



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Partners in the **profitable** and **sustainable development**
of our State's **agriculture, fisheries, forests and minerals**



Mineral Resources – Mine Safety

Coal Mine Health and Safety Regulation 2006 –
a Mechanical Engineering Perspective



Mine safety legislation

- *Coal Mine Health and Safety Regulation 2006*
- *A mechanical engineering perspective*



Mine safety legislation - CMHS Reg

- ***Coal Mine Health and Safety Regulation 2006***
- ***Introduction***
- ***Definitions:***
 - *Powered winding system* includes:
 - (a) any plant **Gazetted** as such
 - *Qualified mechanical engineer* means a person who holds a certificate of competence required by cl 162 to be a qualified mechanical engineer



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- ***Duty of operator to review information (cl 12)***
- The operator of a coal operation must, after receiving information supplied by a colliery holder under s18 of the Coal Mine Health and Safety Act 2002 (the CMHS Act) review that information
- The review is to involve:
 - (a) People with appropriate engineering expertise and
 - (c) in the case of an underground mine:
 - (ii) the manager of mechanical engineering for the coal operation.



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- ***Additional components of health and safety management system (cl 13)***
- For the purposes of s23(3)(e) of the CMHS Act the health and safety management system for a coal operation must include the following:
 - A mechanical engineering management plan (MEMP) covering the life cycle of mechanical plant and installations and mechanical engineering practices at the coal operation that is developed, implemented and periodically reviewed through consultation with a qualified mechanical engineer to control risks as follows:



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■ *Cl 13 (cont)*

- To control risks to health and safety from mechanical plant
- To prevent injury to people from sources of mechanical energy
- To provide safeguards to prevent the release of uncontrolled mechanical energy and prevent an unintended operation of plant
- To prevent catastrophic failure of mechanical plant
- To prevent uncontrolled fires being initiated or fuelled by mechanical plant
- To prevent initiation of gas or coal dust explosions by mechanical energy
- To minimise exposure to toxic or harmful materials associated with mech energy
- To provide safeguards for mechanical plant with a probability of failure appropriate to the level of risk
- To provide the means by which the safety of mechanical plant and installations is managed including legislative requirements



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Mechanical engineering management plan (cl 20)

Management plan for a coal operation must provide for the following:

(a) SOEP for mechanical plant and installations throughout their lifecycle to include:

- Arrangements for acquisition and operation of fit-for-purpose plant and installations
- Inspection and testing systems to ensure plant and installations safe to operate
- Arrangements for maintenance, repair and alteration of plant and installations



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Cl 20 (a) (Cont)

- Competence of people who may deal with plant and installations during the lifecycle of the plant at the coal operation
- Arrangements for supervision of people installing, commissioning, maintaining and repairing mechanical plant to be undertaken by people with people with appropriate mechanical engineering competence or a qualified mechanical tradesperson
- Safe working procedures for people who may deal with plant and installations during the lifecycle



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Cl 20 (cont)

(b) Safe operation of conveyors, winding plant and mobile plant

(beyond requirements under transport arrangements in the surface transport management plan prepared under cl 31 and the underground transport management plan prepared under cl 32)

(c) Safety of structures and mechanical installations



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Cl 20 (cont)

(d) Fitting of mechanical operator protective devices to protect from the risk of mobile plant overturning, objects falling on or coming into contact with the operator and the operator being ejected from the seat as follows:

- Rollover protection and falling object protection on mobile plant that is suitable for the intended surface and the underground environment
- Seat belts or other operator restraint devices on mobile plant
- Protective canopies on continuous miners when controlled by an on-board operator



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Cl 20 (cont)

(e) The safe use and storage of pressurised fluids.

(f) Means for the prevention, detection and suppression of fires on mobile plant and conveyors.

(g) The control of diesel-engined plant and installations including the following:

- The use only of plant and installations containing a registered diesel system in the underground parts of the coal operation
- The maintenance of explosion-protected plant and installations in an explosion-protected state



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Cl 20 (cont)

- (h) The use, as **Gazetted**, of fire resistant hydraulic fluids for purposes in the underground parts of the coal operation as specified*
- (i) Management systems to control diesel pollutants in the underground parts of a coal operation*



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- ***Information to be supplied to Chief Inspector and industry check inspector (cl 22)***
- For the purposes of section 25 of the CMHS Act the following information relating to the health and safety management system for a coal operation is specified as being required to be supplied by the operator of the coal operation to the Chief Inspector and an industry check inspector:
 - an outline of the mechanical engineering management plan for the operation
 - an identification by means of an organisation chart, of people responsible for the major functions in the management structure of the operation



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- ***Cl 28 Prescribed major hazards***
- For the purposes of section 32 of the CMHS Act, the following hazards to people are prescribed as major hazards to which Subdivision 2 of Division 2 of Part 5 of the CMHS Act applies:
 - In relation to all surface parts of a coal operation - hazards arising from the use and operating environment of plant used for the transport of people or materials on the surface part of the operation.



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■ *(Cl 28 Cont)*

- In relation to all underground parts of a coal operation – hazards arising from the transport of people and materials, in particular from transport that is operated in the underground parts of the coal operation and locomotives that are operated on the surface part of the coal operation where the surface rail system operates jointly with the underground system.
- Cl 30
 - Conditions under which the transport may be used
 - Transport being used only with its design parameters
 - The maximum loads that may be carried or towed
 - Maximum speeds at which the transport may be operated



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- ***Content of contractor management plan (cl 40)***
- The following are prescribed as matters for which a contractor management plan for a coal operation must make provision under section 40 of the CMHS Act: *(including)*
 - Pre-assessment of contractor HSMS
 - Site inductions of contractors
 - Monitoring of contractor compliance with site health and safety requirements, including compliance with the act and this regulation.



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- ***Contents of emergency management system (cl 45)***
- For the purposes of section 47 (2) of the CMHS Act, an emergency management system for a coal operation must adequately address the following matters in addition to those specified in section 47 of the Act
- *(including)* The provision and supply of water storage and reticulation



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- ***High risk activities, waiting periods and information required (cl 49)***
- For the purposes of section 53 of the CMHS Act, each activity specified in the Table to this clause is prescribed as a high risk activity to which Subdivision 6 of Division 2 of Part 5 of the Act applies. For the purposes of s54 (1) (b) of the CMHS Act the waiting period specified in the table is that which must elapse before that activity can commence.



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■ *Cl 49 (Cont)*

➤ *(table includes):*

➤ *Cutting or welding in a hazardous zone underground,*

➤ *(Waiting period first occasion one month, each subsequent occasion 7 days), (Information 1. Purpose of cutting or welding, 2. summary of cutting and welding management plan (That is, of safe work procedures to be used in cutting or welding))*

➤ *Installation of a booster fan underground*

➤ *(Waiting period 3 months), (Information 1. Plant location, 2. Ventilation plant, a summary of risks identified and controls to be put in place)*



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■ *Cl 49 (Cont)*

- *The introduction for the first time of a vehicle with a non-flameproof (fire protected) diesel engine to an underground part of a coal operation that is not a hazardous zone.*
- *(Waiting period 3 months), (Information – how the risk of introduction has been assessed and the resulting controls put in place, together with procedures to be followed in the case of failure of control)*



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- *Notification of certain incidents at or in relation to coal operations for the purposes of section 110 (1) (b) of the Act (cl 55)*
- The following incidents are prescribed for the purposes of section 110 (1) (b) of the CMHS Act
 - An injury to a person that results (at any time after the injury) in any of the following:
 - (includes) The injection of fluid (Including hydraulic fluid, oil, air or water) under pressure



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■ *Cl 55 (Cont)*

- Any of the following events or circumstances that present an immediate threat to life or of permanent incapacitating injury
 - Damage to any building plant or structure
 - Imminent risk or explosion or fire
 - Serious burns to a person
 - The unintended activation or movement of vehicles or machinery



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■ *Cl 55 (cont)*

- An uncontrolled explosion or fire or a misfire of explosives in the underground parts of a coal operation
- A collision on the surface part of the coal operation involving a vehicle or mobile plant with a gross weight of more than 2 tonnes
- The loss of control of a heavy vehicle or other large plant on the surface part of the coal operation
- The overturning of a heavy vehicle or other large plant on the surface part of the coal operation



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■ *Cl 55 cont*

- The failure of any part of a powered winding system or damage to a shaft or shaft equipment.

■ *Notification of certain incidents at or in relation to coal operations (cl 56)*

- The following are declared to be incidents or matters that are required to be notified for the purposes of section 110 (1) (c) of the CMHS Act:
 - The in service failure of the explosion-protection characteristics of explosion protected plant,



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■ *Cl 56 (cont)*

- An escape of fluid under pressure that could place any person at risk
- An unintended activation or movement of vehicles or machinery that does not present an immediate threat to life or of permanent incapacitating injury

■ *Notification of certain incidents at coal exploration sites: section 110 (2) (b) of the CMHS Act (cl 57)*

- The following incidents are prescribed for the purposes of s110(2)(b)
- (*includes*) The unintended activation or movement of machinery (other than a vehicle)



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- ***Aluminium or light metal alloys (cl 66)***
- The operator of an underground mine must develop and implement arrangements for the control of the use of aluminium and aluminium articles in the underground parts of the mine.
- ***FRAS materials (cl 70)***
- The operator of an underground mine must ensure that ventilation appliances and conveyor belt accessories in the underground parts of the mine (including reclaim tunnels) are flame resistant and ant-static (FRAS) as Gazetted.



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- ***Diesel fuel (cl 73)***

- The operator of a coal operation must ensure that diesel fuel used at the coal operation:

- Conforms to **Gazetted** requirements

- ***Diesel engines (cl 74)***

- The operator of an underground mine must ensure that:



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■ *Cl 74 (Cont)*

- Diesel engines used in underground parts of the mine meet gazetted limits on the content of their exhaust and
- Exhaust from each diesel engine used in the underground parts of the mine is regularly sampled and analysed by a licensed person in a manner and frequency that may be **Gazetted**.

■ *Diesel particulate matter (cl 75)*

- The operator of a coal operation must minimise the exposure of people at the coal operation to diesel particulate matter produced by diesel engines in use at the coal operation



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- ***Plant requirements (cl 76)***
- The Director General may, by notice published in the **Gazette**, specify requirements (such as design, certification, performance, assessment or installation requirements) that must be met prior to any of the following plant being used at a coal operation:
 - Mobile plant that has the capacity to transport one or more people
 - Remotely controlled plant to which AS/NZS 4240:1994 applies
 - Fixed gas monitoring plant



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- ***Cl 76 (cont)***
- The operator of a coal operation must ensure that those requirements are met
- ***Assessment of risk of fire on belt conveyor (cl 77)***
- The operator of a coal operation must assess the risk of fire on any belt conveyor in a reclaim tunnel or other enclosed space on the surface of the coal operation



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- ***Detection and control of fire on belt conveyor (cl 78)***
- The operator of a coal operation must ensure that any fire on any belt conveyor in a reclaim tunnel or other enclosed space on the surface of the coal operation is detected as soon as possible and is effectively brought under control as soon as possible.
- ***Cl 87 Construction Zones***
- If building construction or demolition is undertaken the operator must designate it a construction zone being an area that includes all places where construction is being carried out.
- An inspector may direct a construction zone to be designated.



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■ *Records of Plant (cl 89)*

- The operator of a coal operation must maintain at the coal operation records of any of the following plant used at the coal operation:
 - Mobile plant that has the capacity to transport one or more people
 - Remotely controlled plant to which AS/NZS 4240:1994 applies
 - Fixed gas monitoring plant
 - A contractor who carries out work at a coal operation must maintain records of any plant of the kind referred to above
 - Such records must contain the **Gazetted** particulars and be kept in the **Gazetted** form



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- ***Cl 89 (cont)***

- Such records must be retained for at least five years.

- This does not require records to be kept in relation to plant that is at a coal operation for less than one week.

- ***Ventilating sheet and non-metallic ventilating ducting (cl 124)***

- The operator of an underground mine must ensure that a ventilating sheet or non-metallic ventilating ducting is not used in the mine unless it is of material that:



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■ *Cl 124 (cont)*

- Does not give rise to a risk of fire or static electricity and
- Meets any **Gazetted** requirements

➤ *Cl 135 Defects in transport*

- On becoming aware of a defect in any plant used for transport, the operator must take action to secure the safety of people directly and indirectly



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- ***Part 5 – Licensing***
- *Definitions* – licensable activity means one of the following activities; (*cl 149*)
- (*including*) Sampling and analysis of diesel engine exhaust under *clause 74*



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- ***Eligibility for licence (cl 153)***
- A person is eligible for a licence if the Chief Inspector is satisfied that:
 - In the case of an individual:
 - Of or above 18 years of age
 - Fit and proper person to hold a licence
 - Appropriate qualifications
 - Appropriate arrangements exist to ensure the individual's employees do not carry out a licensable activity unless they have had training in safe working methods



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■ *Cl 153 (cont)*

■ In the case of a corporation:

- The corporation is a fit and proper person
- Each director would if he or she were the applicant be a fit and proper person
- At least one individual engaged in management of the corporation has appropriate qualifications and
- Appropriate arrangements exist to ensure that the corporation's employees do not carry out the licensable activity unless trained in safe working methods



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- ***Cl 153 (cont)***
- *a person holds appropriate qualifications if they*
 - Have demonstrated a knowledge of safe working methods in relation to the licensable activity or
 - Has completed a course of training specified by the Chief Inspector in relation to the licensable activity or
 - Has in the opinion of the Chief Inspector appropriate experience or training in the carrying out of the licensable activity or
 - Has any facilities or quality assurance arrangements specified by the Chief Inspector



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Competency Standards

- ***Functions to which Part 9 of the Act applies and evidence of competence to perform those functions (cl 162) (Includes):***
- ***(1) Specified function:*** Functions of a manager of mechanical engineering at an underground mine
Specified evidence of competence: Certificate of competence to be a mine mechanical engineer
- ***(2) Specified function:*** functions of a qualified mechanical tradesperson:
Specified evidence of competence: a relevant mechanical trades certificate or employment as a mechanical tradesperson at a coal operation for a period of not less than 2 years prior to the commencement of this clause.



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Competency Standards (Con't)

(1) *Specified function*: Functions of a qualified mechanical engineer

- *Specified evidence of competence*: ‘
- For plant in the underground parts of the coal operation – the evidence of competence required to be a mine mechanical engineer determined by the Minister.
- For plant on the surface parts of the coal operation – either evidence of competence required to be a mine mechanical engineer determined by the Minister or registration on NPER.

■ *Cl 201 Exemptions*



Disclaimer

This presentation was developed to assist mechanical engineers in fulfilling their obligations under the *Occupational Health and Safety Regulation 2001* and *Coal Mine Health and Safety Regulation 2006*. The information is intended as a guide only, contains limited information and is incomplete in some areas. Use of this document does not relieve the reader of any legislative duties covering activities which are contained or not contained within the presentation. The *Occupational Health and Safety Regulation 2001* and *Coal Mine Health and Safety Regulation 2006* must be read for the correct interpretation of legislative duties.