WHS DOCUMENTS & TEMPLATES

DOC-GFR-CCV · Ground Failure and Rockfall Critical Control Verification Pack

Product Overview

For: Mines and quarries: WHS advisers, geotechnical engineers, mining engineers, shift supervisors, quarry managers and control owners

Version 1.0 · 15 November 2026

SAMPLE

Field-ready Critical Control Verification forms for ground failure and rockfall: one for each of the 10 critical controls that stop a fall of ground or rock onto people or equipment, or limit the harm when it happens, with the bowtie, a verification schedule and a short guide.

Most workplaces have controls for ground failure and rockfall: rock bolts, mesh and shotcrete, scaling, barricades at unsupported ground, slope monitoring and catch berms. 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 10 critical controls (6 preventing, 1 preventing and mitigating, 3 mitigating) for the unwanted event: uncontrolled fall of ground or rock onto or near people or equipment. 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.

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How to Use These CCVs

Ground Failure and Rockfall 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: Rock and ground in underground workings, open cut pit walls, benches, highwalls and quarry faces. Unwanted event: Uncontrolled fall of ground or rock onto or near people or equipment. Underground mines, open cut mines and quarries: development headings, drives, stopes and intersections, pit walls, benches, highwalls and quarry faces, wherever people or equipment work under or beside ground that could fail. Your site's ground control management plan, 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	Ground support installed to the standard before people work under it	Preventing	T2	Mainly underground. In open cut and quarries, use it where walls are supported with bolts, mesh or shotcrete.
CCV-02	Ground support tested to the testing programme and failures acted on	Preventing	T2	Mainly underground, or wherever walls are supported. Set the tests and criteria with your geotechnical engineer.
CCV-03	Excavation kept within the geotechnical design	Preventing	T1	Use at every site where the threat or consequence is present.
CCV-04	Loose rock scaled down before people or plant work under it	Preventing	T3	Use at every site where the threat or consequence is present.
CCV-05	Barricading and exclusion from unsupported or unstable ground	Preventing	T4	Use at every site where the threat or consequence is present.
CCV-06	Ground monitoring with trigger action response plans acted on	Preventing and mitigating	T5 (preventing); C1, C2 (mitigating)	Works on both sides: on T5 the trigger response stops the work that drives the movement; on C1 and C2 clearing the area limits who is hurt if the ground fails. Use the instruments and triggers your engineer sets.
CCV-07	Ground inspected after firing, rain or a seismic event before re-entry	Preventing	T6	Use at every site where the threat or consequence is present.
CCV-08	Falling object protection on plant working under walls or backs	Mitigating	C2	Use where plant works under walls, faces or backs.

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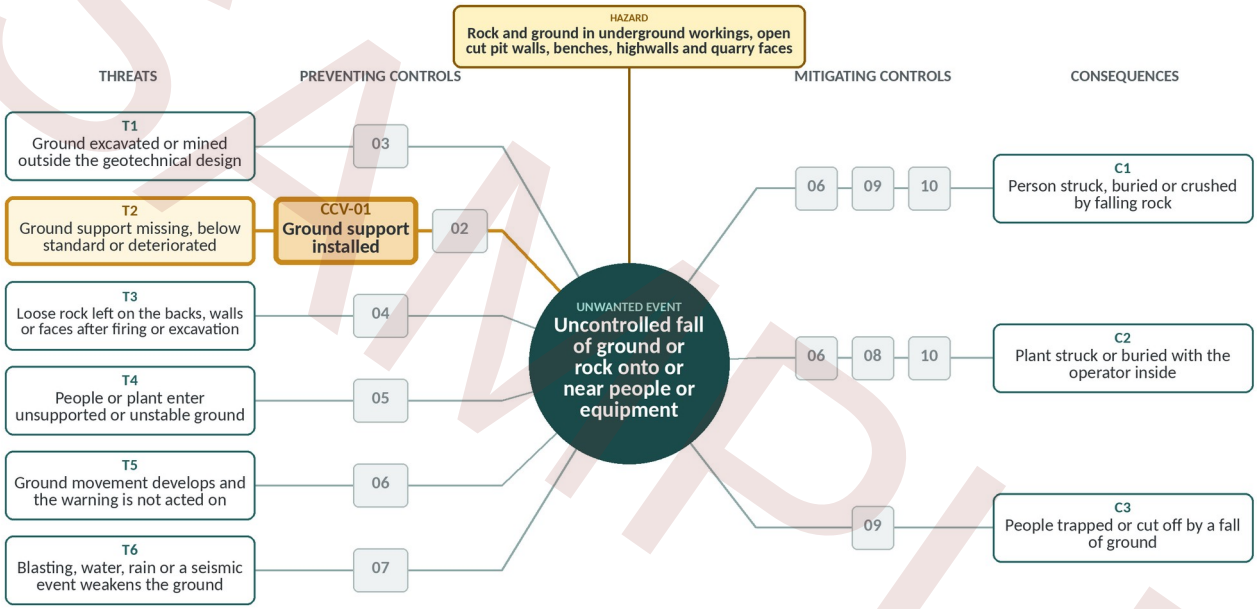
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CCV-01 Ground support installed to the standard before people work under it

Critical Control Verification · Preventing control · Ground failure and rockfall

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 T2. 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	Ground support installed to the standard before people work under it
Type	Preventing: it stops the unwanted event happening.
It sits on	Threat T2: Ground support missing, below standard or deteriorated
Hierarchy of control	Engineering
Objective	Hold the ground in place with rock bolts, cable bolts, mesh, shotcrete or other support installed to **[Ground support standard]**, in the right pattern and sequence, before anyone works under or beside it.
Why it is critical	Most falls of ground underground come from ground that was unsupported, under supported, or supported out of sequence. A single loose block from the backs can kill. The support installed on the ground, not the design on paper, is what holds it.

3 Performance requirements

What the control must achieve. The checklist in part 5 tests each one.

No.	The control must meet this requirement
R1	Every excavation people enter has ground support of the type, length and pattern **[Ground support standard]** sets for that ground.

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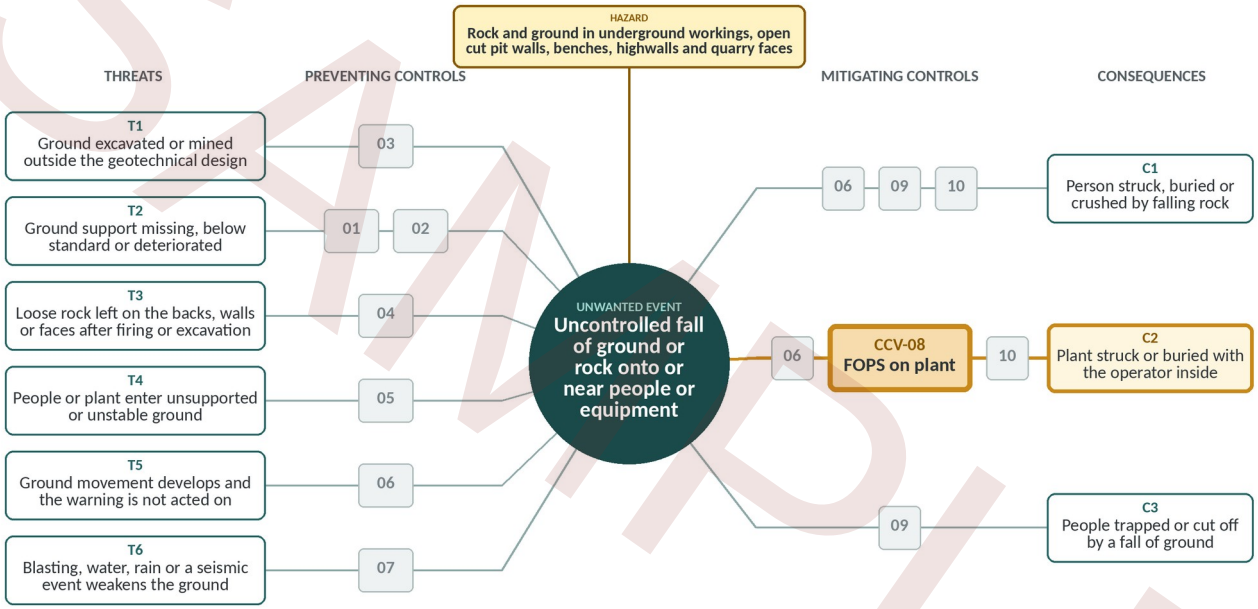
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CCV-08 Falling object protection on plant working under walls or backs

Critical Control Verification · Mitigating control · Ground failure and rockfall

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 line 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	Falling object protection on plant working under walls or backs
Type	Mitigating: it limits the harm once the unwanted event has happened.
It sits on	Consequence C2: Plant struck or buried with the operator inside
Hierarchy of control	Engineering
Objective	Protect operators of plant working under walls, faces or backs with a falling object protective structure (FOPS) or protective cab rated for the hazard, kept in good condition and not modified, so that a rockfall onto the plant does not crush the operator.
Why it is critical	When rock falls onto plant, the cab structure is all that stands between the rock and the operator. An unrated, damaged or modified structure can collapse.

3 Performance requirements

What the control must achieve. The checklist in part 5 tests each one.

No.	The control must meet this requirement
R1	Plant working under walls, faces or backs has a FOPS or protective cab rated for the hazard, as the risk assessment requires.

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Ground Failure and Rockfall Critical Control Verification Pack

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 ground failure and rockfall: one for each of the 10 critical controls that stop a fall of ground or rock onto people or equipment, or limit the harm when it happens, with the bowtie, a verification schedule and a short guide.

What the full product contains

- **10 Critical Control Verification forms, one per critical control (6 preventing, 1 preventing and mitigating, 3 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 Ground support installed (preventing); CCV-02 Ground support tested (preventing); CCV-03 Mined to the design (preventing); CCV-04 Scaling done (preventing); CCV-05 Exclusion from bad ground (preventing); CCV-06 Monitoring and TARPs (preventing and mitigating); CCV-07 Inspected before re-entry (preventing); CCV-08 FOPS on plant (mitigating); CCV-09 Rescue and refuge ready (mitigating); CCV-10 Berms and windrows (mitigating)**
  03_CCV_FORMS/CCV-01 to CCV-10
- **The full bowtie for ground failure and rockfall on one page: every threat, consequence and critical control**
  02_BOWTIE/Ground Failure and Rockfall 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
- Excel (.xlsx), editable, with dropdowns and formulas (no macros)
- PDF copies of the Word documents, for printing blank
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