Submission to WorkSafe

MinEx
THE NATIONAL HEALTH & SAFETY COUNCIL FOR THE NEW ZEALAND MINING AND QUARRY SECTOR

Draft Ground or Strata Instability Code

30 October 2015

SUBMISSION OF

THE NEW ZEALAND MINING INDUSTRY

SAFETY COUNCIL (MinEx)

TO WORKSAFE

ON

Draft Ground or Strata Instability Code

30 March 2016

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Organisation: MinEx
Position: CEO

Introduction

MinEx[1] welcomes the opportunity to submit on the *Draft Ground or Strata Instability Code.* We note the submission deadline of 24 March and we thank you for the extension to 1 April 2016.

MinEx sought advice from its full membership which is attached as Appendix I. Submissions were received from OceanaGold and Bathurst and we understand that the OceanaGold submission was submitted direct to WorkSafe by the due date. The Bathurst submission is attached as Appendices II.

Submission

Introduction

We have attached to this submission the submission of Bathurst Resources and we support the comments made in this submission.

We have also been supplied a copy of the OceanaGold submission and we support all aspects of that submission subject to some comments we have made below.

We rely on the detail of these two submissions and will focus our attention on matters of principal.

We have consulted with Civil Construction NZ and they have advised that they have no major concerns about the code as it stands and have included some minor issues they raise here.

Scope and format of the document

The code is intended to apply to:

- Underground coal mines;
- Underground metalliferous mines; and,
- Tunnels.

In the first two codes issued by WorkSafe in February 2014 (Fire & Explosion and Ventilation), a style was adopted via colour coding into:

- Regulations;
- ACOP;
- Guidance;
- General application to all sectors
- Coal sector only;
- Metal sector only; and,
- Tunnel sector only.

The industry review group, and indeed the Chief Inspector, argued that this made the code easier for the various sectors to interpret and clearly understand what sections applied to their particular sector. It also led to separating out sector specific sections of the code where this was appropriate.

We are disappointed that the Standards and Guidance group responsible for writing the code have ignored industry advice on the style and structure of the code. The code is there to assist industry operators comply with the legislation and most agreed that the style and format of the first 2 codes made them clear and easy to determine what applied to the sector you worked in.

[1] MinEx is the national Health & Safety Council for the New Zealand quarry and mining industry. Its main purpose is to help industry to improve its health and safety performance, and to provide centralised industry representation on matters relating to health and safety.

We note that the current code does have some sections headed as applying to specific sectors. If the industry advice is not going to be taken up then we strongly recommend that where approaches differ sector to sector these are separated out under different headings per sector.

Underground coal mine environments are very different to underground metalliferous mine environments. Each requires a different approach to ground control. Modern tunnels often bear no resemblance to the openings in metalliferous mines. Accordingly, we support the specific comments made by Bathurst and OceanaGold relating to the inappropriate application of some sectors of the code to all 3 underground sections.

Inclusion of guidance within an ACOP

We are aware that the first 2 ACOPs produced for the Extractives industry included guidance material and that this was clearly indicated in the code as being guidance. With the review of the Ground Control code, which also contains guidance, an issue with the structure has occurred to us that we missed in the first 2 codes. If the guidance included is incorrect or becomes superseded then it is difficult to change in an ACOP.

Does WorkSafe have any process of quickly amending any guidance material contained in an ACOP? For example could it issue a Fact Sheet to amend guidance? From an industry perspective we have not been too concerned about guidance contained in an ACOP as we understood it was not mandatory but if it cannot be amended quickly, if it needs to be, then we see this as a problem.

We would also like to understand the legal position with respect to inclusion of guidance within an ACOP. One concern is that it may well give the guidance the status of ACOP and we need to understand this if future codes are going to continue with this approach.

The draft code contains examples of guidance that are not indicated in the document as being guidance and the Bathurst submission deals with this issue.

Prescriptive nature of the code

In places the code is quite prescriptive, and we accept that where specific regulations so require, this is appropriate.

Some of the problems we see around the application of parts of the code to all 3 sectors would be overcome by amending the language used in the code to allow the application of risk assessment and management processes to determine how particular issues might be approached.

Section 4.1.3 is a good example of this and OceanaGold has submitted on this clause. We note that the regulation quoted in 4.1.3 is incorrect and should be 73(3). Bathurst has also submitted some detail on this issue.

General comment

The document has been put together from a number of sources and this often shows in the language used and the general style of the narrative. We support OceanaGold's and Bathurst's views that the document needs review and subsequent polishing by expert underground geotechnical engineers familiar with the 3 underground sectors. This would also serve to remove some of the technical errors in the document.

OceanaGold submission

Under section 4.1, OceanaGold have submitted that the term "practicable" requires definition. We note that the term "reasonably practicable" is defined in the act at section 22 and we submit that this is sufficient.

Under section 4.1.3 the comment is made that more guidelines are required on inrush control methods in this code. We understand that WorkSafe are planning to introduce a code on Inundation and Inrush and that this code will contain the detail suggested.

We note OceanaGold's comment under section 6.9 concerning the definition of a shaft but a shaft is defined under the regulations so that horse has bolted.

Civil Construction NZ (CCNZ) submission

The seismic design section needs more clarification on how the building codes apply to underground construction.

Table 1 states temporary support may not form part of the permanent support. CCNZ disagree with this. Many places are going away from traditional sets and timber lagging, but there is still a place for it. The key is that the design for the temporary support allows for the usable life of the timber and how the permanent design builds around the timber without being compromised.

L McCracken
CEO MinEx
1 April 2016

Appendix I - MinEx membership list

A B Lime
Atlas Quarries Ltd
Bellingham Quarries Ltd
Blackhead Quarries Ltd
Byfords Construction Co Ltd
Christchurch Ready Mix Concrete Ltd
Downer NZ
Fulton Hogan Ltd
Green Vision Recycling Ltd
H G Leach & Co Ltd
Higgins Aggregates Ltd
Higgins Contractors Wairarapa
Holcim (New Zealand) Ltd
Horokiwi Quarries Ltd
Huntly Quarries Ltd
Ihumatao Quarries Ltd
Industrial Processors Ltd
Inframax Construction Ltd
Isaac Construction Co Ltd
J Swap Contractors Ltd
K B Contracting & Quarries Ltd
Lake Road Quarries
Materials Processing Ltd
Maungaraki Lime Ltd
McCallum Bros Ltd
McGregor Concrete Ltd
Mike Edridge Contracting Ltd
Monovale Sand Quarry Ltd
NZ Steel
Oamaru Shingle Supplies Ltd
Origin Quarries Ltd
Palmer Resources Ltd
Perry Resources (2008) Ltd
Porritt Sand
Prenters Aggregates Ltd
Quality Roading & Services (Wairoa) Ltd
Rangitikei Aggregates Ltd
Ravensdown Fertiliser Co-op
River Run Products Ltd
Road Metals Co Ltd
Rock Products Ltd
S C & G A Levet Contracting & Silverhill Quarry
Sibelco NZ Ltd
Southern Aggregates Ltd
Southern Screenworks Ltd
Stevenson Resources Ltd
Taueru Lime Ltd
Taupo Scoria Ltd
Taylor's Contracting Co Ltd
The Roading Company Ltd
Vickers Quarries Ltd
Waiotahi Contractors Ltd
Wharehine Ltd
Winstone Aggregates

Doug Hood
Bathurst Resources
Kaipara Excavators
Milburn Lime
Inframax Construction
Stevensons
Oceana Gold
Delta Electrical

Solid Energy NZ
Kai Point Coal
Taylor Coal
Glencoal
Birchfield

Appendix II – Bathurst submission

WORKSAFE NEW ZEALAND | MAHI HAUMARU AOTEAROA

Submission form

Responses close:
5pm on Thursday, 24 March 2016

Send by post to:
Consultation on Extractives: Ground or Strata Instability – Draft code of practice
WorkSafe New Zealand
PO Box 165
WELLINGTON 6140
Attention: Guidance and Standards team

OR email to:
guidanceandstandards@worksafe.govt.nz

Please insert **Consultation on Extractives: Ground or Strata Instability - Draft code of practice** in the subject line.

SUBMISSION FOR EXTRACTIVES: GROUND OR STRATA INSTABILITY Code OF PRACTICE

Please use this submission form to record your feedback.

If you are mailing your submission please add your contact details in the space provided. If you are emailing this document, please add an email signature or similar with your contact information.

Thank you for your time and effort to help us with this guidance.

Name/s:	Fiona Bartier, Terry Moynihan, Richard Tacon
Position (if on behalf of an organisation):	General Manager Health Safety Environment & Community Senior Mining Engineer (contract) Chief Executive Officer
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☐ I wish to keep my contact details confidential

WorkSafe New Zealand will manage any personal information you supply in accordance with the Privacy

Act 1993. If your response is made publicly available, your contact details will be removed only if you have indicated this as your preference in the tick box above.
WorkSafe New Zealand may post your response on its website at www.worksafe.govt.nz. We may make your response available if answering a request under the Official Information Act 1982.

Does the draft Code of Practice give you clear information about WorkSafe's expectations regarding ground or strata instability at your operation and the HSWA and Regulations?

Comments (or other suggestions):

No, the draft aCoP is a combination of code of practice material with guidance material interspersed in an ad-hoc fashion. Some sections have clearly delineated what is considered as guidance, other sections have guidance material presented as aCoP.

Furthermore, underground coal mine metalliferous and tunnels specific aCoP sections are not always clearly defined.

There will be difficulties for the HHU mines inspectorate to administer the aCoP. There will be situations where the inspectorate will be attempting to apply coal based requirements (CoP, Guidance) into metalliferous or tunnel operations.

Some sections are ambiguous as to what is required.

There are legal implications with an aCoP for both the HHU and the mine operators that will not be possible to resolve. Guidance material is required to be stripped from the document such that it can easily be updated by both industry and HHU as technological requirements change.

The aCoP should be establishing

- current legislation;
- clearly show how the code links to the Act and Regulations;
- how to use in tandem with the WorkSafe guidelines (Extractives: Developing a Ground or Strata Instability Principal Hazard Management Plan);
- cover the minimum general strata management principles;
- outline what are the non-negotiables for ground and strata instability practices;
- where risk assessment practices and use of the levels of the hierarchy of controls are applicable in certain work practices and not in others;
- where technically competent people should be consulted within the process;
- minimum preferred work practices for ground and strata instability for all types of operations.

Where information is specific to a certain type of operation, it should be clearly articulated in each chapter whom the information applies to or compile a separate section on specific preferred work practices for each metal, coal and tunnel operations.

A self-audit tool is required to assist mine operators, SSEs and operational managers for compliance to the aCoP.

The draft aCoP document requires rewriting to address the above concerns.

General comments about the draft Code of Practice

Information from the WorkSafe website (under Health and Safety in Employment Act 1992) states that an Approved Code of Practice is a "preferred work practice". It also states that:

"An approved code does not necessarily contain the only acceptable ways of achieving the standard required by the Act. But, in most cases, compliance will meet the requirements of the Act, in relation to the subject matter of the code.

An approved code does not have the same legal force as a regulation, and failure to comply with a code of practice is not, of itself, an offence. However, observance of a relevant code of practice may be considered as evidence of good practice in a court".

(*http://www.business.govt.nz/worksafe/information-guidance/legal-framework/hse-act-1992/approved-codes-of-practice)

The document needs to consider that for some matters there are substantial differences of preferred work practice between metalliferous operations, coal operations and tunnel operations. For the non-technical person, it is difficult at times to determine from reading the document which sections apply to which type of operations. When it does not state that the information is specific to a type of operation e.g. tunnels, the rest of the information than must be read as applicable to all types of operation.

If this is the case than there are numerous technical inadequacies in the document that require further review by geotechnical engineering experts who specialise in each type of operation. This draft aCoP often is trying to apply some technical information that is coal specific to metal and tunnel operations which is not relevant.

In the existing small New Zealand underground industry, getting the document to place where it does outline "*acceptable ways of achieving the standard required by the Act*" will be of extremely useful for the future consistent management approach of the industry when the commodity prices improve and further underground operations commence or recommence.

It is recommended that a review by geotechnical engineering experts of the document structure and technical inaccuracies is completed and a second draft for comment provided to industry.

General – Boundary Between aCoP and PHMP Interpretative Guidelines

It should be noted that in other industries an aCoP may not have a management document that is required by legislation that will sit under the aCoP and must be reviewed by WorkSafe e.g. ground and strata instability PHMP. The clarification of the boundary between the aCoP and the PHMP Interpretative Guidelines is not clear within the aCoP and needs to be clarified.

General - Risk Management Practice

The Health and Safety in Employment (Mining Operations and Quarrying Operations) Regulations 2013 and the soon to be enacted Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016 introduces the concept of risk management through risk appraisal and risk assessment.

The draft aCoP does not allow sufficiently for work practices to apply risk management to assist with decision making process around the preferred work practices e.g. where risk management assists decision making for which work practices are selected as far as reasonable practicable to apply; where within certain extreme circumstances there could be no work practice that can safely applied safely; etc.

The draft aCoP needs to be reviewed by a geotechnical expert that has experience in applying risk management processes to ground and strata instability work practices outlined in the draft aCoP – which are the non-negotiables for management to apply (i.e. develop a PHMP), through to where risk management can be applied (e.g. selection of monitoring devices to suit operational requirements and site ground conditions).

A current government website* (referencing 2013) states that 51% of codes of practice had not been reviewed within ten years. Considering that there is a large amount of resources going into developing codes for the extractives industries at present, it is unknown what the future budget and therefore timeliness of future reviews may be. It is therefore important to future proof the code for our industry where the draft aCoP covers matters of preferred work practice that are widely acceptable without getting into too specific detail on technical matters (especially where technology plays a large part in the information that can be easily superceded).

(*http://www.dol.govt.nz/publications/nohsac/reviewefficacy/006_content.asp)

Specific comments
Section number (refer to contents): 1.2
Section name (refer to contents): What is the legal status of this code?
Comment on the proposed content, clarity and accuracy (or other suggestions): Insert figure copied from http://www.dol.govt.nz/publications/nohsac/techreport7/014_content.asp for description of legislative framework. Updates required to the figure for **Act**, Health and Safety at Work Act 2015

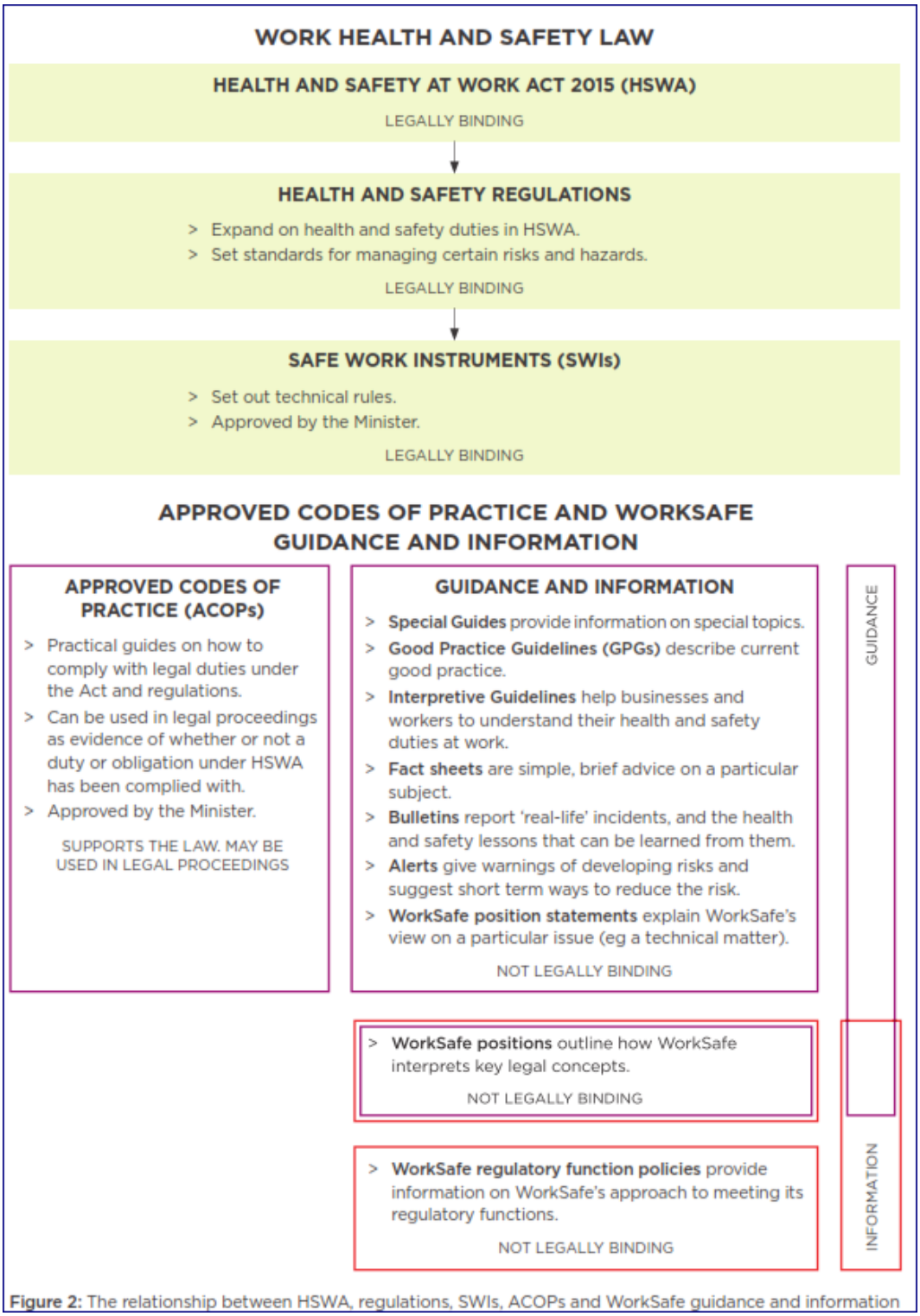

Figure 2: The relationship between HSWA, regulations, SWIs, ACOPs and WorkSafe guidance and information

(reference: WorkSafe NZ, March 2016, Introduction to the Health and Safety at Work Act 2015

Also require supporting text that states the following or similar:

> "A **code of practice** is a practical guide on how to comply with the legal duties under the Health and Safety at Work Act 2015 and Safety at Work (Mining Operations and Quarrying Operations and Regulations 2015"
>
> "**guidance documents** differ from authoritative codes of practice by allowing wider discretion to choose the options that best suit the circumstances. Guidance material contributes to the overall state of knowledge"

Specific comments
Section number (refer to contents): 2.2.2
Section name (refer to contents): Other Safety Critical Roles
Geotechnical roles are normally considered a necessary safety critical role within underground mines and tunnels. It has been noted the regulations do not refer to geotechnical engineers as a safety critical role. In other sections with this aCoP, reference is made to a **competent person** – this is defined in the Regulations.

Specific comments
Section number (refer to contents): 3.2
Section name (refer to contents): Principal hazard management plan for ground or strata instability
Add in the following bold words to "The PHMP for the mining or tunnelling operation **to include** details **of** the **following**: … Why: the PHMP details as listed in the aCoP is too limiting for UG hard rock mining. For more information as what is to be considered the hard rock miner will likely use the more detailed guideline: Geotechnical Considerations in Underground Mines [2] guideline and still comply There should also be a cross-reference to the WorkSafe Developing a Ground or Strata Instability Principal Hazard Management Plan[3]

Specific comments
Section number (refer to contents): 3.2 .1
Section name (refer to contents): Developing a PHMP for ground or strata instability
"an acceptable Factor of Safety (FoS)". What does this mean? The aCoP defines FoS as "Factor of Safety is the ratio of the average ground support strength (S) to the average stress applied to that part of the excavations (σp) and can be expressed as a factor of safety (FOS) FOS= S/ σp " It may be more accurate to state: "Factor of Safety is the strength of the capacity of the system beyond expected or actual loads applied to the system..." or better words. The "system" includes all elements of the rock materials and structures about an excavation including the inherent strength in the rock itself. The aCoP provided definition for FoS in the glossary on page 85 is too specific and may apply to coal mining situation only and is poorly defined. (Consultation with geotech specialist required) Often, there are scenarios where it is found that FoS is not sufficient to rely on FoS on its own but to consider other measurable criteria to assess the adequacy of a designed structure.

[2] MOSHAB, 1997, Geotechnical Considerations in Underground Mines
[3] WorkSafe NZ, August 2015, Developing a Ground or Strata Instability Principal Hazard Management Plan Guideline

Specific comments

Section number (refer to contents): 3.2.1

Section name (refer to contents): Developing a PHMP for ground or strata instability

Page 20: "the hazard identification and risk assessment …" This key aspect is glossed over – requires more rigour. At least add in comments to the effect of "…Considerable mining experience and professional judgment are required for hazard recognition and the selection of appropriate mine design strategies …" or something better. This is often where root causes for mine design and sequencing failures originate.

Page 20: "Risks to health and safety must be eliminated, so far as reasonably practicable, however, if they cannot, then all reasonably practicable steps to minimise the risks of harm to mine workers (and others who could be put at risks) must be taken by the person best-placed to influence an control the matter to which the risk relates, for example, this may be the mine operator or the SSE".

What does this mean?? Example required.

It would be better to have "..."Risks to health and safety must be eliminated, so far as reasonably practicable, however, if they cannot, then as far as reasonably practicable steps to minimise the risks of harm to mine workers (and others who could be put at risks) are to be documented in the PHMP

Specific comments

Section number (refer to contents): 4.1

Section name (refer to contents): Identify the causes of ground or strata instability

"reasonably practical" what does this mean for Regs and this aCoP?

This requires a definition in the glossary or reference to another document

Suggest using definition from HSWA Part 1 s22.

Specific comments

Section number (refer to contents): 4.1.1

Section name (refer to contents): Stress

- This is not correct: "…stress generally increases, approximately linearly with depth, as the weight of overlying rock increases …"
- Additional comment: Section 4.1.1 should also introduce the concept of principal stress – insitu, changes during mining and after mining has been completed. But the aCoP is not a text book so probably too complicated
- **Page 23**; "…An assessment of the three dimensional stress field across the relevant extent of the mining or tunnelling operation should be undertaken". This is poorly written. The word "should" indicates the recommendation be adopted where practicable to comply with the legislation. However there are situations where a 3D stress filed tests are not required. This requires the reasonably practicable test[1] again.

- On this basis the 3D stress field measurements need to be rewritten to bring the risk-based approach back in to ensure the correct meaning and requirement is conveyed to the mine operator
- Page 23, the following section : ".. .To measure stress in mining or tunnelling operations some options **may** include:
    - in situ stress measurements
    - stress change monitoring
    - acoustic emission testing plus variation.

  These are guidance material, does not belong in an aCoP and there are a significant number of tests available, suitable that are not listed. **Action: rewrite this section, move guidance material into appropriate area of document**

- **Page 24, Guidance Section 4.1.1:** the following section is only partly correct as the same symptoms occurs due to changes in the stress field during mining – especially when mining parallel steep dipping orebodies *"...At very shallow depths, horizontal stresses in the roof (sometimes known as 'confining' stresses) could be very low and roof blocks may then slide on joints or other planes of weakness. If open joints are present in the roof then the confining stress is effectively zero and there is a high risk of falling roof blocks."*

Specific comments
Section number (refer to contents): 4.1.4
Section name (refer to contents): Seismic Activity

Comment on the proposed content, clarity and accuracy (or other suggestions):

- **Section 4.1.4** *Mining induced seismicity can occur from explosives being fired or a* ***fault slip***
  Suggest replace "fault slip" with release of stored energy in the form of ground stress and strain. Fault Slip is too narrow in definition/scope. Mine induced seismic events are not restricted to faults, but agree, can be triggered by stope blasting – but not always.
- delete ~~*In ground or strata support activities*~~ *A seismic wave can be heard; a noise similar to a hammer blow or blast.* Or what was the author(s) trying to say. Does not make sense for an aCoP
- **This section needs to be re-written**

Specific comments
Section number (refer to contents): 5.1

Section name (refer to contents): Requirement for a geotechnical assessment at mining and tunnelling operations

- Figure 4. Extraction sequence for both coal and metalliferous mines is very important. It is not mentioned. Incorrect sequencing due to not understanding or ignoring both insitu and induced mining stresses can lead to large problems that has lead to the financial failure and closure of underground hard rock mines. Possible applies to some tunnelling operations where tunnels are opened in stages to very large cross-sections
- page 30, "*mining method, **mining sequence,** mining direction, gradients*

Specific comments

Section number (refer to contents): 5.3

Section name (refer to contents): Site characterisation

- page 31, *"Ongoing updating and recalibration of the geological/ geotechnical model is required **throughout** the operating stage. See section 8 for further information. "* This is reinforced in Section 6.9
- page 32, comment: there should be some acknowledgment that the Site Characterization process is an iterative process, starts with an initial and conservative support estimates on a new mine with limited data available and is built on as new and additional factual data is gathered. Must gather the initial data. OK, covered in 5.3.1

Specific comments

Section number (refer to contents): 5.3.3

Section name (refer to contents): Rock Mass Classification

comment – agree with what is says, but Section 5.3.3 Rock Mass Classification does not ask for anything from SSE etc that must be considered

Are we discussing guidance material here of aCoP.

We think the author(s) has the purpose and scope of the aCoP confused

Specific comments

Section number (refer to contents): 5.4

Section name (refer to contents): Geotechnical mapping

aCoP is too specific to coal mining

Specific comments

Section number (refer to contents): 6.3.1

Section name (refer to contents): Design Document

- **Section 6.3.1** typo "*The design engineer should sign the design engineer.*"
- Design Document: load capacities (support resistance) is the **kinematic analysis** of the ground support components. The energy absorption capacities is the **dynamic analysis** of the ground support components
- **Needs to be rewritten**

Specific comments

Section number (refer to contents): 6.4.1

Section name (refer to contents): Factors influencing Pillar Stability

Factors pillar stability: need to also include extraction sequence as a factor. Also stress regime (insitu and mine induced)

Specific comments

Section number (refer to contents): **New Section required** following Section 6.6.4

Section name (refer to contents):

- as the preceding sections are discussing support component types then need to introduce concept of **dynamic support components**

Specific comments

Section number (refer to contents): 6.6.4

Section name (refer to contents): Galvanised bolts, cables and mesh (corrosion control)

Suggest that this section should be referencing for corrosive environments the geotechnical assessment must include provision for protection of steel components and expected/anticipated/assumed life span of the corrosion protected systems. The provided document is too specific in the examples provided.

Specific comments

Section number (refer to contents): 6.6.7

Section name (refer to contents): Shotcrete linings

"Design of a shotcrete programme should consider ..." need to include the anticipated/estimated deformation of the opening following excavation. In highly deforming "plastic" deformation, fibrecrete can introduce additional hazards after it starts to break up for excessive deformation.

BUT ... this is guidance material??

Specific comments

Section number (refer to contents): 7.1

Section name (refer to contents): Ground support/controls to be installed

- *"Chains are not a suitable barrier to these areas".* Why not "chains"? Chains or rope with appropriate Danger signs labelled with the identified hazard(s) are typical in the hard rock mining industry

Specific comments

Section number (refer to contents): 7.3

Section name (refer to contents): Self Supporting

The issue is the assessment of the level of support required for the intended use of the roadway. This must take into account the factors already discussed (within the draft aCoP) including exposure time and the changes in stress environment the road may be exposed to over the intended life e.g. a small diameter vent raise fitted with a ladder way may be appropriate in a development phase but require additional support during a stopping phase.

The level of support will grade from nil to tertiary depending on the above.

Specific comments

Section number (refer to contents): 7.5

Section name (refer to contents): Scaling & Barring Down

- This section required to be rewritten as appropriate for aCoP, separate out guidance material
- Requires a guidance document and the aCoP makes reference to it
- The are established scaling and barring down guideline that can be sourced or referenced in Australia (reference: http://www.dmp.wa.gov.au/Documents/Safety/MSH_G_UGBarringDownAndScaling.pdf)

Specific comments

Section number (refer to contents): 7.9.1

Section name (refer to contents): Selection

- **Section 7.9.1**: *"chemicals and grout have not exceeded their 'use by date'"* need to include temperature storage range for chemical grouts-resins

Specific comments

Section number (refer to contents): 6.6

Section name (refer to contents): Temporary and permanent support systems

Temporary support is not appropriate term to use.

Use primary, secondary, tertiary support

Section 6.6.1 – 6.6.10 what is this doing in an aCoP? This is guidance or Appendix material

Rewrite required for Sections 6.6, 6.7, 6.8

Specific comments
Section number (refer to contents): 7.13.2
Section name (refer to contents):
• **Section 7.13.2** pull testing – too much specific detail for a COP?

Specific comments
Section number (refer to contents): 8.13.2
Section name (refer to contents): Regular Examinations & …
• **Section 8.13.2** Shift Inspections ... – change "*Shift inspections must be undertaken by the underviewer at **any ~~the~~** underground coal mining operation and **the ~~or~~** supervisor at any other mining or tunnelling operation.*
• **Require an additional *section*** *requiring "During each shift all mine workers are required to identify any hazards or potential hazards (including those related to ground or strata instability) within their work place, the state of their immediate work place and plant operated at their work place, any material matters that might affect the health and safety of mine workers at their work place, and the controls (if any) put in place during the shift to manage those hazards; and report those findings to their shift supervisor.* This usually takes the form of a "Take 5" risk assessment by the mine worker at his work place or multiple work places during the shift. The "mine worker" (that is everyone) requires increased level of accountability to maintain their own safe work area.

Specific comments
Section number (refer to contents): 11.1.3
Section name (refer to contents):
• **Section 11.1.3** Page 78. Change the following: "*For a full list of high risk activities that WorkSafe must be notified about see Schedule **9 ~~8~~**, MOQO Regulations.*

Specific comments
Section number (refer to contents): 12.1.2
Section name (refer to contents): Mining operation records

- **Section 12.1.2**: update reference

Specific comments
Section number (refer to contents): Glossary
Section name (refer to contents): Glossary

- **Glossary – need to include dynamic analysis** - "… considers the dynamic analysis of rock support to seismic events". Refer to a geotech engineer for a more accurate definition. Dynamic analysis is required in active seismic (it might be mining induced active zones only) work zones and (can) lead to a much higher specification and mode of deformation under seismic dynamic loading of the ground support components
- **" Shear**" definition is hidden inside the Seismology definition