Dam Safety Surveillance

Templates for very low, low consequence category dams

Department of Environment, Land, Water & Planning

State Government Victoria

ISBN 978-1-74146-166-4(pdf)

Accessibility

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Purpose

The purpose of the document is to assist small dam owners with very low, low or significant consequence category dams to have a simple to use Dam Safety Surveillance Plan to monitor and evaluate the performance of their dam.

Dam surveillance safety goal and key requirements

Generally very low, low or significant consequence category dams are, by definition, those dams where there is no potential for one or more lives being lost, should they fail. Refer to Australian National Committee on Large Dams (ANCOLD) Guidelines for more information.

The Department of Environment Land Water and Planning (DELWP) has also developed a “Consequence Screening Tool for Small Dams” to assist dam owners to perform an initial level assessment using information which can be readily obtained. This document can be accessed on the DELWP website.

http://www.depi.vic.gov.au/__data/assets/pdf_file/0020/198110/Consequence-Screening-Tool-for-Small-Dams.pdf

The objective of this plan is to avoid failure of the dam by giving early warning of any potential issues that may impact on the performance of this asset.

Dam safety surveillance plan update

This document needs to be updated following any significant changes to the dam and its associated structures or if required by the licensing authority.

Dam safety surveillance plan review

The plan is to be reviewed as per the licence requirements.

If there is significant development downstream of the dam during the licence period, this can impact the consequence category. It will be the responsibility of the dam owner to ensure that consequence assessment is completed on the dam in this case.

If the dam’s consequence category increases to either Extreme, High A, B or C, the surveillance plan will have to be prepared by a suitably qualified engineer.

Frequency of inspections

The following frequency of inspections should be completed for very low, low and significant hazard category dams.

Significant Category

For this category dam, a comprehensive inspection should be completed on first filling and then at five-yearly intervals.

Intermediate inspections should be carried out at annual to two-yearly intervals.

Routine visual inspection should be completed from twice weekly to weekly intervals and special inspections should be completed as required.

Low and Very Low Category

For these category dams, intermediate inspections should be completed on first filling and then at five-yearly intervals.

Routine visual inspections should be completed at monthly intervals and special inspections should be completed as required.

The template attached in Appendix 2 can be used as a minimum to complete the intermediate inspection. The results of the inspection can be recorded in this template and submitted to the relevant licensing authority.

A template that can be used for completing routine visual inspection is included in Appendix 3.

Specialist dam expertise

According to ANCOLD guidelines, comprehensive and intermediate inspections should be performed by a suitably qualified engineer. Visual inspections can be done by the dam owner. If either of these inspections reveals a safety deficiency or potential failure of the dam, the dam owner needs to seek advice from a suitably qualified engineer to rectify the identified issues.

Special inspections should be performed by a suitably qualified engineer following an earthquake, heavy floods, rapid drawdown, or an emergency situation and may require examination of a particular feature of a dam.

Notification to the licensing authority amend the licence

If it is identified that remedial work is required, the dam owner needs to advise the licensing authority of the proposed works as per the licence requirements.

Surveillance information

The dam owner needs to record and maintain information from both visual inspections and the intermediate inspections. Surveillance information from intermediate inspections needs to be forwarded to the licensing authority as per the licence requirements.

Relevant documentation

For additional guidance, the “Your Dam Your Responsibility “document provides guidance on managing the safety of farm dams.

Appendix 1

Dam details

Dam name :	
Dam owner :	
Owner address:	
Dam location address:	
Nearest town :	
Grid reference:	E: _ _ _ _ _ N: _ _ _ _ _ _

Maximum dam storage capacity (megalitres):	
Wall height (metres):	
Wall length (metres):	
Crest width (metres):	
Type of dam (tick box):	**Earthen** □ **Concrete** □ **Other** □
Provide description if 'other':	
***ANCOLD consequence category (tick box):**	**V low** □ **Low** □ **Significant** □ **Assessment Date:**

* The owner will need to verify the Australian National Committee on Large Dams (ANCOLD) Guidelines consequence category through a suitably qualified engineer. Department of Environment Land Water and Planning has also developed a "Consequence Screening Tool for Small Dams" to assist to perform an initial level assessment

Appendix 2

Intermediate Dam Safety Inspection
Template for very low, low and significant consequence category dams

Owner: ---------- Dam Name: ----------	Licence Number: ---------- Date: ---------- Dam location: E: _ _ _ _ _ N: _ _ _ _ _
Water level Full Supply Level(if known) Overflowing	---------- metres (dam level from top) ---------- metres ☐ Yes ☐ No
Dam crest Depressions, cracks/changes Deformation of crest (uniformity, protection, vegetation, sink holes, stock damage, low spots, cracking)	☐ Yes ☐ No ☐ Yes ☐ No Details:
General condition of **Upstream face of dam wall:** (Deformation, slumps, changes Uniformity, protection, vegetation, erosion, bulges, depressions)	Details:
General condition of **Downstream face of dam wall :** Unusual / changed features or signs of instability (erosion, rabbit , wombat or yabby activity, tree growth, wetness, stock damage, evidence of movement, subsidence or new seepage)	☐ Yes ☐ No Details:
Spillway Obstructions/ damage Stability /erosion (condition of crest, chute and floor protection)	☐ Yes ☐ No ☐ Yes ☐ No Details:

Seepage Obstructions or damage to seepage weirs Readings (extent of area, characteristics of the area – soft, boggy, firm etc., spring activity or boils, piping and tunnel erosion)	☐ Yes ☐ No Depth of flow Turbidity details V1---------- m ---------- l/sec yes/no V2---------- m ---------- l/sec yes/no Details:
Drains	
Location and extent of any obstructions to flow	
Inlet / outlet (changes in vegetation, outlet pipe and valve condition, operation, leakage, downstream erosion, gate valve operation, condition and leakage)	Details:
Downstream environment Distance to nearest house or other significant infrastructure	
Other Observations	
Dam safety comments	
Provide details regarding any measures if any necessary to make the dam safe (include photographs)	
Date remediation works to be completed:	
Report Prepared by:	

Appendix 3

Routine visual inspection checklist

1. Crest of dam

Any cracks, either transverse or longitudinal?	No. . . . Yes
Any sinkholes or areas of unusual settlement?	No. . . . Yes
Any vegetation present?	No. . . . Yes

2. Downstream slope of dam

Any new seepage areas or wet areas?	No. . . . Yes
Any changes in conditions at existing seepage areas or wet areas?	No. . . . Yes
Any materials being transported by seepage flows at existing or new areas (such as discoloured seepage water or sediment deposits)?	No. . . . Yes
Any scraps, sinkholes, sloughs, slides or areas of unusual settlement?	No. . . . Yes

3. Upstream slope of dam

Any significant erosion due to wave action?	No. . . . Yes
Any sinkholes, sloughs, slides or areas of unusual settlement?	No. . . . Yes
Any whirlpools in the reservoir?	No. . . . Yes

4. Downstream toe area, abutments and other areas downstream

Any new seepage areas or wet areas?	No. . . . Yes
Any changes in condition at existing seepage areas or wet areas?	No. . . . Yes
Any cracks, sinkholes, sloughs or areas unusual settlement?	No. . . . Yes
Any new seepage areas along the banks of the river channel?	No. . . . Yes
Any new sediment deposits along the banks of the river channel?	No. . . . Yes

5. Outlet works

Any new or enlarged cracks or spalls in the concrete?	No. . . . Yes
Any unusual deformations or displacements?	No. . . . Yes
Any unusual flow pattern or conditions during releases?	No. . . . Yes
Any new seepage into the outlet works conduit?	No. . . . Yes

6. Spillway

Any new or enlarged cracks or spalls in the concrete?	No. . . . Yes
Any unusual deformations or displacements?	No . . . .Yes

7. Additional information (please describe any details changes noted since the last inspection)

If the answer to any of the above questions above is yes, the dam owner must consult a suitably qualified engineer for advice.

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