Occupational Diving

Couple of takeaways

- In most cases, diving work at Hydro Tasmania is carried out by specialist contractors and involves shared duties and responsibilities by both the Hydro Tasmania group and the diving works provider.
- The Dive Plan Template assists in planning the diving works and meets our requirements under legislation.
- A few different types of diving are identified in legislation. Diving on Hydro Tasmania assets will be regarded as "High Risk Diving Work" with specific training and certification requirements unless formally assessed otherwise.
- The Dive Works Support Person (DWSP) is a voluntary Hydro Tasmania role that may provide guidance and support in managing the diving work process.
- All diving operations will be conducted under a permit to work with a person in charge (PIC) appointed.

What is this procedure for?

This procedure outlines the process for working with **contracted diving services providers** to scope, plan and execute diving works on, in and around Hydro Tasmania group assets and waterways.

Most diving work conducted at Hydro Tasmania is completed by **specialist diving services providers**. As such, there exists a shared duty to manage these risks. The diving specific risks within the knowledge, scope and control of the **diving service providers** (e.g., training, fitness, dive times, dive methods) are to be managed by the **diving services provider**.

It should be noted that, at times, **Hydro Tasmania group** may perform their own diving and, as such, would adopt the obligations of the **diving services provider**. Where Hydro Tasmania adopts the role of the diving services provider, the diving work is to be restricted to incidental and limited scientific diving.

Hydro Tasmania is expected to provide advice and risk management of those components of the dive that are within our skills, experience and knowledge only. Examples of risks within Hydro Tasmania's control which are to be managed in consultation with the diving service provider include:

- Risks related to other work activities that may impact the dive.
- Risks related to isolations of plant and assets.
- Risks related to knowledge of the work locations, assets and structures.

How do we plan and risk assess diving work?

The first step in planning to perform work that may involve diving is to identify the hazards and risks associated with the work.

Following identification of the hazards and risks, the next step is to work through the hierarchy of control, from the strongest tier to the least, to identify all the measures that may be implemented to eliminate or reduce the risks related to the work. Examples of these controls include:

Elimination

Scope alternatives

Performing work in other ways that eliminates the need for diving.

Substitution

Submersible remote operated vehicle (ROV)

Isolation

Ensuring isolations are correctly identified and in place.

Engineering

Reduce water levels.

Coffer dam engineering

Administration

Safe Work Method Statement

Personal Protective Equipment (PPE)

Life vest, gloves, dive suit or wetsuit etc.

How do we provide extra support for workers planning work involving diving?

Hydro Tasmania group is responsible for providing accurate and adequate information and instruction to ensure the diving services provider can compile an accurate methodology and dive plan.

The Dive Plan Template may be used to:

1. provide the work scope to the diving services provider.
2. agree on a methodology with the diving services provider.
3. document the dive plan.

Where a diving services provider uses their own dive plan template, the template needs to meet or exceed Hydro Tasmania group standards.

Hydro Tasmania group also has people experienced in planning and coordinating diving work that have volunteered themselves for the role of dive works support person (DWSP). These people may provide guidance and support in managing the diving work process. A list of these people is available in the Permit to Work Register for Assets and Infrastructure.

What are the different types of diving we need to be aware of?

The type of diving work will need to be determined to ensure the diving services provider is aware of the level of risk and the diving team is appropriately trained, certified and competent.

- High risk diving work is defined as work carried out in or under water, or any other liquid, while breathing compressed gas, and involving one or more of the following:
    1. Construction Work as defined in the Work Health and Safety regulations.
    2. Testing, maintenance or repair work of a minor nature carried out in connection with a structure.
    3. Inspections relating to points 1 and 2 (above).
    4. The recovery or salvage of a large structure or large item of plant.

Note: Diving on Hydro Tasmania assets will be regarded as "High-Risk Diving Work" unless formally assessed otherwise.

- General diving work is all other diving work not included in high-risk diving work (as above) and includes limited scientific diving. Examples would include general maintenance, mooring service, marine harvesting, and aquaculture.
- Limited scientific diving work is a type of general diving work that is carried out for professional scientific research and involves only limited diving as per the WHS Regulations.

See "What training is required?" section for further info.

What are the steps we need to take when planning and executing a diving activity?

Once a diving service provider has been sourced and the project or work identified, the following steps are to be taken to ensure all people involved are aware of their responsibilities and the task can proceed to plan.

Planning for dive work (i.e. communicating with the diving services provider and developing a dive plan) must commence at least 36 hours prior to a scheduled dive. Exceptions to this include when plant or people are in danger and a **Level 2 Manager** has given approval for a System Variance.

It should be noted that the final approval step in the process is reliant upon the Permit to Work process. The dive plan and SWMS (as a minimum) is to be provided with the Permit to Work for approval to proceed by the **Asset Owner or Asset Owner Delegate**.

1) Define and document the scope.

In order for the **diving service provider** to provide a compliant dive plan, **the person engaging the dive service provider** needs to develop a suitable work scope. The scope must contain at a minimum.

- Key role accountabilities and contact details.
- The tasks likely to be required.
- The work location (a general overview) & Hydro specific hazards.
- Dive depths.
- The assets being worked on or around (general overview)
- Lake levels and storage operating rules including flows.
- Timing/constraints/simultaneous activity/scheduling considerations/deadlines
- Technical specifications (standards, ITP's, drawings etc)
- Budget cost and deliverables

The scope should be well documented, pictorial, and accurate to ensure a methodology can be proposed by the **diving services provider**.

2) Define and agree on a methodology.

Relevant resources from the **diving services provider** and **Hydro Tasmania group** will need to work together to ensure the methodology is fit for purpose. There will be elements of the task which rely on the expertise of the **diving services provider** and those which are asset specific and require **Hydro Tasmania group** input.

The **diving services provider** will submit the methodology to the **works planner or requestor** who will review the details with any relevant persons (e.g. area supervisor, planners, operators, PIC, trades, and dive works

support person) to ensure it is accurate and fit for purpose. This will then be approved by the **works planner or requestor** so that the **diving services provider** can proceed to developing the dive plan.

3) Request the Dive Plan.

It is the responsibility of the engaged **diving services provider** to ensure a documented dive plan specific to the scope and methodology is provided.

The dive plan must state the following:

- The method of carrying out the diving work
- The tasks and duties of each person involved in the dive
- The diving equipment, breathing gases and procedures to be used
- Dive times, bottom times and decompression profiles
- Altitude profile corrections (prior acclimatisation, delay before travel)
- Hazards and control measures relating to the dive
- Emergency management plan and procedures
- Recompression chamber support (at site, verified availability)

The emergency management plan must take into consideration likely emergency scenarios associated with the work and diving in general. It should also include rescue planning and considerations.

4) Review, Agree and Implement.

The **diving services provider** will submit the dive plan to the **works planner or requestor** who will then initiate a final review with the **asset owner** or **asset owners delegate, authorised issuing officer, person in charge and the diving works supervisor.**

The dive plan will then be signed by the **asset owner or asset owners delegate and the diving works supervisor** as accepting that the plan can be implemented.

5) Work Commences as per the Permit to Work.

Once the dive plan is accepted, the standard Permit to Work processes shall apply. The Permit to Work shall identify the controls to be implemented by **Hydro Tasmania group** for the diving work to proceed (isolations etc.).

No diving work is to proceed without a valid Permit to Work in place.

What are our operational and safety requirements?

Water Flow

All diving conducted at Hydro Tasmania sites should be conducted in still water conditions. An exception to the rule may be considered:

- where a risk assessment supports the change; and
- the velocity of the water can be restricted so as not to exceed 0.4 m/s; and
- it has been deemed a minor flow.

This may be helpful in clearing suspended particles and may provide a safer diving environment with clearer visibility.

Hydrological flow studies are required to calculate flow rates. The flow must be controlled through the isolation process and ensure that there is no risk of failure. Divers must be out of the water when flow rates are to

be modified and a change of conditions/test sheet must be used to document the change. All flow rate changes must be approved as a special condition of the permit to work by the **Asset Owner or Delegate that approved the Permit to Work**.

Where flow is required for work, and the integrity of the structure may be compromised, a pre-inspection assessment in still water conditions is required.

Person In Charge (PIC)

The **diving works supervisor** shall only take on the role of PIC where the diving work is the only work under the permit and there are no other operations within the vicinity that could require coordination or impact on the dive.

No other member of the dive team may perform the function of PIC unless they are not directly performing a role as part of the dive team at the time.

A PIC of diving work should have prior experience in performing the role of PIC for diving work and be selected through the PIC selection tool.

Diving Depths

Dives shall not go to depths greater than 50 metres.

Change Management

Any of the following changes will require the change to be assessed and documented via the Change of Conditions/test sheet:

- Change in scope or work methods
- An unintended break in continuity
- Changes to water flow
- Changes to the work party
- Any changes in simultaneous operations that may impact diving safety.

Diving Operations Manual and Log

The **diving services provider** shall ensure a diving operations manual is available at site and a dive safety log is maintained.

What are some requirements around boats and vessels used for diving?

Risk assessments must ensure approval is gained prior to launching and entering a vessel within 150 metres of any operational infrastructure or exclusion zones.

Vessels used for the works are to be in survey and skippered by persons holding a current coxswain licence.

Any material or chemical which could pose a risk to persons or the environment, must be adequately secured and stored and listed within the vessel operations manuals or logs. Special consideration must be given to fuel and oil containment when in and or around waterways and sensitive areas of the environment.

What training is required?

Whilst the responsibility for ensuring trained, qualified and competent personnel for diving operations remains with the diving services provider, the information below may be referred to for further information or where Hydro Tasmania group personnel may be involved in a dive team.

As well as a medical certificate, workers must hold an RTO endorsed certificate for general diving work; that includes the competencies specified in the AS/NZS 2815 series relevant to the type of general diving work being conducted.

High Risk Diving Work

Divers and dive supervisors conducting high risk diving operations shall have qualifications, knowledge, skills and experience as required by AS/NZS 2299.1 and be trained in accordance with the relevant AS/NZS 2815 series of standards and hold a certificate to that effect issued by an accredited RTO.

General Diving Work

Divers conducting general diving operations need only be trained in accordance with the relevant AS/NZS 2815 series of standards and hold a certificate to that effect issued by an accredited RTO.

A supervisor of general diving work must meet the same qualifications for divers and be experienced in the type of diving work to be supervised.

Limited Scientific Diving Work

Limited scientific diving is not subject to a qualification, however a person must meet the competencies outlined in WHS Regulations 172 and 173.

Dive Works Support Person

Dive works support persons (DWSP) are people within the business who, through experience and exposure, have gained knowledge of diving work along with a thorough understanding of the fundamentals of Hydro Tasmania group power stations and associated dams, water ways and intakes.

They are not required to be experts in diving, however, they should have an understanding of some of the hazards and risks and understand Hydro Tasmania group's internal processes for diving.

What PPE is required?

Life Jackets will be worn when on a vessel undertaking diving work, regardless of whether under power or appropriately moored, anchored or tethered to a structure.

Wet suits, dry suits or other dive specific equipment which provides buoyancy will allow for an exemption to the life jacket requirements.

Other PPE requirements to be identified through risk assessments for the work.

How do we manage emergencies or incidents?

All diving work requires a dive plan which contains an emergency management plan. The emergency management plan must take into consideration all site-specific emergency and evacuation procedures, where relevant.

The emergency management plan will contain at a minimum;

- Details of specific response procedures for divers
- Diving services provider, Emergency Support contact persons.
- Identified Site Communications Options
- Emergency Contacts, Hospitals, Dive & Hyperbaric Medicine unit, Ambulance and Airlift details
- Geographical Meeting and Landing co-ordinates
- access directions or limitations.
- Decompression Chamber availability (Site unit ready to go, Royal Hobart Hospital availability)

Note. In the event of a 000 Emergency call, be clear in communicating, "This is a Diving Medical Emergency"

All Incidents are to be reported in accordance with the Hydro Tasmania group Incident Management and Investigation procedure. Where a high potential near miss or actual incident occurs, diving operations are to be suspended and work shall not resume until incident investigations are completed.

How to Document Dive work?

Hydro Tasmania group has provided a Dive Plan Template which guides the user to create a scope, method, and plan. The diving scope, methodology and the Dive Plan may be recorded through other methods where suitable (e.g. a diving providers own template).

All other records are to be maintained in accordance with the relevant diving regulations, codes of practice and standards.