




State Special Emergency Management Plan

## Dam Safety Emergencies

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| <b>Issue:</b>              | Issue 3  |
| <b>Review Authority:</b>   | This plan is maintained by the Department of Primary Industries, Parks, Water and the Environment (DPIPWE) on behalf of the State Emergency Management Committee (SEMC). |
| <b>Approval Authority:</b> | Acting Commissioner of Tasmania Police<br>State Emergency Management Controller  |
| <b>Approved:</b>           |   |
| <b>Date:</b>               | 18 July 2019   |

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## Section 1 Overview

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### Glossary & Acronyms

The following terms and acronyms that are used in this plan are important to dam safety emergencies. Where applicable, terms used in this Plan are consistent with the Tasmanian Emergency Management Plan (TEMP) terminology.

The *Emergency Management Act 2006* uses shortened forms for a number of titles (e.g. Regional Controller for Regional Emergency Management Controller) and this practice is applied in this plan.

**Table 1: Terms and Acronyms**

| Term and/or Acronym   | In the context of this plan, this means:   |
|---|--|
| <b>Affected Area Recovery Committee</b>   | A committee established under section 24E of the <i>Emergency Management Act 2006</i> after an emergency event to coordinate longer term recovery activities at the regional and/or local levels. These committees bring together members of the affected community, councils and relevant Tasmanian Government agencies to collaboratively plan, prioritise and coordinate regional and local recovery activities.  |
| <b>AARC</b>   | Affected Area Recovery Committee   |
| <b>ANCOLD</b>   | Australian National Committee On Large Dams Inc. This organisation publishes a number of comprehensive guidelines related to dam safety, which have been widely adopted within Australia. The Tasmanian statutory framework for dam safety is strongly linked to the ANCOLD guidelines.  |
| <b>command</b>  | The internal direction of an organisation's resources in an emergency.   |
| <b>community centre</b><br>NB: one or more centre type can be combined at the same location if necessary. | <p><b>Assembly:</b> An identified location where affected persons can assemble. Assembly centres are generally established for a short time to meet the immediate personal support needs of individuals and families (e.g. Community Fire Refuges).</p> <p><b>Evacuation:</b> An identified location that provides temporary accommodation and basic services to meet the immediate personal needs of people affected by an emergency.</p> <p><b>Information:</b> An identified location where information is made available for emergency affected people. They can be virtual (e.g. call centres or web based), or physical (e.g. at a community centre). Notwithstanding the structural arrangements, the importance of providing clear and consistent information is acknowledged.</p> <p><b>Recovery:</b> An identified location for affected persons to access information and assistance after an emergency has occurred. A range of Government and Non-Government Organisations operate from recovery centres (also referred to as a 'One Stop Shop').</p> |

| Term and/or Acronym         | In the context of this plan, this means:   |
|-----------------------------|--|
| <b>Consequence Category</b> | <p>From ANCOLD guidelines (ANCOLD 2012)</p> <p>The likely consequences of a dam failure can be assessed at an initial level based on experienced judgement and qualitative assessments, or at a detailed, level, based on dam break modelling, loss of life, damage and other analyses. Relevant consequences include;</p> <ul style="list-style-type: none"> <li>• Risk to human life expressed either as the Population at Risk or Potential Loss of Life;</li> <li>• Damage and loss expressed in terms of: <ul style="list-style-type: none"> <li>• Cost of damage to property, commerce and infrastructure;</li> <li>• The effects on the owner's business such as dam function and operability;</li> <li>• Loss of credibility, loss of financial viability and political impact;</li> </ul> </li> <li>• Health, social and economic disruption;</li> <li>• Environmental impacts.</li> </ul> <p>Seven Consequence Categories are used:</p> <p><b>Very Low or Low</b></p> <p>These categories would apply to dams where the Population at Risk (PAR) is less than 1 and impacts of a failure would be negligible or minor (for example, smaller farm dams in remote regions)</p> <p><b>Significant, High A, High B &amp; High C</b></p> <p>Provide a graded range between Significant and High categories. PAR between 1 and 1000.</p> <p><b>Extreme</b></p> <p>This category includes those dams where the effects of a failure would have immense consequences in terms of damage to property and infrastructure and could put many lives at risk with the potential for large loss of life if the dam fails (e.g. large dams with major population centres downstream). PAR &gt;1000.</p> |
| <b>Control</b>              | <p>The overall direction and management of response/recovery activities for an emergency. The authority for control can be established in legislation or in an emergency plan and includes tasking and coordinating other organisations' resources to meet the needs of the situation (i.e. control operates across organisations).</p>  |
| <b>coordination</b>         | <p>The systematic acquisition and application of resources (workers, equipment, goods and services) during response/recovery. Coordination can operate vertically within an organisation (as a function of command), as well as across organisations (as a function of control).</p>   |
| <b>debrief</b>              | <p>A meeting of stakeholders to review the effectiveness of response/recovery operations.</p>  |
| <b>dam</b>                  | <p>From (Part 8A) of the Water Management Act 1999:</p> <p>'dam' means a permanent or temporary barrier or structure that stores water or other liquids, silt, debris, mine tailings or other liquid-borne material or holds back or impedes the flow of water or other material and includes –</p> <ol style="list-style-type: none"> <li>(a) water or other material stored or held back by the barrier or structure and the area covered by that water or other material; and</li> <li>(b) an artificial depression or hole excavated in a watercourse that holds water or impedes the flow of water; and</li> <li>(c) an artificial levee or bank that holds back or diverts water in a watercourse; and</li> <li>(d) any appurtenant works;</li> </ol>  |

| <b>Term and/or Acronym</b>       | <b>In the context of this plan, this means:</b>   |
|----------------------------------|---|
| <b>dam incident</b>              | <p>From the <i>Water Management Act 1999</i>:<br/> any incident or event relating to the structural integrity or safety of the dam which causes, or has the potential to cause –</p> <ul style="list-style-type: none"> <li>(a) death or injury to a person; or</li> <li>(b) damage to, or loss of, property or services; or</li> <li>(c) material environmental harm or serious environmental harm;</li> </ul>   |
| <b>dam failure</b>               | <p>From ANCOLD guideline (ANCOLD 2012)<br/> An uncontrolled release of the contents of a dam through collapse of the dam or some part of it, or the inability of a dam to perform functions such as water supply, prevention of excessive seepage or containment of hazardous substances.</p>   |
| <b>Dam Safety Emergency Plan</b> | <p>From ANCOLD guideline (ANCOLD 2012)<br/> A Dam Safety Emergency Plan (DSEP) is a plan maintained by the dam owner that records the procedures for dealing with dam safety incidents and emergencies for dams where there is the potential for loss of life in the event of dam failure, and for tailings dams, where infrastructure or environmental values could be at risk should the dam collapse or fail.</p>  |
| <b>DPIPWE</b>                    | <p>Department of Primary Industries, Parks, Water and Environment (Dam Safety Regulator Water Operations Branch)</p>  |
| <b>Dam safety emergency</b>      | <p>Any dam safety incident where there is an immediate Population at Risk (PAR), or there is a potential for significant economic or environmental damage.</p> <p>A dam safety emergency relates to dams that hold, permanently or temporarily, liquid, waste or other material.</p> <p>A dam safety emergency excludes the engagement of flood protection structures like levees during a flood, as the State Special Emergency Management Plan for floods will take primacy, and the management of the levee is focussed on flood protection.</p> |
| <b>Dam safety incident</b>       | <p>A situation where monitoring of the dam occurs and potential preventative measures are put in place to avoid escalation to a dam safety emergency. Not all dam safety incidents are defined as emergencies.</p> <p>The State Special Emergency Management Plan for Dam Safety Emergencies describes arrangements for dam safety emergencies, and is not focused on dam safety incidents.</p>   |
| <b>DRFA</b>                      | <p>Disaster Recovery Funding Arrangements</p>   |
| <b>DPAC</b>                      | <p>Department of Premier and Cabinet</p>  |

| Term and/or Acronym                    | In the context of this plan, this means:   |
|--|--|
| <b>emergency centre</b>                | <p><b>Emergency Coordination Centre (ECC):</b> A generic term for any facility or location where an identified group or team meets to coordinate measures to address the consequences of an emergency. The work at Emergency Coordination Centres can be agency specific or community focused. This means that multiple centres may be active for a single emergency, and they may be co-located with other centres depending on the situation (e.g. an Emergency Operations Centre). Municipal, Regional and State Emergency Management Committees manage the Emergency Coordination Centres that are focused on community-wide consequence management.</p> <p><b>Emergency Operations Centre (EOC):</b> A generic term for any facility or location where an identified group or team meets to give direction for agency-specific work related to an emergency.</p> <p>This includes the acquisition and allocation of resources required by the agency. The way Emergency Operations Centres are used can vary depending on the situation. May also be referred to as an Incident Control Centre (ICC).</p> |
| <b>Emergency Services GIS (ES GIS)</b> | <p>A service housed within DPIPWE. Major services provided and activities performed include:</p> <ul style="list-style-type: none"> <li>• Capture, integration and management of emergency management spatial data for Planning, Preparedness, Response and Recovery (PPRR) including <ul style="list-style-type: none"> <li>- Administrative Boundaries</li> <li>- Hazard data sets</li> <li>- Infrastructure data sets</li> <li>- Restricted raster data sets</li> </ul> </li> <li>• Provision of 24/7 on-call GIS and desktop mapping support to DPIPWE and other agencies with emergency management responsibilities.</li> <li>• Provision of ongoing development, implementation, maintenance and administration of the LISTmap/COP web mapping applications for emergency management purposes. Contribute to the development of a national spatial information capability to support critical infrastructure protection (CIP), counter terrorism (CT) and emergency management (EM) activities.</li> </ul>   |
| <b>emergency powers</b>                | <p>From the <i>Emergency Management Act 2006</i>: emergency power means a power specified in Schedule 1.</p> <p>These powers are formally authorised by the State Controller or conferred on Regional Controllers and relate to:</p> <ul style="list-style-type: none"> <li>• directing/controlling movement of people, animals, wildlife</li> <li>• medical examination and/or treatment, decontamination</li> <li>• destruction of animals, wildlife, vehicles, premises/property suspected to be contaminated with chemical, biological, radiological materials</li> <li>• disposal of human and animal remains</li> <li>• managing energy supply (electricity, liquids, gas, other)</li> <li>• traffic control</li> <li>• closing public places/events</li> <li>• allowing entry to vehicles or premises (stop, enter, inspect; seize, copy, take extracts of relevant items)</li> <li>• property (e.g. excavate, earthworks, modify)</li> <li>• required cooperation for emergency management.</li> </ul>   |

| <b>Term and/or Acronym</b>                        | <b>In the context of this plan, this means:</b>   |
|---|---|
| <b>evacuation centre</b>                          | An identified location or facility that provides information, and temporary shelter and basic services to meet the immediate personal needs of people affected by an emergency.   |
| <b>GM WRM</b>                                     | General Manager, Water and Marine Resources Division, DPIPW   |
| <b>hazard</b>                                     | From the <i>Emergency Management Act 2006</i> : hazard means a place, structure, source or situation that may potentially endanger, destroy or threaten to endanger or destroy human life, property or the environment.   |
| <b>Management Authority</b>                       | The organisation responsible for providing guidance for aspects of comprehensive emergency management. This responsibility is often established in legislation and undertaken in partnership with other organisations.  |
| <b>Municipal Recovery Coordinator</b>             | A person appointed to coordinate, manage and advise on recovery arrangements at a municipal level under section 24G of the <i>Emergency Management Act 2006</i> .   |
| <b>Municipal Emergency Management Coordinator</b> | Municipal Emergency Management Coordinator means a person appointed under Section 23 of the <i>Emergency Management Act 2006</i> .  |
| <b>over topping</b>                               | The flow of water over the dam crest, when the water level of a reservoir behind a dam rises above crest level. This happens when the inflow to a dam exceeds the capacity of the spillway to discharge water from the dam. Overtopping of a dam is often a precursor of dam embankment failure.  |
| <b>OSEM</b>                                       | Office of Security and Emergency Management   |
| <b>Potential loss of life (PLL)</b>               | From ANCOLD guideline (ANCOLD 2012)<br>The part of the population at risk that could lose their lives in the event of a dam break.  |
| <b>Population at Risk (PAR)</b>                   | From ANCOLD guideline (ANCOLD 2012)<br>All people who would be directly exposed to floodwaters assuming they took no action to evacuate.  |
| <b>Portfolio Dam</b>                              | A dam managed as part of a portfolio of dams by a water entity (Hydro Tasmania, Tasmanian Irrigation or TasWater).<br>The difference between emergency response for portfolio dams and a private dam is that the portfolio manager is more likely to have access to significant relevant engineering resources. This includes well developed emergency protocols to manage the dam asset, including initial contact and coordination with the range of emergency management agencies. |
| <b>PPRR</b>                                       | Prevention (and mitigation), Preparedness, Response and Recovery  |
| <b>preparedness</b>                               | Planned and coordinated measures to ensure safe and effective response and recovery.  |
| <b>prevention and mitigation</b>                  | Planned and coordinated measures that eliminate or reduce the frequency and/or consequences of emergencies.   |
| <b>Public Information</b>                         | Information provided to the public immediately before, during and after an emergency to reduce the potential impact of an emergency or hazard.  |
| <b>PIU</b>  | Public Information Unit   |
| <b>Recovery</b>                                   | The process of dealing with the impacts of an emergency, with the aim of returning social, economic, infrastructure, economic, and natural environments to an effective level of functioning  |
| <b>Recovery centre</b>                            | A place or facility where people affected by an emergency may be provided with information about, or support to recover from, that emergency.   |



| <b>Term and/or Acronym</b>   | <b>In the context of this plan, this means:</b>  |
|--|--|
| <b>Recovery Domain</b>   | A thematic group of recovery functions. Alternatively known as a 'recovery environment' and in this Plan referring to Social, Economic, Infrastructure and Environmental domains.  |
| <b>Recovery Doman Coordinator (Social / Economic / Infrastructure / Environmental)</b> | A nominated State Service employee authorized to plan, lead and coordinate the delivery of recovery services (by domain) within a region for and on behalf of a Regional Controller and the Coordinating Agency.   |
| <b>Recovery function</b>   | A particular activity or group of activities that may be undertaken as part of recovery efforts. In this Plan recovery functions are grouped under four recovery domains and one group of cross-domain functions (refer to section 3.4).   |
| <b>Recovery Taskforce</b>  | A temporary Tasmanian Government business unit established after a significant natural disaster or other emergency to support affected communities and coordinate a whole-of-government recovery effort.   |
| <b>Regional Recovery Coordinator</b>   | A nominated State Government employee who is authorised to coordinate the delivery of recovery services within a region, in collaboration with Municipal Recovery Coordinators and their deputies.   |
| <b>Regional Committee</b>  | Regional Committee means a Regional Emergency Management Committee established under Section 14 of the <i>Emergency Management Act 2006</i> .<br>Section 14 requires that the Regional Committee institutes and coordinates emergency management in the region.  |
| <b>Regional Controller</b>   | <i>Regional Controller</i> means the Regional Emergency Management Controller appointed under <i>the Emergency Management Act 2006</i> and requires the Regional Controller function to be either: <ul style="list-style-type: none"> <li>• a police commander determined by the Commissioner of Police and the State Controller OR</li> <li>• a person appointed by the Minister</li> </ul>                           |
| <b>RMA</b>   | Response Management Authority  |
| <b>Risk Assessment Powers</b>  | The <i>Emergency Management Act 2006</i> specify a range of functions, duties, powers and authorities relating to risk identification, assessment, management and planning.  |
| <b>RWMO</b>  | Regional Water Management Officer (DPIPWE)   |
| <b>SES</b>   | State Emergency Service  |
| <b>SEMC</b>  | State Emergency Management Committee - the state committee established by the <i>Emergency Management Act 2006</i> .   |
| <b>Severity of Damage and Loss</b>   | From ANCOLD guideline (ANCOLD 2012)<br>Defined as; <ul style="list-style-type: none"> <li>• cost of damage to property, commerce and infrastructure</li> <li>• the effects on the owner's business such as dam function and operability</li> <li>• loss of credibility, loss of financial viability and political impact</li> <li>• health, social and economic disruption</li> <li>• environmental impacts</li> </ul> |
| <b>special emergency powers</b>  | Special emergency power means a power specified in Schedule 2 from the <i>Emergency Management Act 2006</i> .<br>These powers mean the State Controller or the Regional Controller affected by the declaration of a state of emergency may direct resources to persons   |

| Term and/or Acronym           | In the context of this plan, this means:  |
|-------------------------------|---|
|                               | involved in emergency management and take such actions considered appropriate for emergency management.   |
| <b>spillway</b>               | From ANCOLD guideline (ANCOLD 2003)<br>A weir, channel, conduit, tunnel, gate or other structure designed to permit discharges from the reservoir normally under flood conditions or in anticipation of floods.   |
| <b>spillway capacity</b>      | The maximum amount of water flow that can be discharged through a dam's spillway, usually expressed as an instantaneous flow (cubic metres per second).   |
| <b>State Controller</b>       | State Controller means the State Emergency Management Controller appointed under the <i>Emergency Management Act 2006</i> and requires the State Controller function to be either: <ul style="list-style-type: none"> <li>• the Head of Agency for the Department of Police and Emergency Management OR</li> <li>• a person appointed by the Minister</li> </ul>  |
| <b>State Growth-Transport</b> | Department of State Growth (Transport) formally Department of Infrastructure, Energy and Resources.   |
| <b>state of emergency</b>     | State of emergency means a state of emergency declared under Section 42 of the <i>Emergency Management Act 2006</i> .<br>Section 42 states that a state of emergency may be declared by the Premier when an emergency, or a significant threat of an emergency, is occurring or has occurred in Tasmania; or that the existing circumstances require, or may require, the exercise of special emergency powers. |
| <b>sunny day dam failure</b>  | From ANCOLD guideline (ANCOLD 2012)<br>A failure of the dam with its storage at Full Supply Level without concurrent flood flow either into or downstream of the dam.   |
| <b>Support Agency</b>         | Organisations that are responsible for maintaining, or maintaining access to, specific functional capabilities, as agreed with Management Authorities. Support Agencies command their own resources in coordination with the Management Authority, as required.   |
| <b>tailings dam</b>           | From ANCOLD guideline (ANCOLD 2012)<br>A dam constructed to retain waste products (tailings) from mining or other industrial operations.  |
| <b>Treasury</b>               | Tasmanian Department of Treasury and Finance  |
| <b>TRRA</b>                   | Tasmanian Relief and Recovery Arrangements  |
| <b>validation</b>             | Activities that are conducted to assess or review the effectiveness of emergency management arrangements. Standard validation activities include exercises, operational debriefs, workshops, and reviews.   |
| <b>warnings</b>               | Dissemination of a message signalling imminent hazard/s, which may include advice on protection measures.   |
| <b>WMRD</b>                   | Water and Marine Resources Division (DPIPWE)  |
| <b>worker</b>                 | A generic term used to describe people who perform defined functions for an organisation or system, including staff, volunteers, contractors and consultants.<br><br>The <i>Emergency Management Act 2006</i> (see Section 3) defines emergency management worker specifically for emergency management protection and coordination purposes.   |

## Introduction

### Authority

- 1.1 This plan is issued under the authority of the State Controller in accordance with the requirements of Section 35 of the *Emergency Management Act 2006*.
- 1.2 The authority for this plan is supplemented by the *Water Management Act 1999* and *Water Management (Safety of Dams) Regulations 2015*.

### Aim

- 1.3 The aim of the plan is to describe the emergency management arrangements for dam safety emergencies in Tasmania.

### Objectives

- 1.4 The objectives of this plan are to:
  - a Outline the current regulatory framework for dam safety in Tasmania
  - b Record the roles and responsibilities related to dam safety emergencies
  - c Outline the current arrangements for Prevention and Mitigation, Preparedness, Response and Recovery (PPRR) for dam safety emergencies including:
    - I. emergency planning responsibilities;
    - II. protocols for a joint response between dam owners, emergency services, other government agencies and private individuals and entities;
    - III. usual methods to request/access additional support from regional organisations and State government.
  - d Describe the likely recovery needs resulting from dam safety emergencies.

### Scope and Application

- 1.5 The arrangements in this plan address the range of dam safety emergencies resulting from different incidents up to the total failure of a dam, including all incidents where there is a potential risk to life (Population at Risk), or there is a potential for significant economic or environmental damage.
- 1.6 This plan includes arrangements relevant to water storage dams, tailings and other waste storage dams and retention basins, but excludes flood protection structures like levees during a flood, as the State Special Emergency Management Plan for Floods manages levees.
- 1.7 The arrangements in this plan do not specifically address the management of immediate consequences of inundation (flooding) caused by dam failures; other plans cover these, such as:
  - a debris flow which may result from a dam failure (refer to the State Special Plan for Floods (SES))
  - b structural collapse of buildings (refer to the State Special Plan for Structural Collapse (Tasmania Fire Service (TFS))
  - c search and rescue operations (refer to the State Special Plan for Search and Rescue (Tasmania Police (TAS POL))

- 1.8 Regardless of these exclusions, the arrangements in this plan are intended to be:
  - a scalable and flexible so they can be adapted when required (such as allowing for the greater technical resources available to portfolio dam owners compared to private farm dams); and
  - b consistent with all-hazard arrangements, so they can be applied in conjunction with other arrangements when required.
- 1.9 Specific powers/authorities may be activated (typically during response and recovery) by a range of positions to complement existing efforts including:
  - a dam owners,
  - b Manager Water Operations and General Manager, Water and Marine Resources, DPIPWE,
  - c Regional Managers, SES (North-West, Northern, Southern),
  - d Regional Controllers (North-West, Northern, Southern) – TAS POL Commanders for Western, Northern and Southern Districts, and
  - e State Emergency Management Controller (Commissioner of Police).

## **Context Statement**

- 1.10 Tasmania has a large number of dams, ranging from many small farm dams to major dams used for hydroelectricity generation, irrigation, tailing/waste or urban water storage. The current register of dams held by DPIPWE records 7,154 dams (as at October 2018) but there is also an unknown number of dams (possibly > 8,500) which are not currently registered.
- 1.11 Dams and the water they hold provide very significant economic and social benefits to Tasmania, providing water for a diversity of uses such as hydroelectricity generation, irrigation, urban water supplies, smaller stock and domestic water supplies and a variety of other commercial purposes.
- 1.12 Dams typically represent significant capital investments, often forming critical parts of the operations for a wide range of businesses. For example, the mining industry uses tailing dams as an integral part of their mining business and wastewater dams are also an integral part of urban water management. Many other industries are also indirectly dependent on dams through their use of the water being stored.
- 1.13 Dams also provide important amenity and recreational services to communities, including significant freshwater fisheries.

## **Types and causes of dam safety emergencies**

- 1.14 Dam safety emergencies can range from minor incidents to complete and sudden dam failure with catastrophic implications on Population at Risk, and significant economic or environmental damage.
- 1.15 The typical range of dam safety emergencies include:
  - a an actual failure in the wall or abutments of the dam causing an uncontrolled release of water;
  - b collapse of the spillway or overtopping of the dam embankment causing erosion of the embankment and threatening embankment failure;
  - c failure of an intake tower or outlet works, leading to an uncontrolled release of water;
  - d potential failure identified from surveillance or direct observations, such as increased seepage rates and cracking;

- e seismic event e.g. earthquake which endangers, or has the potential to endanger, the integrity of the dam.
- 1.16 A release of stored water endangering the Population at Risk downstream is an emergency which can occur without structural failure of the dam, such as;
- a overtopping due to high inflows unable to be passed around the embankment via the spillway;
  - b overtopping due to a wave of water caused by a landslide of a magnitude beyond the capacity of the spillway;
  - c unannounced release due to operational error or malfunctioning valve system or sabotage.
- 1.17 The majority of dam safety emergencies are caused either by some sort of structural failure of a dam, or by the effects of high inflows. Structural problems can result from:
- a excessive settlement of the embankment;
  - b mass movement of the dam on its foundation;
  - c instability of the upstream or downstream batters of the dam;
  - d excessive seepage or piping through the embankment, foundation or abutments;
  - e cracks, settlement or seepage on the crest, batters or abutments of embankments.
- 1.18 In many cases, these structural issues become apparent during the period leading up to the dams first filling, and are usually as a result of design or construction problems, but they may also develop over a long period of time.
- 1.19 Dam spillways are designed to enable certain flows to be passed safely around the dam's wall. However, when inflows to a dam exceed the capacity of the spillway to discharge the flow, or if a spillway becomes blocked, the dam wall can then 'overtop'. This can potentially lead to damage, or the failure of, the dam embankment. This scenario is a particular issue for earthen dams, as overtopping may lead to erosion of the dam embankment, eventually resulting in a breach of the embankment. Floods can also lead to deterioration of spillways, intake towers, outlet works or tunnels, with potentially serious implications.
- 1.20 The minimum designed discharge capacity of a dam's spillway set out in the guidelines (ANCOLD 2000) for dams, ensure that the risk of dams overtopping are minimised. The minimum spillway design is to pass a peak discharge flow of a 1:100 year event. For dams where population are at risk, the peak discharge capacity of the spillway is to be designed for at least a 1:1000 year event, and increases depending on the scale of the population at risk. However, it must be acknowledged that it is possible for the spillway capacity for any dam to be exceeded in any time period.
- 1.21 In extreme flood situations, there is also the potential for multiple dam failures or 'cascade failures' of dams within a catchment. Cascade failures result when one dam in a series of dams on a watercourse fails, which then triggers the failure of other dams downstream. The cumulative impact of these dam failures would be much greater than that of a single dam failure.

## **Consequences of dam safety emergencies**

- 1.22 Dam failures cause a range of consequences across the community including direct and indirect damage and loss. These apply to the wider community, environment, and also business impacts on dam owners e.g. liability, compensation claims, loss of asset value and credibility.

The ANCOLD dam safety guidelines have established a method of categorising the consequences of dam failure, which forms the core of the dam safety management framework. The term used is "Consequence category", which relates to the risk to human life (Population at Risk) and potential damage and loss expected in the event of failure.

- 1.23 The Consequence category relates to the consequences of a dam failure, not to the chance that it may occur. The consequence assessment can be used to separate urgent dam safety tasks i.e. dams where Population at Risk have been identified, from dams with no damage or loss and no Population at Risk.
- 1.24 The consequence of dam safety emergencies can be both immediate and long term, and range from zero to catastrophic in terms of Population at Risk, property damage or loss, business impacts and environmental damage.
- 1.25 The failure of tailings or other waste storage dams can also cause an additional hazard to the emergency scene due to their chemical makeup and potentially toxic nature.
- 1.26 As a dam safety emergency develops, the scope of actions required and the number and scope of potential stakeholders and participants increases proportionately with the type of dam, Consequence Category, nature of emergency, the number and size of affected communities and the environment affected.
- 1.27 Where two or more dams are located on the same watercourse and where the failure of the upstream dam would cause cascade failure of downstream dam/s the Consequence Category for the upstream dam should be based upon the combined effect of multiple dam breaks.
- 1.28 Table 2 outlines the classification of Consequence Category by ANCOLD (2012), which is based on assessment of the Population at Risk and the severity of damage and loss in the event of failure. In general terms, the table shows that if there is a Population at Risk of greater than one, a dam will be of Significant or greater Consequence Category.

**Table 2: Consequence Categories as defined in ANCOLD 2012**

| Population at Risk (PAR) | Severity of Damage and Loss    |                                |             |              |
|--------------------------|--------------------------------|--------------------------------|-------------|--------------|
|                          | Minor                          | Medium                         | Major       | Catastrophic |
| <1                       | Very Low                       | Low                            | Significant | High C       |
| ≥1 to 10                 | Significant<br><i>(Note 2)</i> | Significant<br><i>(Note 2)</i> | High C      | High B       |
| >10 to 100               | High C                         | High C                         | High B      | High A       |
| >100 to 1,000            | <i>(Note 1)</i>                | High B                         | High A      | Extreme      |
| >1,000                   | <i>(Note 1)</i>                | <i>(Note 1)</i>                | Extreme     | Extreme      |

**Note 1:** With a PAR in excess of 100, it is unlikely Damage will be minor. Similarly with a PAR in excess of 1,000 it is unlikely Damage will be classified as Medium.

**Note 2:** Change to High C. where there is the potential of one or more lives being lost.

**Consequence Categories:**

**Very Low** –dams where the Population at Risk is less than 1 and damage and loss severity is minor (for example, small farm dams in remote regions).

**Low**- dams where the Population at Risk is less than 1 and damage and loss severity is medium.

**Significant**- dams where the Population at Risk is greater than 1 but less than 10 and damage and loss severity up to Medium or no Population at Risk and damage and loss severity is up to Major.

**High**- dams where the Population at Risk is greater than 1 but less than 1000 and damage and loss severity up to Catastrophic.

**Extreme** – dams where the Population at Risk is greater than 1000 and damage and loss severity Catastrophic.

1.29 Table 3 shows the current Consequence Category classification of dams on the DPIPWE dam register. This classification is based on the ANCOLD (2012) guidelines. **Note**, not all dams in the dam register are current with ANCOLD (2012) guidelines, as a majority of Very Low and Low dams are classified under previous ANCOLD guidelines but are represented in Table 3 as Consequence Category classification until reassessed.

**Table 3: Consequence Category of registered dams in Tasmania**

| Consequence Category * | Number of dams<br>(as at October 2018) |             |             |             |
|------------------------|--|-------------|-------------|-------------|
|                        | State-wide                             | Southern    | Northern    | North-West  |
| EXTREME                | 12                                     | 6           | 2           | 4           |
| HIGH A                 | 24                                     | 14          | 2           | 8           |
| HIGH B                 | 11                                     | 5           | 3           | 3           |
| HIGH C                 | 58                                     | 18          | 17          | 23          |
| SIGNIFICANT            | 145                                    | 41          | 57          | 47          |
| LOW                    | 2796                                   | 572         | 765         | 1459        |
| VERY LOW               | 1009                                   | 216         | 463         | 330         |
| NOT ASSESSED           | 3099                                   | 570         | 715         | 1814        |
| <b>TOTAL DAMS</b>      | <b>7154</b>                            | <b>1442</b> | <b>2024</b> | <b>3688</b> |

\* **Note**, not all dams in the dam register are current with ANCOLD (2012) guidelines, as a majority of Very Low and Low dams are classified under previous ANCOLD guidelines but are represented in Table 3 as Consequence Category classification until reassessed.

### Dam safety emergencies in Tasmania

- 1.30 Over the last few years, several dam safety emergencies in Tasmania have occurred. These have mostly consisted of the failure of smaller farm dam, and are generally minor in terms of consequences. Significant dam safety emergencies have been relatively rare.
- 1.31 The potential worst-case scenarios for dam safety emergencies in Tasmania would arise from two circumstances:
- a the sudden ('sunny day') failure of an Extreme or High Consequence category dam, resulting in the release of most or all of the water in the dam in a single surge; or
  - b a major rainfall event resulting in overtopping, leading to embankment failure. This scenario can be extended to multiply dam failures downstream within the same event. In this circumstance, either single or multiple dam failures, the likely existing riverine flooding which would already be occurring at this time could be significantly and suddenly augmented by the uncontrolled release of water from the dams.



1.32 There have been some notable historical dam safety emergencies in Tasmania, including the following:

| INCIDENT            | DATE          | DESCRIPTION   | CONSEQUENCES  |
|---------------------|---------------|---|---|
| Briseis Dam failure | 1929          | <p>The most significant recorded flooding event in Tasmania affected the northeast and parts of the northwest in April 1929. More than 500mm of rain fell over 3 days, resulting in flooding to most rivers.</p> <p>The greatest impacts were in Derby, due to the failure of the Briseis Dam above the town. The dam failed following prolonged overtopping, due to the spillway being unable to discharge enough of the water flowing into the dam.</p> <p>This resulted in a sudden catastrophic failure of the dam wall, with a wall of water travelling rapidly downstream to the town of Derby and the Briseis mine, about 5 km downstream, with little or no warning.</p>    | <p>14 deaths</p> <p>Major economic impact through long-term closure of the mine</p>   |
| Blackman Dam        | 2005          | <p>This 29-meter high earthfill dam in the Southern Midlands, holding about 7,000 ML of water and Consequence category of High C. The newly constructed dam first began to fill to capacity in late 2005.</p> <p>During the first filling, significant leaks developed through the dam embankment, and the dam came close to breaching. Due to the potential risks to the Midlands Highway and the town of Tunbridge, an urgent emergency response was initiated, including the evacuation of Tunbridge.</p> <p>The emergency was resolved by lowering the level of water in the dam over several days by excavating the spillway channel and controlling the release of water.</p> | <p>Costs of the emergency response</p> <p>Evacuation of Tunbridge</p> <p>Very large costs incurred by the dam owners to investigate and repair the dam, and loss of income through not being able to store water in the dam for irrigation purposes for about four years.</p> |
| Falmouth Dam        | 2009 and 2010 | <p>This 8.45 m high 180 ML earthfill farm dam with a Consequence category of High C, due to its potential to impact on a road and the township of Falmouth. It was completed in September 2008.</p> <p>The dam leaked significantly on first filling in September 2009. Because of risk of failure, traffic flow below the dam was controlled by Police and preparations made to evacuate residences at risk. Failure of the dam was prevented by construction of an emergency spillway to lower the water level in the dam.</p>  | <p>Substantial financial losses to the dam owner and the contractor</p> <p>A significant emergency response due to the potential consequences of failure of the dam.</p>  |

| INCIDENT              | DATE         | DESCRIPTION   | CONSEQUENCES  |
|-----------------------|--------------|---|---|
|                       |              | <p>The section of the dam that failed was rebuilt in 2010, with additional protection against piping failures. After heavy rains in January 2011, however, the dam filled rapidly again and more leaks developed.</p> <p>The dam failed largely due to poor construction, selection of unsuitable materials and insufficient compaction during construction.</p> <p>The dam has now been rebuilt and filled and being monitored.</p>  |   |
| Major rainfall events | January 2011 | <p>Riverine and flash flooding in North East and North West over 2 days of very heavy rain (&gt;300 mm) resulted in over 100 farm dams over-topping and some of these dams at high risk of failure.</p> <p>The potential of imminent failure resulted in some precautionary evacuations being carried out.</p> <p>The relatively short duration of the peak flooding limited the period of over-topping and probably prevented most of these dams from breaching and creating a more serious emergency situation.</p> | <p>Ten dams breached, and loss of one small downstream bridge.</p> <p>Combined financial losses of at least \$1 million to the dam owners and councils.</p> |
| High rainfall event   | June 2016    | <p>High rainfalls across the North over several days resulted in over 100 dams impacted due to high stream flows.</p> <p>High flows in Northern catchments resulted in extensive impacts to farming land, business and local communities.</p> <p>One dam failed and several other dams experienced over-topping, resulting in embankment damage and downstream sediment. One dam sustained damage to its concrete spillway, requiring urgent repairs.</p>   | <p>Financial impacts on dam owners due to damage was extensive, requiring additional funds in repairs.</p>  |

## Section 2 Governance and Management

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### Roles of Government and Emergency Management Partners

- 2.1 Dam owners and DPIPWE as the dam safety regulator have key roles in ensuring that dams are built, operated and maintained to minimise dam safety risks. If and when dam safety emergencies do arise, the dam owner, DPIPWE and emergency services will all have significant roles to play.
- 2.2 In dealing with dam safety emergencies where Population at Risk has been identified, dam owners have the initial responsibility to activate their Dam Safety Emergency Plan, once the defined triggers have been met.
- 2.3 Other agencies and organisations with lead response and recovery roles for dam safety emergencies include Tasmania Police, State Emergency Service (SES) and Councils.

### The Legal Framework

- 2.4 Part 8A (Safety of Dams) of the *Water Management Act 1999* (the Act) establish the responsibilities of dam owners and the functions of the Minister for Primary Industries and Water in relation to dam safety.

The Minister has functions under Section 12 and Part 8A (Safety of Dams) of the Act for dams, including;

- to keep a register of dams for the purpose of the Act, and amend the register of dams to add, amend or remove any particulars, in relation to a dam, relating to dam safety;
- to develop specifications, prescribed standards and competency of persons required for the design, construction, maintenance, surveillance and decommissioning of dams or classes of dams;
- to ensure compliance with those standards and that safety of dams and, in particular, plans to remove or minimise risks to persons or property or the natural environment arising from an incident.

Where it appears to the Minister that a dam is unsafe or is in imminent danger of becoming unsafe or there is a high risk of an incident, the Minister may, by notice in writing, require the owner of the dam or person in control of the dam at the relevant time to do such things as are specified in the notice as may be reasonably necessary to ensure safety of the dam.

- 2.5 Section 165G of the Act imposes a statutory obligation on the dam owner for having overall responsibility for dam safety. An owner of a dam must, so far as is reasonably practicable, maintain and operate the dam so as not to cause, or be likely to cause, material environmental harm or serious environmental harm or danger to any person or property.
- 2.6 These statutory requirements are aligned with the ANCOLD guidelines, which establish nationally agreed standards and guidelines for a number of elements in dam safety programs. The statutory requirements are also complemented by a number of DPIPWE documents (Refer to full list in Section 5).
- 2.7 Dam Safety Emergency Plans (DSEP) are required for dams where there is the potential for loss of life in the event of dam failure, and for tailings dams, where infrastructure or environmental values could be at risk should the dam collapse or fail. This requires the dam owner to prepare and maintain a DSEP that document incident triggers and the arrangements and procedures in dealing with dam safety emergency. Each plan provides an inundation map of potential inundation arising from the dam failure, at varying degrees.

## Emergency Powers

- 2.8 In the event of a dam safety incident, the dam owner is responsible for taking action to resolve the situation using their own resources and making the appropriate notifications to DPIPWE.
- 2.9 In the event of a dam safety emergency, the arrangements in this plan overlay/complement the activities outlined in the relevant DSEP (Dam Safety Emergency Plan) as they are underpinned by the Tasmanian Emergency Management Plan (TEMP) and the *Emergency Management Act 2006*. That is, Tasmania Police assume control and are supported by the dam owner and other supporting agencies such as DPIPWE (WMR staff), SES, Councils, etc. DSEP's are stored on the Emergency Services GIS LISTmap server, with access provided to Tasmania Police and SES during the emergency.
- 2.10 In the event of 'imminent danger from a dam', there are powers in the *Water Management Act 1999* that allow the relevant Minister to direct the owner of the dam or the person in control of the dam to take action to ensure the safety of the dam. Where a person fails to comply with, or is unable to execute a direction, the Minister may authorise another person to take the action required. However in this case, the owner must first be served a notice in writing requiring the owner to do such things, to ensure the safety of the dam. The owner has 14 days to apply for a review of the decision regarding the notice.
- 2.11 Councils also have various powers pursuant to the *Local Government Act 1993* including that a General Manager can authorise certain works and/or issue abatement notices and instructions under Sections 199, 200 and 201 provided that the General Manager was satisfied that there was an immediate danger to persons or property.
- 2.12 It should be noted that Schedule 1 of the *Emergency Management Act 2006* also details a list of emergency powers that can be authorised by the State Controller (Tasmania Police Commissioner). These emergency powers can enable a range of actions, including; to "excavate land, construct earthworks, erect temporary barriers and other structures and modify or mend any existing structure".
- 2.13 The *Emergency Management Act 2006* also contains authorisations and powers relating to risk identification and assessment and provisions to enable authorised officers to require the owner or person in charge of or responsible for a place, structure, source or situation to take action that the authorised officer considers appropriate to mitigate or prevent a risk contributing to or aggravating an emergency.
- 2.14 If a situation is deemed to justify this type of action, the TAS POL officer in charge at the scene i.e. the TAS POL Forward Commander, seeks approval to use these powers by referral to the Regional Controller (their regional Police Commander), who consults with the State Controller or their authorised deputy. These powers, and the *Emergency Management Act 2006* more broadly, prevails over all other emergency management legislation, as per section 5 (2), in the case of inconsistencies and/or conflict.

## Emergency Management Governance

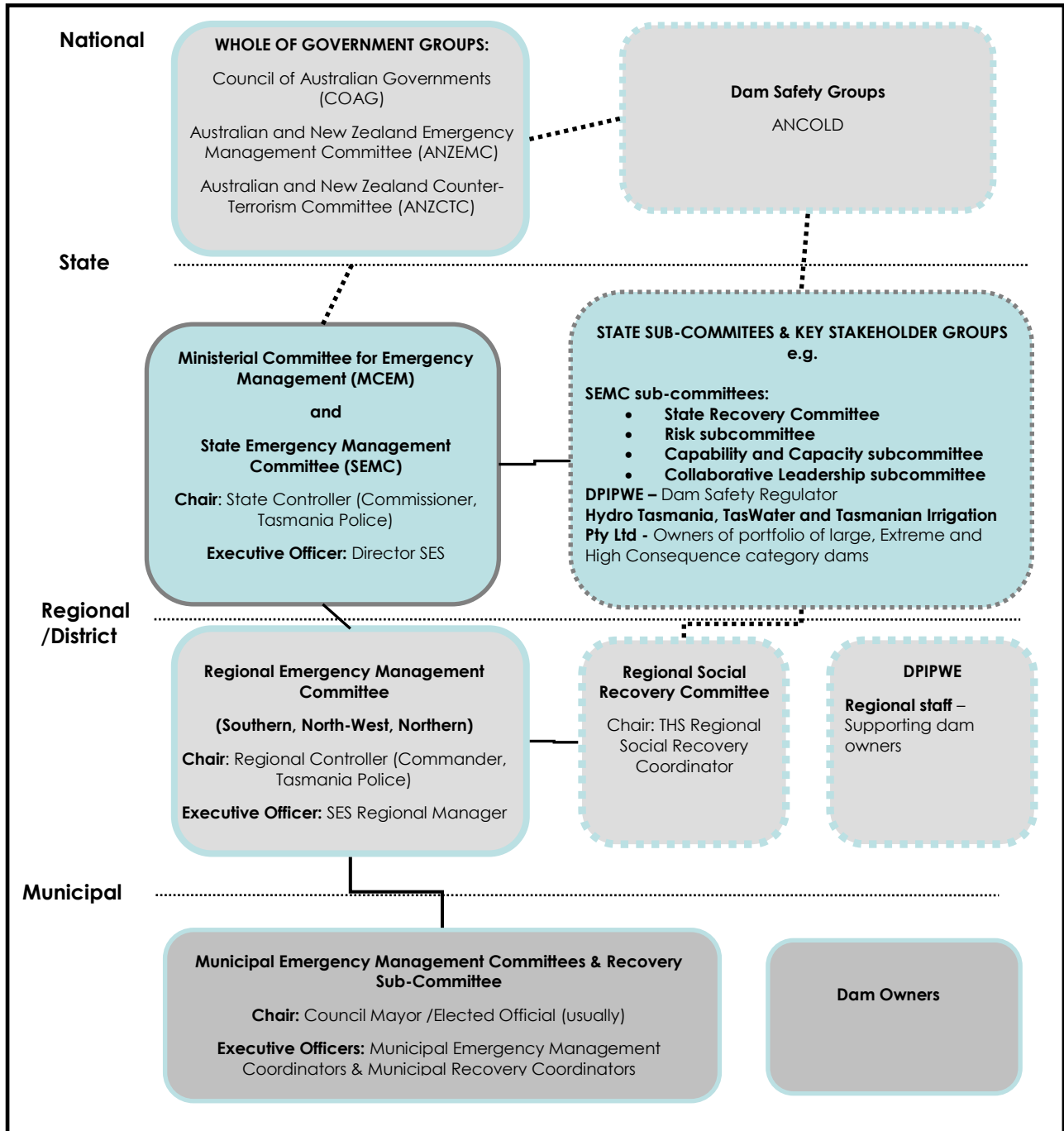
- 2.15 The *Emergency Management Act 2006* establishes emergency management committees at local, regional and State levels. Their role is to oversee emergency management activities in each of their areas and they do this through their diverse membership including councils, State and Commonwealth government agencies, critical infrastructure owners and Non-Government Organisations.
- 2.16 This network of committees is coordinated by the State Emergency Service (SES) in partnership with Tasmania Police.

2.17 The *Emergency Management Act 2006* provides for emergency powers which may be authorised by the State Controller. The use of such emergency powers will generally be restricted to managing the consequential impacts of the dam safety emergency, or to provide such assistance the emergency services require in managing the situation or to more rapidly make the situation safer.

2.18 Emergency Management Committees and Agencies with a direct relationship to this plan include (refer Figure 1):

- Municipal Emergency Management Committees
- Regional Emergency Management Committees
- DPIPWE
- Ministerial Committee for Emergency Management (MCEM)
- State Emergency Management Committee (SEMC)

**Figure 1 Governance Framework**



## Current Management Roles and Responsibilities

This section identifies the main positions/agencies/authorities responsible for identified emergency management duties, across the PPRR spectrum.

**Table 4: Overview of Roles & Responsibilities**

| SUMMARY ROLES AND RESPONSIBILITIES  |                      |                         |                        |  |
|---|----------------------|-------------------------|------------------------|--|
| Type of Emergency   | SEMC Advisory Agency | Management Authority    |                        |  |
|   |                      | Prevention & Mitigation | Preparedness           | Response   |
| Portfolio managed dams (Hydro Tasmania, TasWater or Tasmanian Irrigation Pty Ltd) dam emergency | DPIPWE               | WMR Division<br>DPIPWE  | WMR Division<br>DPIPWE | TAS POL<br><br>(assisted by where relevant Hydro Tasmania, TasWater or Tasmanian Irrigation Pty Ltd) |
| Private dams-Irrigation/Farm/Tailing dam emergency  | DPIPWE               | WMR Division<br>DPIPWE  | WMR Division<br>DPIPWE | TAS POL<br><br>(assisted by dam owner)   |

## ROLES AND RESPONSIBILITIES

### PREVENTION & MITIGATION

|   |  |   |
|---|--|---|
| 1 | Dam safety program and regulation to ensure dam owners are meeting statutory obligations.  | DPIPWE  |
| 2 | Assessment and approval of new dams, including assessment of engineering and dam safety issues.  | DPIPWE  |
| 3 | Developing and maintaining national standards and guides for dam safety.   | ANCOLD  |
| 4 | Safe operation of dams including development and implementation of operations manuals where required, and appropriate levels of resourcing and training.   | Dam owner   |
| 5 | Assessing applications and issuing permits for dams holding waste, including mine tailings.  | Councils (Level 1 activity)<br>EPA (Level 2 activity) |
| 6 | Development and implementation of surveillance program appropriate to the Consequence Category of the dam in accordance with ANCOLD and DPIPWE guidelines. | Dam owner   |
| 7 | Routine scheduled maintenance of dam and appurtenant works, and in response to issues identified through surveillance and monitoring.                      | Dam owner   |
| 8 | Upgrading of dams and appurtenant works to meet contemporary safety standards.   | Dam owner   |
| 9 | Oversight of compliance of dam owners with statutory requirements in regards to dam safety   | DPIPWE  |

### PREPAREDNESS

|   |   |                            |
|---|---|----------------------------|
| 1 | Preparation, review and maintenance of DSEP including inundation mapping.   | Dam owner                  |
| 2 | Warnings readiness (including contact lists and procedures).  | Dam owner                  |
| 3 | Conducting exercises to test DSEP.  | Dam owner and stakeholders |
| 4 | Access to DSEP plans and inundation maps.   | ES GIS                     |
| 5 | Maintaining and testing protocols to support response operations for dam safety emergencies with a variety of stakeholders e.g. TAS POL, private dam owners, portfolio dam owners e.g. Hydro Tasmania | DPIPWE                     |
| 6 | Maintaining and testing protocols to lead response operations for dam safety emergencies with a variety of stakeholders e.g. dam owners, DPIPWE, councils   | TAS POL with SES           |



**RESPONSE****On-Site:**


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|   |   |   |
|---|---|---|
| 1 | Initial response to dam safety incident   | Dam owner   |
| 2 | Initial advice to emergency contacts  | Dam owner (or other person if the dam owner is not on-site) |
| 3 | Management of response for dam safety emergencies.<br>May require additional powers/authority from the <i>Emergency Management Act 2006</i> .                               | TAS POL   |
| 4 | Supportive role to dam owner and emergency services, and monitoring of condition of dam (noting that level of DPIPWE involvement is likely to be greater for private dams). | DPIPWE  |
| 5 | Consequence management.   | SES, TAS POL  |
| 6 | Support to controlling agency.  | Councils  |

**Off-Site:**


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|   |  |  |
|---|--|--|
| 1 | Monitoring of emergency and decisions as to required response      | TAS POL, Dam owner, SES, DPIPWE  |
| 2 | Coordination of advice to affected community                       | TAS POL, SES, Councils, Public Information Unit (DPAC) (if activated)  |
| 3 | Media releases   | TAS POL (for response operations)<br>Portfolio managed dams owners<br>DPIPWE (as dam safety regulator)   |
| 4 | Advice and briefing to responsible agency executives and Ministers | DPIPWE<br>SES, TAS POL   |
| 5 | Warnings/evacuation advice   | Technical advice for TAS POL, dam owner, DPIPWE<br>Community advice/warnings: TAS POL (with SES and Councils as required)<br>Public Information Unit (DPAC) (if activated) |
| 6 | Evacuation management  | TAS POL  |

**Consequence Management:**


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|   |   |   |
|---|---|---|
| 1 | Coordination of consequence management  | MEMC-REMC-State Control Centre  |
| 2 | Traffic control                         | TAS POL, SES support  |
| 3 | Public information and queries          | TAS POL, supported by DPIPWE, Councils, Public Information Unit (DPAC) and Tasmanian Emergency Information Service (TEIS) |
| 4 | Managing adverse environmental impacts  | DPIPWE, Councils support  |
| 5 | Other consequence management activities | Support Agencies  |

## RECOVERY

|   |   |  |
|---|---|--|
| 1 | Recovery coordination and management  | Municipal Coordinator and MEMC<br>Regional Emergency Management Controller (TAS POL)<br>State Controller<br>State Recovery Advisor, DPAC |
| 2 | Restoration of dam integrity and supply, or decommissioning   | Dam owner  |
| 3 | Evacuation and recovery centre management   | Councils   |
| 4 | Cost management: cost recovery negotiations for emergency operations (on request), compensation, Insurance pay-outs | Dam owners and insurers.   |

**Table 5: Summary of Hazard Specific Roles and Responsibilities by Organisation**

| Row | Organisation   | Role   |
|-----|--|--|
| 1   | Councils (Assisting Support Agency)  | <ul style="list-style-type: none"> <li>• Response support: arrange/coordinate resources as requested by TAS POL/SES (e.g. plant &amp; equip contractors, etc.) for dam safety emergencies (Municipal Coordinators)</li> <li>• Emergency planning (MEMC)</li> <li>• Establishment and management of evacuation and recovery centres</li> <li>• Local coordination of recovery: activities to address broader consequences from emergencies across four areas: psychosocial, economic, infrastructure, environmental.</li> <li>• Supported by State agencies including DoH, DPIPWE, State Growth, SES, DPAC, Communities Tasmania</li> </ul>   |
| 2   | Dam Owner (include Hydro Tasmania, Tasmanian Irrigation Pty Ltd or TasWater) | <ul style="list-style-type: none"> <li>• Safe control, operation and maintenance of the dam including appropriate resources and training</li> <li>• Prepare, reviews and maintain the DSEP including arranging the development of inundation maps;</li> <li>• Routine surveillance and monitoring of the dam in accordance with ANCOLD guidelines;</li> <li>• Monitors condition of the dam in relation to incident triggers;</li> <li>• Initiates and implements the DSEP when incidents are triggered;</li> <li>• Sharing information with the relevant emergency management authorities regarding dam condition, extent and nature of flooding anticipated, and procedures for dam safety</li> <li>• Reimbursement of agreed costs from dam safety emergency operations.</li> </ul> |

| Row | Organisation  | Role  |
|-----|---|---|
| 3   | DPIPWE<br>(Assisting Support Agency-Technical advice on dam infrastructure) | <p>Water and Marine Resources Division:</p> <ul style="list-style-type: none"> <li>• Dam safety regulator</li> <li>• Coordinate the state wide dam safety management program</li> <li>• Oversight and compliance monitoring of statutory dam safety obligations of dam owners</li> <li>• Provide technical advice regarding dams to TAS POL and SES and dam owners during dam safety emergencies.</li> </ul> <p>ES-GIS Unit:</p> <ul style="list-style-type: none"> <li>• Capture, management and access to information on dams, including DSEPs and inundation maps</li> <li>• Assist councils with recovery through provision of spatial mapping advice and sharing relevant information.</li> </ul> <p>AgriGrowth Tasmania:</p> <ul style="list-style-type: none"> <li>• Coordinate agribusiness impact assessment</li> </ul> <p>EPA Tasmania</p> <ul style="list-style-type: none"> <li>• Coordinate environmental impact assessment where dams hold waste</li> </ul> |
| 4   | SES<br>(Primary Support Agency)   | <ul style="list-style-type: none"> <li>• Provide operational support to TAS POL, near the site (traffic control, supporting evacuation advice)</li> <li>• Executive support to Regional and State Emergency Management Committees</li> <li>• Advice for Council e.g. Mayor, General Managers, Municipal Coordinators</li> <li>• Arrange urban/street view impact assessments (TFS may assist SES).</li> </ul>   |
| 5   | Tasmania Police<br>(Response Management Authority)                          | <ul style="list-style-type: none"> <li>• Response Management Authority (Control of dam safety response operations)</li> <li>• Provide warnings and coordinate public information (DPAC Public Information Unit may assist).</li> <li>• Determine need for, extent and implementation of, evacuation.</li> <li>• Coordinate impact assessments by SES/TFS and DPIPWE detailed above.</li> </ul>  |
| 6   | DPAC  | <ul style="list-style-type: none"> <li>• State level recovery coordination and assessment of long term recovery needs</li> <li>• Management of the Whole-of-Government Public Information Unit (PIU) and the TasALERT platform</li> </ul>   |

## Section 3 Emergency Management Arrangements

### Section 3.1 Prevention and Mitigation

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#### Overview

- 3.1.1 DPIPWE oversees a range of prevention and mitigation activities in collaboration with its municipal, regional and State emergency management partners for dam safety emergencies. The main focus of these activities are:
- a. maintaining and enhancing a dam safety program, including the statutory and policy arrangements;
  - b. refining and improving the regulation of dam safety;
  - c. assisting other organisations to better manage the risks associated with dams. This draws on a range of disciplines including:
    - i. risk management (includes risk assessments and risk reduction activities)
    - ii. protective security and business continuity management
    - iii. land-use planning.

#### Current Arrangements

##### Dam Safety Program

- 3.1.2 DPIPWE manages a dam safety program with the following elements:
- a. Maintaining a register of dams, containing basic information on dams including their assigned Consequence category (where known) and identifying and bringing into the regulatory framework dams which are not currently included in the register;
  - b. Authorising the construction of new dams to ensure they are designed and constructed to contemporary standards;
  - c. Ensuring that dam owners meet their statutory obligations in regard to the control, operation, surveillance and maintenance of the dam;
  - d. Using a risk-based based approach that is primarily focussed on dams where Population at Risk has been identified;
  - e. The program is focussed on identifying and managing potential safety issues with dams before they escalate to an emergency, and the mitigation of risks through preventative maintenance and the upgrading of dams to meet contemporary standards, where this is reasonably practicable.
- 3.1.3 The main focus of the dam safety program is to have in place emergency management procedures, and appropriate surveillance and maintenance programs for all dams where Population at Risk has been identified.

The focus of the program is to ensure that dams where there is the potential for loss of life in the event of dam failure, and for tailings dams, where infrastructure or environmental values could be at risk should the dam collapse or fail are maintained appropriately and have effective emergency procedures in place. For these dams, the dam owner is responsible for the following:

- a. To undertake surveillance inspections as per ANCOLD 2003 requirements, every five years and maintain the dam in a safe manner, addressing any remedial or upgrade works as required;

- b To develop a Dam Safety Emergency Plan as per ANCOLD 2003 requirements, to implement the Plan in an event of a dam safety emergency, and update the Plan as required.

## **Regulation Arrangements**

- 3.1.4 The *Water Management Act 1999* and the *Water Management (Safety of Dams) Regulations 2015* and associated policies and guidelines provide a comprehensive regulatory framework to manage dam safety, in accordance with the ANCOLD guidelines.
- 3.1.5 DPIPWE regulates dam safety for new and existing dams through a process which:
  - a registers dams;
  - b assigns a Consequence Category to each dam;
  - c ensures the dam construction, maintenance and upgrading meets current standards and guidelines in accordance with the Consequence Category assigned to the dam;
  - d ensures the appropriate dam safety emergency management arrangements are put in place for each dam where there is the potential for loss of life in the event of dam failure, and for tailings dams, where infrastructure or environmental values could be at risk should the dam collapse or fail.

## **Assisting Others**

- 3.1.6 DPIPWE provides information and guidelines to dam owners to assist them to meet their statutory obligations for dam safety.
- 3.1.7 Information stored in the dams register and by the ES GIS unit, details information on the potential consequences of dam safety emergencies and failures and DPIPWE may share it with relevant emergency management entities and for land use planning purposes.
- 3.1.8 DPIPWE provides information to Councils regarding dam safety, hazards and categories, on request.
- 3.1.9 DPIPWE is responsible for reviewing the management of dam safety emergencies and where possible identifying ways to reduce the likelihood of similar situations re-occurring, in consultation with principal stakeholders e.g. TAS POL, Hydro Tasmania, TasWater, Tasmanian Irrigation, State Growth, Councils, etc.

## **Mitigation of risks**

- 3.1.10 One of the key mitigation strategies to prevent overtopping of dams and their potential failure is to ensure their spillways are designed and built to meet identified minimum flooding standards/levels. Flood capacity of the spillway, to protect the community and environment is a risk-based decision, with guidance provided in the ANCOLD 2000 guidelines. Factors considered include; the Consequence category of the dam, probabilities that annual rain or historic flood events are exceeded in any year, and the quantum of maximum flood and precipitation in the catchment.
- 3.1.11 In situations where large population centres would be affected, High or Extreme Categories would apply, and the prescribed levels of dam safety and asset management are required of the dam owners. In addition Dam Safety Emergency Plans (DSEPs) are required for dams where there is the potential for loss of life in the event of dam failure, and for tailings dams, where infrastructure or environmental values could be at risk should the dam collapse or fail. The DSEPs set out the different types of dam safety emergencies which may arise for a specific dam.

## Section 3.2 Preparedness

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### Overview

- 3.2.1 The main preparedness activities for dam safety emergencies are based on:
- preparation of DSEPs and flood inundation maps (for dams where potential loss of life has been identified);
  - emergency planning;
  - inundation assessments;
  - maintaining systems and arrangements for notification and warnings;
  - maintaining all-hazard arrangements for evacuation management; and
  - validating the procedures and arrangements through exercises and reviews.

### Consultation Framework

- 3.2.2 The following table outlines the committees/organisations as the main entities involved with the development and maintenance of dam emergency preparedness

**Table 6: Summary of committees/organisation involved in preparedness**

| Type of Emergency                            | Consultation Framework   |
|--|--|
| Portfolio managed dams                       | Portfolio manager (Hydro Tasmania, TasWater or Tasmanian Irrigation Pty Ltd), DPIPWE, TAS POL, SES, Councils, REMCs, MEMCs |
| Private dams - irrigation/farm/tailling dams | Dam owner, DPIPWE, TAS POL, SES, Councils, REMCs, MEMCs  |

*NOTE: The Whole of Government emergency management consultation framework as shown in Figure 1 supports the dam safety consultation framework.*

*ANCOLD 2003 provide guidance on consultation during the development of dam safety emergency plans.*

### Capacity and Capability

- 3.2.3 Dam owners and State government agencies maintain their own capacity and capability arrangements. For dam safety emergencies the following points are important considerations to ensure Dam owners and State government agencies are prepared to meet the needs of a dam safety emergency:

- redundancy for DPIPWE dam safety roles;
- support for emergency management education for government workers; and
- maintaining relevant emergency operations centres (or ICCs) and emergency coordination centres.

if required the State government Interoperability Register may be called upon to supplement staffing shortages.

### Personnel for Dam Safety Emergencies

- 3.2.4 The following table shows the typical roles dam safety emergencies and their typical deputy/delegate/alternate arrangements:

**Table 7: Summary of typical roles and alternates for dam safety emergencies**

| <b>Dam Safety Emergency Roles</b>                       | <b>Typical Alternates</b>   |
|---|---|
| Dam owner   | Dam owner engineer  |
| DPIPWE Regional Water Management Officer (RWMO)         | RWMO from neighbouring region, or other DPIPWE staff on a roster for a prolonged incident |
| DPIPWE Manager Water Operations                         | DPIPWE Manager, Water Management and Assessment   |
| DPIPWE Dam Safety Engineer                              | Consulting engineer if required (DPIPWE arranges)   |
| Municipal Coordinator                                   | Deputy Municipal Coordinator  |
| Municipal Recovery Coordinator (Council role)           | Deputy Municipal Recovery Coordinator (Council role)                                      |
| Tasmania Police Forward Commander (Incident Controller) | As directed (TAS POL)   |
| SES Regional Manager                                    | SES Duty Officer for the region   |
| Regional Controller                                     | Deputy Regional Controller  |
| DPIPWE General Manager                                  | As arranged (DPIPWE)  |
| State Controller (Commissioner, Tasmania Police):       | Deputy State Controller (Deputy Commissioner)   |

## Current Arrangements

### Emergency & Evacuation Planning

- 3.2.5 Owners of dams where there is the potential for loss of life in the event of dam failure, and for tailings dams, where infrastructure or environmental values could be at risk should the dam collapse or fail are required to prepare and maintain a DSEP. DPIPWE provides a Guideline to assist dam owners or their delegates to meet this requirement in a consistent format.
- 3.2.6 The plan includes information about the structure and operation of the dam and procedures for dealing with emergency situations including contact lists and inundation maps to guide response and evacuation decisions.
- 3.2.7 All completed DSEPs and inundation maps are stored on LISTmap and are accessible by Tasmanian Police and SES during an emergency.
- 3.2.8 For dams that have a Consequence category of Significant or above, dam owners must also undertake a Comprehensive Surveillance Inspection every 5 years and document the inspection. The inspection includes a review of the Consequence Category (incorporating an assessment of the Population at Risk) for the dam which considers any new developments downstream. DPIPWE ensure inspections are undertaken in accordance with the requirements the *Water Management Act 1999*.
- 3.2.9 DPIPWE maintains departmental procedures and guides to support response to dam failures e.g. 'DPIPWE Protocols for Dam Safety Emergency Response'. Further information is in Section 3.3 Response.
- 3.2.10 In some areas, specific evacuation arrangements have been developed. For example, in the Forth Valley a consortium of stakeholders including the dam owner, Council, DPIPWE, SES and TAS POL have developed specific, localised emergency management arrangements.

## **Flood Inundation Assessments**

- 3.2.11 Dam owners are responsible for preparing an inundation map as part of the DSEP process, including provision of the map/s to DPIPWE (as regulator) for inclusion on LISTmap.
- 3.2.12 Inundation maps are generated by complex computer modelling, identify flood depths and flow volumes at each zone of impact.
- 3.2.13 All completed DSEPs and inundation maps are lodged with ES-GIS for uploading onto LISTmap and are accessible to the relevant emergency planning and management agencies.

## **Points for Public Enquiries**

- 3.2.14 DPIPWE, Councils, TAS POL and SES maintain a number of points to deal with dam preparedness or safety enquiries from dam owners and/or members of the public e.g.:
  - a DPIPWE: the first point of contact would usually be the respective local Regional Water Management Officer (RWMO). The RWMOs are listed on the DPIPWE website;
  - b Councils: council switchboard;
  - c TAS POL : Police Assistance and Triple Zero switchboards; and
  - d SES: Regional offices switchboard during normal Business hours.

## **Validating the Procedures and Arrangements**

- 3.2.15 The guidelines which cover DSEPs (ANCOLD 2003) require that the plans be periodically reviewed and that the emergency contact numbers in all DSEPs be updated annually, by dam owners. Dam owners are encouraged to invite local response personnel to participate during testing of the plans, including familiarisations with the dam infrastructure. DPIPWE ensure DSEP's are reviewed and updated in accordance with the requirements of the *Water Management Act 1999*.
- 3.2.16 Supporting all-hazard emergency arrangements in local, regional and the State plan are required to be reviewed at least every two years; and implicit in that cycle is the expectation that the arrangements will have been tested (validated) in that period at least once.

## **Cost Management Preparedness**

- 3.2.17 Stakeholders in the dam safety emergency arrangements maintain cost management systems and processes to address authorised operational expenses in the first instance, and seek cost recovery as appropriate.
- 3.2.18 For Government agencies, systems and processes are subject to Treasury requirements for the 'Request for Additional Funds' (RAF) process, as well as (where relevant) state and Australian Government recovery funding arrangements.



## Section 3.3 Response

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### Overview

- 3.3.1 Response arrangements depend on defined roles being undertaken in a coordinated way. Broad responsibilities for dam safety emergencies are established in legislation (e.g. *Water Management Act 1999*, *Police Powers (Public Safety) Act 2005*, *Emergency Management Act 2006*), and the planning process establishes arrangements that draw on these responsibilities in a practical, flexible and scalable way to reduce the threat to life, property or the environment.
- 3.3.2 The roles and responsibilities relevant to dam safety emergencies are summarised in Section 2 of this plan. This section records how these roles and responsibilities are intended to be used.
- 3.3.3 The arrangements in this plan are consistent with dam owners statutory obligations that is, to be responsible for safety of the dam as required by the regulator and the emergency management authorities responsibilities to manage the dam safety specific aspects of response.
- 3.3.4 While initially control rests with the dam owner, TAS POL and SES have other legislative authorities that can support the response to dam safety emergencies. So when extra assistance is required, other powers may be authorised for the Response Management Authority (TAS POL) until the threat to life, property and the environment is resolved.

### Command, Control and Coordination

- 3.3.5 Tasmania Police is the lead agency responsible in the response phase for any dam safety emergency if there is risk to life, property or the environment.
- A dam safety emergency may be initially reported from a wide range of sources for example the dam owner, local council officers/workers, emergency services in response to a public report, or even possibly the media.
- 3.3.6 When a dam safety emergency occurs, DPIPWE's initial actions are focused on determining the nature of the incident by ensuring the dam owner is aware of the reports, the status of the dam and its safety. If activation of a DSEP is required, the dam owner is then responsible for this activation.
- 3.3.7 The responses and actions required are dependent on the nature and seriousness of the emergency, and initially no external contact may be needed. Once triggers or thresholds are met, the need to contact various stakeholders commences. This may include the need to bring in expert engineering advisors if required.
- 3.3.8 DPIPWE, as dam safety regulator, provides assistance to the dam owner and TAS POL including making recommendations to seek expert engineering advice. This will initially involve understanding the nature of the problem, how it is likely to progress, mitigation measures and the likelihood of potential outcomes; and providing advice to TAS POL, SES and Councils about it. DPIPWE officers may remain on-site for the duration monitoring the situation and assisting the relevant organisations as required.
- 3.3.9 The potential consequences of a dam failure mean that prompt advice to TAS POL, usually results in TAS POL assuming control, and forming a multi-agency team with:
- a the dam owner
  - b DPIPWE for expert advice and supporting dam owner
  - c SES for operational support
  - d Council/s

- e other agencies as required
- 3.3.10 Portfolio dam owner or dam owner (supported by DPIPWE) conducts an initial impact assessment and initial Situation Reports (SIT REPs) address:
- a the need for further expert assessment/inspection
  - b likely outcomes/consequences
  - c the most effective, available remedial action for dam safety
  - d likely timeframes related to potential failure and for remedial action to be effective
  - e need for warnings/public information/evacuation/road closure etc.
- 3.3.11 SIT REPs provided to TAS POL after assuming control, are shared with the respective senior officers of the organisations involved. DPIPWE will continue to support dam owner in updating SIT REPs during the response, especially focusing on changes to the likely outcomes/consequences.
- 3.3.12 Where the dam owner is absent/un-contactable, TAS POL and SES are responsible for assessing the powers available to them, especially those under Schedule 1 of the *Emergency Management Act 2006* and advising the State Controller as to the need or otherwise of authorising them.
- 3.3.13 The Regional Controller will brief the State Controller and the State Controller will determine the need to activate the State Control Centre and/or brief the State Emergency Management Committee.
- 3.3.14 The following table summarises the centres, and the agencies and their responsibilities:

**Table 8: Summary of agencies and centres**

| Agency   | Centres                                  | Level          |
|--|--|----------------|
| DPIPWE   | Dam Safety Coordination Centre, Prospect | State          |
| Councils   | Emergency Operations Centre              | Local/Regional |
| Tasmania Police  | Forward Command Post                     | On-Site/Local  |
|  | Police Operations Centre                 | District       |
|  | Police Operations Centre                 | State          |
| SES  | Emergency Operations Centre              | Regional       |
| Portfolio dam owners<br>(Hydro Tasmania,<br>TasWater or Tasmanian<br>Irrigation Pty Ltd) | Emergency Operations Centre              | State          |
| Regional Committees  | Emergency Coordination Centre            | Regional       |
| SEMC   | State Control Centre                     | State          |

## **Emergency Powers**

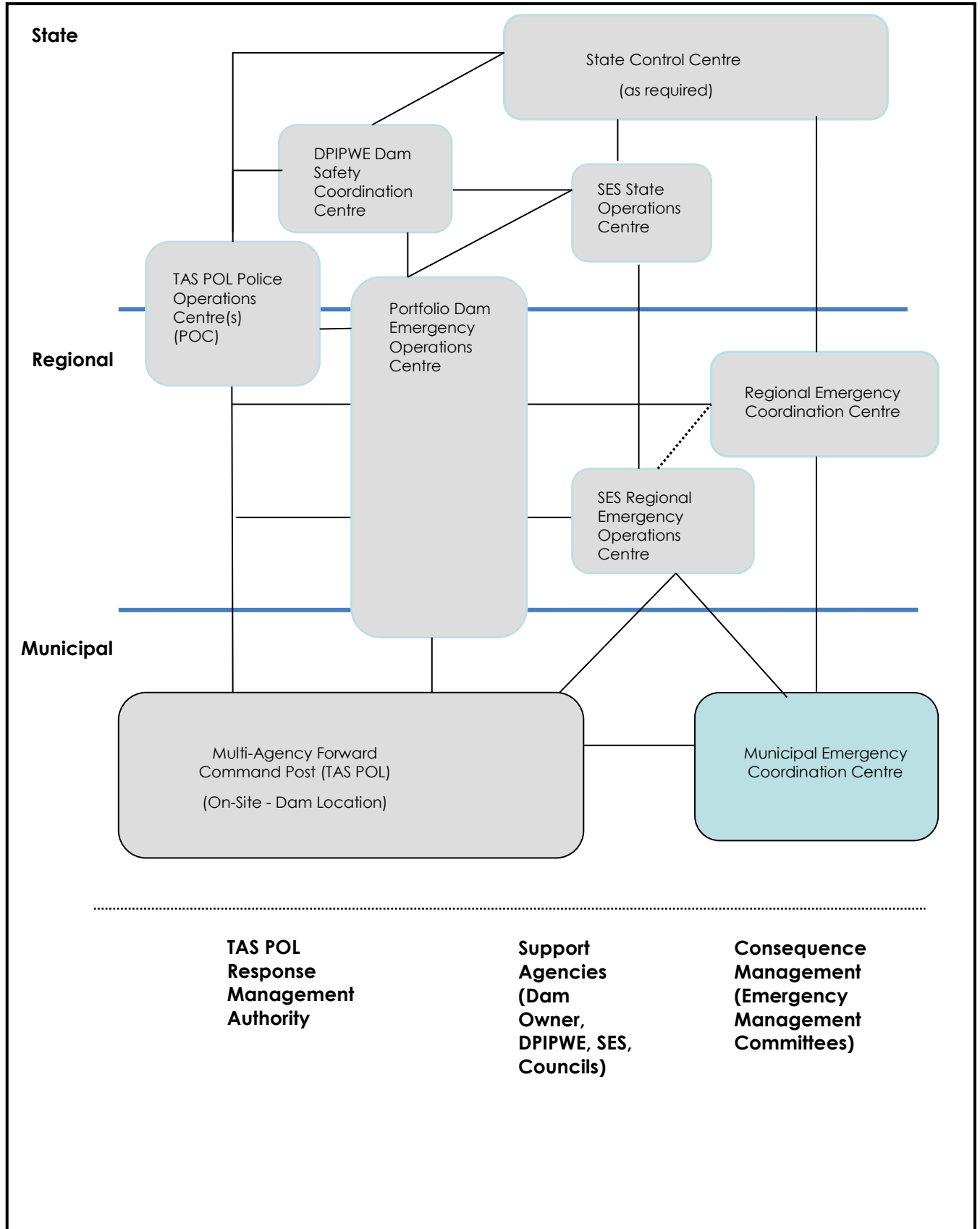
- 3.3.15 Emergency powers relevant to a dam safety emergency are described in Section 2 of this plan, and in more detail in TEMP (Section 3.3).
- 3.3.16 Coordination of actions at the emergency site and consequence management activities of Regional Controllers and Regional committees etc. is achieved with support from the REMC Executive Officer.
- 3.3.17 The following table summarises the nature of actions taken by the Response Management Authority and Support Agencies during the five phases of response.

**Table 9: Summary of Typical Response Actions**

| Number | Phase                   | TAS POL<br>(Response Management Authority)  | Supported By<br>(Dam owner, DPIPWE, SES, councils or others as requested)  |
|--------|-------------------------|---|--|
| 1      | <b>Alert</b>            | <ul style="list-style-type: none"> <li>• Contact with dam owner</li> <li>• If the dam owner is not present or is un-contactable, advise the Regional Controller i.e. TAS POL Regional Commander</li> <li>• Site Inspection</li> <li>• Consider options for remedial action/treatment.</li> </ul>  | <ul style="list-style-type: none"> <li>○ Provide advice on dam structure and integrity (SIT REP)</li> <li>○ Monitor actions of dam owner to determine if appropriate action is being taken in a timely manner</li> <li>○ Identify suitable personnel who may be required to attend the TAS POL multi-agency Forward Command Post.</li> </ul>   |
| 2      | <b>Stand-By</b>         | <ul style="list-style-type: none"> <li>• Assessment of dam safety emergency</li> <li>• Commence planning for remedial treatment</li> <li>• Prepare to request authorisation of emergency powers, if needed (especially if the dam owner is not present/contactable and/regional consequences are likely)</li> <li>• Consider likely consequences of failure and establish plan for issuing warnings, evacuation including traffic</li> <li>• Brief senior officers</li> <li>• Identify command and control arrangements and Forward Command Post location and team.</li> </ul>  | <ul style="list-style-type: none"> <li>○ Prepare to issue directions to the dam owner and authorise others to enter property and take action if required</li> <li>○ If the dam owner is un-contactable, councils to prepare to use powers provided under the <i>Local Government Act 1993</i> as per Section 2 of this plan</li> <li>○ Locate and brief suitable personnel who may be required to attend the Forward Command Post</li> <li>○ Commence identification and marshalling of likely resources needed for response and recovery</li> <li>○ Brief relevant stakeholders (SIT REP).</li> </ul> |
| 3      | <b>Respond / Deploy</b> | <ul style="list-style-type: none"> <li>• Coordinate remedial treatment plan to be implemented</li> <li>• Arrange for warnings and public information to be released in a coordinated way</li> <li>• Develop and implement evacuation plan (as required)</li> <li>• Ongoing assessment of impacts especially for power supply, potable water, transport disruption, public/environmental health conditions and recovery needs</li> <li>• Advise the Regional Controller and State Recovery Advisor (DPAC) of anticipated need for recovery support</li> <li>• Monitor dam safety emergency and assess likely outcomes</li> <li>• Request additional support (scenario dependent) e.g. search and rescue-all discipline e.g. technical, trench, USAR; ambulance etc.</li> </ul> | <ul style="list-style-type: none"> <li>○ Manage requests for assistance/resources</li> <li>○ Identify and implement mitigating measures to prevent failure of the dam</li> <li>○ Support implementation of remedial treatment plans for the dam structure</li> <li>○ Update stakeholders and Regional Controller as required (SIT REPs)</li> <li>○ Support development and issue of warnings and public information</li> <li>○ Coordinate meals, relief/accommodation for workers (as required)</li> <li>○ Support implementation of evacuation plan (may include opening and managing</li> </ul>      |

| Number | Phase             | TAS POL<br>(Response Management Authority)  | Supported By<br>(Dam owner, DPIPWE, SES, councils<br>or others as requested)  |
|--------|-------------------|---|---|
|        |                   | <ul style="list-style-type: none"> <li>• Update senior officers and public information outlets</li> <li>• Coordinate meals, relief/accommodation for workers (as required)</li> <li>• Confirm when dam safety emergency situation has stabilised and plan for end of response and transition to recovery.</li> </ul>  | <ul style="list-style-type: none"> <li>○ community centres e.g. assembly or evacuation)</li> <li>○ Provide specialist support e.g. search and rescue disciplines.</li> </ul>  |
| 4      | <b>Stand Down</b> | <ul style="list-style-type: none"> <li>• Liaise with Council/Regional Controller/DPAC regarding the status of recovery operations and arrange 'hand over' as required</li> <li>• Complete Rapid Impact Assessments and prepare documents for handover to recovery authority</li> <li>• Reinstate transport routes etc.</li> <li>• Confirm end of response operations and ongoing points of contact</li> <li>• Collate logs, costs etc. and assess needs for re-supply.</li> </ul> | <ul style="list-style-type: none"> <li>○ Confirm end of response operations</li> <li>○ Liaise with State Recovery Advisor (DPAC) and council recovery workers and assess needs</li> <li>○ Update stakeholders and Regional Controller (SIT REPs)</li> <li>○ Close or transition management of recovery centres as agreed</li> <li>○ Collate logs, costs etc. and assess needs for re-supply.</li> </ul> |
| 5      | <b>Debrief</b>    | <ul style="list-style-type: none"> <li>• Conduct internal debrief/s</li> <li>• Participate in multi-agency debriefs as required and report to Regional Controller/Committee.</li> </ul>   | <ul style="list-style-type: none"> <li>○ Conduct worker debrief ('Hot' debriefs)</li> <li>○ Arrange for Municipal/ Regional Committee debrief and report to Regional Controller/Committee.</li> </ul>   |

**Figure 2 Command Control & Coordination Summary**



## Response Strategies

3.3.18 When a dam safety emergency is reported and assessed, the following table provides a list of remedial actions that may be considered:

**Table 10: Dam Safety Emergency Remedial Actions**

| Row | Remedial Action                       | Explanation  | Usual Coordinator           | Main Advisor |
|-----|---------------------------------------|--|-----------------------------|--------------|
| 1   | <b>Monitoring and site inspection</b> | Visual inspection and monitoring of the dam safety emergency to identify the cause(s) and likely progression of the situation and its status over time. Modified as situation progresses | Dam owner or their engineer | DPIPWE       |
| 2   | <b>Controlled Release</b>             | Controlled release of water via the dam's outlet pipe, to lower the water level and potentially reduce loading on the dam wall   | Dam owner or their engineer | DPIPWE       |
| 3   | <b>Structural Modification</b>        | Construction of an emergency spillway to increase the rate of release of water from the dam  | Dam owner or their engineer | DPIPWE       |
| 4   | <b>Sandbagging (downstream)</b>       | To divert water flow and prevent flooding  | SES                         |              |
| 5   | <b>Warnings</b>                       | Situation reports, and/or to evacuate  | TAS POL, SES                | DPIPWE       |
| 6   | <b>Evacuation (PAR)</b>               | Clear danger area and/or inundation area to evacuation centre  | TAS POL                     | SES          |
| 7   | <b>Decommissioning</b>                | Post emergency to cease use of dam, and rehabilitate per further reports and assessments   | Dam owner or their engineer | DPIPWE       |

## **Warnings & Public Information**

### **Warnings**

- 3.3.19 The provision of appropriate warnings to the affected community is a critical part of the response.
- 3.2.20 Tasmania Police as the Response Management Authority are responsible for maintaining arrangements to supply public information during dam safety emergencies. Depending on the situation this may include dissemination of important safety information on the TAS POL Community Alerts webpage, social media, door to door message, use of the media (radio, social media and television) and Emergency Alert.
- 3.3.21 Support Agencies will work cooperatively with the Response Management Authority so that public messages are accurate, timely, consistent and coordinated.
- 3.3.22 Councils may support warning dissemination in accordance with their own responsibilities and/or assist other groups if requested by the:
- a Response Management Authority
  - b SES Regional Manager
  - c Regional Controller
- 3.3.23 TAS POL may elect to use the 'Emergency Alert' system. This national capability can send warnings to landline and mobile telephones via voice and text messages in a geographic area. 'Emergency Alert' operates on a 'fee for service'. Cost recovery is coordinated at State level between TFS and the TAS POL as the Response Management Authority.
- 3.3.24 Warnings sent using the Emergency Alert system are issued by the TFS following a request from the Response Management Authority (TAS POL). TAS POL can take into account advice from both DPIPWE and the SES regarding the effectiveness or otherwise of using this service.
- 3.3.25 Dam owners are required to maintain an emergency contacts list as part of the DSEP and to directly contact relevant stakeholders of potential dam safety emergencies once particular events are triggered.
- 3.3.26 In specific areas (e.g. Launceston City Council - Invermay/Inveresk levee system) council flood warning systems (sirens, etc.) may be maintained and operated by, or on behalf of, the council.
- 3.3.27 Table 11 summarises the all-hazard arrangements for providing information to the public about the emergency.

### **Whole-of-government public information**

- 3.3.28 During a dam safety incident, TAS POL may request assistance from, or activation of, the whole-of-government Public Information Unit (PIU).
- 3.3.29 The PIU is managed by DPAC and brings together communications staff from multiple government agencies to manage public information during emergencies.
- 3.3.30 Activation of the PIU can be requested when:
- There are not sufficient resources within the RMA to manage all public information requirements of the response to an emergency;
  - A whole-of-government public information response is required because of the scale, impact or longevity of the emergency; or
  - There are several agencies involved in managing an emergency and there is a subsequent need for co-ordination of public information activities



- 3.3.31 TasALERT is the official Government emergency information source. It provides a single source of emergency and resilience information from emergency services and government agencies. TasALERT is managed by DPAC's Communications and Protocol Unit.
- 3.3.32 TAS POL may request the use of the Tasmanian Emergency Information Service (TEIS), which provides a single point of telephone contact for non-operational government information during emergency response and recovery assistance through the hotline: 1800 567 567. DPAC is responsible for activating and managing the TEIS.

### **Tasmanian Emergency Information Service (TEIS)**

- 3.3.33 Tasmania has a state call-centre capability known as the Tasmanian Emergency Information Service (TEIS), which provides an initial point of contact for the community to access self-help information following an emergency via a 1800 number.
- 3.3.34 The service is activated and deactivated by the Office of Security and Emergency Management (OSEM) within DPAC on request from the RMA, and/or following the advice of Regional Controllers, SEMC and TAS POL, DPIPWE, SES, DPAC/DoH for dam safety emergencies. The decision to activate the service includes acceptance of a number of responsibilities including appointing a:
- a Liaison Officer to be located at the TEIS for the duration of the activation
  - b supporting Information Manager
- 3.3.35 The service operates on a 'fee for service' basis and further details are available in the TEIS Arrangements (2017) (see 'Associated Documents', Appendix 5).
- 3.3.36 If use of TEIS is approved, scripts are then developed, using a consultative approach.

### **Working with the Media**

- 3.3.37 Local and regional media outlets can assist to disseminate public information about dam safety emergencies, in particular the ABC as the emergency broadcaster.
- 3.3.38 The relevant agencies involved in the response aim to provide comments through nominated media officers and limit their comments to their own role in response/recovery activities. TAS POL, as the Response Management Authority, should always be deferred to regarding the actual status of the response. Other agencies, e.g. DPIPWE as regulator, should only issue media statements, etc. that are consistent with their supporting responsibility.

**Table 11: Summary of Public Information Arrangements**

| <b>Location</b>                             | <b>Scope of emergency information</b>                                  | <b>Provided by</b>   | <b>Developed by</b>                                  | <b>Cleared by</b>   | <b>Distribution methods</b>                              |
|---|--|--|--|---|--|
| <b>On-site</b>                              | The emergency and its known impact                                     | TAS POL (Response Management Authority)<br>Dam Owner, SES, Councils, etc. can advise about their own roles | The relevant response agency                         | TAS POL   | Media<br>TasALERT/<br>Agency websites<br>Emergency Alert |
| <b>EOC/ECC</b>                              | Actions/responsibilities of the centre                                 | Centre Coordinator   | Centre Coordinator                                   | Authorised Emergency Management Coordinator (e.g. Municipal, Regional Controller) | Media  |
| <b>Other centres – assembly, evacuation</b> | Actions/responsibilities of the centre                                 | Centre Coordinator e.g. Councils, DoH  | Centre Coordinator                                   | Centre Coordinator  | Media<br>TEIS<br>TasALERT                                |
| <b>Council area</b>                         | Impact of the emergency on the local community e.g., water, power etc. | Mayor  | Council media officer                                | Council media officer   | Media, council website<br>TasALERT, TEIS, CALD, others   |
|   |  | Council switchboard  | Council media officer                                | Council media officer   | Phone enquiries  |
| <b>Within the region</b>                    | Impact of the emergency on the region                                  | Regional Controller  | SES Regional Manager or delegate                     | Regional Controller   | Media, council websites, TEIS<br>CALD, others            |
|   |  | TAS POL  | TAS POL Media Officer                                | Response Management Authority, regional liaison                                   |  |
|   |  | DoH (Regional Social Recovery Coordinator)   | DoH Media Officer                                    | SES Regional Manager or delegate for Regional Controller                          |  |
| <b>Rest of the State</b>                    | Impact of the emergency for the State, including relief arrangements   | State Controller   | SES Director, TAS POL Media Unit, Govt. Media Office | SES Director, TAS POL Media Unit, Govt. Media Office                              | Media, agency website or TasALERT, TEIS<br>CALD, others  |
|   |  | DPIPWE (regulator)   | Media Officer  | GM WMR division   |  |

| Location | Scope of emergency information | Provided by      | Developed by           | Cleared by             | Distribution methods |
|----------|--------------------------------|------------------|------------------------|------------------------|----------------------|
|          |                                | Premier/Minister | DPAC Govt Media Office | DPAC Govt Media Office |                      |

## Evacuation

- 3.3.39 TAS POL has functional responsibility for evacuations. Voluntary evacuation is the preferred strategy in emergencies.
- 3.3.40 If TAS POL, as the Response Management Authority, identifies a need for evacuation, in the first instance the SES Regional Manager and/or the Municipal Coordinator can be contacted for assistance.
- 3.3.41 To estimate/identify the Population at Risk the following issues are considered (there may be other groups/issues as well):
- a groupings of dwellings and/or businesses
  - b camping areas
  - c allowances of itinerants (fishing, bushwalking etc.)
  - d river crossings/bridges/roads
  - e facilities housing more vulnerable groups e.g. aged care, hospitals, jails/detention centres.
- 3.3.42 Registration of evacuees is a significant issue to be addressed as part of the evacuation plan. The general arrangements for registration for dam safety emergencies are described below.
- 3.3.43 When evacuation plans involve significant changes to traffic flows over roads and bridges, the road owner/manager should be involved (i.e. Council and/or State Growth-Transport).
- 3.3.44 Council maintains a register of facilities that could be used to provide services for affected persons in the council plan e.g. assembly or evacuation centres.

## Registration of Evacuees

- 3.3.45 Registration is an important system for recording relevant details of persons affected by emergencies. Common groups requiring registration are:
- a affected persons (e.g. people who are evacuated/their families)
  - b other stakeholder/affected groups (e.g. businesses)
  - c spontaneous volunteers
  - d witnesses
  - e potential donors/sponsors (equipment, services, supplies).
- 3.3.46 Tasmania Police are the lead agency for registrations and may begin and coordinate the registration process. Councils manage and coordinate registrations in evacuation and recovery centres. TAS POL may also activate Australian Red Cross to coordinate use of their on-line 'Register. Find. Reunite' system (formally referred to as the NRIS-National Registration and Inquiry Systems), on request.
- 3.3.47 Registration data is shared regularly through the response phase, including with the SES Regional Manager, Regional Social Recovery Coordinator, relevant councils and the State Recovery Advisor (DPAC).

## Impact Assessments

- 3.3.48 The Response Management Authority, supported by DPIPWE, dam owner and dam engineer as relevant, is responsible for coordinating impact assessments and reporting them to other responding agencies and the relevant recovery officers (council/regional). The State Special Emergency Management Plan for Impact and Damage Assessment explains arrangements for urban/street view assessments typically undertaken by TFS and/or SES. AgriGrowth Tasmania (DPIPWE) can be requested to undertake agribusiness impact assessments and Councils may be asked to assist with this work.
- 3.3.49 Impact assessments cover:
- a potential dam break inundation and impacts
  - b housing/accommodation needs
  - c power supply
  - d potable water impacts
  - e transport networks and alternative route planning
  - f telecommunications
  - g public/environmental health issues and standards
  - h public and private infrastructure damage
  - i economic and small business impacts
  - j agribusiness assets, infrastructure and supplies (e.g. cropping land, fencing, livestock feed, irrigation systems).
  - k Gas pipelines
- 3.3.50 Where transport corridors also provide access for other networks (e.g. power, water, telecommunications), the asset managers/owners are involved in decision making if necessary.
- 3.3.51 GIS capabilities can assist to record the outcomes of assessments and support broader consequence management planning.

## Debriefs

- 3.3.52 Debriefs provide an opportunity to review arrangements and decisions.
- 3.3.53 Key lessons identified are shared with stakeholders, including the Municipal Committee, the Regional Emergency Management Committee and the State Emergency Management Committee.
- 3.3.54 The Municipal Committee is responsible for reviewing emergencies that are significant to the area. If appropriate and agreed, this review is shared with the Regional and State Committee so that lessons can be shared easily with emergency management partners.
- 3.3.55 DPIPWE will conduct an internal debrief for an emergency where they assist TAS POL with a dam safety emergency and will participate in any other debriefs as invited/requested.
- 3.3.56 DPIPWE will also review all debrief findings to enhance prevention and mitigation.

## **Cost Management & Administration Arrangements**

- 3.3.57 The state arrangements for cost management for emergency operations are described in the Tasmanian Emergency Management Plan: 'In the first instance, organisations are responsible for absorbing their own expenses for response (i.e. meeting the costs of the expenses they authorise for emergency operations)'
- 3.3.58 Agencies must maintain separate financial records for 'emergency' expenditure. This will assist the Department of Treasury and Finance if the State is financially assisting agencies with the cost of emergencies.
- 3.3.59 Cost recovery may be negotiated with the dam owner (claims substantiated by records of the authorisations and invoices). Typically these authorisations are made by TAS POL as the Response Management Authority for response operations, and Councils for immediate recovery needs. Cost recovery claims are particularly relevant to commercially provided services/supplies that were authorised due to their critical role in contributing to public safety.
- 3.3.60 All response records are subject to the usual records management provisions and State archiving legislation and are treated accordingly. Logs, reports and briefings are collated and stored for future reference.

## Section 3.4 Recovery.

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### Overview

- 3.4.1 The Tasmanian Emergency Management Plan (TEMP) and State Recovery Plan outlines state-level arrangements for recovery, which apply during and after dam safety emergencies. Regional and Municipal Emergency Management Plans outline regional and municipal arrangements.
- 3.4.2 Generally, recovery following a dam safety emergency will be handled in partnership between the affected parties (e.g. schools, hospitals, businesses) and government (councils, assisted by other Government agencies as required).
- 3.4.3 Individuals and organisations will implement their own specific recovery arrangements. This may include insurance pay-outs depending on policy coverage.
- 3.4.4 Financial relief may be made available to affected parties by the State Government. The Tasmanian Relief and Recovery Arrangements (TRRA), which set out the Tasmanian Government's financial assistance measures to individuals and communities following natural disasters however, dam safety emergencies do not apply. Reference may be made to financial assistance measures listed in the TRRA in this regard, when recommending the Government activate financial relief. This will help provide similar types and levels of assistance to individuals and communities affected by emergencies.
- 3.4.5 See the TEMP and the State Recovery Plan for more detail on the recovery arrangements for all-hazard recovery.

### Current Arrangements

- 3.4.6 The general all-hazard arrangements for recovery are relevant in the dam safety emergency context which generally results in inundation and/or land stability events.
- 3.4.7 Table 12 summarises the specifics of the recovery elements for dam safety emergencies. It is intended to complement (not duplicate) the all-hazard recovery arrangements described in the State Recovery Plan.

**Table 12: Recovery Summary**

| Element                | Likely Consequence  | Supporting Short Term Activity  | Support Agency   |
|------------------------|---|---|--|
| <b>Social:</b>         | <ul style="list-style-type: none"> <li>Displaced people</li> <li>Deaths/injuries</li> <li>Social fragmentation (residents need to 're-home'; school students are re-located; income earners find other work; 'blame' culture emerges)</li> <li>Increased occurrences of mental illnesses e.g. anxiety, depression.</li> </ul> | <ul style="list-style-type: none"> <li>Rapid Impact Assessments</li> <li>Municipal Recovery Coordinator coordinate recovery (with recovery partners, e.g. NGOs, THS)</li> <li>Emergency cash grants/relief</li> <li>Supply assistance</li> <li>Emergency housing</li> </ul> | <ul style="list-style-type: none"> <li>Councils</li> <li>DoH and THS</li> <li>DPAC</li> <li>DPIPWE</li> </ul>  |
| <b>Infrastructure:</b> | <ul style="list-style-type: none"> <li>Inundation and damage to homes, outbuildings, community assets e.g. local school, supply points e.g. shop, service station etc.</li> <li>Asset damage or loss- consider critical assets first e.g. water supply, power supplies and telecommunications, roadways.</li> </ul>           | <ul style="list-style-type: none"> <li>Immediate repairs/rationing</li> <li>Contingency service arrangements implemented</li> <li>Remediation of the compromised dam</li> <li>Insurance assessment and policy activations</li> </ul>  | <ul style="list-style-type: none"> <li>Dam owner</li> <li>Councils</li> <li>DPIPWE</li> <li>State Growth</li> <li>Other infrastructure owners</li> <li>DPAC</li> </ul> |
| <b>Economic:</b>       | <ul style="list-style-type: none"> <li>Lost business and income across multiple industries</li> <li>Loss of confidence in industry</li> <li>Lost stock/pasture/crop</li> <li>Loss of stock feed, fencing</li> </ul>   | <ul style="list-style-type: none"> <li>Business support programs</li> <li>Agricultural relief- animal welfare, fodder supply</li> </ul>   | <ul style="list-style-type: none"> <li>Dam owner</li> <li>Councils</li> <li>State Growth</li> <li>DPIPWE</li> <li>DPAC</li> </ul>                                      |
| <b>Environment:</b>    | <ul style="list-style-type: none"> <li>Public health issues- contaminated water</li> <li>Compromised potable water quality and supply for irrigation</li> <li>Compromised environment for flora and fauna</li> </ul>  | <ul style="list-style-type: none"> <li>Impact assessments (environmental focus)</li> <li>Rehabilitation of local environment</li> </ul>   | <ul style="list-style-type: none"> <li>Dam owner</li> <li>Councils</li> <li>EPA</li> <li>DPIPWE</li> <li>DOH</li> </ul>  |

3.4.8 Financial relief may be made available to affected parties by the State Government. The Tasmanian Relief and Recovery Arrangements (TRRA) set out the Tasmanian Government's financial assistance measures to individuals and communities following major rapid onset natural disasters. Reference may be made to financial assistance measures listed in the TRRA when developing financial assistance for other emergencies. This will help provide similar types and levels of assistance to individuals and communities affected by all emergencies while recognising the different recovery needs of different types of emergencies.

### Short Term Recovery

3.4.9 Short term recovery refers to relief and recovery efforts which occur during an emergency response, and includes the coordination of immediate relief and assistance, impact and needs assessment and early recovery planning. Short term recovery efforts aim to meet the essential needs of affected people, minimise consequences, assess the scale, severity and complexity of recovery needs, and plan for the transition to longer term arrangements.

3.4.10 The scale and circumstances of an emergency will determine the level of recovery response. Smaller events are likely to be appropriately managed within the established arrangements, existing support services and/or support provided through the relevant local community.

3.4.11 In the event of an emergency, recovery services will be activated in accordance with the relevant Municipal Emergency Management Plan or escalated through the activation of the Regional Recovery Committee in accordance with the Regional Emergency Management Plan. The Regional Controller may also seek assistance from the State Controller and State Recovery Advisor (DPAC) as required.

### **Long Term Recovery**

3.4.12 As an emergency response nears completion, recovery activities transition from short term response phase management and relief coordination to long term arrangements appropriate to the anticipated recovery needs.

3.4.13 The State Recovery Advisor (DPAC) is responsible for advising the government on long term recovery arrangements, and works in consultation with the RMA, Regional Controller and/or Municipal Coordinator to assess recovery needs. Recovery needs are considered in relation to the Needs Assessment Framework in the State Recovery Plan and appropriate arrangements recommended for consideration by the government.

### **Public Information:**

3.4.14 Information may be communicated through a range of channels. These include:

- The RMA's website and social media;
- TasALERT website and social media;
- Radio, television and print media; and
- Public meetings, evacuation and recovery centres and outreach visits.



## Section 4 Plan Administration

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### Plan Contact

- 4.1 This plan is maintained by the Water Operations Branch in the Department of Primary Industry, Parks, Water, and Environment. The primary contact is the Manager, Water Operations. Feedback regarding this plan should be made in writing to:
- a Email: [damsafety@dpiuwe.tas.gov.au](mailto:damsafety@dpiuwe.tas.gov.au)
  - b Postal address: PO Box 46, Kings Meadows, Tas, 7249
  - c Ph: (03) 6777 2236

### Review Requirements and Issue History

| Issue No. | Year Approved | Comments/Summary of Main Changes   |
|-----------|---------------|--|
| 1         | 2015          | Issue 1 developed as part of the State Preparedness Project managed by the SES.  |
| 2         | 2016          | Issue 2 is an updated version of Issue 1, as a result of changes to dam safety statutory arrangements coming in to force on 1 <sup>st</sup> January 2016.  |
| 3         | 2018          | Issue 3 is an updated version of Issue 2, resulting from the (2) yearly review.<br><br>Changes incorporated in to Issue 3 are from learnings obtained from dam safety exercises, and further clarity with roles and terminology. |

### Distribution List

- 4.2 This plan is made available on WebEOC and the DPIUWE website [www.dpiuwe.tas.gov.au/water/dams/dam-safety](http://www.dpiuwe.tas.gov.au/water/dams/dam-safety). Courtesy copies are provided by DPIUWE as follows:

| Organisation               | Position  |
|----------------------------|---|
| <b>State:</b>              | Members REMCs (North-West, North, South) and Regional Recovery Committees<br>Chair and Executive Officer of SEMC (TAS POL and SES)<br>SES Senior Planning and Education Officer<br>LGAT |
| <b>DPIUWE:</b>             | Executive Committee members<br>Water Operations Officers  |
| <b>Other Organisations</b> | Hydro Tasmania<br>TasWater<br>Tasmanian Irrigation Pty Ltd  |

## **Consultation for this Issue**

- 4.3 TasWater provided comments on Issue 2, following a dam safety exercise undertaken by TasWater in 2018.
- 4.4 Hydro Tasmania, Tasmanian Irrigation Pty Ltd, TAS POL and Members of SEMC provided comments during the drafting of Issue 3.

## **Communications Plan Summary**

- 4.5 Once the plan is approved it will be issued and communicated as follows:
  - a electronic copies sent to all listed on the Distribution List
  - b noted by the Regional Emergency Management Committees
  - c noted by the Municipal Emergency Management Committees

## **Validation of this Plan**

- 4.6 Arrangements within this plan will be validated within the two year review cycle by:
  - a conducting and participating with selected stakeholders, exercises designed to test key components of the plan
  - b participating, where able, in other regional, State and national exercises (e.g. Hydro Tasmania, TasWater, Tasmanian Irrigation Pty Ltd sponsored exercise)
  - c reviewing the plan's effectiveness in responding to a dam safety emergency during the period prior to next planned review.

## Section 5 Appendices

This plan summarises the emergency management arrangements in relation to dam safety emergencies. Other documentation relating to this plan includes:

### Legislation

|              | Title   | Agency |
|--------------|---|--------|
| <b>State</b> | <i>Emergency Management Act 2006</i>                      | SES    |
|              | <i>Water Management Act 1999</i>                          | DPIPWE |
|              | <i>Water Management (Safety of Dams) Regulations 2015</i> | DPIPWE |

### Plans/Agreements

|                 | Title  | Custodian   |
|-----------------|--|---|
| <b>State</b>    | Tasmanian Emergency Management Plan                                      | SES   |
|                 | State Recovery Plan  | DPAC  |
|                 | State Special Plan for Floods  | SES   |
|                 | State Special Emergency Management Plan for Impact and Damage Assessment | DPAC  |
|                 | Protocol for Dam Safety Emergency Response (May 2018)                    | DPIPWE<br>Water Operations Branch                         |
| <b>Regional</b> | Regional Emergency Management Plans (North-West, Northern, Southern)     | Executive Officer Regional Emergency Management Committee |
|                 | Municipal Emergency Management Plans                                     | Municipal Emergency Management Coordinators               |
| <b>Other</b>    | Dam Safety Emergency Plans - various                                     | Dam owners/managers                                       |

### Other Related and Associated Documents

|                 | Title   | Enquiries  |
|-----------------|---|--|
| <b>National</b> | ANCOLD (2000) Guidelines on Selection of Acceptable Flood Capacity for Dams                     | <a href="http://www.ancold.org.au">www.ancold.org.au</a> |
|                 | ANCOLD (2003) Guidelines on Dam Safety Management   | <a href="http://www.ancold.org.au">www.ancold.org.au</a> |
|                 | ANCOLD (2012) Guidelines on the Consequence Categories for Dams                                 | <a href="http://www.ancold.org.au">www.ancold.org.au</a> |
|                 | Emergency Management Planning for Floods Affected by Dams (Australian Emergency Manuals Series) | <a href="http://www.ema.gov.au">www.ema.gov.au</a>       |
|                 | Flood Response (Australian Emergency Manuals Series)  | <a href="http://www.ema.gov.au">www.ema.gov.au</a>       |
| <b>State</b>    | Guidelines for Dam Safety Emergency Plans November 2018   | DPIPWE Water Operations Branch                           |
|                 | Guidelines for Comprehensive Surveillance Reports November 2018                                 | DPIPWE Water Operations Branch                           |