**Title:** **Discipline of Zoology, Trinity College Dublin SCUBA Diving at Work Policy and Procedures**

**Date:** 7 December 2021

**Approval:**

1. **Purpose**

These Discipline of Zoology Diving Policy and Procedures have been developed to comply with the relevant parts of the Safety, Health and Welfare at Work (Diving) Regulations 2018 (S.I. No. 254 of 2018) and the Code of Practice for Inland Diving and Inshore Diving (Safety, Health and Welfare at Work (Diving) Regulations 2018), The School of Natural Sciences Safety Statement and the Trinity College Dublin Safety Statement.

1. **Description**

These Discipline of Zoology Diving Policy and Procedures must be followed for all Diving Operations that take place on or after 1st May 2019 in association with the discipline and in Ireland. Individuals and institutions are subject to the laws of the location in which visits take place.

All staff and students diving for scientific purposes have a legal obligation under the Safety, Health and Welfare at Work Act 2005 to follow the Diving Policy and Procedures.

This policy is for open-circuit SCUBA. Breathing gas will be air (21% O2 and 78% N2). Use of Enriched Air Nitrox, other Mixed Gases and Oxygen Rebreathers is not covered within this Policy Document. Working dives at NUIG will be ‘shallow’; there will be no planned decompression diving, and no diving below 20 m depth. Where use of Nitrox, mixed gases, or decompression diving is required, a separate policy must be developed.

This policy does not cover diving from vessels. Where diving will commence away from the shore a separate policy must be developed.

**Explanation of Terms**

The Code of Practice for Inland Diving and Inshore Diving uses specific terms for roles.

**Client:** the person who commissions the diving project. This is normally Trinity College Dublin (TCD) but could be different where outside bodies have commissioned our services.

**Diving Contractor:** This is the employer TCD. A Dive Officer (DO) will sign off on day to day dive operations on behalf TCD and hence the Diving Contractor.

**Dive Officer:** a competent person who will oversee the Diving Project Plan, approves diver competency, determines who is sufficiently qualified and experienced to conduct ‘check out dives’, and keeps records of the same. Where diving groups are smaller than four person the Dive Officer will act as Diving Supervisor.

**Diving Supervisor:** the Dive Officer or a competent person appointed in writing by the Dive Officer to supervise a Diving Operation. Where a Diving Project is broken down into multiple Diving Operations (see below), the Dive Officer can appoint more than one Diving Supervisor. However, only one Diving Supervisor can be in charge of a Diving Operation at any one time.

**Divers:** any persons who undertake work dives. Although students are not covered by the Safety, Health and Welfare at Work (Diving) Regulations 2018, these policies and procedures apply the same standards and regulations to all persons when scientific diving.

**Standby diver:** the person who is appropriately positioned, equipped, dressed and ready to render immediate assistance to a diver in an underwater emergency. This is the work diver’s buddy.

**Diver’s tender:** person who assists a diver, monitors diving operations through a surface marker buoy (SMB), or underwater radio comms, or in the case of fixed point dives through a tendered Lifeline, and manages the diver recall system. The diver’s tender can be the dive supervisor.

**Diving Operation:** the portion of a diving project identified in the Diving Project Plan which can be safely supervised by one Diving Supervisor. An operation can be made up of either a number of dives or even a single dive.

**Diving Project:** the term used for the overall diving event – regardless of its duration. Depending on the size of the diving project, it can be made up of one or more diving operations.

**Principal Investigator (PI):** lead researcher responsible for the preparation, conduct, and administration of the research for which diving is required.

**Competency**

Diving Supervisors, Divers and Diver’s tenders must be competent to undertake the role that they have accepted. As of May 2019, the Code of Practice for Inland Diving and Inshore Diving (Safety, Health and Welfare at Work (Diving) Regulations 2018) does not specify a minimum competency. TCD requires that Divers and Diving Supervisors have:

1. ISO 24801-3 or equivalent qualifications (Scientific Diving certificates preferred, such as Comhairle Fo-Thuinn/Irish Underwater Council Scientific Diver training, European Scientific Diver Training or American Academy of Underwater Sciences)
2. 20 dives between 10 to 20 m or greater
3. A current dive medical (within the past year) from a registered medical practitioner approved by the Authority to issue a certificate of medical fitness to dive (or equivalent from EU or international practitioners). A list of suggested doctors is on the HSA website.
4. Current insurance that covers diving at work (for instance Diving Alert Network minimum Sports Silver coverage)
5. Current diving first aid training
6. A check out dive with the dive officer, or a delegated person previously deemed competent, to ensure competency.

Holding qualifications/experience does not constitute an automatic right to dive, and if not deemed competent by DO, Diving Client or Diving Supervisor, a diver will not be recommended for approval to participate in any Diving Operations. Where qualifications and experience are lesser than those described above, the DO may recommend clearance to dive after a checkout with the DO, in appropriate conditions and with continuing training.

Individual competencies of third-party dive team members e.g., another higher education institute or funding body if involved, should be specified in writing and respective institutes or organisations are responsible for all gear and infrastructure used by third-party members.

**3.0 Responsibilities**

## Dive Officer

The DO will ensure that:

(a) the diving project is planned, managed and conducted so far as is reasonably practicable in a manner which protects the safety, health and welfare of all persons taking part in the diving project,

(b) the Diving Project Plan is prepared in accordance with legislation and the Relevant Code of Practice,

(c) TCD is identified in the Diving Project Plan as the Diving Contractor,

(d) the Diving Project Plan is updated throughout the course of the diving project,

(e) before a diving operation commences, each person appointed as a Diving Supervisor receives a copy of the Diving Project Plan,

(f) the signatures of any Diving Supervisors are included in the Diving Project Plan to indicate their acceptance of the role.

(g) the signatures of the DO, Project PI (or in their absence their approved deputies) are included on the Diving Project Plan to indicate their approval of the Plan.

(h) there are a sufficient number of competent persons available to carry out, safely and without risk to the health or welfare of such persons, the diving project, and any action, including the giving of appropriate first aid, which may be necessary in the event of a foreseeable emergency that occurs during the course of the diving project,

(i) any diver engaged in a Diving Operation is competent and able to dive (as described above) in the operation and is competent in the type of work to be carried out during the course of the Diving Operation.

(j) in so far as is reasonably practicable any person taking part in the diving project complies with the provisions of the Diving Project Plan and the relevant statutory provisions.

## Responsibility of the University Unit within which the diving is taking place

The Discipline of Zoology will designate a named competent person responsible for dive safety, who will ensure that:

(a) there is suitable and sufficient equipment necessary for the safe conduct of the Diving Operation,

(b) such equipment is available when needed to carry out (safely and without risk to the health or welfare of any person) the diving project and any action which may be necessary in the event of an emergency that occurs during the course of, or is connected with, the diving project,

(c) all equipment used during the Diving Operation (university owned and personal) is in good working order and maintained in a safe working condition and that records of maintenance are kept,

(d) the equipment has been subjected to inspections, examinations and tests in accordance with any relevant statutory provisions and manufacturers’ specifications, by a certified authority, and that the results of any such inspections, examinations or tests are recorded in writing and kept in accordance with the requirements of Health & Safety legislation for 5 years (See Section 13.6 of the Code of Practice for Inland Diving and Inshore Diving)

(e) records of maintenance are made available to Diving Supervisors (generally located with the equipment).

Where staff or students use university equipment, they must log usage in the logbook provided by the relevant unit’s person responsible for dive safety.

Where staff or students elect to use personal dive equipment, they must maintain it in good working order, and ensure that records of maintenance are made available to Diving Supervisors and Heads of units, or other named competent staff members charged with oversight. Annual performance tests for modern regulators include dynamic and static IP levels, precision cracking effort, demand effort vs. flow and venturi performance, from a certified technician, should be kept on record and buoyancy compensators should be pressure tested annually.

## Diving Supervisors

Diving Supervisorsmust read the Code of Practice for Inland Diving and Inshore Diving and sign the relevant part of the Diving Project Plan to confirm that they have read and understand their responsibilities and that, as far as is reasonably practicable, the Diving Operation that they are being asked to supervise complies with the requirements of the Diving Regulations and relevant Code of Practice.

Diving Supervisors should not dive whilst supervising other Divers. Where a Diving Supervisor is required to carry out any other activity other than supervising, a secondary Diving Supervisor should be appointed. Handover between supervisors must be documented in the Diving Operation Record. During field work there should be a clear commend structure, especially for instances where command passes from dive supervisor to other members of the dive team.

A Diving Supervisor should not participate in a Diving Operation that he or she considers to be unsafe because, for example, in the Diving Supervisor’s opinion, it is too large for one person to supervise safely or, for example, the Diving Supervisor knows that he or she is not competent to supervise.

Only a Diving Supervisor may authorize the start of a dive.

Diving Supervisors must ensure that:

(a) the Diving Operation that they are supervising is carried out safely and without risk to those involved or to those who may be affected by the diving operation and in line with relevant legal requirements and the Diving Project Plan;

(b) they have located and notified the nearest compression chamber of the Diving Project Plan

(c) they do not allow a Diver to dive if in their opinion the Diver is not fit and competent.

(d)  the contents of the Diving Project Plan which relate to the Diving Operation which they are supervising is brought to the attention of those taking part; and that the Diving Project Plan and arrangements for dealing with foreseeable emergencies are clearly understood by all those engaged in the Diving Operation. This would normally be ensured by carrying out a pre-dive briefing session with all those involved and, if appropriate, carrying out rehearsal of the arrangements;

- there should be a dive plan for each dive (depth and time) so that the dive supervisor can monitor the dive via SMB or tendered Lifeline and know if an alert to Emergency Services is required based on extended bottom time (5 minutes over plan).

Dive Tables will be used in all planning to ensure that decompression stops are not required, but dive computers will be used to monitor depth and time for all divers (decompression model changes across brand + model). For this process, Dive Supervisors should use the tables that they were trained to use when gaining their ISO 24801-3 qualifications.

Example of daily dive plan:



(d) all equipment has undergone the relevant inspections, examinations and tests and is readily available for use.

(e) all equipment, unless intended to be mobile, is secured;

(f) there is an adequate quantity of breathing gas for the Diving Operation. The quantity of breathing gas supplied must be sufficient for all the Divers engaged in the diving operation and be sufficient for the standby Diver and Diver to safely return to a place of safety in an emergency. The air quality must meet standards I.S. EN 12021:2014 (Respiratory Equipment - Compressed Gases for Breathing Apparatus);

(g) so far as is reasonably practicable, that the proposed dive site and the water and weather conditions are suitable;

(h)  the risk assessment is still current for the prevailing circumstances on the day of and during the dive;

(i)  all divers are fit for and understand their and other responsibilities during the Dive Operation;

(j)  the personnel that they are to supervise are competent to carry out the work required of them. They should also check, as far is reasonably practicable, that these personnel are fit, and in possession of all necessary certificates, i.e. where appropriate, medical fitness to dive, diver’s certificate, first aid certificate and emergency oxygen first aid certificate;

(k) if working in or close to a lock or in a harbor ensure that the necessary permission is obtained before starting or continuing the operation and the Irish Coast Guard’s relevant Rescue Coordination Centre, are aware that a diving operation is to start or continue;

(l)  the divers have an SMB in operation as communication tool and a backup SMB with standby diver to communicate with supervisor on surface;

(m) appropriate first aid equipment is available on site;

(n)  proper records of Diving Operations are maintained in a diving project log, specified in Appendix 3;

(o) any area being used as dive platform (jetty) is:

 - suitable for the number of persons and equipment carried,

 - is not overloaded

## Divers

Divers have specific duties under the Diving Regulations. They must not dive unless they are fit to do so, hold a valid certificate of medical fitness, are competent to undertake the dive and carry out any associated work.

Under Regulation 10(3) of the Diving Regulations, all people, including Divers, have a general duty to comply with any instructions applicable to them in the Diving Project Plan.

All Divers must maintain a diver’s personal log-book. On every day that a Diver takes part in a Diving Operation they must record in their personal diver’s log-book the particulars set out in Appendix 2.

The log-book should be hard bound with numbered pages and signed by the Diving Supervisor after dives. Diving Supervisors must never sign/stamp and date blank pages in log-books and leave divers to fill in the details. The dives should be sequentially numbered and include a running total of dive time.

The log-book must be retained for at least two years after the last entry.

Where the diver maintains an electronic diver’s log-book, a backup personal log- book should also be maintained.

# 4.0 Procedures

1. Proposed Diving Projects must be discussed in the first instance with the Dive Officer.

2. The DO will advise on the preparation of a Diving Project Plan which will be prepared initially by the person whose work requires the Diving Project, as this person best understands the scope of the proposed work, and the location of the proposed work. Preparation of the Diving Project Plan may be delegated in part or whole if another person is deemed to have a better understanding of the project/dive requirements.

3. The PI(s), other staff (research and technical) and, where applicable, students of the project requiring scientific diving will discuss and agree with the DO the appointment of Dive Supervisors.

4. The Diving Project Plan will be checked by all parties, including, but not limited to, the Dive Supervisor(s), the relevant PI (or their deputies), to ensure that all legal obligations of the Dive Contractor are met, and that the Diving Project has been properly Risk Assessed and that the Diving Operations will be carried out in a safe manner.

5. The PI (or their deputies) will pass the Diving Project Plan to the DO for final approval and to sign-off or note any objections to the Diving Project Plan before it is considered approved.

6. Once a Diving Project Plan is approved and signed off, the Diving Supervisor is responsible for all aspects of Diving Operations (e.g. daily risk assessments, dive team compliance).

7. The Diving Supervisor must only use Divers who have been deemed competent by the DO. All records of personal certifications should be scanned and kept on record by the Diving Control Board for at least 2 years post termination of Dive Project.

8. The Diving Supervisor leads each Diving Operation according to the Diving Project Plan.

9. After each Diving Operation, Divers complete their personal logbooks (See Appendix 2 for required details), which are signed and stamped (with a unit stamp) by the Diving Supervisor and Discipline Safety Officer, and maintained for two years after completion of the Dive Project.

10. After each Diving Operation, the Diving Supervisor must complete the Dive Project Record (see Appendix 3 for required details), which will be stamped with the unit stamp, and maintained by the PI or Discipline Safety Officer for a minimum of five years after completion of the Dive Project.

# 5.0 Preparing a Diving Project Plan and Risk Assessment

The Code of Practice for Inland Diving and Inshore Diving gives extensive advice on preparing a Diving Project Plan and Risk Assessment.

The Diving Project Plan must be compliant with all relevant legislation, for example with regard to the size of the dive team (the minimum number of divers for untethered SCUBA is three), diver to diver and diver to surface communications, diver equipment (e.g., net cutting devices, independent secondary air supply (pony bottle) ), Emergency and First Aid etc.

A non-exhaustive checklist of factors that need considering is included in Appendix 1. Pages 21-54 of the Code of Practice for Inland Diving and Inshore Diving are **essential reading** for interpreting the requirements of this checklist.

# 6.0 Related Documents

# Appendix 1 – Diving Project Plan Cover Page DetailsAppendix 2 – Dive Officer Role

# Appendix 3 – Diving Project Plan Requirements Appendix 4 – Required Particulars for the Diver’s Personal Log-Book Appendix 5 - Required Particulars for Diving Operation Records

# Appendix 1 – Diving Project Plan – Cover Page Details

Diving Project Plan – Cover Page

Project Name:

Client: Trinity College Dublin, the University of Dublin

Diving Contractor: TCD or Marine Institute

Diving Supervisor(s):

Project PI:

# Signatures of Diving Supervisors:

I agree that I have accepted the role of Diving Supervisor for this named project, and am competent to undertake that role. I will fulfill the duties of Diving Supervisor as laid out in the Code of Practice for Inland Diving and Inshore Diving (Safety, Health and Welfare at Work (Diving) Regulations 2018), a copy of which has been made available to me, and which I have read.

Signature of Diving Supervisor

[Duplicate signature line if more than one Diving Supervisor Appointed]

# Approval

**Project PI**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Dive Officer**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Appendix 2 – Dive Officer Role**

Dive Officer

The DO approves diver competency, determines who is sufficiently qualified and experienced to conduct ‘check out dives’, and keeps records of the same.

The DO may not sign off his/her own dive plans. These should be signed off by the PI (or their deputies).

Where a DO is unavailable for a period of time (e.g., annual leave, field work), another competent member of the dive team will serve as temporary replacement.

The DO and has responsibility to establish and/or approve training programs and diving projects; recommend changes in policy and procedure; recommend new equipment or techniques; review, revise, and assure compliance with the relevant legislation.

The DO has the power to suspend diving programmes which it considers to be unsafe or unwise; and investigates the nature and cause of any diving incidents or violations of the University Dive Policy.

The DO will elect an equipment officer from among its members. The term of equipment officer will be for three years, but they may serve multiple terms if re-elected. The equipment officer is responsible for maintaining equipment maintenance logs for university gear and test records for personal diver gear in the form of test reports (see **Responsibility of the University Unit within which the diving is taking place**), including those for bouyancy compensators which can be done by the equipment officer in house.

# Appendix 3 – Diving Project Plan Requirements

The Diving Project Plan must take account of relevant national standards and guidelines on safety and health, where such exist. In their absence, account should be taken of relevant European and international standards and guidelines. In particular, the following non-exhaustive list of matters must be considered-

1. Planning

(a) Environmental conditions including:

* Meteorological conditions including forecasted and prevailing conditions.
* Tidal information (including local tide tables and indications of the anticipated speed of tidal current) and water currents in inland waterways.
* Potential vessel traffic and proposed shipping movements.
* Underwater hazards of the diving site including any culverts, penstocks, sluice valves or areas where differences in hydrostatic pressure or an entrapment risk may endanger the diver.
* Air and water temperatures and surface waves.
* Bed conditions.

(b)  Depths and type of operation.

(c)  Diving equipment available and suitability of plant and equipment.

(d)  Availability, qualifications and competency of personnel.

(e)  Effects of air transport after diving.

(f)  Availability of suitable personal flotation devices/lifejackets for use when travelling to and from the dive site or in emergency situations.

2. Preparations

(a)  Consultation with the client and with any other person who has control of the site of the project or information related to the safety of the diving operation.

(b)  Selection of and equipment.

(c)  Check of plant and equipment.

(d)  Allocation of personnel.

(e)  Personal fitness of divers for underwater operations.

(f)  Precautions against cold in and out of the water.

(g)  Means of communication (lifeline system, signaling procedures etc.).

(h)  Precautions against underwater hazards of the diving site.

3. Procedures during diving

(a) Responsibilities of the diving supervisor, dive team and others.

(b) Use of all types of personal diver’s equipment and plant.

(c) Supply of breathing gas

(d)  Working in different locations and varying altitudes.

(e)  Operations and use of equipment under water.

(f)  Limits on depth and time under water.

(g)  Descent of divers.

(h)  Ascent and recovery of divers.

(i)  Compression and decompression.

(j)  Control in relation to changing environmental conditions.

(k)  Maintenance of log books.

(l)  Distance and transport method to nearest compression chamber.

(m)  Display of correct flags and signals.

(n)  Awareness of and avoidance of obstruction to vessels or other water users in the vicinity.

4. Emergency Procedures

(a)  Emergency communications and signaling.

(b)  Emergency assistance under water and on the surface.

(c)  Therapeutic recompression and the availability of a compression chamber or that purpose.

(d)  First aid equipment, personnel and arrangements.

(e)  Medical assistance.

(f)  Calling in assistance of emergency services including advance liaison with those services where appropriate.

(g)  Precautions in event of evacuation.

(h)  Provision of emergency electrical supplies.

(i)  Suspension of diving.

# Appendix 4 – Required Particulars for the Diver’s Personal Log-Book

* Name and address of the diver. (Names and addresses should be printed and in block capitals).
* Signature of the diver and a verified photograph of the diver.
* Date to which entry relates.
* Name and address of the diving contractor.
* Name and signature of the diving supervisor(s) for that dive.
* Location of the diving project, including the name of any work site or installation from which diving is taking place.
* Dive number and running total of dive time.
* The maximum depth reached on each occasion.
* The time on each occasion that the diver leaves the surface, the bottom time and the time the diver reached the surface.
* Where the dive includes time spent in a decompression chamber, details of any time spent outside the chamber at a different pressure.
* Breathing apparatus and breathing gas used by the diver.
* Any decompression schedules followed by the diver on each occasion.
* Any work done by the diver on each occasion, and the plant (including any tools) used in that work.
* Any episode of barotrauma, discomfort or injury suffered by the diver including details of any decompression illness and the treatment given.
* Any emergency or incident which occurred during the diving operation.
* Any other factor relevant to the diver’s health or safety.
* Affix unit stamp after the record has been signed by the Diver and Diving supervisor(s).

#  Appendix 5 – Required Particulars for Diving Operation Records

The following required particulars are to be included in the diving operation record for all diving projects

1. Name, business address, e-mail address and telephone number(s) of the client.
2. Name, business address, e-mail address and telephone number(s) of the diving contractor.
3. The date and time to which the entry relates or the dates and times during which the diving operation was carried on.
4. Name of the diving supervisor or supervisors and the times and dates for which he or she is acting in that capacity in respect of that diving operation. (An entry must be completed daily by each diving supervisor for each diving operation).
5. Location of the diving operation, including as appropriate the name or other designation of any work site or installation from which diving is taking place.
6. Names and respective duties of the divers and other persons taking part in the diving operation including names of personnel operating any diving plant or equipment.
7. Purpose or nature of the diving operation.
8. Breathing apparatus and breathing gas used by each diver in the diving operation.
9. The time at which each diver leaves atmospheric pressure and returns to atmospheric pressure and their bottom time.
10. Maximum depth which each diver reached.
11. Procedures followed in the course of the diving operation including as appropriate, the maximum length/depth of the dives, which must avoid the need for decompression.
12. Emergency support and first aid arrangements.
13. Particulars of any emergency or incident which occurred during the diving operation, including any action taken and details of any decompression sickness, illness, discomfort or injury suffered by any of the divers and the treatment given.
14. Details of the pre-dive inspection of all plant and equipment being used in the diving operation. Confirmation that all equipment used has been checked immediately prior to the dive and conforms to the maintenance schedule.
15. Any defect discovered or recorded in the functioning of any plant or equipment used in the diving operation.
16. Particulars of any relevant environmental conditions or factors affecting the diving operation.
17. Any other factors likely to affect the safety or health of any persons engaged in the operation.
18. Any relevant Code of Practice that applies to the diving operation.
19. Name and signature of the diving supervisor completing the record.
20. Obtain stamp from unit Administrator and file record in Safety Officer or PI’s Office.