

Health, Safety and Environment Management System

HSE-PRO-002 Diving Procedure

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1 Intent

The purpose of this Procedure is to ensure that the University meets its diving safety obligations by identifying hazards, removing any associated risks and / or installing control measures to prevent or minimise the level of risk to staff, students, contractors, volunteers and visitors engaged in underwater diving at the University.

James Cook University also recognises its obligation to provide a framework from which can meet its requirements under applicable Workplace Health and Safety Regulations, Workplace Health and Safety Codes of Practice and Australian Standards with regards to providing responsible management of diving operations, and the provision of appropriate equipment, training and workplace inductions for such activities.

2 Scope

This Procedure is intended to provide information and advice for all Divers involved in underwater research and teaching activities at the University. It provides a concise statement of approved procedures as outlined in the *JCU Diving Operations Manual Version 2013* which governs all snorkelling, breath – hold diving and compressed air diving operations conducted through the University, or that could be deemed to be related to the University in any way.

The aim of this Procedure is to ensure users conduct their diving operations in a safe manner, and it is the responsibility of each individual Diver within the University to ensure they are familiar with the Procedure, and the James Cook University Diving Operations Manual.

This Procedure applies to all people who carry out diving activities at the University. This includes people who take part in research or a recognised programme of study at the University including undergraduate, postgraduate studies and collaboration with outside agencies.

Related Information:	JCU Diving Operations Manual Version 2013 – Accessible with permission via the JCU Boating and Diving Register JCU Diving Procedures
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3 Definitions

Term	Definition
Dive / Diving	An operation that involves the complete or partial submergence of a person below the surface of the water such that their ability to breathe atmospheric air is restricted.
Dive Supervisor	Nominated leader for the operation of dive teams in the field. The Dive Supervisor will undertake the supervision of diving work at the dive site, as per the dive plan.

Principal Dive Supervisor	Is the legally designated leader for the operation of any Dive Team, as per AS2299.2. JCU Principal Dive Supervisors must be approved by the University Diving Officer
Dive Attendant	Whenever a Diver goes underwater they will be attended by a Diver's Attendant, except in cases where their responsible Boating and Diving Officer has allowed a 2 person dive team. The Diver's Supervisor may also act as the Dive Attendant / Boat Handler at the discretion of the Boating and Diving Officer.
Diver	A person diving as part of his / her work.
Dive Safety Log	Also known as the Dive Activity Sheet.
Dive Register	A register containing the following details: <ul style="list-style-type: none"> • Training, qualifications and experience relevant to the type of diving work undertaken. • Written evidence of relevant competence to undertake or supervise general diving work. • Certificates of medical fitness. • Where required details of diving related plant and equipment. Details of relevant diving plant and equipment will be listed in the plant register.

4 Duty, Obligations and Responsibilities

Diving can be a hazardous activity. Education, training and team cooperation can reduce risks associated with diving.

4.1 All Diving Participants

All participants shall follow the *JCU Diving Operations Manual* as outlined in this Procedure during diving activities.

4.2 James Cook University

In accordance with the Work Health and Safety Act 2011 (the Act), the University as a 'Person Conducting A Business Or Undertaking' (PCBU), has a primary duty of care to ensure workers and others are not exposed to a risk to their health and safety when undertaking diving activities.

A primary duty of care is owed by the University when it:

- Directs or influences work carried out by a worker;
- Engages or causes to engage a worker to carry out work; or
- Has management or control of a workplace.

4.3 WHS Officers

The Act outlines the duties of officers of a PCBU. Officers are defined in the Act as a person who makes decisions, or participates in making decisions that affect the whole or a substantial part of a business or undertaking, and has the capacity to significantly affect the financial standing of the business or undertaking.

It is an Officer's duty to exercise due diligence to ensure their business or undertaking fulfils its health and safety obligations under the Act. The essential elements of due diligence for an Officer are interrelated and cumulative in nature.

These elements require an Officer:

- To acquire and keep up to date knowledge of work health and safety matters.
- To gain an understanding of the operations of the business and the hazards and risks involved.
- To ensure appropriate resources and processes are provided to enable hazards to be identified and risks to be eliminated or minimised.
- To confirm information regarding incidents, hazards and risks is received and the information is responded to in a timely way.
- To ensure the PCBU has, and implements, processes for complying with any legal duty or obligation.
- To make certain processes are verified, monitored and reviewed.

4.4 University Boating and Diving Officer

The University Boating and Diving Officer is a suitably qualified and experienced boater and diver who has University-wide oversight of boating and diving activities. The University Boating and Diving Officer (UBDO) is responsible for ensuring all University divers are adequately qualified, trained, equipped and supervised.

More specifically, he / she is responsible for the following:

- Maintaining the University Boating and Diving Register to ensure currency of qualifications for all divers listed thereon.
- Approving new divers and boat operators and ensuring they are given an induction in diving and/or boating procedures with the University.
- Ensuring all divers and boat operators are trained and qualified for the tasks they intend to participate in.
- Appointing Dive Supervisors, and ensuring the Dive Supervisor is aware of their role and responsibilities.
- Ensuring all diving and boating equipment is maintained to required standards.
- Ensuring a dive plan and risk assessment is completed for each diving project prior to commencement.
- Attending relevant committee meetings and / or advisory groups.
- Reviewing diving incidents / hazards and communicating any corrective actions.

4.5 Principal Dive Supervisor

A Principal Dive Supervisor is the legally designated leader for the operation of any Dive Team, as per AS2299.2, and JCU Principal Dive Supervisors must be approved by the University Boating and Diving Officer.

The role of Principal Dive Supervisor involves significant responsibilities, before, during and after each dive trip, and meeting these is essential to ensure dives are conducted safely and to the level required by the applicable Australian Standards and Codes of Practice.

Principal Dive Supervisors must ensure they maintain a comprehensive knowledge of the requirements of their position, as listed at Appendix 8 of the *JCU Diving Operations Manual Version 2013*, and must meet these requirements in practice.

A designated Principal Dive Supervisor must be in charge of every JCU diving operation, and may act as either a Dive Supervisor, Diver's Attendant or as a Diver during any diving operation - provided an adequate replacement is available on site for them should they enter the water.

4.6 Dive Supervisor and Acting Dive Supervisor

For every dive operation there shall be present at the surface of the dive site, a Dive Supervisor, to direct and control the dive team and diving work, except where the responsible Diving Officer has allowed a two person dive team. When the Principal Dive Supervisor is not able to occupy this position then they shall authorise a suitably trained team member to carry out these duties. The Dive Supervisor may perform the duties of a Diver's Attendant should the need arise. The Dive Supervisor for the dive operation shall nominate one person as the Dive Leader. This person would normally be the most experienced diver and/or the person in charge of the research project.

The Dive Supervisor is responsible for:

- Ensuring that the dive team operates within the University's diving requirements. The Dive Supervisor has additional responsibilities if diving is done without any surface supervision or attendant (see section 6.3 of the *JCU Diving Operations Manual Version 2013*).

In this situation, the Dive Supervisor is responsible for checking that the University Diving Officer or delegate has not expressly prohibited certain diving activities.

- Ensuring that the dive flag is displayed, a float line is deployed if needed and that the anchor is checked upon starting the dive.
- Ensuring that each diving operation is performed in accordance with a predetermined dive plan.
- Discussing control measures, with the dive team and any other person responsible for the workplace, if any dive operation contains high risk factors listed in Appendix 3 of the *JCU Diving Operations Manual*.
- Restricting or suspending any operation considered unsafe.
- Ensuring that the Record of Dive is completed for every dive.
- Maintaining surveillance of divers and lookout over dive site conditions and outside influences.

4.7 Divers

All JCU Divers must have training and experience in accordance with the requirements of the *JCU Diving Operations Manual*, as well as with the operation of any equipment being used and any work being carried out during diving.

Every diver should be aware that ultimately they are the best 'safety device' they could have, and must exercise common sense when deciding whether or not a particular dive is within their capabilities.

JCU Divers must ensure they maintain a comprehensive knowledge of the requirements of their role, as listed in Appendix 9 of the *JCU Diving Operations Manual*, and meet these.

If any diver is concerned about participating on a particular dive for any reason, or about any aspects of that dive, they have a responsibility to refuse to take part in the dive – and this shall occur without prejudice from any individual.

Related Information	JCU Boating and Diving Register <i>JCU Diving Operations Manual Version 2013</i>
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5 Requirements

5.1 Dive Register

All staff, students, contractors, visitors and volunteers who are required to scuba dive in diving operations conducted by James Cook University must register and be approved for diving by the Diving Officer.

The Register serves a requirement of Work Health & Safety Act to:

- Keep records of the qualifications of personnel conducting the diving work
- Ensure qualifications and certificates are current
- Keep records of induction and other training
- Keep records of the work being done and related risk assessments
- Keep records of dives done
- Ensure appropriate dive teams and supervision is in place for the work being done.

Once a person has fulfilled all requirements and is registered in the system, it is their responsibility to keep their qualifications and certificates up to date, if they wish to be available for diving work.

The Register is a place where users can store their key diving qualifications, certificates and diving history, and access anywhere from the Web.

5.2 Dive Plan

For every diving operation the Principal Dive Supervisor shall complete a Dive Plan and submit this to the University Boating and Diving Officer (UBDO) for approval with sufficient time allowed for adoption of any changes required by the UBDO

Any dive plan should be based around the abilities of the least experienced diver participating, and discussed in detail with all divers and support personnel before the dive. It must take into consideration at least the following:

- Divers' names, medical dates, duties and last dive details.
- Approximate number of proposed dives.
- Location(s) of proposed dives.
- Estimated depth(s) and bottom time(s) anticipated.
- Decompression tables used.
- Proposed work, equipment, and boats to be employed.
- Any hazardous conditions anticipated etc.
- An emergency plan and risk and hazard assessment shall be completed for the dive location.

Important: The Principal Dive Supervisor or Trip Leader must ensure that the Dive Plan has been signed by the University Boating Diving Officer or delegate at least three working days before undertaking any diving operation.

5.3 Dive Logs

All working dives must be logged in the DCIEM format, and all logs submitted in the Boating and Diving Register at the end of a trip.

By using the 'Dive Log Template' function in the field trip application, dive log sheets can be generated and either printed and filled in manually, or as a spreadsheet record.

It is expected that dive records will be completed by the Dive Supervisor after every dive.

5.4 Control of Dive Site

The procedures followed during diving work will depend on who is in charge of the work site.

As a general rule, a dive site controlled by a JCU Principal Diving Supervisor will always follow JCU diving procedures, regardless of the dive site location, or the vessel(s) being used, or other external persons involved.

If a JCU diver is conducting work at a site controlled by another organisation, the activity will only be approved if the procedures in use offer the same or higher level of safety than JCU procedures.

If a JCU diver is conducting work while based at a research station, the additional station procedures will also be followed, providing those procedures do not compromise safety.

5.5 Risk Management

The hazards of diving and snorkeling must be managed to eliminate or minimise the risks of death, injury or illness as far as is reasonably practicable. Effective risk management requires persons conducting a business or undertaking (PCBU) to identify all hazards, assess risks and implement, maintain and review control measures.

Generally the hazards of diving and snorkeling are either:

- Hazards that apply to the activity all or most of the time (e.g. drowning if an air supply fails or decompression illness)
- Specific to the workplace environment, human factors or the natural environment.

Hazards should be identified during the preparation of the dive plan and prior to the commencement of the dive. Any hazards which arise during the dive should immediately be brought to the attention of the dive supervisor, and the diving activity varied as necessary to ensure the health and safety of the diver, or the diving activity must be aborted.

An assessment by a competent person is the critical appraisal of a diving operation with particular emphasis on the potential risk to divers. The assessment process focuses on the overall risk to any diver from a number of elements rather than from the risk from one of these elements in isolation. Thorough assessment assists in the identification and prioritization of the control measures to be applied.

It is the initial responsibility of the Principal Dive Supervisor for any particular diving operation, to ensure as far as is practicable that all hazards are identified for that operation through the Risk Assessment process. Following this assessment, the Project Supervisor and UBDO must ensure that suitable measures to control any risks have been determined. In addition, they must be sure that any Principal Dive Supervisor responsible for implementing the control measures is capable of doing so.

5.5.1 Medical and Fitness Requirements

Medical Requirements - All JCU staff, students and volunteers intending to dive with the University shall have a dive medical, performed by a doctor trained in diving medicine, to the criteria set out in the Australian Standard AS/NZ 2299.

All visiting scientific divers shall have a current dive medical to AS/NZ 2299 or equivalent.

Fitness for Work - JCU is responsible for taking all reasonably practicable steps to protect the health and safety of all employees and third parties (including Visitors) acting for, on behalf of, or at the direction of JCU and as such shall ensure that persons are fit for work. Employees also are responsible for managing their health in a manner that allows them to safely perform their job responsibilities.

Drugs and Alcohol - All JCU staff, students and volunteers shall comply with the requirements for the fitness to work.

All personnel shall maintain a blood alcohol content of 0.00% while undertaking work and always remain under 0.05% when in the field.

If the consumption of alcohol is allowed during the dive operation, this will be advised during training and induction.

The possession of illicit drugs while in the field undertaking diving operations upon which JCU work is being undertaken is prohibited.

5.5.2 Classification and Diving Requirements

Individuals intending to undertake any form of diving activity with the University must fulfil all requirements of the *JCU Diving Operations Manual Version 2013*. Divers shall subsequently be classified by the UDO based on their qualifications and experience, as well as the UDO's assessment of their abilities.

Any diver who is deemed to have insufficient training or experience may be classified as a Restricted Diver, and as such be required to dive under the direct supervision of a suitably experienced Scientific Diver.

5.5.3 Diving Regulations for SCUBA (Open Circuit, Compressed Air)

No person shall engage in diving operations under the auspices of the University's diving program unless he/she is currently enrolled on James Cook University's Dive Register pursuant to the provisions of the *JCU Diving Operations Manual Version 2013*.

5.5.4 Decompression Tables and Dive Computer

The use of a conservative decompression table is essential for safe, 'low' risk diving. Dive computers and dive tables are simply guides that attempt to take into account the physiological processes involved with the breathing of compressed gases at depths. They are most definitely not infallible, and do not take into account many factors that can affect an individual's susceptibility to decompression sickness. These factors include variations in age, sex, weight, physical condition, recent illnesses / injuries, as well as many others.

During the formulation of the dive plan the JCU Principal Dive Supervisor must give consideration to any existing or potential risk factors that may render the dive less safe. Also see Section 14 and Appendix 3 of the *JCU Diving Operations Manual Version 2013*.

5.5.5 Breath Hold or Snorkelling Procedures

As a general guide, breath-hold diving by JCU personnel should only be used as an observation and / or a light recovery or collection technique. No difficult or strenuous work of any kind should be attempted by breath-hold diving, without implementation of appropriate safety precautions and the written permission of the University Diving Officer.

An individual wishing to participate in snorkeling activities through the University must be listed on the University Snorkel Register, having met all snorkeling requirements of this procedures manual, and must satisfy the UDO of their fitness to take part in such activities by completing a medical declaration, or possessing a current

certificate of medical fitness and / or by satisfactorily completing the swim assessment in Appendix 1 of the *JCU Diving Operations Manual Version 2013*.

Although no 'formal' qualifications are required of snorkel divers, they are required to complete a detailed Dive Plan for any trip - including a risk assessment for any tasks to be performed.

5.5.6 Emergency Procedures

Each university workplace will develop emergency procedures that follow the standards of care of the community and must include procedures for primary response and the provision of first aid, evacuation, recompression and further professional advanced care for each dive location. The JCU Critical Incident Policy provides the overarching instructions for response to, and the management of a critical incident. All users of diving activities should be aware of the JCU Critical Incident Policy.

The *JCU Diving Operations Manual Version 2013* provides specific guidance on how handle a number of different emergency scenarios relating to diving activities.

5.5.7 Diving Equipment

Diving equipment purchased by individual users (i.e. Researchers, Centres and Laboratories) for use on JCU diving projects, should be done through, or in consultation with the Boating and Diving Office. This is to ensure the type, quality, function and condition of such equipment is compliant with the relevant diving standards and also suitable for the tasks intended. The *JCU Diving Operations Manual Version 2013* gives guidance on types of equipment that must be used when doing certain diving activities.

All equipment shall meet standards as determined by the Diving Officer and the Diving and Boating Unit. Equipment that is subjected to extreme usage under adverse conditions should require more frequent testing and maintenance.

All equipment shall be regularly examined by the person using it. Any defects in the operation of the equipment will require the item to be put aside and tagged with the details of the problem and the owners of the equipment notified.

5.5.8 Specialised Diving Modes

Any dive requiring staged decompression, conducted in restricted overhead environments (cavern, cave, tunnel, ice, or shipwreck penetration), conducted in blue-water (open ocean), incorporating breathing gas mixtures other than air and EAN, involving breathing gas delivery systems other than open-circuit SCUBA, or conducted in any other particularly hazardous environments, shall be considered Specialised Diving.

For each of these modes, the *JCU Diving Operations Manual Version 2013* section defines specific considerations regarding the following issues:

- Special Medical Examination requirements, if any;

- Training and/or experience verification requirements for University authorisation;
- Equipment requirements;
- Operational Requirements and additional safety protocols to be used.

For dives that involve more than one specialised diving mode, all requirements for each diving mode shall be met.

Decompression diving shall be defined as any diving during which the diver cannot perform a direct return to the surface without performing a mandatory decompression stop to allow the release of inert gas from the diver's body. Such diving shall only be performed with the permission of the UBDO.

5.5.9 Incident Reporting

All staff (including casuals) and students are required to use the RiskWare reporting software to communicate any work-related incidents, injuries or hazardous situations.

A work-related incident or hazard is identified by two key elements:

1. The workplace or work activity contributed to the incident, injury, illness or hazard and
2. The incident, injury, illness or hazard occurred during the course of employment

All work-related incidents must be reported on RiskWare within 24 hours of the incident. If full details of the work-related incident or injury are not available within this timeframe, the essential details of the incident or injury as they are known should be submitted and then updated at a time when more detail becomes available.

It is also possible to report a work-related incident on behalf of other people, such as a colleague, student, contractor or visitor.

If an incident has occurred or a hazard has been identified that is not work-related (i.e. work was not a contributory factor and/or the incident did not occur during the course of employment) it must not be logged on RiskWare. If you are unsure please contact the HSE unit for advice.

The emergency procedures given in the *JCU Diving Operations Manual Version 2013* are the minimum that should be carried out in the various circumstances.

5.5.10 Equipment Maintenance

Each equipment modification, repair, test, calibration, or maintenance service shall be logged, including the date and nature of work performed, serial number of the item, and the name of the person performing the work for the following equipment:

- Regulators
- Submersible pressure gauges
- Depth gauges
- Scuba cylinders
- Cylinder valves

- Compressors
- Buoyancy control devices

Related Information	JCU Boating and Diving Register JCU Diving Operations Manual Version 2013
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6 Related Documents, Legislation and Other Resources

6.1 Related Documents and Other Resources

JCU Boating and Diving Register
JCU Diving Operations Manual Version 2013
JCU Critical Incident Policy

6.2 Regulatory Authorities and Other Relevant Entities

Workplace Health and Safety Queensland

6.3 Related Legislation, Codes of Practice and Standards

Legislation	Work Health and Safety Act 2011 Work Health and Safety Regulation 2011
Codes of Practice	Occupational Diving Work Code of Practice 2005 Recreational Diving, Recreational Technical Diving and Snorkelling Code of Practice 2011
Standards	Standards Australia AS2030 - Storage of Compressed Gases; AS3848.2 – Filling of Gas Cylinders for Diving Standards Australia AS2299.1: 2007 – Occupational Diving Operations Part 1 – Standard Operational Practice Standards Australia AS2299.2: 2002 Part 2 – Scientific Diving Standards Australia AS2815.1: 1992 Training and certification of occupational divers Part 1: SCUBA diving to 30m Standards Australia AS2815.2: 1992 Training and certification of occupational divers Part 1: Air diving to 30m

7 Administration

NOTE: Printed copies of this Procedure are uncontrolled, and currency can only be assured at the time of printing.

7.1 Approval Details

HSE-PRO-002 Procedure Sponsor	Head, Health, Safety and Environment responsible for development, compliance monitoring and review
Approval Authority	Health, Safety and Environment Advisory Committee (HSEAC)

Consultation Committee	HSE Unit, HSEAC Sub Committees and Divisional HSE Committees
Approval date	22 October 2015
Implementation date	22 October 2015
Date for next review	24 October 2017
Contact Unit	safety@jcu.edu.au

7.2 Revision History

Version	Date Amended	Description of changes	Author
1.1	26/10/2015	Procedure naming convention amended to: HSE-PRO-002 – Diving Procedure	Health, Safety & Environment
1.0	22/10/2015	Procedure established	Health, Safety & Environment

Keywords	
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8 Schedules

Not applicable

9 Appendices

Not applicable