Model Work Health and Safety Regulations for Mining - Public Comment Response Form

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Regulations Chapter 9: Mines	
Part 9.1	
Regulation	**Comment**
Part 9.2	
Regulation	**Comment**
Part 9.3	
Regulation	**Comment**
Other Comments	

Codes of Practice	
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Managing Naturally Occurring Radioactive Materials in Mining	
Section/page number	**Comment**
The Mine Records	
Section/page number	**Comment**

WHS Management Systems in Mining	
Section/page number	**Comment**
Inundation and Inrush Hazard Management	
Section/page number	**Comment**
Emergency Response in Australian Mines	
Section/page number	**Comment**
Strata Control in Underground Coal Mines	
Section/page number	**Comment**
Ventilation of Underground Mines	
Section/page number	**Comment**
Survey and Drafting Directions for Mine Surveyors	
Section/page number	**Comment**
Health Monitoring	
Section/page number	**Comment**
Mine Closure	
Section/page number	**Comment**

Ground Control in Open Pit Mines	
Section/page number	**Comment**
Ground Control for Underground Mines	
Section/page number	**Comment**
Cover Page Picture	This is a dated photograph that does not reflect mainstream coal mining in Australia now or in the past. Given that the code of practice is intended to set and maintain high standards, I think a much more appropriate photograph could be found for the title page
Scope and Application P3	It is stated that *the code does not apply to the surface effects of underground mining*. Yet, managing the impacts of mining on the surface is one of the most important factors to be considered today in designing mine layouts. Underground mine design, sub-surface behaviour and surface ground behaviour are interactive and can impact on strata control decision making at the coal face. It is recommended that the code give consideration to the management of sub-surface and surface effects and how these can impact on strata control decisions.
1.1 What is strata control P4	The code notes that *effective strata control is a function of three main components;* • *Strata characteristics* • *Mine planning and design, and* • *Strata control measures* It is established practice in geotechnical engineering for mine planning and design to be premised on the identification of geology and geological domains, leading to the construct of a geological model, from which the mine design and support requirements are determined through the application rock mechanics and geotechnical engineering principles. The choice of an inappropriate geological model can have serious implications for strata control. It is recommended that the term s*trata characteristics* be expanded to better reflect the engineering design process. These comments also have relevance to Section 3.1 where again there is no mention of the construction of a geological model.
2.2 Assessing the Risk P6	Re *calculations ...to determine the probability of instability to be assigned to any coal pillar, consistent with the pillar's role or roles over its life.* There is a very limited range of techniques available for assigning probability of stability to pillars and these do not encompass all pillar types, sizes and functions. Field experience and numerical modelling can be used to address these knowledge gaps but, whilst indicating whether an outcome is likely to be stable or not, they cannot produce a probability of instability. It is recommended that determination of the probability of stability be noted as a desirable outcome but in circumstances where this cannot be achieved, the design should be motivated by some other form of analysis or assessment.

3.6 Failure Model P10	There are multiple possible roof failure models, which may vary with factors such as direction of mining and intersections with other roadways. Often, failure modes are not as simple as the stated modes of buckling, bending and shear. Sometimes, they are never fully determined. Hence, there is potential for the prescriptive designation of such simple models to actually introduce risk. Rather, it might be preferable to emphasise the uncertainty associated with determining roof failure modes and the need to manage this uncertainty through the use of Trigger Action Response Plans (TARPS) supported by adequate monitoring and review of the Strata Control Risk Management Plan.
Oversize roadways P12	The code reads that increasing the height of a roadway substantially increases the loading on the roadway. This needs qualification. Increasing the roadway height has very little effect on vertical load (stress) but can result in an increase in horizontal stress in the roof and floor of the roadway. It has minimal effect on the load acting on the roadway sidewalls/ribs but does result in a reduction in sidewall strength.
Windblast - both in respect of longwall and pillar extraction P12 & P14	Windblast is attributed to the collapse of cantilevered strata. This is too restrictive. Many windblasts are due to a slab of material parting from the bottom of an undermined plate.
Periodic Weighting - both in respect of longwall and pillar extraction P13 & P14	Depth below surface is also an important parameter that can affect the frequency and intensity of periodic weighting events.
Extraction of Regular Standing Pillars P19	Re *Experience suggests that the average pillar loading can be typically 1.3 to 1.5 times tributary area load; a tributary multiplier of 1.5 is recommended. Where it is known that a row of pillars remain standing against a goaf edge for a considerable period of time the load multiplier should be increased to 2.* This is too prescriptive and inaccurate. The following is more apt (Galvin JM: 2008. Geotechnical Engineering in Underground Coal Mining - Principles, Practices and Risk Management. UNSW. ACARP Project C14014) *Galvin and Hebblewhite (1995) suggested a design loading of 1.3 to 1.5 times tributary area load, increasing to 2 times tributary area load for pillars which were to remain standing against a goaf edge for an extended period of time. Whilst both these approaches have proven successful, they should only be considered as 'rules of thumb'.* This statement could benefit further by acknowledging the role for numerical modelling in these situations.
Table 1 P19	*1 in 1000,000* should read *1 in 100,000*

Appendix A Geotechnical and Mining Terms	This section needs a major review. The definitions are poor and sometimes inaccurate and some of the terminology and stated mining practices are foreign to coal mining (they are more apt to metalliferous mining)
Appendix B Examples of Functions and Responsibilities	This section also needs review. Some of the roles do not exist in the Australian underground coal industry and other are confused (some are more apt to metalliferous mining)
Appendix C Other Relevant Information	The list of other publications is dated and limited. *Roadway and Pillar Mechanics Workshop - Stage 2 - Design Principles and Practice UMRC9810/2* is a rebadged edition of the following 1995 publication and dated in some important aspects. *Galvin JM, Hebblewhite BK & Wagner H. Pillar and Roadway Mechanics – Stage 2 – Design Principles and Practice. School of Mines, UNSW, 1995. ISBN 0 7334 1338 2.*
Concluding Comment: The document provides a good framework for a code of practice in strata control. There is a considerable amount of additional information that warrants inclusion in such a document (for example, longwall face strata control procedures, implications of sub-surface and surface subsidence control measures on local and regional mine stability, measures for recovering from a strata instability) and some of the information already in the draft code needs updating (for example, the different functions and design approaches for coal pillars). It may be beneficial to map the code against the national competencies relating to strata control to provide consistency in structure and content, albeit that the code is a higher level document in terms of content and detail.	
Underground Winding Systems	
Section/page number	**Comment**