>
</thead>
</table>

### Health Dive activities

<table>
<thead>
<tr>
<th>Inadequate thermal protection</th>
<th>Exposure to Heat cold</th>
<th>Personal injury</th>
<th>Almost certain</th>
<th>Serious</th>
<th>Substantial</th>
</tr>
</thead>
</table>

### Diving accidents

<table>
<thead>
<tr>
<th>Diving/ swimming on surface</th>
<th>Encounter with boat traffic</th>
<th>Boat -river collision Propeller caused injury</th>
<th>Personal injury</th>
<th>Possible</th>
<th>Catastrophic</th>
<th>Substantial</th>
</tr>
</thead>
</table>

### Possible Catastrophic Substantial

Many diving controls are administrative and due to money and time restraints researchers will be put in a position where they choose not to follow procedures to get the work done.

### Possible Catastrophic Substantial

Tired dives can and will make mistakes, that in diving can result in serious injury.

### Possible Catastrophic Serious Moderate

| Suitable wet suits, wind/spray jacket, sun hats, hot or cold drinks, sun screen. | Suitable wet suits, wind/spray jacket, sun hats, hot or cold drinks, sun screen. | | | | |
|---|---|---|---|---|---|---|

### Possible Catastrophic Serious Moderate

<p>| Do not dive in boating channels. | Do not dive in boating channels. | | | | |</p>
<table>
<thead>
<tr>
<th>Diving accidents</th>
<th>Diving on the surface</th>
<th>Exposure to adverse conditions, poor visibility</th>
<th>Lost diver</th>
<th>Personal injury</th>
<th>Almost certain</th>
<th>Serious</th>
<th>Substantial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving and on the surface</strong></td>
<td>Exposure to adverse conditions, poor visibility</td>
<td>Lost diver</td>
<td>Personal injury</td>
<td>Almost certain</td>
<td>Serious</td>
<td>Substantial</td>
</tr>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving to 30 meter depth limit</strong></td>
<td>Exposure to adverse conditions, poor visibility</td>
<td>Lost diver</td>
<td>Personal injury</td>
<td>Almost certain</td>
<td>Serious</td>
<td>Substantial</td>
</tr>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving to DCIEM tables</strong></td>
<td>Exposure to adverse conditions, poor visibility</td>
<td>Lost diver</td>
<td>Personal injury</td>
<td>Almost certain</td>
<td>Serious</td>
<td>Substantial</td>
</tr>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving to 30 meter depth limit</strong></td>
<td>Exposure to adverse conditions, poor visibility</td>
<td>Lost diver</td>
<td>Personal injury</td>
<td>Almost certain</td>
<td>Serious</td>
<td>Substantial</td>
</tr>
</tbody>
</table>

b. Boat dive flag, diver dive flag in high traffic areas.

c. Dive attendant to keep a look out.
d. Ascend and descend under boat.
e. Avoid swimming on the surface.
f. First aid plan.
g. Communication plan 
h. Emergency procedure manual

a. Manage operational pressure.
b. Pre dive brief and risk assessment
c. Termination of dive guidelines.
d. Lost buddy procedures 
e. Communication plan 
f. Emergency procedures manual

Diving accidents

<table>
<thead>
<tr>
<th>Diving accidents</th>
<th>Diving</th>
<th>Depth</th>
<th>Decompression Illness</th>
<th>Personal injury</th>
<th>Almost certain</th>
<th>Catastrophic</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving</strong></td>
<td>Depth</td>
<td>Decompression Illness</td>
<td>Personal injury</td>
<td>Almost certain</td>
<td>Catastrophic</td>
<td>Extreme</td>
</tr>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving to 30 meter depth limit</strong></td>
<td>Depth</td>
<td>Decompression Illness</td>
<td>Personal injury</td>
<td>Almost certain</td>
<td>Catastrophic</td>
<td>Extreme</td>
</tr>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving to DCIEM tables</strong></td>
<td>Depth</td>
<td>Decompression Illness</td>
<td>Personal injury</td>
<td>Almost certain</td>
<td>Catastrophic</td>
<td>Extreme</td>
</tr>
</tbody>
</table>

a. Dive approval.
b. no decompression diving
c. diving to DCIEM tables
d. 30 meter depth limit 
e. Precautionary decompression stops for depth that exceeds 9 m 
f. Accent rate limits 9m per minute 
g. Repetitive diving guidelines- table 2 
h. Dive time limits depending on time to recompression support Table 1

No controls can capture the difference in diver’s philology and worst case is still a fatality. With appropriate controls in place the consequence of DCI is reduce to serious because it is reversible.

Diving accidents

<table>
<thead>
<tr>
<th>Diving accidents</th>
<th>Diving</th>
<th>Equipment</th>
<th>Equipment failure</th>
<th>Personal injury</th>
<th>Possible</th>
<th>Catastrophic</th>
<th>Substantial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diving accidents</strong></td>
<td><strong>Diving</strong></td>
<td>Equipment</td>
<td>Equipment failure</td>
<td>Personal injury</td>
<td>Possible</td>
<td>Catastrophic</td>
<td>Substantial</td>
</tr>
</tbody>
</table>

a. Equipment service and maintenance schedule 
b. Termination of dive guidelines 
c. Pre-dive equipment checks 
d. Standby diver 
e. Rescue diver training

Rare Catastrophic Moderate

Rare Catastrophic Moderate

No controls can capture the difference in diver’s philology and worst case is still a fatality. With appropriate controls in place the consequence of DCI is reduce to serious because it is reversible.
<table>
<thead>
<tr>
<th>Diving accidents</th>
<th>Ascending and descending</th>
<th>Barotraumas</th>
<th>Over expiration of gases in air spaces</th>
<th>Personal injury</th>
<th>Possible</th>
<th>Critical</th>
<th>Moderate</th>
<th>Rare</th>
<th>Critical</th>
<th>Low</th>
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</thead>
<tbody>
<tr>
<td>Diving accidents</td>
<td>Lost buddy</td>
<td>No assistance</td>
<td>Personal injury</td>
<td>Likely</td>
<td>Catastrophic</td>
<td>High</td>
<td>a. Lost buddy procedures</td>
<td>Rare</td>
<td>Catastrophic</td>
<td>Substantial</td>
</tr>
<tr>
<td>Diving accidents</td>
<td>Entanglement</td>
<td>Running out of air</td>
<td>Personal injury</td>
<td>Possible</td>
<td>Catastrophic</td>
<td>Substantial</td>
<td>a. Rescue diver training</td>
<td>Rare</td>
<td>Substantial</td>
<td>Moderate</td>
</tr>
<tr>
<td>Diving accidents</td>
<td>Lost buddy</td>
<td>No assistance</td>
<td>Personal injury</td>
<td>Likely</td>
<td>Catastrophic</td>
<td>High</td>
<td>a. Lost buddy procedures</td>
<td>Rare</td>
<td>Catastrophic</td>
<td>Substantial</td>
</tr>
<tr>
<td>Diving accidents</td>
<td>Encounters with:</td>
<td>Sharp teeth</td>
<td>Personal injury</td>
<td>Possible</td>
<td>Catastrophic</td>
<td>Substantial</td>
<td>a. SSCI dangerous marine animal procedures</td>
<td>Rare</td>
<td>Substantial</td>
<td>Moderate</td>
</tr>
<tr>
<td>Diving Accidents</td>
<td>Entering or exiting dive platform</td>
<td>Shark shield tentacle</td>
<td>Trip Hazard</td>
<td>Personal injury</td>
<td>Likely</td>
<td>Serious</td>
<td>Moderate</td>
<td>a) Dive attendant responsibility</td>
<td>Rare</td>
<td>Serious</td>
</tr>
<tr>
<td>Diving accidents</td>
<td>Encounters with rocks and sharp objects</td>
<td>Cuts and bruises</td>
<td>Personal injury</td>
<td>Likely</td>
<td>Disruptive</td>
<td>Low</td>
<td>a. Project RAMP - PPE suitable foot wear, wetsuit/ protective gear and gloves</td>
<td>Likely</td>
<td>Disruptive</td>
<td>Low</td>
</tr>
<tr>
<td>Diving accidents</td>
<td>Manual handling</td>
<td>Heavy items</td>
<td>Personal injury</td>
<td>Likely</td>
<td>Serious</td>
<td>Substantial</td>
<td>a. ECU inductions and dive induction</td>
<td>Possible</td>
<td>Serious</td>
<td>Low</td>
</tr>
<tr>
<td>Diving accidents</td>
<td>Falls, over exertion, manual handling</td>
<td>Slips,</td>
<td>Personal injury</td>
<td>Likely</td>
<td>Serious</td>
<td>Substantial</td>
<td>a. Remove fins before leaving the water, rubber soled booties</td>
<td>Rare</td>
<td>Serious</td>
<td>Low</td>
</tr>
</tbody>
</table>
| Diving Work | Using hand tools | Inadequate instruction | Improper use | Personal injury | Likely | Serious | Moderate | b. Anti-slip mats, carpet or check plate flooring.  
c. Good housekeeping.  
d. Diver attendant to help with gear.  
e. Dive platform assessment form. |
| Diving Work | V-Wrap System | Inadequate instruction | Improper use | Personal injury | Likely | Serious | Moderate | a. Project RAMP training  
b. Pre dive brief  
c. Field Emergency procedures  
d. Emergency numbers in dive plan.  
Prohibit to use until Safe work procedures are developed | Rare | Critical | Low |
b. Dive induction delivered by Dive Officer or delegate.  
c. Pre dive check list.  
d. Field Emergency procedures.  
e. Emergency numbers in dive plan.  
Prohibit to use until Safe work procedures are developed | Rare | Critical | Low |
| Vessel Administration | Diving Operations | Worker not knowing or unable to locate Safety, emergency equipment and/or operational procedures | Failure to follow dive procedures or respond appropriately in an emergency situation | Personal injury, equipment and environmental damage, legal action | Possible | Catastrophic | Substantial | a.  
b.  
c.  
d.  
e.  |
| SSCI Vessel Operations | Field work, loading and unloading cargo, pre and post sea boat readiness, Boating operations | Slippery surfaces, trip hazards | Falls | Personal injury | Likely | Serious | Substantial | a. Suitable footwear.  
b. Carpet, rubber mats or checker boards flooring.  
c. Good housekeeping.  
d. SSCI Vessel Operations induction - correct stowage instructions.  
Prohibit to use until Safe work procedures are developed | Rare | Serious | Low |
### School of Science

#### Dive Operations Procedures

**Version 1.0 - January 2019**

<table>
<thead>
<tr>
<th>Risk</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Critical</th>
<th>Consequence Descriptions Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Potential for a minimal increase, $50,000 or less, or 3% or less of budget. Minor impact on time or quality. There may be issues that impact on the university’s ability to fully operate services or activities proposed by the project at time of delivery.</td>
<td>Potential for cost increase $50,000 - $250,000, or 5% - 10% of budget. Minor impact on time or quality. There may be issues that impact on the university’s ability to fully operate services or activities proposed by the project at time of delivery.</td>
<td>Moderate potential for cost increase $250,000 - $500,000, or 10% - 20% of budget. Moderate impact on time, cost, resources and quality. Minimal impact on operation of services or activities proposed by the project at time of delivery.</td>
<td>Severe potential for cost increase $500,000 - $1,000,000, or 20% - 40% of budget. Severe impact on time, cost, resources and quality. Potential impact on multiple work streams, projects or stakeholders. University will need to make adjustments to service or activity. Additional funding to be sought for an extended period of time.</td>
<td>Catastrophic</td>
<td>Severe long-term impact - severe environmental impacts with significant impact on ecosystem function and/or social aspects. Remand in court. Environmental or remand cost $5m - $10m.</td>
</tr>
<tr>
<td>Environmental</td>
<td>Internally managed to non-catastrophic impact or measurable impact, and/or environmental liability or remnant cost $5m.</td>
<td>Internally managed with minor environmental impact or biological/physical environment and/or minor short-term change to a localized area, or issues once the event is over and/or environmental liability or remnant cost $5m.</td>
<td>Internally managed with major environmental impact or biological/physical environment, and/or major short-term change to a localized area, or issues ongoing and/or environmental liability or remnant cost $5m.</td>
<td>Internally managed with catastrophic environmental impact or biological/physical environment, and/or catastrophic short-term change to a localized area, and/or environmental liability or remnant cost $5m - $10m.</td>
<td>Catastrophic</td>
<td>Environmental or remnant cost $10m - $25m.</td>
</tr>
<tr>
<td>Financial</td>
<td>$0 - $5m, or 0% - 0.5% of budget for Schools, Institutes &amp; Centres. Up to $50m for all other work.</td>
<td>$5m - $25m, or 1% - 2% of budget for Schools, Institutes &amp; Centres.</td>
<td>$25m - $50m, or 3% - 5% of budget for Schools, Institutes &amp; Centres.</td>
<td>$50m - $100m, or 5% - 10% of budget for Schools, Institutes &amp; Centres.</td>
<td>Critical</td>
<td>$100m - $250m, or 10% - 20% of budget for Schools, Institutes &amp; Centres.</td>
</tr>
<tr>
<td>Human Safety</td>
<td>No human fatalities or severe short term symptoms or health effects from first aid and treatment only, or minor injury to eyes, minor burns, or minor muscular discomfort.</td>
<td>Temporary inability to perform normal activities, and/or temporary health effects.</td>
<td>Temporary inability to perform normal activities, and/or temporary health effects.</td>
<td>Temporary inability to perform normal activities, and/or temporary health effects.</td>
<td>Critical</td>
<td>Permanent inability to perform normal activities, and/or permanent health effects.</td>
</tr>
</tbody>
</table>

**ECU Risk Matrix (Exposure Risk Scale)**

- **1**: Minimal
- **2**: Minor
- **3**: Moderate
- **4**: Major
- **Critical**: Catastrophic
## ECU Risk Matrix

<table>
<thead>
<tr>
<th>Description</th>
<th>LIKELIHOOD</th>
<th>Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretically possible but not expected to occur during the life cycle of</td>
<td>Rare (&lt;5% probability)</td>
<td>1</td>
<td>1</td>
<td>(Low)</td>
<td>2</td>
<td>(Low)</td>
<td>3</td>
<td>(Low)</td>
</tr>
<tr>
<td>the activity or the life of the equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible that it may occur once during the life cycle of the activity or</td>
<td>Possible (5-10% probability)</td>
<td>2</td>
<td>2</td>
<td>(Low)</td>
<td>4</td>
<td>(Low)</td>
<td>6</td>
<td>(Moderate)</td>
</tr>
<tr>
<td>or the life of the equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This event may occur slightly more than twice during the life cycle of</td>
<td>Occasional (10-25% probability)</td>
<td>3</td>
<td>3</td>
<td>(Low)</td>
<td>6</td>
<td>(Moderate)</td>
<td>9</td>
<td>(Moderate)</td>
</tr>
<tr>
<td>the activity or or the life of the equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This event may occur frequently during the life cycle of the activity or</td>
<td>Likely (25-50% probability)</td>
<td>4</td>
<td>4</td>
<td>(Low)</td>
<td>8</td>
<td>(Moderate)</td>
<td>12</td>
<td>(Substantial)</td>
</tr>
<tr>
<td>or the life of the equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected to occur routinely during the life cycle of the activity or</td>
<td>Almost Certain (50% probability)</td>
<td>5</td>
<td>5</td>
<td>(Moderate)</td>
<td>10</td>
<td>(Substantial)</td>
<td>15</td>
<td>(High)</td>
</tr>
<tr>
<td>or the lifetime of the equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Acceptance Criteria

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Likelihood</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 4</td>
<td>Low</td>
<td>Acceptable with Periodic Review – Exposure to this level of risk is acceptable without additional risk treatments.</td>
</tr>
<tr>
<td>5 - 9</td>
<td>Moderate</td>
<td>Acceptable with Periodic Review – Exposure to this level of risk may continue, provided an appropriate assessment has been conducted. <strong>Review period should not exceed 12 months</strong></td>
</tr>
<tr>
<td>10 - 12</td>
<td>Substantial</td>
<td>Acceptable with Ongoing Review – Unnecessary exposure to this level of risk must be discontinued as soon as reasonably practicable, ongoing exposure will only be considered in exceptional circumstances. <strong>Review period should not exceed 6 months.</strong></td>
</tr>
<tr>
<td>15 - 19</td>
<td>High</td>
<td>Intolerable without treatment – Exposure to this level of risk should be discontinued as soon as reasonably practicable. The decision to tolerate this level of residual risk must be made by a member of the Chancellery. <strong>Review period should not exceed 3 months.</strong></td>
</tr>
<tr>
<td>20 - 25</td>
<td>Extreme</td>
<td>Intolerable – Exposure to this level of risk would normally be immediately discontinued except in extreme circumstances. <strong>Review period should not exceed 1 week.</strong></td>
</tr>
</tbody>
</table>

ECU Risk Matrix (Likelihood Scale and Assessment Matrix)
# Diver Registration Form

## PERSONAL DETAILS

<table>
<thead>
<tr>
<th>Surname</th>
<th>First Name(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of Birth</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

## DIVE EXPERIENCE

### Date Started Snorkelling

<table>
<thead>
<tr>
<th>Date Started SCUBA Diving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

### Details of SCUBA Diving Qualifications

### Instructor’s Name & Address

### Recreational Boat Licence

<table>
<thead>
<tr>
<th>Commercial Vessel Ticket #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

### Details of 1st Aid / Oxygen Therapy Qualifications:

## DIVING EXPERIENCE

<table>
<thead>
<tr>
<th>Meters</th>
<th>Approx. Hours</th>
<th>Meters</th>
<th>Approx. Hours</th>
<th>Meters</th>
<th>Approx. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Night</td>
<td>Date</td>
<td>Night</td>
<td>Date</td>
<td>Night</td>
</tr>
<tr>
<td>0-10</td>
<td>20-30</td>
<td>40-50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>30-40</td>
<td>50+</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Principle Locations

### Total # of Dives

### Deepest Dive

### Date of Most Recent Dive

### Depth of Most Recent Dive
Indicate with the appropriate letter if you have experience in diving in the following situations:

**E** - Extensive (>30 times); **M** - Moderate (5-30 times); **L** - Limited (1-4 times)

<table>
<thead>
<tr>
<th>Diving from boats</th>
<th>Shore diving</th>
<th>Penetration diving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small boats</td>
<td>Rocks</td>
<td>Cave diving</td>
</tr>
<tr>
<td>Vessels (&gt;7M)</td>
<td>Surf</td>
<td>Wreck diving</td>
</tr>
<tr>
<td>Blue water diving</td>
<td>Mixed gas diving</td>
<td>Low visibility diving (&lt;15M)</td>
</tr>
<tr>
<td>Diving in fresh water</td>
<td>SSBA*</td>
<td>High visibility diving (&gt;15M)</td>
</tr>
<tr>
<td>Diving in mangroves</td>
<td>Diving coral reef</td>
<td>Diving in currents (&gt;0.5k knot)</td>
</tr>
<tr>
<td>Computing aided diving</td>
<td>Diving using air assisted tools</td>
<td>Diving using spear guns</td>
</tr>
</tbody>
</table>

Details of any Previous Work Related Diving:

If you have ever been involved in a diving accident, please give details:

**UDO Only**

<table>
<thead>
<tr>
<th>Log book checked</th>
<th>Date registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of dive medical</td>
<td>Restricted / Unrestricted</td>
</tr>
<tr>
<td>Qualifications checked</td>
<td>Date of induction</td>
</tr>
<tr>
<td>Date of skills test</td>
<td>UDO Signature</td>
</tr>
</tbody>
</table>
## Dive Induction Statement of Understanding

I, ______________________________________________________ hereby declare that I have read in full the SSCI Diving Procedures Manual and understand its scope and content, as well as my responsibilities as a SSCI Diver / Dive Coordinator.

### DIVER

**I was given instruction in:**
- The use and content of the SSCI Diving Procedures Manual
- The responsibilities of SSCI divers
- The schools risk assessment process
- The use of the DCIEM decompression tables
- The use of dive equipment
- Dive briefing
- Dive plan
- The use of diving tables

**I demonstrated:**
- Mask clearing
- Neutral buoyancy
- Location of safety knife, scuba rattles/horn
- Location of safety sausage
- Buddy breathing
- Location and use of the octopus
- Removal of weight belt
- Recovering and towing of unconscious diver
- Use of diving tables

<table>
<thead>
<tr>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Induction by:</td>
<td></td>
</tr>
<tr>
<td>Signature:</td>
<td>Date:</td>
</tr>
<tr>
<td>University Dive Officer:</td>
<td></td>
</tr>
<tr>
<td>Signature:</td>
<td>Date:</td>
</tr>
</tbody>
</table>
DIVE COORDINATOR

<table>
<thead>
<tr>
<th>I was given instruction in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field operation registration</td>
</tr>
<tr>
<td>Risk assessment, emergency plans, and implementation of emergency protocols</td>
</tr>
<tr>
<td>SSCI dive permission, dive record and post dive procedures</td>
</tr>
<tr>
<td>Requirements for nominated contacts</td>
</tr>
<tr>
<td>Post dive procedures</td>
</tr>
<tr>
<td>The need for dive briefings</td>
</tr>
<tr>
<td>Equipment checks each day, with all divers</td>
</tr>
<tr>
<td>Defective equipment tagging and reporting procedures</td>
</tr>
</tbody>
</table>

I agree that at all times I will follow safe diving practices as outlined in the School of Science Diving Procedures Manual, and will observe the directions given in the manual and any other directions that may be given to me by the SSCI Diving Officer or an SSCI Dive Coordinator, provided I feel that it is safe to do so.

<table>
<thead>
<tr>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Induction by:</td>
<td></td>
</tr>
<tr>
<td>Signature:</td>
<td>Date:</td>
</tr>
<tr>
<td>University Dive Officer:</td>
<td></td>
</tr>
<tr>
<td>Signature:</td>
<td>Date:</td>
</tr>
</tbody>
</table>
1. **What are the minimum requirement for a Scientific Diver?**
   a) Rescue Diver or equivalent, Applied First Aid, Oxygen Provider, commercial dive medical and 15 dives.
   b) Rescue Diver or equivalent, Applied First Aid, Oxygen Provider, commercial dive medical and 30 scientific dives.
   c) Rescue Diver or equivalent, Applied First Aid, Oxygen Provider, commercial dive medical and 30 dives.
   d) Rescue Diver or equivalent, Applied First Aid, Oxygen Provider, commercial dive medical and 15 scientific dives.

2. **What are the responsibilities of a Scientific Diver?**
   a) Be experienced and competent to appropriate levels to carry out the work safely.
   b) To dive in accordance with instructions from the dive leader and/or coordinator.
   c) Report all accidents, incident and issues to the Dive Coordinator.
   d) Ensure that they are familiar with the pre dive plan and dive in accordance to the Pre dive plan.
   e) Report all accidents, incident and issues to the Dive Coordinator.
   f) Act as a standby diver/dive buddy.
   g) All of the above.

3. **A Restricted Scientific Diver cannot?**
   a) Act as a standby diver, dive deeper than 12 meters or act as dive attendant
   b) Dive with an “Open Water” certification, act as a standby diver or dive deeper than 12 meters
   c) Act as a standby diver, dive deeper than 12 meters or remain a restricted diver for longer than 12 months
   d) Act as a standby diver, dive deeper than 12 meters or dive unless they are diving with the Dive Coordinator

4. **Manual handling at sea differs because?**
   a) The boat may move beneath you
   b) Items are lighter underwater
   c) Deck space maybe limited
   d) All of the above.

5. **What is the minimum PPE required by a diver working under pressure in marine waters?**
   a) Dive knife, shark shield and thermal protection
   b) Dive knife, gloves, shark shield and thermal protection
   c) Dive knife, booties, shark shield and thermal protection
   d) Dive knife, dive computer and thermal protection

6. **An SSCI dive may be managed using the following decompression tables?**
   a) Recognized sports diving tables like PADI tables
   b) Dive algorithms on dive computers
   c) DCIEM tables only
   d) Any of the above
7. **A dive shall be terminated if?**
   a) A diver requests termination
   b) A diver loses contact with a buddy diver
   c) A diver begins to use his or her reserve gas supply
   d) A diver is aware of any sign of malfunction of equipment or of any sign or symptom of distress
   e) A diver becomes aware of any unusual or unplanned situation which threatens the health or safety of any dive team member
   f) All of the above

8. **A Dive Coordinator is responsible for?**
   a) Plan all diving operations under supervision
   b) Ensure all divers under supervision are experienced and competent to appropriate levels to carry out the planned work safely
   c) Maintain records of Pre dive equipment checks
   d) Conduct the Pre-dive brief
   e) Ensure all dives are in accordance to the Pre-dive plan
   f) For all dive equipment under supervision
   g) Reporting all accidents, incident or issues to the Dive Officer as soon as practicable possible
   h) Submit dive approval, equipment checks, induction forms (if applicable) and dive logs to the Dive Officer at the end of the diving operation
   i) All of the above

9. **It is important to terminate a dive when your Scuba tank pressure is 50 bar because?**
   a) You begin to use your reserve gas supply
   b) You’re charged more on air fills
   c) Internal tank pressure is less than water pressure and salty water seeps into and rusts the tank
   d) You do not have to conduct a safety stop

10. **An attendant may recall divers by?**
    a) Banging on the hall
    b) Revving the engine
    c) Using an air horn
    d) All of the above.

11. **Under the general duty of care employers, must consult and cooperate with safety and health representatives and employees about safety and health at the workplace. (Circle one) - True / False**

12. **A worker must?**
    a) Follow reasonable safety instructions
    b) Stop work if they are unsure
    c) Both (a) and (b)

13. **The purpose of Incident/Hazard reporting is to?**
    a) Assign blame
    b) Determine the cause of the accident or incident
    c) Develop strategies for avoiding similar incidents or hazards in future
    d) Both (b) and (c)
14. **Who must you notify if you have an accident or near miss in the field?**
   a) The Health and Safety Rep
   b) Your supervisor
   c) The university, via the online reporting system
   d) All of the above

15. **When does an approved Risk Assessment Management Plan need to be reviewed?**
   a) Never
   b) When you get around to it
   c) Annually, after an incident or near miss, or before any new activities

16. **You are required to disclose all pre-existing injuries, illnesses which could be accelerated, exacerbated, aggravated or caused to recur or deteriorate by you performing the responsibilities associated with your work.**
   (Circle one) - True / False

17. **Where can SSCI safety information such as procedure manuals and forms found?**
   a) Blackboard

---

<table>
<thead>
<tr>
<th>University Dive Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quiz Score</th>
<th>(pass mark 17/17) - _____________ / 17</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Signature</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
</table>
Dive Plan Approval Form

<table>
<thead>
<tr>
<th>Dive date/s</th>
<th>RAMP Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dive Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**ACTIVITY OUTLINE**

<table>
<thead>
<tr>
<th>Field work location</th>
<th>Car travel time/day(h)</th>
<th>Hours worked/day (Drive + field + Lab + prep time)</th>
<th>TAS Approval (Yes, No Pending)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

*Note: Add extra rows for multiply day dive trips.*

Vessel Name:

Boat trailer will be parked at:
<table>
<thead>
<tr>
<th>Divers Name:</th>
<th>Phone #</th>
<th>Dives/ day:</th>
<th>Restricted/ Scientific Diver</th>
<th>First Aid (exp. date)</th>
<th>DAN O2 (exp. date)</th>
<th>Medical (exp. date)</th>
<th>Boat Licence (Y/N)</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Weather forecast

<table>
<thead>
<tr>
<th>Wind</th>
<th>Swell</th>
<th>Seas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Marine warnings: 

Fitness level

- **Low**
  - Single dive- observation

- **Medium**
  - Repetitive dives- observation
  - Single dive- long transects (200m+)
  - Single dive- strong current

- **High**
  - Repetitive dives long transects (200m+)
  - Repetitive dives- strong current

Fluid management

- Personal water: L
- Reserve water: L
Dives

<table>
<thead>
<tr>
<th>Day #: 1</th>
<th>Dive 1</th>
<th>Dive 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI from last dive (Hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Est. Depth (Meters)</td>
<td></td>
<td></td>
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<tr>
<td>Deco limit (Mins)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Est. dive time (Mins)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective bottom time (Mins)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buddy pair/standby diver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dive leader</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface support</td>
<td></td>
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</tr>
</tbody>
</table>

For multiple days diving insert the required number of dive plan table.

Do any special conditions need to be adopted above and beyond normal safe diving practice?

SAFETY EQUIPMENT

Personal Protective Equipment

- Hat
- Wet-weather gear
- Suitable clothing
- Dive knife
- Appropriate footwear
- Wetsuit
- Sunscreen
- Shark shields

Other

- First aid kit
- Oxygen first aid equipment
- Other
EMERGENCY PROCEDURES

Emergency procedures can be found in the SSCI emergency procedures manual.

- Lost buddy procedures must be discussed in every pre-dive briefing.
- Sufficient oxygen (O₂) must be carried in the boat and the vehicle to ensure the patient receives 100% O₂ during the entire evacuation procedure, from the dive location to the medical facility.

<table>
<thead>
<tr>
<th>Expected evacuation location</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected evacuation time to transport any patient to nearest facility</td>
<td></td>
</tr>
<tr>
<td>Number of oxygen cylinders and size required</td>
<td></td>
</tr>
</tbody>
</table>

EMERGENCY CONTACTS

| Divers emergency services | 1800 088 200 |
| Chamber location and phone # | Fiona Stanley Hospital Hyperbaric Unit (08) 6152 2222 |
| Sea rescue log in details |  |
| Nearest medical/police contact/location and phone # |  |

The Dive Coordinator must ensure all personnel involved in this boating/diving operation are made aware of any hazards that exist at the dive location and any task related. No boating or diving shall be attempted unless the area and conditions are deemed to be safe for the type of work that is intended to be carried out.

<table>
<thead>
<tr>
<th>Task Specific Hazard</th>
<th>Controls/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diver to diver communication</td>
<td></td>
</tr>
<tr>
<td>Diver to surface communication</td>
<td></td>
</tr>
<tr>
<td>Diver emergency recall</td>
<td></td>
</tr>
<tr>
<td>Fouling/entrapment</td>
<td></td>
</tr>
<tr>
<td>Water temperature</td>
<td></td>
</tr>
<tr>
<td>Description of underwater terrain</td>
<td></td>
</tr>
<tr>
<td>Isolation of dive site</td>
<td></td>
</tr>
<tr>
<td>Pre-dive fitness</td>
<td></td>
</tr>
<tr>
<td>Manual handling</td>
<td></td>
</tr>
<tr>
<td>Dive platform</td>
<td></td>
</tr>
<tr>
<td>Boat handling</td>
<td></td>
</tr>
</tbody>
</table>
Tides/Currents
Dangerous marine life
Marine traffic
>50M from boat
Disorientation/lost

All participants must acknowledge and understand the potential hazards associated with this operation before diving commences.

<table>
<thead>
<tr>
<th>Diver’s Name</th>
<th>Signature</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

As dive coordinator I understand to notify all personnel involved of the potential hazards associated with this operation.

<table>
<thead>
<tr>
<th>Signature of Dive Coordinator</th>
<th>Date</th>
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</thead>
<tbody>
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</table>

Approved
Yes ☐  No ☐

<table>
<thead>
<tr>
<th>Signature of Dive Officer</th>
<th>Date</th>
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</table>
# Pre-Trip Dive Checklist

**MUST BE COMPLETED BY THE DIVE SUPERVISOR BEFORE LEAVING CAMPUS**

<table>
<thead>
<tr>
<th>Dive Supervisor’s Name</th>
<th>Cost Code</th>
</tr>
</thead>
</table>

## SAFETY

- Dive approval
- Shark Shield equipment numbers (i.e. 1, 2 & 4)
- Are they charged Y/N
- DAN O₂ Kit equipment numbers
- Scuba Rattles equipment numbers
- Air Horn equipment numbers
- O₂ cylinder contents
- First Aid Kit
- Risk assessment
- ECU dive log book
- ECU diving manual
- DCIEM tables suitable for your intended depth
- A pre dive brief
- MSDS if you are using chemicals
- Volunteer forms

## GENERAL EQUIPMENT

- BC’s equipment numbers
- Dump valve operation
- Inflator operations
- Any leaks
- Safety Sausage, whilst, dive knife, scuba rattle or air horn

- Regulator equipment numbers
- Operation of second stages?
- Operation of 2<sup>nd</sup> regulator (Occy)?
- Inflator operation
- Status of computer battery
- Any signs of damage (i.e. cracked hoses, torn regulator mouthpieces)
- Any leaks?

- Cylinder numbers
  - Valve operation
  - O-ring condition
### Post-Trip Dive Checklist

<table>
<thead>
<tr>
<th>Lost/broken gear Y/N. What was lost?</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

#### Cleaning

- BC’s cleaned, drained and hung out to dry
- Regulators cleaned and hung out to dry

#### General Equipment

- Have the cylinders been filled Y/N
- State of general equipment good/ fair/ unusable comments

#### COMMENTS

<table>
<thead>
<tr>
<th>Signed</th>
<th>Dated</th>
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<tbody>
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</table>
Dive Emergency Response

If a dive emergency develops then;

- **Do Not Panic**
- Assess the situation (DRSABCD)
- Protect first aiders from injury
- Retrieve the injured diver
- Protect the patient from further injury
- Send for help - Dial 1800 088 200
- Stand-by for instructions and give immediate first aid as required.

Collect essential information:

- Number of patients
- Nature of and extent of injury/s
- Progressive state of patient’s e.g. stable, colour, getting worse
- First aid administered
- History relating to incident
- First aid equipment on site

Calling emergency services

- Give exact location and any directions
- Give the number of patients
- Give type and extent of injury
- Give the telephone number of the phone you are using.

Get someone else to record details of:

- Patient’s full recent diving history for at least the preceding 48 hours
- Previous medical history of patients e.g. colds, previous injuries, medications etc.
- Provide a brief summary of the incident.
25.1 BAROTRAUMAS

Onset of AGE - usually occurs during or immediately after surfacing.

**Ear Barotrauma**

**Symptoms:**
- Hearing loss
- Loud tinnitus (a ringing or roaring sound in the ear).
- Pain.

**Signs:**
- Vertigo
- Vomiting
- Blood.

**First Aid:**
- Make the patient comfortable
- Treat for shock
- Administer 100% oxygen as soon as possible
- Seek immediate medical assistance
- Monitor and Record details (responsiveness and first aid treatment).

**Barosinusitis**

**Symptoms:**
- Pain

**Signs:**
- Blood

**First Aid:**
- Make the patient comfortable
- Treat for shock.
- Administer 100% oxygen as soon as possible
- Seek immediate medical assistance
- Monitor and Record details (responsiveness and first aid treatment).

25.2 DECOMPRESSION ILLNESS

Onset of DCI- usually within 15 minutes to 12 hours after surfacing.

**Symptoms of DCI:**
- Unusual fatigue
- Skin itch
- Pain in joints and / or muscles of the arms, legs or torso
- Dizziness, vertigo, ringing in the ears
- Numbness, tingling and paralysis
- Shortness of breath

**Signs of DCI:**
- Skin may show a blotchy rash
- Paralysis, muscle weakness
- Difficulty urinating
- Confusion, personality changes, bizarre behaviour
- Amnesia, tremors
- Staggering
- Coughing up bloody, frothy sputum
- Collapse or unconsciousness

**First Aid:**
- Check the patient for responsiveness, (DRSABCD) and resuscitate if necessary.
- Treat for shock.
- Lay the patient on their back, or for drowsy, unconscious, or nauseated victims, on their side.
- Administer 100% oxygen as soon as possible.
- Seek immediate medical assistance,
- Give water only if responsive, stable, and not suffering from nausea or stomach pain.
- Monitor and Record details (responsiveness and first aid treatment).

### 25.3 ARTERIAL GAS EMBOLISM

**Onset of AGE- usually occurs during or immediately after surfacing.**

**Symptoms of AGE:**
- Dizziness
- Visual blurring
- Areas of decreased sensation
- Chest pain
- Disorientation.

**Signs of AGE:**
- Bloody froth from mouth or nose
- Paralysis or weakness
- Convulsions
- Unconsciousness
- Cessation of breathing
- Death.

**First Aid:**
- Check the patient for responsiveness, (DRSABCD) and resuscitate if necessary.
- Treat for shock.
- Lay the patient on their back, or for drowsy, unconscious, or nauseated victims, on their side.
- Administer 100% oxygen as soon as possible.
- Seek immediate medical assistance,
- Give water only if responsive, stable, and not suffering from nausea or stomach pain.
- Monitor and Record details (responsiveness and first aid treatment).

### 25.4 SHARK SITING

If you see a shark;
- Remain calm;
- Do not rush to the surface as the shark is likely to follow;
- Attract the attention of your buddy;
- Keep the shark and the other diver in view;
- Diver’s should ensure that their shark shield is turned on;
- During ascent prepare for quick entry into the vessel by undoing all harness attachments etc.; and
- Be aware of your breathing and ascent rate.
25.5 LOST DIVER

Lost buddy procedures must be discussed in every pre-dive briefing.

If you lose your dive buddy then;

- Circle 360°, looking for the buddy, or their bubble trail;
- Use you air horn or tank rattle;
- Ascend 3-5 metres and circle 360°, looking for the buddy, or their bubble trail;
- Terminate the dive;
- The dive attendant should circle 360°, looking for the buddy, or their bubble trail;
- Continued until either the diver is located; and
- If the buddy is not found in a reasonable amount of time get help from the Sea Rescue.

25.6 OVERDUE DIVE TIME

If your dive team is overdue;

- **DO NOT PANIC**
  - Assess degree of urgency- Air status and any decompression commitments;
  - Notify sea rescue by Radio immediately;
  - Scan 360 Degrees and look for bubbles or divers;
  - Send a diver recall signal; and
  - Buoy the area where the team was last seen