**COMMERCIAL SHELLFISH DIVING IN INSHORE WATER**

**Diving at Work Regulations 1997**

**Guidance**

This guidance provides practical advice and sets out what you have to do to comply with the requirements of the Diving at Work Regulations 1997 (DWR).

It applies to all diving projects conducted to collect shellfish where the catch is to be sold to a merchant or direct to a customer:

* Inshore within United Kingdom territorial waters adjacent to Great Britain (generally 12 nautical miles from the low water line);
* Inland in Great Britain including in harbours, rivers, lochs and reservoirs.

This guidance document does not apply to:

* Diving projects specifically covered by one of the other ACOPs approved by HSE under the Diving Regulations 1997.
* Diving on a fish farm, which is covered by the inland/inshore Approved Code of Practice (ACOP)(L104);

This edition of the guidance has been revised in order improve safety for shellfish divers, to simplify some of the information, update the references and provide greater consistency with the diving at work ACOPs. This document has also been updated to reflect changes in technology and industry practice. The most significant changes relate to:

1. Approved qualifications. The minimum qualification approved for shellfish diving from 1st April 2022 will be HSE SCUBA or equivalent. There is a period of two years from publication to allow divers with recreational diving qualifications to gain the HSE SCUBA or equivalent qualification. This change is to improve safety and ensure competence of the divers taking part.
2. Dive teams. The minimum dive team size for SCUBA has changed from 3 people to 4. This is to improve safety and to ensure consistency with the diving ACOPs.
3. Communications. Two-way communications between the diver and the supervisor must be provided.
4. Equipment. Full face masks should be worn by all divers.
5. Partial pressure of oxygen. The maximum recommended partial pressure of oxygen for breathing gases has been changed to 1.4 bar. This is to ensure consistency with the diving ACOPs.
6. The availability of compression chambers. This change is to reflect medical advice and ensure consistency with the diving ACOPs.
7. Electrofishing. A new section has been added on electrofishing to reflect current and future trials permitted by the relevant authorities.

**DUTY HOLDERS**

## **Clients and others**

Regulation 4 of DWR places a duty on anyone whose actions can affect the safety of the diving project, even though they are not part of the diving team.

These people include:

* the client who has placed a contract with a shellfish diving contractor;
* a master of a vessel from which diving is to take place;
* and any other person whose actions or activities may affect the safety of the dive.

Although their responsibilities vary, they all have a duty to co-operate with the diving contractor and supervisor. This is to ensure that DWR is complied with, and that their actions do not affect the safety of the dive team.

These people should consider carefully the actions required of them to comply with the Regulations. They should, where appropriate, take reasonable steps to ensure that any diving contractor selected is capable of complying with the Regulations.

Other groups of people, for example harbour masters, may have authority over the dive under regulations other than DWR.

# **Diving contractors**

Regulation 5 requires that before a diving project can take place there must be a diving contractor. The diving contractor is normally the individual, partnership, company, or other corporate body who employs the divers for the diving project. It may also be a self-employed diver in the dive team. No diving work may go ahead without a diving contractor being appointed.

The diving contractor is the person who plans and conducts a diving project (which can be made up of a number of diving operations). They have the main responsibility under DWR to ensure a safe diving project. There can only be one diving contractor for the diving project. The diving contractor must be notified to the HSE using a form found on the HSE diving website (see ‘further information’).

Many shellfish diving teams will not be employees of a larger organisation but a group of self-employed divers working with a boat owner or master who assists them. One of those divers however will need to accept and take on the roles and responsibilities of the diving contractor.

The diving contractor's responsibilities include ensuring that:

* risks are assessed and a diving project plan is prepared (this will for example, identify the number of divers, supervisors and the diving equipment needed);
* the dive team is aware of the plan;
* there are suitable and sufficient divers who are competent in the type of diving to be carried out;
* the place from which the diving is to be carried out is suitable and safe;
* supervisors are appointed in writing;
* the team is medically fit to dive;
* there are adequate arrangements for first aid and medical treatment;
* diving project records are kept;
* all other regulations are complied with.

**Supervisors**

A supervisor must be appointed in writing by the diving contractor. More than one supervisor may be appointed in a shellfish diving team but only one may be in control at any one time. The appointed supervisor should have immediate overriding control of all safety aspects of the diving operation.

Competence

A supervisor must be suitably qualified as a diver for the diving techniques to be used in the operation. Supervisors do not have to have a certificate of medical fitness to dive unless they also intend to carry out the role of diver.

The diving contractor must consider the competence of a person before appointing them as a supervisor. The diving contractor must be satisfied that the dive supervisor can plan, manage and conduct a diving operation in a manner that protects the health and safety of those persons taking part.

Responsibility of the supervisor

Supervisors are responsible for the operation that they have been appointed to supervise and they should only hand over control to another suitably qualified supervisor appointed for that diving project by the diving contractor.

During diving operations from a vessel, the supervisor should liaise with other personnel, such as the vessel master. In such circumstances, the supervisor should recognise that the vessel master has responsibility for the overall safety of the vessel and its occupants.

To ensure that a diving operation is carried out safely, supervisors must:

* satisfy themselves that the proposed dive site and the water and weather conditions are suitable;
* satisfy themselves that the personnel they are to supervise are competent and fit to carry out the work required of them;
* ensure that all those who are to dive hold a suitable and valid certificate of diving competence and hold a current diving medical issued by an HSE approved medical examiner of divers;
* ensure that the diving project plan and arrangements for dealing with foreseeable emergencies are clearly understood by all those engaged in the diving operation;
* check that the plant they propose to use is adequate, safe, properly certified and maintained. They should ensure that the plant is adequately inspected by themselves or another competent person before its use;
* maintain proper records of the diving operation. As a minimum this would include a description of the dive, the names of those taking part and their qualifications, the date, time and location, maximum depth attained by each diver and their bottom time or dive time, the decompression schedule being used and a record that the plant has been inspected before the dive; and
* maintain the diving operation record throughout the diving operation for which they are appointed.

**Divers**

Divers have a number of responsibilities under DWR. These include:

* Holding an approved qualification suitable for the work they intend to do;
* Being competent to work safely;
* Holding a valid certificate of medical fitness to dive;
* Complying with the directions of the supervisor and the dive plan;
* Maintaining a daily record of their dives, which they should keep for at least two years.

Competence

All divers at work must hold an approved diving qualification suitable for the work they intend to do. A list of current approved qualifications is available on the HSE diving website (see ‘Further information’).

From 1997 the minimum qualification approved for commercial shellfish diving was a recreational diving qualification of CMAS 3\* or equivalent (PADI Divemaster for example). This was unusual for commercial diving, but HSE recognised that many shellfish divers had no formal diving qualifications, and this was considered a compromise to allow those people to gain widely accessible training.

Given changes in shellfish diving practices, and a number of significant incidents in the industry, HSE reviewed the adequacy of diving qualifications for shellfish diving. Recreational qualifications do not ensure competency in working underwater and commercial diving techniques and the use of full face masks, rope signals and voice communications. Therefore, as of 1st April 2022, HSE will no longer approve recreational diving qualifications for shellfish diving; the minimum qualification being HSE SCUBA or equivalent. In the intervening period the diving contractor has a responsibility to ensure that the dive team are competent.

Medical checks

All divers at work must have a current certificate of medical fitness to dive issued by an HSE approved medical examiner of divers, (AMED). The certificate of medical fitness to dive is a statement of the diver’s fitness to perform work underwater, and is valid for as long as the doctor certifies, up to a maximum of 12 months. A list of HSE medical examiners is available on the HSE diving website (See ‘further information’).

Divers who consider themselves unfit for any reason, for example, fatigue, minor injury, recent medical treatment or who are taking any medication, must inform their supervisor. Even a minor illness, such as a common cold or a dental problem, can have serious effects on a diver under pressure, and should be reported to the supervisor before the start of a dive. Medications routinely taken may have significant side effects in hyperbaric environments. Supervisors should seek guidance from the diving contractor, their medical adviser or an HSE approved diving doctor if there is doubt about a diver's fitness to dive.

## **TEAM SIZE AND WORKING PRACTICES**

The required size of the dive team will depend on the risk assessment which should take into account the number of hours to be worked each day, the type of diving, the diving plant and the techniques to be used, any decompression requirements, and the appropriate number required for safety.

When SCUBA diving, the minimum team size required to conduct a dive safely when diving for shellfish is four - a supervisor, a working diver, a standby diver and a tender for the working diver. Additional people may be required to operate the boat and to assist in an emergency.

## **Standby diver**

### A standby diver should be in immediate readiness to provide any necessary assistance to a diver in the water.

The standby diver should remain on the surface unless required for an emergency. The standby diver should be dressed to enter the water but need not be wearing a mask or a helmet. This equipment should, however, be immediately to hand. They should not be used for any other task while there is a working diver underwater.

### **Tenders**

The diving contractor should be satisfied that the tender is competent. The tender should be familiar with the diving procedures to be used and the contingency and emergency plans for the project. The tender does not have to be a qualified diver, although will need to understand simple diving safety requirements, and be trained in the use of rope signals.

### **Personnel not employed by the diving contractor**

Personnel who are not employed by the diving contractor but who are considered for inclusion in the dive team must be competent for the work that they are going to do. They should be familiar with the diving contractor's procedures, rules and the diving plant that is to be used.

### **Familiarisation**

### When arriving at a dive site before the start of a diving project, all members of the dive team should familiarise themselves with the dive, plant, and any relevant details.

### **First-aid**

The diving contractor is responsible for ensuring that enough people in the diving project are trained and competent in first aid. The risk assessment should identify the first-aid equipment required on site and the number of qualified personnel needed to use it.

The risk assessment should take into account the type of diving taking place, the size of the team and the distance of the dive site from the emergency services. It is sensible to have more than one person in the team qualified in first aid in case that person becomes injured. Those who are qualified should not hold other important duties which could conflict with the need to administer first aid in an emergency.

### **Oxygen availability**

Oxygen should be immediately available at all dive locations. Sufficient gas should be provided for the duration of a transfer of a diver to a recompression chamber, hospital or other place. It should be provided by a tight-fitting mask or by a mouthpiece with noseclip.

Pressurised oxygen can fuel a serious fire or cause an explosion. It should therefore be stored and handled correctly. Any gas mixture containing more than 25 per cent oxygen by volume should be handled as if it were pure oxygen.

### **Communications**

All divers in the water should have a communication system that allows two way direct voice contact with the supervisor on the surface and vice versa. A hard-wired communication system is preferred because the effectiveness of a through-water communication system can be degraded by acoustic shadow, sediment, air bubbles, turbulence etc. If through water communications are used then divers should be attached to a permanent surface marker buoy or lifeline so that line signals can be used in the event of communication failure.

Diving should be aborted if the voice communications fail.

In certain conditions, where two divers are in the water as a buddy pair, then rope signals may be considered as the primary communication method between the divers and the supervisor. The divers should be attached to each other via a line, and close enough to observe each other’s condition. The decision to dive in this way should be based on risk assessment, and will depend on factors such as underwater visibility. A standby diver at the surface will still be required.

### **Diving Methods**

The risk assessment should identify the safety reasons for the choice of equipment i.e. surface supplied diving equipment (SSDE) or SCUBA. The equipment necessary to perform the dive safely and without risk to health depends on the type and location of the dive and should be set out in the diving project plan.

The diving contractor should ensure as a minimum that each diver:

* carries an independent secondary source of breathing gas with a contents gauge that can be read by the diver (for example, a bail-out cylinder);
* wears a full face mask;
* is equipped with a means of providing positive buoyancy which will float them on the surface while awaiting recovery. This is in addition to any buoyancy provided by a dry suit;
* has a submersible depth gauge, timing device and a suitable cutting tool;

## **Quantity of gases**

The quantities of gases required for diving operations, including primary, secondary supplies and therapeutic treatments, should be calculated and provided when planning a diving project. Allowances should be made for leakage, wastage and contingencies. Diving should be stopped if the quantity of gas acceptable for safety purposes falls below the planned minimum.

## **Quality of gases**

Procedures for checking and maintaining gas purity standards should be provided to ensure that the breathing gas is safe to breathe. Breathing gas should comply with the appropriate national, European or international standards.

## **Diver monitoring**

Supervisors should monitor divers’ breathing patterns, their position and the duration of dives. The surfacing time for each diver must be known in advance and the supervisor must be able to recall individual divers if required. If surface marker buoys are being used, then each buoy should identify which particular diver it is marking.

### **SPECIFIC HAZARDS**

**Entrapment**

Divers can easily be entrapped or entangled. Shellfish diving should therefore not take place in the proximity of intakes or discharges or where there is a risk of entrapment near underwater nets or structures.

**Use of compressed air or gas mixtures**

Divers breathing a mixture of oxygen and nitrogen under pressure, whether compressed natural air or an artificial mixture, are at risk of both oxygen toxicity and nitrogen narcosis as the depth increases. The maximum depth for breathing mixtures of compressed air or oxygen and nitrogen is 50 metres of water. The recommended maximum partial pressure for oxygen is 1.4 bar. Some decompression tables include decompression stops which require higher partial pressure of oxygen. This may pose an increased risk of oxygen toxicity. If such decompression techniques are used, the procedures accompanying the decompression tables should be followed, and the risk assessment for the dive should consider the increased risk of oxygen toxicity.

Some therapeutic tables may also require higher partial pressures of oxygen.

**Decompression illness**

Diving carries an inherent risk of decompression illness (DCI). The incidence of DCI drops if the length of time that a diver spends at any particular depth is limited. All dives should be planned and conducted in accordance with a recognised decompression table. This should be referenced in the diving project plan.

The diving contractor should assess the risk of DCI and likelihood of a diver requiring emergency recompression. This should be based on the depth and duration of the planned dives. The assessment should also consider factors which may increase the risk of DCI such as water temperature, type of work and the number of dives/ascents. The risk of decompression should be reduced as far as practicable by the careful and considered use of dive tables and their procedures for cold water, hard work, repetitive diving etc.

Availability of compression chambers

The diving contractor has a responsibility to ensure the provision of facilities so that a diver can be recompressed in an emergency, should this be necessary. Treatment of DCI in a compression chamber should commence as soon as possible (subject to medical advice). The provision of a compression chamber should be in accordance with the decompression procedures selected as part of the diving project plan.

If there is no chamber on site, the following should be applied:

* There should be no planned in-water decompression exceeding 20 minutes.
* The diving contractor should identify the nearest suitable operational two-person, two-compartment chamber. Under no circumstances should this be more than 6 hours travelling distance from the dive site.
* The diving project plan should demonstrate that in an emergency, a diver will be able to be transported and recompressed to ensure their safety. This includes the provision of sufficient oxygen to administer to a casualty for the duration of the transfer.
* If the diving project plan relies on the support of any emergency services, then that plan should be subject to continued assessment and take into account any factors which may affect such support (for example changing weather conditions).
* If the diving contractor is responsible for transporting the injured diver to a hospital or other place, their duty will continue until the diver is admitted to the hospital or other place.

**Restricted surface visibility**

Restricted surface visibility may affect the safety of the operation, for example when diving in darkness, heavy rain or fog. The diving project plan should identify when an operation should be suspended because of restricted visibility.

The use of SCUBA drift diving techniques is particularly vulnerable to poor visibility. Supervisors must be aware of worsening conditions or poor forecasts, diving must be suspended before conditions deteriorate.

**Weather**

Adverse weather conditions may affect the safety of a diving operation and the dive plan should identify when an operation should be suspended. Boats are often small craft which are quickly affected by worsening seas. Not only may a vessel's handling be affected, making it more difficult to reach a diver in the water but also the ability to see a marker buoy reduces rapidly as the sea state increases. Supervisors must be aware of this and suspend diving before conditions become hazardous.

**Underwater currents**

Currents may impose limitations on a diver's operational ability. Tide meters and tide tables may provide information on the current at different depths and can be used to help assess diving conditions. Changing currents may separate divers who enter the water together. Supervisors must be alert to recalling divers if they are in danger of becoming so separated that they can no longer be monitored efficiently.

**Thermal stress**

Excessive heat and cold can affect the health, safety and efficiency of divers and the dive team. Appropriate personal protective equipment and procedures should be provided to maintain thermal balance, both in the water and in the boat before and after a dive.

**Altitude changes after diving**

Restrictions on travelling/flying after diving should be contained in the dive contractor’s diving project plan and be in accordance with the decompression tables being used.

**Electrofishing**

It is illegal to conduct electrofishing for shellfish unless the vessel has been given permission by the appropriate fisheries authority.

Electrofishing has the potential to increase the risks to the divers.

The risk assessment and diving project plan should address the additional risks of diving in the proximity to electrical equipment. This should include consideration of the use of SSDE or SCUBA.

Care should be taken to ensure that the divers and other members of the dive team are protected from the risk arising from the use of electricity, in particular the risk from shock. The risk assessment and project plan should address the risk of the diver coming into contact with the live electrodes. This should include

* Safe working practices
* Separation
* Physical barriers
* Emergency cut-off switches
* Regular testing of electrical safety equipment (this should be included in pre-dive checks)

For electrofishing at least one tender is required for each diver in the water.

## **Further information**

## HSE’s diving website: [www.hse.gov.uk/diving](http://www.hse.gov.uk/diving)

Diving contractor notification form: <https://www.hse.gov.uk/forms/diving/osddc1.pdf>

List of approved diving qualifications:

<http://www.hse.gov.uk/diving/qualifications/approved-list.pdf>

List of AMEDS and diving medical requirements:

<https://www.hse.gov.uk/diving/medical-requirements.htm>

This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

This document can be found online at: www.hse.gov.uk/hid/osd/scallop.pdf

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