Works in or Around Water Procedure

1. Purpose

The purpose of this Procedure is to provide a summary of tasks, responsibilities, tools and templates applicable to renewals programs delivered by the Project Delivery Group, relevant to Works in or Around Water.

2. Scope

☐ Planning	☒ Delivery	☐ Handover
☐ Program Management	☐ Procurement	☐ Community & Stakeholder
☐ Safety	☒ Environment	☐ Quality

This Procedure steps through the processes for construction activities which operate in, over or near water. These activities/procedures include:

- Works in or near Water
- Piling / Drilling
- Spill Prevention
- Temporary Water Crossings
- Sediment and Erosion Control

This Procedure should be read in conjunction with the following documents:

- Sediment and Erosion Control Procedure
- Dewatering and Bypass Pumping Procedure
- Environmental Management Plan
- Working in and Around Water Procedure
- Site Environment Plan
- Dewater or Bypass Pump Permit
- Plume Observation Form
- **Error! Reference source not found.**

3. Definitions

This Procedure should be read in conjunction with the Project Delivery Group Acronyms and Glossary document.

This is not an exhaustive list. It provides step-by-step guidance. Please refer to the relevant management plan or tools for detailed information.

4. Works in or over water

Construction impacts to water bodies may incur impacts such as:

- Introducing pest species
- Injury or death to marine fauna
- Contamination to the environment.

The following controls have been developed to mitigate these impacts.

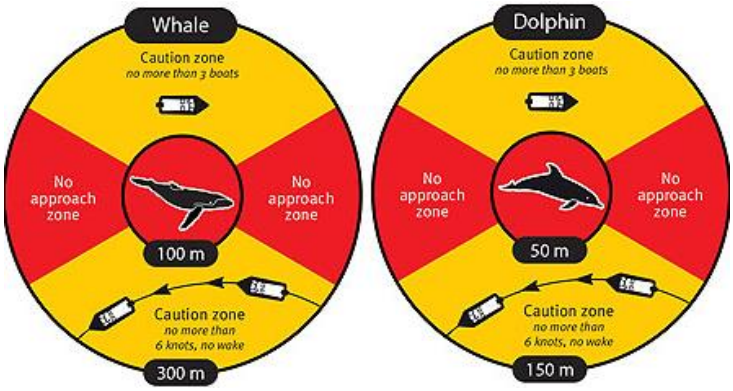
5. Bypass Pumping

The likely bypass pumping scenarios for TasWater PDG Projects are:

- Clean water pump around at waterway crossings
- Bypass pumping for live pipelines, sewer mains, etc.

The following methodology for bypass pumping will be adopted.

PROCEDURE	RESPONSIBILITY
MARINE (or ESTUARINE)	
All necessary permits and approvals shall be in place prior to any seabed disturbing activities. Any additional disturbance outside of the approved area of disturbance will not be carried out until the necessary approvals have been obtained. • All floating plant selected for the Project shall be verified as being free of marine pest species prior to entering either Australian waters (or the Project waters). • The hull and all apparatus lowered into the water will be free of marine growth that is exotic (non-Australian), or a declared marine pest species in Tasmania. • Marine fauna spotters will be present during marine works to identify the presence of marine mammals, turtles and fish aggregations within a defined safety zone (70m or 150m depending on location). • Spotters shall be particularly vigilant during whale migration periods (May - July). • Construction activities below the waterline must not be carried out while whales, dolphins, turtles or other species of conservation significance, are within 150m of the activity Controls must be implemented to eliminate or minimise the impact of in water construction on water quality. This includes: • The size of vessel and environmental conditions must be considered when selecting anchorage points or ground tackle for barges. • Barges and anchor points must be within the approved project footprint. • Fuel cells must be of the double skinned marine standard type and installed with automatic shutoff valves. Fuel cells are only to be refuelled onshore, prior to being lifted onto a barge. • Waste receptacles with lids and appropriate bunding are to be provided on vessels and barges. As required by the *Australian National Guidelines for Whale and Dolphin Watching* (DEH, 2005) all vessels in transit must: • Not cause a whale to alter its direction or speed of travel, • Not disperse or separate a group of whales, • Operate at a 'no wake' speed when within 300m of a whale within 150m of a dolphin; • Not approach a whale within a distance of 100m or 300m if in front or behind; and • Not approach a dolphin within a distance of 50m or 150m if in front or behind a dolphin.	

	Contractor/EA/ PDG Supervisor Contractor
ALL WATERBODIES	
• Biodegradable oil is to be used in plant and equipment for works over waterways • Hydraulic hoses are inspected for wear and tear / damage prior to the commencement of works. Damaged hoses are replaced. Sheathing is provided for exposed hydraulic and fuel lines. • Hydrocarbon absorbent booms are to be present in the waterway to prevent the spread of spills. • Full encapsulation is required for any abrasive blasting works or similar surface treatment works over water • Containment controls are required for any painting works over water • Controls must be implemented to eliminate or minimise to impact of work near water on water quality. This includes: • Temporary bank stabilisation is required for areas of watercourse banks exposed to the full bank flow condition • Use of silt curtains where there is a risk of sediment pollution from activities • Retention systems to prevent concrete curing water or other polluted water from running off into watercourses • Pile spoil must be prevented from entering watercourses • All fuels, oils and chemicals are to be stored in bunded containers	Contractor
FAUNA MONITORING	
• Visual inspections of the waterways must be undertaken before, during and after works to ensure that any studies or assessments of the site are accurate, and the site is not partial habitat to species. • If any potentially significant fauna species are observed, contact your EA and consider pausing works to ensure that activities are not likely to negatively impact aquatic fauna species • Use the **Error! Reference source not found.** to record these observations.	Contractor
PLUME MONITORING	
• Visually inspect waterways during general construction activities, Dewatering & Bypass pumping, and before and after rain events, to ensure that there is no plume leaving site. • Continuous monitors should be installed for turbidity and flow where work is being done in natural waterway or immediately adjacent (within 30 meters) of a waterway. • Use the **Error! Reference source not found.** to record instances of any plume leaving site. • Follow the monitoring guidelines outlines in the **Error! Reference source not found.**	

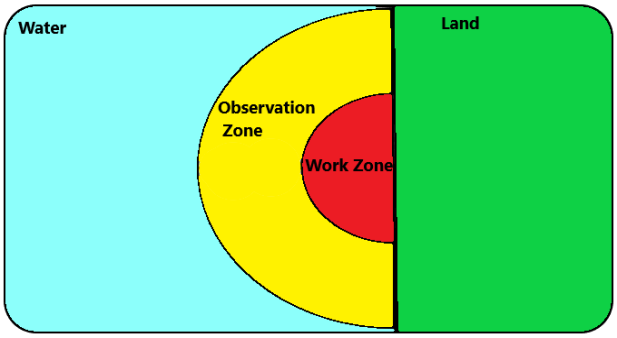
6. Dewatering

The purpose of this primary standard is to eliminate or minimise significant environmental harm as a result of dewatering activities.

PROCEDURE	RESPONSIBILITY
DEWATERING	
• The following controls must be implemented when dewatering: • Carrying out all conditions required by the regulating authority in the license/permit • Treating water as necessary to meet water quality criteria including pH correction, reduction of total suspended solids, metals, oil and grease or other contaminants of concern • Undertaking water testing using approved methods prior to discharging water off site • Undertaking in-situ water quality testing for the area to be dewatered and the receiving environment to confirm compatibility and compliance with water quality discharge obligations. • Monitoring the pump outlet at all times during pumping and ceasing pumping immediately should the water quality change at the outlet • Engaging an aquatic ecologist to compete de-fishing or aquatic fauna salvage activities prior to dewatering in sensitive fish habitat areas • Identifying appropriate location to relocate fish • Providing erosion protection for the pump system outlet • Taking photographs of downstream waters of aquatic plant life • Undertaking water quality monitoring of receiving waters • Documenting dewatering activities including time, water quality testing and quantity of water discharged	Contractor/EA/PDG Supervisor

7. Piling Operations

Where piling is required, potential impacts to marine fauna, soil and water contamination may arise. The following controls are recommended to mitigate piling impacts.

PROCEDURE	RESPONSIBILITY
• An observation zone will be created and monitored around the perimeter of the piling and drilling activities undertaken within the ocean or waterway. • Piling activities will be placed on hold for the period of time it takes the animal to leave the safety zone. If the animal has not been sighted for 20 minutes piling may resume. • Drilling and hammering of piles must stop if a turtle, dolphin, whale is spotted within the observation zone of these activities. Please utilise the *Fauna Observation Form* [Ref. 7] to monitor the activities of the animal in the work zone. • Drilling and hammering of piles will not commence until the marine fauna move out of the observation zone. If the animal has not been sighted for 20 minutes drilling and hammering of piles may resume.  • A soft start approach will be adopted during piling start up activities to limit noise and vibration impacts within the marine environment. This approach includes piling commencing at low energy levels, building up slowly to full impact force allowing marine species to vacate the area. • During piling, fill spoil to be removed directly onto trucks or skip bins and disposed of offsite as per pre-classification. Hook lift bins or suitable equivalent are used to retain pile spoil and monitored frequently to assess capacity and identify potential over filling. Contamination of the piling pad must be prevented at all times. • Underlying natural soil/rock to be screened as per the *Acid Sulfate Soil Management Procedure* [Ref. 5] • Piling dewatering will be managed as per the Dewatering Procedure [Ref. 4] • Polymer products used in piling works are prevented from entering waterways and disposed of correctly to prevent impacts on surrounding environment • Spill Kits are located close to the piling works and maintained to ensure they are fully stocked	Contractor

8. Spill Prevention

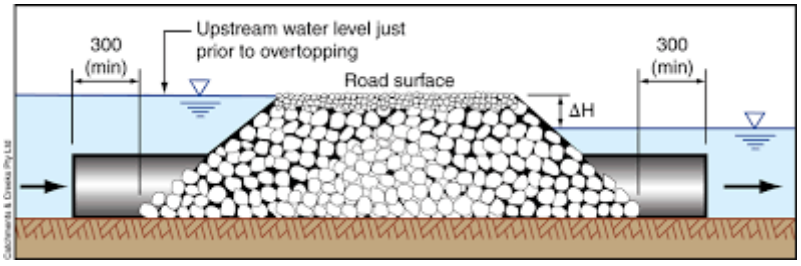
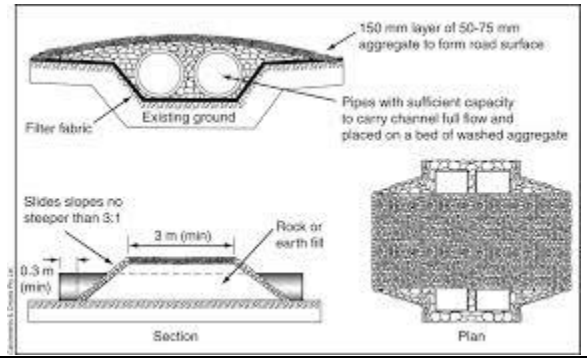
Construction activities create a risk to the environment of contamination from site compounds, chemical storage areas, and wash down locations.

The TasWater CDO requires hazardous materials management to align with the fundamentals and techniques outlined in the *0001-PRO-EN-0011 Environmentally Hazardous Materials Management Procedure*.

Please refer to the procedure for controls to mitigate the potential for fuel, chemicals, oils, grease and petroleum hydrocarbon spills from construction machinery to impact nearby waterways and soils, resulting in contamination.

9. Temporary water crossings

The purpose of this procedure is to eliminate or minimise the risks of significant environmental harm as a result of the installation and operation of temporary waterway crossings.

PROCEDURE	RESPONSIBILITY
• Ecology professionals are consulted on the structural and hydraulic design for any waterways that have at least intermittent flow and connect with aquatic habitats. • Temporary crossings are designed to be structurally stable for over-topping flow events, relevant to their anticipated design life and the design rainfall event. This is typically the 1 in 10 year, critical time of concentration rainfall event. • Temporary waterway crossings with culverts are designed with a maximum velocity of 0.3m/s for culverts and with a minimum pipe size of 450mm • Temporary waterway crossings are constructed from clean rock >150mm in size • The temporary waterway crossing design includes a stabilised overtopping point/emergency spillway • Permanent waterways and named intermitted waterways are designed to have maintained the capacity of the existing bank full channel • Sediment controls are installed to manage construction runoff from the crossing surface and adjacent exposed areas • Approach roads are stabilised (e.g. gravelled or trafficable polymer emulsion) and have appropriate flow diversions using cross banks. Cross banks and sediment traps are installed out of the waterway, on the high bank floodplain terraces.  	Contractor

10.Sediment and Erosion Control

Construction activities or impacts that may affect water quality include:

- Disturbance/mobilisation of sediment adjacent creeks associated with pier/pile construction.
- Clearing of riparian vegetation
- Concreting works
- Exposure and mobilisation of exposed soils during construction such as from cleared areas and Stockpiles

- Earthworks and associated inadequate management of runoff, sediment controls from the construction site
- Excavation and exposure of ASS to the air (oxidizing conditions) resulting in potential for acidic runoff to receiving waterways and adjacent cane fields.

Potential results of impacts include:

- Degraded water quality including increased turbidity, altered EC, and altered pH
- Disturbance of contaminated land causing contamination of downstream waterways
- Increased sediment loads in nearby creeks due to riparian vegetation removal
- Increased sedimentation smothering aquatic life and affecting aquatic ecosystems
- Increased levels of nutrients, metals and other pollutants, transported via sediment and runoff to receiving waterways

The TasWater CDO requires sediment and erosion control planning and execution to align with the fundamentals and techniques outlined in the *International Erosion Control Association Australasia's (IECA Australasia) document - Best Practice Erosion & Sediment Control*.

The *Best Practice Erosion & Sediment Control* suite sets the standard for sediment and erosion control in Australia and is referred to throughout this procedure. *IECA Best Practice Erosion & Sediment Control Books 1-3*, the field guides, books and fact sheets are available for download or hard copy purchase from the IECA Australasia website https://www.austieca.com.au/ or for download from the site https://www.catchmentsandcreeks.com.au/.

Please refer to *Sediment and Erosion Control Procedure and Dewatering and Bypass Pumping Procedure* for further information.

11. Tannin Management

Mulch stockpiles have the potential to generate tannin leachate, which if not managed properly can degrade water quality.

- Mulch stockpile sites are located on elevated ground within the work footprint, away from water and creek lines, and at least 20 metres from a watercourse.
- A sump is constructed downstream of the mulch bund to contain runoff from the design rainfall event.

12. References

- Environmental Management Plan
- Working in and Around Water Procedure
- Site Environment Plan (Template)
- Dewater or Bypass Pump Permit
- Plume Observation Form
- Environmentally Hazardous Materials Management Procedure
- Invasive Marine Pests Risk Assessment
- International Erosion Control Association Australasia's (IECA Australasia) document - *Best Practice Erosion & Sediment Control.*