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	
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The Mine Records	
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WHS Management Systems in Mining	
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Inundation and Inrush Hazard Management	
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Emergency Response in Australian Mines	
Section/page number	**Comment**
Strata Control in Underground Coal Mines	
Section/page number	**Comment**
3.9 Pillar Design Pages 15 - 19	It is only in relation to pillar design where the *Draft Code of Practice - Strata Control in Underground Coal Mines* actually proposes a design methodology/process. Without stating it explicitly the design methodology/process proposed is essentially the University of New South Wales Pillar Design Procedure (UNSW PDP). There is no other aspect of strata control (e.g. ground support design) within the draft document where a particular design technique is specified. In fact just the opposite, for example on Page 10 of the draft code under **Strata control support design** it states, *"The mine operator should determine and employ the technique appropriate to the mine".* This is clearly far more appropriate. Mining rock mechanics/geotechnical engineering has progressed significantly during the past five decades, but is still in the early stages of development and several new/updated design techniques for strata control purposes have been developed in Australia alone in the last 10 years. While it is appropriate that the draft code recommend/require that minesites/geotechnical engineers utilise appropriate design techniques for the various aspects of strata control pertaining to their colliery (i.e. so as to undertake calculations to assess stability etc), it is not appropriate for a document such as this to be specifying the design technique/process to be adopted which may be totally inappropriate for the issue being assessed. Furthermore there are many different types of coal pillars that fulfil a wide range of roles at any particular mine and it is now well established in the Australian underground coal industry that a "tailored" approach for each pillar type in relation to the role it fulfils is required and this type of engineering assessment goes well beyond simply a "number" whether it be Factor of Safety (FOS) or Probability of Failure (POF). UNSW PDP is an empirical design technique and like all such techniques is critically reliant on its database in terms of its credible use and application. The UNSW PDP Database in total contains 35 cases, 19 Collapsed Pillar Cases and 16 Unfailed Pillar Cases. In terms of the

	Collapsed Cases only one case (i.e. Case SC3) has a pillar width-to-height ratio (w/h) greater than 5. Information has recently come forth that clearly indicates a pillar collapse (as defined in the literature by UNSW) did not occur in relation to Case SC3 and as such this case should not have been included in the UNSW PDP database. As the pillar w/h increases the pillar mechanics changes significantly and where roof and/or floor failure mechanisms have been eliminated (as well as rib bursts associated with coal pillar "bumps"), then to the best of the author's knowledge there is no other documented compressive failure pillar collapse case worldwide where the pillars have a w/h ratio > 5. In utilising empirical modelling for design, the critical aspects in terms of the successful application of same are firstly to ensure that an empirical model (as it is developed and then used) faithfully represents the geotechnical environment and mechanics of the problem, secondly the database (on which the model is based) is directly related to the design outcome and finally the model is typically used within the limits of its database. It should also be noted that the UNSW PDP Database does not contain one single example of a chain pillar subject to abutment loading and in Australia such pillars typically have minimum w/h ratios > 8 (and more often > 10). There is absolutely no scientific evidence, basis or justification for the direct use of UNSW PDP in assessing the FOS/POF of pillars beyond a w/h of 5 and certainly no empirical basis for its use in the design/assessment of chain pillars as utilised within Australian longwall operations. In terms of the Pillar Design section it is recommended that all diagrams and references (direct or indirect) related to UNSW PDP and the publications mentioned be removed and in terms of application of pillar design techniques a similar approach/wording is adopted as for the **Strata control support design.**
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**
Underground Winding Systems	
Section/page number	**Comment**