WHS DOCUMENTS & TEMPLATES

DOC-TSF-CCV · Tailings and Water Storage Failure Critical Control Verification Pack

Product Overview

For: Mines, quarries and processing plants: WHS advisers, tailings and dam engineers, facility operators, environmental advisers and control owners

Version 1.0 · 15 November 2026

Field-ready Critical Control Verification forms for tailings and water storage failure: one for each of the 9 critical controls that stop a sudden release of tailings or water from a storage facility, or limit the harm when it happens, with the bowtie, a verification schedule and a short guide.

Most workplaces have controls for tailings and water storage failure: engineer-approved raises, freeboard kept, decant and spillway capacity, piezometers and survey monitoring, inspections and an emergency action plan. The question is whether they are working today. A critical control verification (CCV) is the proof: a planned check, in the field, that a control that matters most is in place, in good condition, working as designed, used properly and not bypassed.

This pack gives you one CCV form for each of 9 critical controls (6 preventing, 1 preventing and mitigating, 2 mitigating) for the unwanted event: uncontrolled release from a tailings storage facility or water storage dam. Each form shows where the control sits on the bowtie, what it must achieve, how it fails, and a checklist scored Pass, Fail or Non-conformance. Physical controls are Pass or Fail only; Non-conformance is kept for administrative items such as records and training dates. A Fail stops the work and is escalated as a high potential incident. The last page of each form has prompts for talking to the operators, workers and supervisors who use the control.

The full bowtie shows every control on one page, the schedule sets who verifies each one and how often, and the guide explains the method. Every form is editable, so you can adapt it to your site. Made by Orana Skills Centre.

SAMPLE

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How to Use These CCVs

Tailings and Water Storage Failure Critical Control Verification Pack

What a critical control verification is

The key word here is proof. Not assumption, not guesswork. A critical control verification (CCV) is a planned check, in the field, that one critical control is doing its job. It checks that the control:

- Exist
- Are in place and in good condition
- Are functioning as designed
- Are being used properly
- Are not being bypassed or failing silently

Each CCV form tests one control against its performance requirements, item by item, grouped by those five checks and then the records. It is not a general inspection, an audit, or a maintenance check: keep those, and use the CCVs alongside them for the few controls that matter most.

The bowtie and the critical controls in this pack

Hazard: Tailings or water held behind a storage embankment. Unwanted event: Uncontrolled release from a tailings storage facility or water storage dam. Tailings storage facilities and water storage dams at mines, quarries and processing plants, including process water ponds, return water dams and sediment and stormwater dams large enough to cause harm if they fail. Your site's dam safety management system, operations manual, principal hazard management plan and trigger action response plans come first: use these forms to verify the controls they set.

CCV	Critical control	Type	Sits on	At your site
CCV-01	Every raise and change designed and approved by the engineer of record	Preventing	T1	Use at every site where the threat or consequence is present.
CCV-02	Embankment built to the design under construction quality control	Preventing	T5	Use while a raise, buttress or repair is being built.
CCV-03	Freeboard and the water balance kept within limits	Preventing	T2	Use at every site where the threat or consequence is present.
CCV-04	Decant and spillway kept clear and working to design capacity	Preventing	T3	Use the parts that apply: decant on tailings facilities with one, spillway where the facility has one.
CCV-05	Piezometer, survey and seepage monitoring with trigger levels acted on	Preventing and mitigating	T4 (preventing); C1 (mitigating)	Works on both sides: on T4 the trigger response deals with the weakness before it fails; on C1 the emergency levels clear people from the flow path. Use the instruments and triggers your engineer sets.
CCV-06	Routine surveillance inspections by trained operators	Preventing	T4, T6	Use at every site where the threat or consequence is present.
CCV-07	Engineer inspections and periodic dam safety reviews done and acted on	Preventing	T1, T6	Use at every site where the threat or consequence is present.
CCV-08	Emergency action plan with downstream warning and evacuation	Mitigating	C1, C2	Use at every site where the threat or consequence is present.

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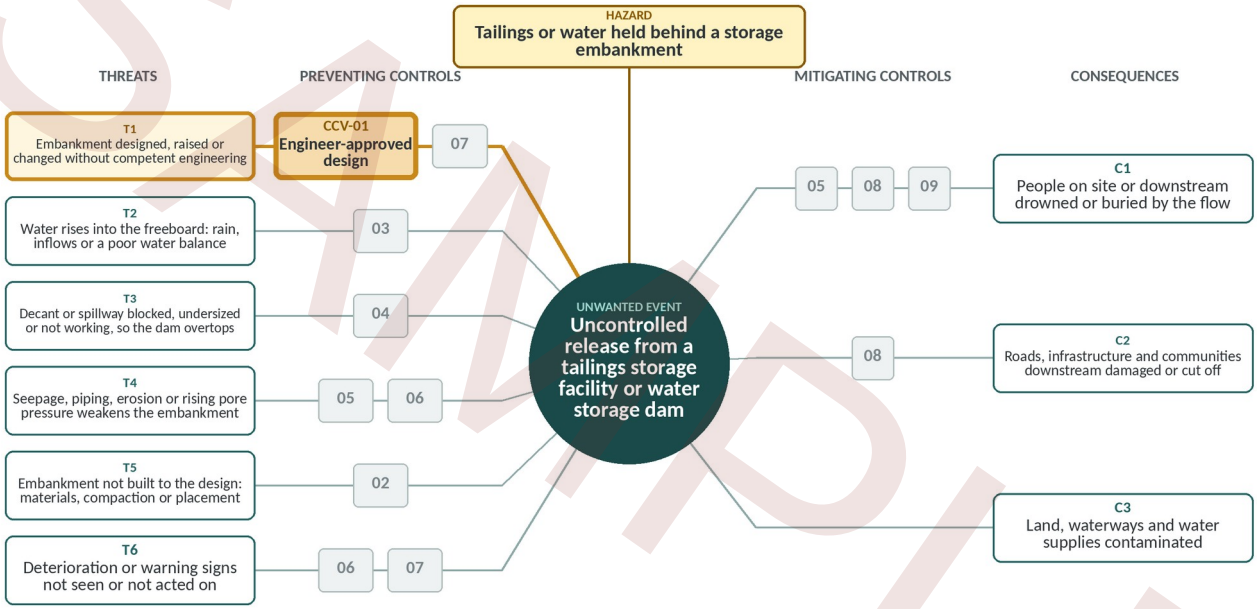
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CCV-01 Every raise and change designed and approved by the engineer of record

Critical Control Verification · Preventing control · Tailings and water storage failure

Site or location		**Plant or area verified**	
Date and time		**Shift**	
Verified by (name and role)		**Control owner**	

1 Where this control sits on the bowtie



Amber: this control, CCV-01, on threat line T1. Grey numbers: the other critical controls in this pack. Preventing controls sit left of the unwanted event and stop it happening; mitigating controls sit right of it and limit the harm.

2 The control

Control	Every raise and change designed and approved by the engineer of record
Type	Preventing: it stops the unwanted event happening.
It sits on	Threat T1: Embankment designed, raised or changed without competent engineering
Hierarchy of control	Engineering and Administrative
Objective	Make sure the facility, every raise and every change to its operation or construction is designed by competent engineers, approved by the engineer of record before work starts, and managed through the dam safety management system.
Why it is critical	Tailings and water dams have failed when they were raised, steepened, loaded or operated in ways their design never allowed for. The engineer's design and approval, used before every change, is what keeps the embankment within what it was designed to hold.

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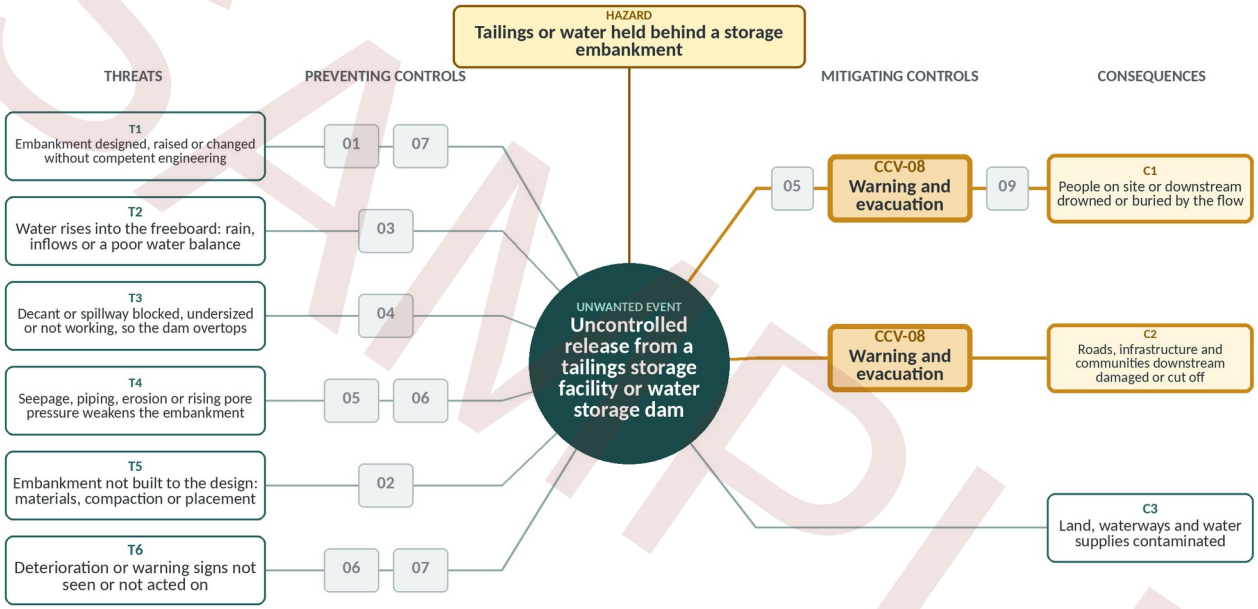
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CCV-08 Emergency action plan with downstream warning and evacuation

Critical Control Verification · Mitigating control · Tailings and water storage failure

Site or location		**Plant or area verified**	
Date and time		**Shift**	
Verified by (name and role)		**Control owner**	

1 Where this control sits on the bowtie



Amber: this control, CCV-08, on consequence lines C1 and C2. Grey numbers: the other critical controls in this pack. Preventing controls sit left of the unwanted event and stop it happening; mitigating controls sit right of it and limit the harm.

2 The control

Control	Emergency action plan with downstream warning and evacuation
Type	Mitigating: it limits the harm once the unwanted event has happened.
It sits on	Consequence C1: People on site or downstream drowned or buried by the flow; consequence C2: Roads, infrastructure and communities downstream damaged or cut off
Hierarchy of control	Administrative and Engineering
Objective	If the facility starts to fail, or an emergency trigger is reached, carry out the emergency action plan: warn everyone in **[Inundation area]** on site and downstream, evacuate them to high ground, and alert emergency services and the authorities.
Why it is critical	A tailings or dam failure can reach people downstream within minutes. People survive by being warned quickly and knowing where to go, which is only possible if the warning works and the plan has been practised with the people and services downstream.

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END OF THE FREE SAMPLE

This sample shows a few pages, so you can judge the layout and the quality. Field-ready Critical Control Verification forms for tailings and water storage failure: one for each of the 9 critical controls that stop a sudden release of tailings or water from a storage facility, or limit the harm when it happens, with the bowtie, a verification schedule and a short guide.

What the full product contains

- **9 Critical Control Verification forms, one per critical control (6 preventing, 1 preventing and mitigating, 2 mitigating): each with its bowtie, objective, performance requirements, failure modes, a Pass / Fail / Non-conformance checklist, the overall result, actions, a page of prompts for talking to the people who use the control, and sign-off**
  03_CCV_FORMS/ (Word and PDF)
- **The critical controls: CCV-01 Engineer-approved design (preventing); CCV-02 Built to design (QC) (preventing); CCV-03 Freeboard kept (preventing); CCV-04 Decant and spillway (preventing); CCV-05 Monitoring and triggers (preventing and mitigating); CCV-06 Routine inspections (preventing); CCV-07 Engineer reviews (preventing); CCV-08 Warning and evacuation (mitigating); CCV-09 Flow path exclusion (mitigating)**
  03_CCV_FORMS/CCV-01 to CCV-09
- **The full bowtie for tailings and water storage failure on one page: every threat, consequence and critical control**
  02_BOWTIE/Tailings and Water Storage Failure Bowtie.docx and .pdf
- **The CCV schedule: who verifies each control, how often by exposure, the method and the record**
  04_CCV_SCHEDULE/CCV Schedule.docx and .pdf
- **The CCV schedule workbook: suggested frequency by exposure, next due dates and status by formula, dropdowns, no macros**
  04_CCV_SCHEDULE/CCV Schedule.xlsx
- **How to use these CCVs: the method, scoring, the response to a Fail or Non-conformance, frequency, and adapting the set to your site**
  01_START_HERE/How to Use These CCVs.docx and .pdf
- **Read Me First, Product Overview, Permitted Use Terms and Version Information**
  01_START_HERE/ (PDF)

Formats

- Word (.docx), editable, with your logo and business name in the header
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