

Generic Open Water Risk Assessment

This document should be read by all divers taking part in dives organised by Totnes Sub-aqua Club, and will be made available to all club members via an annual distribution and on the club website.

It is the Dive Manager's responsibility to carry out a risk review prior to every dive/expedition, based on this generic risk assessment, plus consideration of prevailing conditions. If conditions change such as to be significantly different from those applying at the time the original assessment was undertaken, then the Dive Manager shall reassess the dive plan accordingly.

Hazards should be continuously monitored during any dive or dive related activity. The Dive Manager/boathandler should be prepared to put any contingency plans into place at any point during the dive.

Standard Controls

Divers shall dive within the restrictions of their training and experience and all diving shall be carried out in accordance with BSAC Safe Diving Practices and TSAC Branch Rules.

It is the responsibility of each individual diver to undertake personal risk control measures as befits their level of training and experience and, if appropriate, the Dive Manager/Instructor shall brief the diver/trainee on the risks associated with the dive.

As part of the risk control measures the Dive Manager shall ensure that there is an oxygen kit and first aid kit available on every boat dive and that personnel on the boat(s) are familiar with the use of the oxygen kit (a list of approved boathandlers and oxygen administrators is available from Diving Officer or from TSAC website). The Dive Manager or designated boat tower shall ensure that the boat is properly equipped (refer to the boat checklist on the back of the boatshed door for equipment list).

It is the responsibility of each individual diver to advise the Dive Manager if they are using a mixed gas, and to state the limitations/constraints that this imposes, to enable the Dive Manager to plan the dive and dive pairings accordingly.

Anyone managing a branch dive must obtain the Diving Officer's consent to the planned dive. On completion, the Diving Officer shall be advised of the safe return of all divers, or of any accidents or incidents, at the earliest opportunity.



A detailed log sheet/slate will be kept during diving operations. The Dive Manager, or Assistant Dive Manager on that boat, where more than one boat is used, shall be advised of any planned decompression schedules.

An approved boat handler must be present in the boat at all times (a list of approved boathandlers is available from Diving Officer or from TSAC website), and only persons having undertaken a recognized boat handling course and subsequently satisfied the Diving Officer of their competence may handle the boat unsupervised. The boathandler shall wear a lifejacket while operating in that role. The engine kill cord should be attached to the boat handler at all times when the boat is underway.

All persons in the boat must be in possession of a buoyancy device and if a dry-suit is to be relied upon in this role the zip must be completely closed before leaving shore.

The A flag should be flown at all times that divers are in the water and should be taken down once all divers have been recovered.

All divers must have completed a medical self-declaration form.

All divers shall carry an alternative (gas) source, i.e. Octopus, Air II, pony or twin-set.

Divers to use SMB/DSMB as appropriate, and at the direction of the boathandler.

Divers should ensure that their equipment is properly maintained and functional.

Divers to carry appropriate surface detection aids and a knife/tool for cutting.

The Dive Manager shall include diver separation procedures in the dive briefing as appropriate.

All divers and boathandlers should be aware of TSAC's diver recall procedure.

All Oxygen kits contain an Incident Procedure Sheet which should be completed to accompany a diver requiring evacuation by the emergency services.

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
Currents	Diver separation underwater	High	Dive Manager to use tide tables where appropriate and brief divers on tidal information. Ensure diver separation procedures are included in briefing and divers to consider use of a buddy line. Contact to be maintained throughout dive. If not diving with SMB, use DSMB for ascent.	Divers to abort dive and return to surface (subject to decompression requirements)
Currents	Diver(s) swept away from marked site or losing contact with boat cover	High	Dive Manager to use tide tables where appropriate and brief divers on tidal information. Have contingency exit points available of shore diving. Divers to agree dive plan with boat handler/skipper. Where required, set maximum dive times. All divers to carry surface detection aids such as DSMB, torch, strobe, EPIRB, flag, flares, whistle, etc, particularly DSMBs.	Divers to use SMB or DSMB for ascent. Divers to use surface detection aids to attract assistance.
Equipment failure	Serious injury to diver/death	High	Divers to perform a buddy check before entering the water. It is recommended that divers carry-out a bubble check once under the surface. Equipment to be well maintained and regularly serviced.	Divers to abort dive and return to surface. Assistance from buddy as required.
Nitrogen narcosis	Injury to diver	High	Divers should agree a dive plan with the Dive Manager before the dive. Divers should build-up depth experience progressively. Divers to carry-out progressive work-up dives if going beyond their recent diving experience. Experience to be gained in company of Instructor/diver of greater experience at that depth.	Assistance from Instructor/buddy.
Reduced underwater visibility	Diver separation underwater	High	Ensure diver separation procedures are included in briefing and divers to consider use of a buddy line. Divers to be prepared to abort dive if necessary. All divers to carry detection aids such as torch or strobe. If not diving with SMB, use DSMB for ascent. NOTE: Divers should dive in buddy pairs if at all	Divers to abort dive and return to surface (subject to decompression requirements)

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			possible. Groups of three should consist of experienced divers who are self-reliant. If training, the normal student-to-instructor ratio of 2 students to 1 instructor should be reduced to 1 to 1 if possible, except in the case where the 'students' are experienced divers involved in supplementary training.	
Running out of gas	Serious injury to diver/death	High	Dive Manager to record "gas in" and "gas out" on dive slate. Divers to plan gas requirements for their dive and ensure they have adequate gas for that dive. Divers to perform a buddy check before entering the water, including gas levels. Divers to agree a gas reserve at which they will leave the bottom and monitor their buddy's gas level during the dive. All divers should carry an alternative source (AS), i.e. Octopus, Air II, pony or twin-set.	Diver to use own or buddy's AS.
Uncontrolled ascent	Serious injury to diver/death	High	Divers should ensure they are properly weighted and capable of making a safe and controlled ascent, and that inflation and dump systems are working correctly. Divers using drysuits to have been trained in their use. Dive Manager to ensure oxygen kit and administrator on boat divers. If training, Instructor to monitor student. Instructor/student ratios to be in accordance with BSAC recommendations.	Oxygen kit and trained O2 administrators on site. Diving monitored by boat/shore cover able to provide/direct assistance.
Unfavourable weather	Lost diver/Injury to diver	High	Dive Manager to plan dive using latest weather forecast, and to have contingency dive site. Continuously monitor conditions prior to and during dive and abort dive if necessary. If diving from a boat, notify coastguard of position in advance. Skipper to be aware of divers planned times and watch for divers arriving at the surface. Make sure a	Dive Manager to cancel diving or change to back-up site. Recall divers if dive in progress. Advise coastguard of change of

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			<p>proper watch is kept at all times. Divers to come up shot line, or use SMB or DSMB for ascent. All divers to carry surface detection aids such as DSMB, torch, strobe, EPIRB, flag, flares, etc, particularly DSMBs. Boat handler to agree diver recall system with divers prior to entry (e.g. signals via SMB line, engine revving).</p> <p>NOTE: Unfavourable weather would include rough sea, poor visibility (fog or rain), low sun preventing boat from seeing divers or onshore wind preventing the pick up of divers.</p>	<p>plan/returning to base.</p>
Boat propeller	Serious injury to diver or swimmers/death	Medium	<p>Only a competent skipper to operate boat while divers are in the water; a competent skipper is defined as a Diver Cox'n, an experienced boathandler or a less experienced boathandler under supervision. While on the surface all activities are controlled by the skipper. Divers to ascend up shot line where possible and no ascents to be carried out in open water without an SMB or DSMB unless in an emergency and unavoidable. Divers to look and listen for boat traffic during ascent. Divers to be aware of boat entry and exit procedures.</p>	<p>First Aid to be administered. Dive Manager/boathandler (or other divers) to contact emergency services, as required. Hospitalise, as required.</p>
Cold water	Regulator freezing/freeflow – injury to diver	Medium	<p>Divers to choose appropriate equipment for the environment. Equipment to be well maintained and regularly serviced. Divers should consider the use of environmentally sealed first stages if regularly diving in cold water. If possible keep cylinders out of cold until just before diving. Avoid breathing from regulators on surface prior to dive and do not take regulator out of mouth during dive. Avoid alternative source (AS) drills, except on specific training dives</p>	<p>Diver to abort dive if necessary. Use own or buddy's AS if catastrophic loss of gas.</p>

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			with appropriate back-up procedures in place.	
Cold water and/or wind chill	Hypothermia	Medium	Divers to choose appropriate, well fitting exposure protection in good condition, including wind-proof coat to wear on boat if required. Divers to be prepared to exit water early if cold. Divers to monitor buddies, and in particular trainees, for early signs of cold. Trainees to be briefed on appropriate divers' signals to indicate chill. Survival blanket to be kept in boat first aid box.	First Aid to be administered. Dive Manager/boathandler (or other divers) to contact emergency services, as required. Hospitalise, as required.
DCI (DCS and barotrauma)	Serious injury to diver/death	Medium	Divers should agree a dive plan with the Dive Manager before the dive. Divers should avoid aggressive dive profiles and ensure they have sufficient gas for the planned decompression schedule, including safety stops if "no decompression" diving. Divers should ensure they are properly weighted and capable of making a safe and controlled ascent, and that inflation and dump systems are working correctly. Divers to remain well hydrated and avoid excessive exercise after diving. If diving on computers, divers to have a contingency plan for computer failure e.g. watch and dive tables. Dive Manager to ensure oxygen kit and administrator on boat dives.	Oxygen kit and trained O2 administrators on site. Dive Manager/boathandler (or other divers) to contact emergency services, as required. Incident Procedure Sheet to be completed for emergency services to accompany diver. Casualty to be referred to recompression facility.
Deteriorating weather	Risk to boat and passengers	Medium	Dive Manager to plan dive using updated weather forecast, and to have contingency dive site. Continuously monitor conditions prior to and during dive and abort dive if necessary. If diving from a boat, notify coastguard of position in advance.	Dive Manager to cancel diving or change to back-up site. Recall divers if dive in progress. Advise coastguard of change of

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
				plan/returning to base.
Disorientation during wreck penetration	Panic, entrapment, injury to diver, running out of air, serious injury to diver/death	Medium	Divers to avoid entering wrecks unless they have clear exit, or are suitably trained and equipped. Divers to carry/use distance line.	Assistance from buddy.
Diver falling from ladder when exiting water or generally during entry/exit	Serious injury to diver beneath them	Medium	Divers to ensure they are never beneath a diver who is climbing up a ladder or entering/exiting water. If diving from Rib with detachable ladder, ensure ladder is securely in place before using.	Recover casualty from water and administer first aid. Hospitalise, as required.
Diver inattention due to task loading (e.g. photographers, scallopers, wreck divers)	Diver separation underwater, entanglement of isolated diver	Medium	Dive Manager to consider likely tasks when determining buddy pairs (e.g. in many cases it's best to avoid putting two photographers together). Ensure diver separation and recall procedures are included in briefing and divers to agree behaviour underwater, i.e. different roles to be played by buddies. Divers to be prepared to abort dive if necessary. All divers should carry cutting tool or knife, torch or strobe as appropriate. If not diving with SMB, use DSMB for ascent. NOTE: Divers should dive in buddy pairs if at all possible.	Divers to abort dive and return to surface (subject to decompression requirements)
Diver influenced by drugs or alcohol	Injury to diver	Medium	Dive Manager/skipper to stop anyone believed to be under the influence drugs or alcohol from diving. Diver to advise Dive Manager if concerned about dive fitness of buddy.	Dive Manager/skipper to stop affected person from diving.
Drowning	Serious injury/death of diver or boat passenger	Medium	Divers in drysuits to have zip closed when aboard boat. Non-divers/boathandler to wear life jackets when aboard boat.	First Aid to be administered. Dive Manager/boathandler (or other divers) to

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			All divers should carry an alternative source, i.e. Octopus, Air II, pony or twin-set.	contact emergency services, as required. Hospitalise.
Ear damage	Injury to diver	Medium	Trainees to receive specific instruction on ear clearing. Divers to avoid diving when suffering from a cold.	Assistance from Instructor/buddy.
Engine failure	Risk to boat and passengers/separation from divers	Medium	Engine to be serviced regularly. Dive Manager to ensure that the boat is carrying sufficient fuel for the planned voyage. Boat to carry toolkit, VHF radio, oars, flares and other emergency equipment. Notify coastguard of position/estimated duration in advance.	If unable to repair, seek assistance from other boats in vicinity. If no immediate assistance available, advise coastguard of problem – Mayday if imminent danger to boat/divers. Recall divers if dive in progress/arrange for other boat(s) to pick-up divers if possible.
Fishing line, nets, kelp, and other underwater obstructions	Panic, entrapment or entanglement, injury to diver, running out of air, serious injury to diver/death	Medium	Dive Manager to brief divers of any known underwater obstructions or if the site is known to be prone to collecting nets & fishing lines. Change sites or dive plan if necessary. Divers should aim to have their equipment streamlined and avoid dangling equipment as far as is possible. Divers must have diving tool/knife for cutting.	Assistance from buddy.
Gas toxicity	Serious injury to diver/death	Medium	Divers to advise the Dive Manager if they are using a mixed gas, and to be aware of the limitations/constraints that this imposes. Divers to check gas for taste before entering water	First Aid to be administered. Dive Manager/boathandler (or other divers) to

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			and be prepared to abort dive if suspicious of cylinder contents.	contact emergency services, as required. Hospitalise, as required.
Heart attack	Death	Medium	Divers to complete medical self-declaration/referral to medical referee.	BLS to be instigated. Dive Manager/boathandler (or other divers) to contact emergency services. Hospitalise.
Missed decompression stops	DCI - Serious injury to diver/death	Medium	Divers should agree a dive plan with the Dive Manager before the dive. Divers should ensure they have sufficient gas for the planned decompression schedule, including safety stops if "no decompression" diving. Divers should ensure they are properly weighted and capable of making a safe and controlled ascent, and that inflation and dump systems are working correctly. If diving on computers, divers to have a contingency plan for computer failure e.g. watch and dive tables. Dive Manager to ensure oxygen kit and administrator on boat dives.	Oxygen kit and trained O2 administrators on site. Dive Manager/boathandler (or other divers) to monitor diver(s) for signs of DCI.
New location	Unknown risks	Medium	Dive Manager to plan diving at site with knowledge from charts, dive guides and local knowledge (e.g. from local dive clubs/shops). Only Advanced Divers to Manager dives to new locations. Diving Officer to approve all dive plans in advance.	Dive Manager to cancel diving or change to back-up site.
Night	Lost diver on surface	Medium	Skipper to be aware of divers planned times and watch for divers arriving at the surface. Make sure a proper watch is kept at all times. Divers to come up	Divers to use SMB or DSMB for ascent. Divers to use surface

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			shot line, or use SMB or DSMB for ascent. If wreck diving, consider attaching light source to shot line, e.g. strobe at bottom and/or chem-stick/torch to buoy. If drift diving attach chem.-stick/torch to SMB. All divers to carry surface detection aids such as torch, strobe, EPIRB, flares, etc. All divers to carry spare torch.	detection aids to attract assistance, e.g. illuminate SMB with torch.
Boat launching/recovery	Injury to diver/general public	Low	Dive Manager to ensure that everyone is familiar with procedures for launching and recovery of boats. General public to be kept clear of immediate area during these operations.	First Aid to be administered.
Debris at entry/exit site or otherwise unsuitable	Injury to diver	Low	Dive Manager to consider whether divers can enter/exit water safely. Dive Manager to check that entry and exit are possible at all states of the tide during the diving day. Divers should only enter water if easy to do in full kit and exit is possible.	Change sites or dive plan if necessary, or abort dive. Divers to change method of entry or abort dive.
Hot weather	Hyperthermia/sunburn	Low	Divers to take precautions against over-heating/sun. Divers to avoid dehydration. Water to be carried on boat.	First Aid to be administered. Dive Manager/boathandler (or other divers) to contact emergency services, as required. Hospitalise, as required.
Injury from falling cylinders	Injury to diver/general public	Low	Divers to avoid leaving cylinders standing upright, particularly if unattended. Trainees taught to always lay heavy equipment down.	First Aid to be administered.
Lifting shot/dive gear	Injury to diver	Low	If particularly heavy or deep shot, Dive Manager to consider use of lifting bag attached to shot to assist in recovery. If possible, shot to be recovered by non-	First Aid to be administered.

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			diver. If heavy dive gear, e.g. twinset, recovery into boat to be undertaken by more than one person, or with assistance from diver in the water pushing from below.	
Mask squeeze	Injury to diver	Low	Trainees to receive specific instruction on mask equalisation. Only masks which enclose both eyes and nose in same airspace to be used.	Assistance from Instructor/buddy.
Other boat traffic/water users in dive site location, e.g. fishermen	Serious injury to diver/death	Low	“Alpha” flag to be flown while divers are underwater. Boat cover to monitor other surface traffic while divers are in water. Dive Manager/skipper to avoid placing divers in shipping lanes. Divers to ascend up shot line where possible and no ascents to be carried out in open water without an SMB or DSMB unless in an emergency and unavoidable. Divers to look and listen for boat traffic during ascent. Dive Manager to have contingency dive site and to be prepared to cancel diving or change to back-up site if necessary.	First Aid to be administered. Dive Manager/boathandler (or other divers) to contact emergency services, as required. Hospitalise, as required.
Radio failure	Risk to boat and passengers	Low	Carry hand-held radio or mobile telephone as back-up. Flares to be kept in boat box. If possible, boats to travel in pairs.	In emergency use flares or alternative means of communication to summon assistance from emergency services.
Seasickness	Injury to diver	Low	Divers to take precautions against seasickness, or to avoid diving if they consider that conditions are such as to make them likely to be ill. Trainees to be made aware of the risk of dehydration and the enhanced risk of DCI if sick. Water to be carried on boat.	Diver to abort dive if necessary.

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
Sharp objects	Injury to diver	Low	Divers to avoid touching jagged/rusty edges of metal on wrecks unless wearing gloves. Dive knives to be kept in sheath unless in use.	First Aid to be administered. Dive Manager/boathandler (or other divers) to contact emergency services, as required. Hospitalise, as required.
Sharp objects	Damage to RIB/injury to diver or boat passenger	Low	Divers to ensure that their equipment does not have exposed jagged edges that are "RIB unfriendly".	If unable to repair, seek assistance from other boats in vicinity. If no immediate assistance available, advise coastguard of problem – Mayday if imminent danger to boat/divers. Recall divers if dive in progress/arrange for other boat(s) to pick-up divers if possible.
Trips, slips and falls	Injury to diver/damage to equipment	Low	Brief trainee/inexperienced divers on how to put on and take off scuba equipment and to be aware of and look out for possible obstacles while walking or moving in diving equipment. Divers should exercise caution when carrying diving equipment. While on dive boats all divers must keep their equipment tidy and secure. Divers not to put fins on feet until at or very near to water entry point - this must not involve divers being exposed to a risk of falling in without having fins on. In the case of	Remove casualty from danger and administer first aid. Hospitalise, as required.

Hazard:	Risk of:	Risk Evaluation:	Controls:	Immediate measures to deal with consequences if risk does occur:
			cold weather, extreme caution should be exercised by all divers as there is a risk of icy walking surface. Divers should be aware that wet decks are slippery.	
Wet decks	Injury to diver, e.g. slipping/damage to equipment	Low	Divers should be aware that wet decks are slippery. Divers should exercise caution when carrying diving equipment. Divers not to put fins on feet until at or very near to water entry point - this must not involve divers being exposed to a risk of falling in without having fins on. In the case of cold weather, extreme caution should be exercised by all divers as there is a risk of icy walking surface.	Remove casualty from danger and administer first aid. Hospitalise, as required.