Trade & Investment Mine Safety

Draft Work Health and Safety (Mines) Regulation

Public comment template

Please send submissions by email to consult.minesafety@trade.nsw.gov.au Submissions must be received by **27 June 2014.**

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This template is divided into two parts:

1. Comments in response to discussion paper
2. Comments in relation to draft regulation

Please ensure you include the page, section number or regulation clause number to which your comment relates. Your submission should, wherever possible, include evidence and examples to justify your position.

Part 1 - Comments in response to discussion paper	
Page or Section No.	**Discussion point and your comment**

Part 2 - Comments in relation to draft regulation	
Clause number	**Title of clause and your comment or suggestion**
Cl 66 (6) on Page 63 and (3) Definitions on page 12	**Return roadway definition or description.** This states that a return roadway means "*a roadway used for the removal of air and airborne contaminants from mine workings*." This is the only definition of a return roadway in these draft regulations and there isn't one at all in the existing regulations so it is not open to as much interpretation as this new definition could be. In the opinion of the author this is not clear as to the intent of the meaning. Would it for example mean that a homotropal conveyor set up for heat removal or the reversal of a panel travel intake road into a temporary return air path for diesel fumes during a longwall changeout means that those roadways are then designated returns and thus are hazardous zones under the definition of a hazardous zone in Clause 12 on page 3 of the regulation draft. There are numerous areas around most mines where dust, heat and other contaminants are commonly diluted such as series intake ventilation over transformers and longwall pumps stations by way of example. Surely the return side of these locations would not be designated as returns but given the definition of a return it could be construed as such. If heat and minor dust contamination for example cannot be managed and diluted using intake roadways then it would be impracticable. The author is confident that would not be the intention of the draft regulation for this definition of a return so why not define it more clearly in regard to the intention. If it is intended to refer generally to the path of air back to the main mine fans from production and working areas and/or along old goaf paths to the fans, as is generally accepted now, then why not say so?
(3) Definitions Page 13	**Definitions.** This relates to **light metal alloy.** The definition states "*light metal alloy means an alloy containing aluminium, magnesium or titanium (or a combination of those metals), but only if:* *(a) those metals make up more than 15% of the weight of the alloy,* *or* *(b) magnesium and titanium make up more than 6% of the weight of the alloy.* This definition is clear but it is clouded somewhat by the reference in **Schedule 4, column 1. Item 7** where it states that uncoated

	or unprotected aluminium cannot be used in a number of specified locations. Is that to assume that even though aluminium is in itself classed as a light metal alloy in the aforementioned definition that it can be used if it is protected but the other light metal alloys cannot, even if they are protected?? This is confusing in the author's opinion.
Cl 60(3) Page 56	**Ventilation System- Further Requirements.** The draft states "*The mine operator must ensure that, in areas of the mine where persons work or travel, the ventilation system for the mine provides an average air velocity of at least 0.3 metres per second measured across the work or travel area*." This figure of 0.3m/s has been pulled straight from the Qld regulations which states in part "*The controlled ventilation for a working place mentioned in subsection (1)(b)(ii) or (iii) must provide for a ventilation current of an average velocity of at least 0.3m/s, measured across the cross-sectional area of the roadway in the working place.* *Subsection 1b (ii) and (iii) are* *(ii) in each standing working place that is on the intake side of a working place; and* *(iii) in each working place in an ERZ1;* Quite clearly this ventilation requirement in Qld is for face areas in an operating production district, which is practical and sensible. The draft regulation appears to have transposed the 0.3m/s requirement for areas where people work or travel which is every open roadway in the mine accessible to personnel. As a licenced ventilation engineer that has been auditing ventilation management plans for the last seven years there is not one mine that been audited by me that has complied with the following existing regulation in the current NSW regulations which states under Clause 113 **Minimum airflow** "*The operator of a coal operation must ensure that an airflow of at least 1 cubic metre per second of air movement is maintained at all underground parts of the coal operation where people work*." If we can't currently comply with $1m^3$/sec what chance have we of supplying a flow of around $5m^3$/sec in an average roadway cross section?? Plenty of work is done in mine cut-throughs which make up around 1/3 of the total mine roadways and it is not in any way practicable to expect every cut through in the mine to be ventilated with such a flow where people may be required to work or travel. Surely the risk assessment process and the mine inspection system itself should manage this issue. Clause should be deleted or should refer to production faces where methane layering is more likely to occur, which simply has to

	be the intent of this clause.
Cl 62 Page 57	**Modelling to take place before changes to ventilation system** This states "*The mine operator of an underground mine must ensure that before any significant change is made to the ventilation system for the mine, modelling of that change is carried out and the modelling demonstrates that the change can be made without increasing the risk to the health or safety of any person*." This begs the question why there is no definition of "significant" or examples of what the regulator might consider are "significant" in the context of this proposed clause. Without it this clause will be open to endless individual interpretation for years to come. Dictionaries tend to agree that significant means something such as "*large enough to be noticed or have an effect*" or "*having or likely to have a major effect*." A ventilation change that brings about an increase in ventilation in every mine split when one split is reduced in flow is significant. There is a huge difference though between that change and one that opens up a ventilation split and thus reduces all other flows in the remaining areas of the mine. They are both significant but one is much more hazardous to execute than the other. Wouldn't it be prudent to simply list some examples of what the regulator might deem "*significant*" to save future debates over interpretation of this key, but as yet undefined word. Further to this the specific wording of this draft regulation is incorrect. It alludes to <u>all</u> ventilation changes <u>always</u> being carried out without increasing the risk to the health and safety of any person. It is plainly not possible to do an intricate ventilation change that reduces flows in key circuits without altering and possibly increasing the level of risk. The point at hand is that the level of risk that can be tolerated is acceptable. Risk profiles are ever dynamic in any change management process. The key is that resultant risk must be acceptable and in the authors opinion that should be reflected in the wording in some form.
Cl 62 Page 57	**Modelling to take place before changes to ventilation system** This states "*The mine operator of an underground mine must ensure that before any significant change is made to the ventilation system for the mine, modelling of that change is carried out and the modelling demonstrates that the change can be made without increasing the risk to the health or safety of any person*." The ability of a ventilation model to accurately predict the results of an intended ventilation change is inextricably linked to validity of the model itself and how closely the flows and pressures within the ventilation model mirror or reflect the actual pressure and flows within the mine. A mine ventilation model is a tool which can be very useful if very accurate but extremely dangerous if inaccurate. There have been numerous examples across both Queensland and NSW in recent years where ventilation changes

	have been executed according to predictions based on ventilation modelling that have gone very wrong and resulted in the occurrence of extremely high potential incidents. It would seem irrational not to require some sort of quantitative validation of the accuracy of a ventilation model. In the authors opinion it could be likened to utilising a methane monitor but without requiring any technical calibration of the gas monitor itself but still relying on the results that it outputs. The ventilation model monitors the performance of an intended ventilation change much like a gas monitor monitors atmospheric change. The danger of an un-calibrated gas monitor is obvious and thus strict rules apply to their calibration. Similar rules should apply to ventilation models. If they are not calibrated then they perceivably could be more dangerous than using no model whatsoever. A ventilation change by an experienced undermanager with no model may be much more safely executed than one performed by an inexperienced ventilation officer using an inaccurate model. If the general consensus is to utilise ventilation models to predict the performance of significant and critical ventilation circuit adjustments then surely this work must be done utilising ventilation models that have been calibrated to closely represent the measured performance of the circuit underground.
Cl 63 (3)(c) and (3)(d) page 58 and Cl 71 Page 66	**Excerpts from Clause 63 "Duty to prepare ventilation control plan" and Clause 71 "Atmospheric Contaminants from Sealed Areas"** Clause 63 (3) (c) states "*arrangements for managing risks to health and safety associated with potential inrush hazards and leakage into intake airways of atmospheric contaminants from goaf areas and abandoned sealed workings*," and then Clause 63 (3) (d) states "*arrangements for managing risks to health and safety associated with intake air travelling across the face of a permanent seal at the mine*," This in itself would appear to be satisfactory legislation to allow all mines to manage the hazard dependent on the level of risk determined using risk assessment processes, at each particular mine site. Some of these mines may never have encountered flammable gas underground and waste areas may contain breathable air yet others may be fuel rich inert with methane or full of extinctive carbon dioxide and, as such, completely different from a risk profile perspective. To further such differentials some of these goaves may be on negative pressure and some may be highly positively pressurised which again highlights significantly different risks to the personnel inbye. One would think that such risks could be managed in house using sound developed risk based logic. Why then are all mines mandated to ensure compliance with **71 Atmospheric contaminant from sealed areas** which states, "(1) *In complying with clause 9, the mine operator of an underground coal mine must provide ways of:*

	(a) preventing intake air from travelling across the face of a permanent seal at the mine, and *(b) minimising the risks of inrush and leakage, into intake airways, of atmospheric contaminants from goaf areas and abandoned or sealed workings.* *(2) Subclause (1) (a) does not apply if the mine operator has implemented control measures that ensure the following:* *(a) leakage through the seal is minimised and damage to the seal is prevented,* *(b) the seal is capable of withstanding an overpressure of at least 140 kilopascals,* *(c) a monitoring system is installed that includes a monitoring device in each intake airway on the return side of the seals over which the intake air passes to detect the intake air concentration of:* *(i) oxygen, and* *(ii) carbon dioxide, if it is present behind the seal in a concentration greater than 3% by volume, and* *(iii) any other gas that is present behind the seal in a quantity and concentration that is likely to create a risk if it enters the intake airway adjacent to the seal,* *(d) in the case of longwall workings, the monitoring device referred to in paragraph (c) is positioned at the intersection of the longwall face and the intake airway,* *(e) the monitoring system referred to in paragraph (c) triggers an alarm to warn each person who may be affected if a gas mentioned in the paragraph is present in a predetermined concentration."* This regulation has been directly transplanted from the Queensland regulations which were written many years ago to enforce this requirement on a relatively young and immature group of underground coal mines, most of which were very gassy and highly prone to spontaneous combustion. The author is not questioning the intent of this regulation but the practicality of now enforcing it carte blanche on some very old established mines, some of which have never recorded methane being found underground. It is obviously a wise and prudent move to engineer a mine design in such a manner for a new operation but how is it managed at

	an operation that has kilometres of intake airways travelling past goaf seals as in the case in numerous NSW coal mines??. One of two things will occur. Either the mine will have to install all the monitoring required and erect 140kPa rated overpressure seals at every location at hugely enormous expense, or set up the ventilation system so that the faces of these seals are all ventilated to return instead. The problem with this is that some of the deeper, gassy, well established very old coal mines do not have ventilation systems with the design or installed capacity to simply dump air to return. Many are struggling as it is given their age, complexity and inherently problematic surface access issues. Consider this possible scenario. If a gassy mine that is ventilation constrained has to dump a considerable quantity of air to return to ventilate past seals that have been inspected adjacent to intake airways for many years and this then robs the longwall circuit of valuable ventilation pressure, which it will, then the results could be devastating. Surely putting a mine with little or no excess ventilation capacity into a position where it has to dump ventilation air because it travels past a seal needs careful consideration of all the inherent risks. Reducing ventilation pressure across a L/W goaf that relies on that pressure to bleed gas out the back and away from the tailgate corner is likely a far higher risk to the safety of the men underground than that air first travelling past a goaf seal on the way to the L/W face, as it may have done for numerous years. This regulation could result in a change management process that complies with this new legislation but greatly elevates risk. The author is of the opinion that this regulation should be negotiated in some way to better cater for older mines and that a working party is set up urgently to review this. If not the author is hopeful that the regulators should review pertinent exemption submissions reasonably if there is a chance an undesirable or unacceptable elevation of risk in other areas of the mine because of adoption of this regulation. If there was the ability to exempt “legacy” areas in these old mines due to the impracticability to be able to physically comply with this legislation and adopt the proposed regulations in newly developed areas then that would be beneficial. Whatever happens though this change can’t be allowed to unacceptably elevate risk elsewhere in the mine where operators are battling to comply with this regulation. Finally it does seem out of context to demand an overpressure rating on outbye seals but dismiss any requirement for a quantitative overpressure rating on all other underground ventilation appliances that are in close proximity to the face areas. That just doesn’t make sense in the opinion of the author.

Cl 63 (3) (e)Page 58	**Duty to prepare ventilation control plan.** Clause 63 (3) (e) states "*arrangements for an alternate and independent way of operating the main ventilation fans in the event of a loss of power supply*" This alludes to running a generator or other alternate power supply to continue to operate the main fans if power supply is cut. This new requirement is of an arguably minimalistic safety benefit given that underground power is cut when the main fans lose power supply under the current regulations albeit it would be of immense value at particularly gassy mines with respect to repowering the mine. That said it is a valid request to ask all mines to maintain some underground ventilation if power is lost and such ancillary ventilation is a reasonable initiative. It is highly likely though that a diesel powered back up genset will only be able to supply very limited capacity to a smaller number of mine fans than the number that may be in operation normally. The clause says an independent way of operating the main fans which suggest more than one but in many cases this is unlikely to be possible from a practical perspective. It would be prudent in the author's opinion to reword this so there is no misunderstanding when a reduced mine ventilation flow is established by the use of a backup power supply. It would be extremely doubtful that this initiative is intended to provide 100% ventilation capacity and if so this should be explained more clearly in the clause. Quite simply it could be reworded along the lines of "operate mine fans at an acceptable capacity to allow safe self-escape" or something similar.
Cl 65 (2)(a)Page 59 Cl 56(1)Page 52 Cl 60(4)Page 56 Cl 72(2)(b) Page 67	Clause 65 **Ventilation plan** states in part "(2)(a) The ventilation plan must show: the direction, course and volume of air currents, and…." The word volume relates to a three dimensional space. The term quantity is universally used in relation to describing airflow rates in mine ventilation. The same use of "*volume*" rather than "*quantity*" is seen in Clauses 56(1), 60(4), 65(2), 72 2(b) and should be considered for rewording.
Cl 69 page 65	**Sealing Clause 69** (2) (c) states "*that each entrance from the surface to the underground mine is capable of being sealed remotely so that, for the purposes of the sealing, no person will be required to be in front of, or above, the entrance or the point at which the seal is to be placed*," This regulation states that each entrance must be able to be sealed remotely which is more arduous than the Queensland regulations which in themselves are somewhat difficult to practically apply. In Queensland the regulations arguably cater for the ability to seal entrances when personnel are exiting the mine. An example of this is doors in a prepared coffin seal at a surface belt portal which are normally left open but which can be closed according to a procedure when evacuating the mine. An adjacent transport portal door would then be remotely sealed as required to affect the intake seal. This new NSW regulation though clearly states the remote closure of all entrances which may be extremely difficult and impracticable in practice. This will be exacerbated markedly at some of the older mines that have a huge number of physical entry points. The author believes the meaning of the word "remotely" should be given careful consideration before this regulation

	is enacted. It may be bordering on impossible to engineer such a feature at all entrances in a period of 2 years which is the lead time given in the regulation draft in Schedule 12 Division 3 part 8. Would it not be worthy considering the replacement of the word "remotely" with "safely subject to risk assessment" or something similar?
Cl 72 Page 67	**Ventilation** Clause 72 (2)(c)states "*the ventilation control plan for the mine specifies the minimum quantity of ventilated air required for each part of the mine for power to continue to be supplied to that part of the mine, and* (d) *if the minimum quantity specified in the ventilation control plan is not supplied at any time to any part of the mine, arrangements are in place to ensure that*: (i) *immediate action is taken to supply ventilated air to that part of the mine to above that minimum quantity as soon as possible and* (d) (ii) states, *the supply of power to electrical plant (other than electrical plant referred to in clause 78 (3)) is cut off by the quickest means available and will be incapable of being restored before the supply of ventilated air is above that minimum quantity*…" It appears obvious that ventilation quantity is intended on being utilised in trying to ensure that **sufficient** ventilation flows are maintained in all districts. Sufficient is a word I have used and is accentuated because obviously the intent of the legislation is to ensure that all flows are sufficient to manage any expected contaminants at any time be they heat, flammable gas, extinctive gas, radon, dust, diesel emissions etc, etc. Considering flammable gas in a coal mine context this quantity/power management system would appear to be of much lesser value and far riskier than shutting down power due to gas contaminant percentages, as the Qld regulations do at the NERZ/ERZ and NERZ/NERZ zone interfaces. Because of variations in gas emissions during production operations the quantity that is needed to maintain gas percentages at consistent levels changes all the time. It changes on every shift of every day as the panel gas monitor data will reflect. The danger in shutting down power in this manner is that if flows are set too low then unexpected elevated gas emissions at any time could increase gas contamination in the split above desirable levels, regardless of the flow quantity at that particular time. The Queensland method of tripping power to ventilation splits on preset gas percentages is a much more robust and practicable solution to this issue because the quantity becomes irrelevant. Utilising quantity alone disregards the ever changing gas emission regime in the split whereas using gas contamination trip set levels ensures that the product of both the ventilation flow and the gas emission is properly monitored to trip power in a safe and timely manner. Not introducing the proven Queensland style of system in favour of predetermined quantities in a dynamic gas emission environment should be hotly debated. This resembles the rail gauge argument from the middle 1800's where the difference between the states just makes absolutely no sense whatsoever. The author is of the opinion that a working group should be formed as a matter of **extreme urgency** to examine this issue in far more detail given its grave importance to the safety and integrity of the NSW mines and all the men that work in them.
Cl 72 (3) page 68	Clause 72 (3) states "*The mine operator of an underground coal mine must ensure that the effectiveness of the ventilation system and the ventilation control plan for the mine are audited at least once every 12 months by an individual holding the statutory position of ventilation auditor at the mine*."

	This auditing is currently carried out by a ventilation auditor referred to as the "Ventilation Engineer" who is issued a licence to do these audits by the NSW Chief Inspector. This existing ventilation engineer is someone who is not routinely associated with the site and requires specialist qualifications including auditing qualifications and a Graduate Diploma in Mine Ventilation from the UNSW. The new regulation changes the title to a "*ventilation auditor*" which is listed as a non-key statutory role at the site but given that it is a statutory role it is likely to require an appointment at the site and the legislation infers that it could quite easily be someone employed at the site that would fill this role. Some background information supplied by Ms Sharon Carvolth from Audit Services International in Brisbane below demonstrates the need for independence and objectivity in the Audit process. She states in part: "An audit is an independent evaluation of audit evidence, performed by competent auditors. The audit is used to determine whether integrated management systems (safety, environment, quality) effectively address specific risks and are being implemented in line with legislative and system requirements. Furthermore, the results must be a fair and true reflection of the actual status of the organisation's management system. Audit: systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled. The definition of an audit is dependent on the term independence. Therefore, if the mine is to be allowed to appoint an internal person as the ventilation auditor there is a potential for a lack of independence. Currently there are three tests for independence: 1. Are you the author of the system 2. Are you the owner of the system 3. Are you the supervisor for the system In the event that a ventilation officer was appointed as the ventilation auditor, he would not pass the tests of independence as at a minimum he is likely the owner and author of the system. If someone else in the business was appointed as the ventilation auditor, there is a potential that they would not have the technical expertise to be able to conduct the audit. The auditors competence must include appropriate knowledge and access to legislation, regulations and codes of practice that relate to the company and the scope, objectives and criteria of the audit. The current process of licencing auditors for such aspects as ventilation ensures compliance with ISO19011 for auditing as well as providing a more technically robust result for the mine being audited. These draft regulations not only remove the license requirement for the ventilation auditor but also remove the license

	requirement for an auditor of explosion suppression systems at NSW mines as well which is along very similar lines as the ventilation auditor's role but in regards to explosion suppression measures at the mine. It is the authors opinion that removing the existing auditors licence requirements for the two most instantaneously catastrophic hazards in underground coal mining such as ventilation adequacy and the suppression of the formation of a fully formed coal dust explosion whilst leaving existing licence requirements intact for health concerns such as sampling and analysing of diesel exhausts and airborne dusts would be extremely difficult or impossible to justify to the average coal mine worker who knows anything about risk.
Cl 102 page 95	**Duty to inform workers about safety management system** This states in part (1) "*The mine operator of a mine must ensure that, before a worker commences work at the mine:* *(a) the worker is given a summary of the safety management system for the mine that is relevant to the worker's work at the mine, and* *(b) the worker is informed of the right to see the documented safety management system for the mine prepared under clause 13, and* *(c) the worker is given a summary of each principal mining hazard management plan prepared under clause 23 that relates to any risk that may arise in the course of the worker's work at the mine,* *and* *(d) the worker is informed of the right to see any principal mining hazard management plan prepared under clause 23.* The above induction requirements would seem logical and robust for a full time employee but what consideration if any has been given to the training and induction requirements for consultants and contractors to carry out very limited work at the mine whilst being accompanied at all times by site staff?? This sort of training requirement to carry out such sporadic work may stifle the use of temporary such expert assistance which could have both safety and financial implications in the operation of the mines. Would it not be prudent to have some alternate training requirements for extremely short term but often urgently required ancillary labour?? Clauses 104 and 105 specify training differences between visitors and employees which is a grey area at most mine sites at present. Would it be possible to devise another level of induction instruction for persons that are carrying out very limited works in the accompaniment of mine staff. In essence they are visitors that perform some small supervised work function. It is simply not practical to have just two clear lines of training and induction for visitors and full time employees. There is and always has been a grey area of overlap in the middle of the two that needs to be sensibly managed.
Schedule 12 Cl 25 of regulations draft page	Part 4 Statutory functions and licensed activities Clause 25 (1) (f) states that "a Graduate Diploma in Mine Ventilation from the University of New South Wales or a qualification that was Gazetted under clause 162 of the CMHS Regs as an equivalent qualification, The role that this qualification refers to in the previous regulations was for the engagement of a Licensed Ventilation Engineer.

201 and Section 3.21.2 from discussion paper.	This engagement has been scrapped in this draft in favour of a Statutory Ventilation Auditor. It would be prudent to identify the qualifications required to fill this position in a manner similar to the qualifications required to be a mines inspector in Clause 174. The discussion paper on the draft regulations states in **Section 3.21.2 New statutory functions** The draft WHS (Mines) Regulation includes the new statutory functions of: • site senior executive (all mines) • underground mine supervisor (mines other than coal mines). It does not mention the statutory Ventilation Auditor as being a new function even though it is a statutory position which the previous one wasn't described as, it requires no licence issued by the Chief Inspector and is called by a different name, which is difficult to understand.
Cl 182 page 143	**Exemptions granted by regulator during first 12 months** This states *(1) The regulator may exempt a person, or class of persons, from any provision of this Regulation either unconditionally or subject to conditions.* *(2) An exemption may be granted on application by the person or on the regulator's own initiative.* *(3) An exemption under this clause applies in respect of a person only if the person complies with any conditions to which the exemption is subject.* *(4) This clause ceases to have effect 12 months after the commencement of this clause.* Does point 4 mean that nothing in these draft regulations when enacted will be exemptible after the expiration of a 12 month time frame?? Does that mean that the numerous greenfield operations undergoing current feasibility that haven't even commenced production by that time will never be able to ask for an exemption for any clause in the regulations for any reason whatsoever?? Is it practicable and workable for every single clause in the regulations to be rightly applicable to every single operation for ever??