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

Individual/Organisational name: Waudby_John Francis	
Regulations Chapter 9: Mines	
Part 9.1	
Regulation	**Comment**
9.1.4 (1) (b) Principal mining hazard	(1)(b) Requires hazard sources that can give rise to multiple fatalities in a single event or a series of recurring incidents should be defined as a principal hazard and the consequent principal hazard management requirements. There are a number of hazard sources that fall into this category as evidenced by fatal accident data (High pressure hydraulics have been the source of a number of fatalities in industry (mining and non-mining), electricity (There are a number of electrocutions every year in Australia)). These known multiple fatality hazards are widely used in the mining industry and should have specific requirements to have principal hazard management plans and be treated in a similar manner to the currently prescribed principal hazards. An alternative would be to delete part (b) and have the principal mining hazard focus on its intention, that is, hazards that are either unique or manifest in a unique mining manner.
Part 9.2	
Regulation	**Comment**
9.2.14 (1) (b) Progress of workings.	(1)(b) Requires exploratory boreholes to be drilled that will indicate the presence of the inrush hazard. The inrush hazard may be detectable by other and safer means, this should be included in this clause – refer to 2(a) where it includes "other exploratory methods
Part 9.2	
Regulation	**Comment**
9.2.15 Shafts and winding	This whole sub-section is a mixture of outcomes and prescribed controls. This section should prescribe the outcomes and include risk controls in Schedule 9.2, 2. Winding systems need to satisfy the following: Be capable of carrying the maximum expected load. Be controlled within defined parameters (Schedule 9.2, 2 should include those parameters (physical location in the shaft, speed, acceleration, deceleration, obstructions, load profiles, cage doors open at the wrong place etc). Be controlled such that the winder is brought safely to rest and maintained in a safe condition when the winder exceeds the defined

	parameters. Protect personnel from falling objects, coming into contact with shaft fitting / structures or other conveyances or materials being carried by the conveyance whilst the conveyance is in motion. Shaft entrances (roadways, surface access etc) need to be guarded to prevent access to the shaft if a conveyance is not in position. Controls need to be sufficiently reliable to control the risk (have the appropriate safety integrity) All other requirements except (2) in this section should be included in the schedule.
Part 9.2	
Regulation	**Comment**
9.2.16 (2) Movement of mobile plant.	A key element in mobile plant safety is that the plant can be safely operated in its selected environment; this requirement is not clearly expressed. A new paragraph between (2) (a) and (2) (b) is required. It should state: "The mobile plant is selected to safely operate in the environment specified in (a).
Part 9.2	
Regulation	**Comment**
9.2.16 (2) (d) Movement of mobile plant.	The operation of remotely controlled plant should be expanded to include automatically operated mobile plant. Note: AS/NZS4240 deals with remote controlled mining equipment and excludes automated plant; any definitions need to be consistent with a published standard.
Part 9.2	
Regulation	**Comment**
9.2.17 Dust explosion in an underground mine.	Potentially explosive dust atmospheres are the subject of a number of International and National standards. These standards recognise that dust layers are a potential source as an explosive atmosphere. They are a source if that layer is disturbed sufficiently. In many industries a control measure is to clean up the dust layers before they are of sufficient depth to create an explosive atmosphere. Dust layers and control methods are not clearly covered in the current clause. Clause 2(b) should be modified to state: suppress, collect and remove potentially explosive dusts and layers of dust that can create an explosive atmosphere.

Part 9.2	
Regulation	**Comment**
9.2.23 Air safety – additional requirements relating to methane in underground mines.	The matters relating to preventing explosions in underground mines should be separate from air quality requirements. There should be a new section immediately after 9.2.17 dealing with gas explosions. **New section 9.17A Gas explosion in an underground mine.** Where there is a risk of an explosive gas atmosphere, there are International and National standards that deal with this matter. The principles which are practiced world wide are: characterise the explosive gas, identify the sources of release of the explosive gas, determine the likelihood of the release and classify the area affected by the release and finally manage the ignition sources (one element of managing ignition sources is to only permit appropriately rated equipment (eg Explosion protected electrical and mechanical equipment) into the area where there is a potentially explosive atmosphere. Another common practice in coal mines is to remove the electricity from certain explosion protected equipment when general body methane concentrations exceed 1.25%, Note: If the equipment is an explosion protection level (EPL) of Ma (Mining) or Ga (Non- underground coal mining) then it is suitable for use in an explosive atmosphere – this would typically be intrinsically safe category ia. Another practice in NSW underground coal mines is to remove the electrical power from non-explosion protected equipment when the gas concentration reaches 0.5%. The above are the principles that should be applied in this clause. The new clause should be titled: **Gas explosion ion an underground mine:** (1) The mine operator of an underground mine must, so far as reasonably practicable, minimise the risk of a gas explosion occurring at the mine. (2) Without limiting sub regulation (1), the mine operator must implement control measures that: (a) minimise the generation of potentially explosive gases; and (b) dilutes the concentration of explosive gases to: (i) A maximum of 0.25% for intake air (ii) A maximum of 2% for air passing through the main ventilation fans (iii) A maximum of 1.25% for air passing over explosion protected equipment category Ma or Ga © Where the above levels are exceeded, remove any potential ignition sources, in particular: (i) The mine operator must ensure that arrangements are in place that remove the supply of electricity to non-explosion protected equipment when the methane concentration at or near the equipment (including cables) exceeds 0.5% and / or removes the supply of

	electricity to explosion protected equipment with an explosion protection level (EPL) of Mb or Gb when the methane concentration at or near the engine exceeds 1.25%. (ii) The mine operator must ensure that arrangements are in place that stops any non-explosion protected internal combustion engine when the methane concentration at or near the equipment (including cables) exceeds 0.5% and / or stops any explosion-protected internal combustion engine when the methane concentration at or near the engine exceeds 1.25%. **If this new section is included delete 9.2.23 (1) (2) (3) and (4)**
Part 9.2	
Regulation	**Comment**
9.2.23 Air safety – additional requirements relating to methane in underground mines.	In underground coal mines, especially those with a risk of methane being present, the ventilation system is the most important risk control. Being a safety critical piece of infrastructure, the ventilation fans need to be highly reliable. Further, when a ventilation fan fails to adequately ventilate the mine the focus becomes on managing the ignition sources. When a ventilation fan / fans fail to deliver the required amount of fresh air ALL ignition sources need to be managed. It is a widely accepted practice that when a ventilation fan fails to deliver the fresh air electrical power is automatically removed from the underground coal mine. This clause should include requirements to automatically remove electrical power to an underground coal mine or parts of an underground coal mine when ventilation is insufficient. However, the automatic removal of power should be done safely and be commensurate with the risk. This clause should include a requirement that in the event the ventilation levels can not keep the methane concentrations below the prescribed levels then the ignition sources shall be removed from the affected areas.
Part 9.5	
Regulation	**Comment**
9.5.1 (3) Survey plan of mine must be prepared.	The survey plan should include the location of all atmospheric monitoring equipment. The survey plan should also include the location of other infrastructure that may help in an emergency, eg compressed air systems, pump line isolation valves etc.
Other Comments	
The current Chapter 9 does not have any requirements with regards the use of electricity and this topic is not adequately covered in chapter 4 of the regulation. Currently the safe use of electricity in general industry is covered in two sets of legislation, OH&S legislation and Electricity Safety legislation. Irrespective of	

what the OHS legislation requires, the Electricity Safety Legislation requires compliance with the Australian Wiring Rules (AS/NZS3000) has specific requirements for work by licensed electrical people and prescribes that certain electrical equipment has to conform to prescribed requirements. The application of Electricity Safety legislation is variable across Australia; some states (including NSW) specifically exclude mines. Where Electricity Safety legislation does not apply to mines there is a possibility that the regulatory expectations imposed on mines will be less than for general industry, that is, there is the potential to increase the risk to mine worker safety to a level that is greater than general industry. This matter can be addressed by ensuring specific mining legislation has equivalent provisions to those in the electricity safety legislation.

The current Chapter 9 does not have any requirements with regards to potentially explosive atmospheres at the surface of mines and this topic is not adequately covered in other chapters of the regulation.

Potentially explosive atmospheres exist at the surface of mines. These potentially explosive areas can be dust or gas; the gas can be mine gas such as methane or other gas or vapour produced by processing equipment. These regulations do not adequately cover the identification and classification of areas with a potentially explosive atmospheres or the appropriate management of ignition sources. Traditionally general industry has to address this matter through a number of ways, one of which is compliance with the relevant state electricity safety legislation, which invariably requires compliance with the Australian Wiring Rules (AS/NZS3000), which in turn requires the classification of areas with potentially explosive atmospheres. This legislation needs to require compliance with AS/NZS3000 for mines where the state electricity safety legislation does not apply.

The current Chapter 9 does not have any requirements with regards to the use of technology to protect people; this is not specifically covered in chapter 5.

Technology (electrical, electronic, and programmable) is widely used to control risks in mines; the reliability of this technology can significantly impact on the amount of risk reduction provided. The chapter should require that technological / engineering risk controls are sufficiently reliable to provide the necessary risk reduction (safety integrity).

Codes of Practice	
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
General comment	The CoP is clearly focussed on surface operations, however the scope and some of the content is aimed at underground operations also. For underground mines the CoP is deficient in dealing with the fact the roadway heights and widths are a significant factor, and that these are further reduced by mining infrastructure such as cables, pipes, conveyors, pumping requirements, and electrical distribution switch gear requirements.
Codes of Practice	
Roads and Other Vehicle Operating Areas	
Section/page	**Comment**

number	
General comment	Technology (electrical, electronic, and programmable) is widely used to control risks on mobile equipment; the reliability of this technology can significantly impact on the amount of risk reduction provided. The code of practice should require that technological / engineering risk controls are sufficiently reliable to provide the necessary risk reduction (safety integrity).
Codes of Practice	
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Page 7 of 20, section 1.4, sub-section "When should a principal mining hazard management plan be reviewed?"	Any management plan should be reviewed when the risk change not only when risk control measure is revised. Risks can change due to many other things than a risk control being revised; indeed the management plan review may be the avenue for revising risk controls.
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Page 9 of 20, section 2, final paragraph and dot points.	The hazards from lightning should be included. For underground operations vehicles contacting side walls / ribs, roofs and mining infrastructure and the reduced capability of people to avoid the hazard should be included.
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Page 12 of 20; section - Road widths, final paragraph.	This broad statement should be qualified with geological constraints on roadway widths. It may be necessary to consider this requirement in the opposite way – the vehicle should have a clearance in the designed roadway that satisfies the 1.5 times requirement. Roadway height should be considered for underground operations.

Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Page 13 of 20, section - Stopping distances, paragraph 2 dot points.	The type of braking used influences stopping distance and the type of braking actually used (eg dynamic (electrical) braking or the use of emergency brakes).
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Page 14 of 20, section - Overhead powerlines and structures.	A known risk control for minimising risk of contact with overhead powerlines is to locate overhead powerlines around mining areas. AS3007 gives advice on overhead powerlines and should be referred to (in an advisory manner).
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Page 15 of 20, section - Dumps and pads.	Dumps and pads need to be managed so they do not encroach on overhead lines corridors / easements.
Roads and Other Vehicle Operating Areas	
Section/page number	**Comment**
Page 17 of 20, section - Remotely operated mobile equipment locations.	A key risk control for remotely operated equipment is to prevent the equipment from being operated by other remote controllers or other EM sources. For underground mines AS/NZS4240, parts 1, 2 and 3 should be referred to in an advisory manner.
Managing Naturally Occurring Radioactive Materials in Mining	
Section/page number	**Comment**

	No comment
The Mine Records	
Section/page number	**Comment**
	No comment
WHS Management Systems in Mining	
Section/page number	**Comment**
Appendix A PRINCIPAL MINING HAZARD MANAGEMENT PLANS, page 13.	The consequences of a principal hazard management plan failing to protect workers are so high; it warrants consideration of independent accreditation of such plans by competent accreditation providers (not necessarily the regulator). Further, specific known risk controls may also need to be subject to independent certification or accreditation. Technology (electrical, electronic, and programmable) is widely used to control risks in mines; the reliability of this technology can significantly impact on the amount of risk reduction provided. The code of practice should require that technological / engineering risk controls are sufficiently reliable to provide the necessary risk reduction (safety integrity).
WHS Management Systems in Mining	
Section/page number	**Comment**
Appendix A PRINCIPAL MINING HAZARD MANAGEMENT PLANS, page 25, section - Mine shafts and winding operations.	Section 3.6 states: ‘A principal hazard management plan helps the mine operator manage all aspects of the risk control measures…” For technical systems such as a mine winders the reliability of the technical risk controls is a key element, as such the principal hazard management plan should establish the level of reliability of protective systems to provide the required risk reduction. Acceleration and deceleration limits should be mentioned, this should be included in the principal hazard management plan Measures to prevent conveyance and landing gates from being left open at inappropriate times, this should be included in the principal hazard management plan Protecting people from being able to have parts of their body protruding from a conveyance during travel (there have been fatal accidents in NSW when this has occurred), this should be included in the principal hazard management plan
WHS Management Systems in Mining	
Section/page number	**Comment**
Appendix A	Section 3.6 states: ‘A principal hazard management plan helps the mine operator manage all aspects of the risk control measures…” For

PRINCIPAL MINING HAZARD MANAGEMENT PLANS, page 25, section – Fire, explosion and gas outbursts.	technical systems such as gas detection systems the reliability of the detection and any associated alarming, interlocking etc is a key element, as such the principal hazard management plan should establish the level of reliability of protective systems to provide the required risk reduction. A key element in preventing explosions is the identification and classification of locations that may have a potentially explosive atmospheres, this should be included in the principal hazard management plan.
Inundation and Inrush Hazard Management	
Section/page number	**Comment**
Section 2.1, page 7 of 31	Abandoned mines: This should include mine shafts (Lofthouse Colliery disaster)
Emergency Response in Australian Mines	
Section/page number	**Comment**
Section 3, page 10 of 27	This section needs to provide advice on the need to be able to contact Network Service Providers who supply electricity to a mine. The electricity supply will need to be maintained during an emergency, it may also electricity under the control of a transmission authority or Network Service Provider may be the source of the emergency. An additional paragraph is required, it should state: "Network Service Providers and transmission authorities need to be able to easily find the mine and coordinate their activities with the mine so as to address any emergency on their assets or to ensure electricity supply is maintained or re-established as quickly as possible."
Section/page number	**Comment**
Section 3, page 10 of 27	This section needs to provide advice on the need to identify mine safety critical infrastructure (main ventilation fans, gas drainage plants, mine winders, fire fighting pumps etc., and to make arrangements for alternative power supplies if the normal supply fails. An additional paragraph is required, it should state: "The mine should identify mine safety critical infrastructure supplied be electricity and provide an alternative source of supply in the event the normal supply is disrupted."
Section/page number	**Comment**
Section 5.2, page 14 of 27	Communication – underground mines. Dot point 2. The term explosion risk zone is a unique Queensland terminology. The issue is to have functional communication systems in the presence of excessive methane. International Standards term the suitability of equipment as "Explosion Protection Level (EPL). Further, the EPL's are categorised for mining as Ma and Mb, with Ma being the highest level of protection. Traditionally equipment with an EPL Mb has required the removal of electrical power to the equipment when methane concentrations (in the general body of air) reach 1.25%. Traditionally equipment with an EPL of Ma has been considered suitable to remain energised in the presence of methane in concentrations greater than 1.25%. The second dot point should be re-phrased to state: "electrically

	powered communication systems should have an Explosion Protection Level of Ma where the concentration of methane in the general body of air may exceed 1.25% during an emergency."
Strata Control in Underground Coal Mines	
Section/page number	**Comment**
	No comment
Ventilation of Underground Mines	
Section/page number	**Comment**
Section 2.2, page 11	A key risk control for preventing ignition of methane is to use appropriately rated equipment (that is explosion protected equipment with an appropriate Explosion Protection Level (EPL)). This should be included as a new dot point that states: "Using equipment (mechanical and electrical) that has an appropriate Explosion Protection Level."
Section/page number	**Comment**
Section 2.2, page 11	Because the consequences of a methane explosion are so high, the confidence in the equipment as a risk control needs to be very high. This confidence is can be achieved by having independent assessment that the equipment is explosion protected and by having an independent assessment of the quality aspects of manufacturing of the equipment. The United Nations Working Group on equipment for potentially explosive atmospheres recognises this in its published model regulations; they also recognise that certification can provide the required level of confidence. A new dot point should state: "Electrical and mechanical equipment used in an area where the methane concentrations exceed prescribed limits shall have an appropriate Explosion Protection and Level and shall be certified as achieving that level."
Section/page number	**Comment**
Section 3.4, page 23	A key risk control for preventing ignition of methane is to automatically remove the power to non-explosion protected equipment in the event of the main ventilation failing. This needs to be reflected in the sections on Main fans and booster fans. Additional dot points should state: "In the event of the main ventilation fans or booster fans failing to deliver sufficient quantity of air to sufficiently dilute any methane content, then the electrical power to the affected area of the underground coal mine should be automatically removed before the methane concentration exceeds 0.25%."
Survey and Drafting Directions for Mine Surveyors	
Section/page number	**Comment**
Section 7.8, page 20 of 36	Overhead powerlines are the largest source of electrocutions in Australia; as such their location should be shown on the plans for the mine. The site services plan should specifically show ALL overhead powerlines at the mine, including those owned and operated by transmission authorities and Network Service Providers. The plan should show the operating voltage of the line. Dot point 4 should be modified to state: "…sub stations and in particular overhead powerlines, including overhead powerlines owned and operated by transmission authorities and

	Network Service Providers, the plan should state the operating voltage of the overhead powerlines.”
Section/page number	**Comment**
New Section, page 21 of 36	For underground mines a plan showing electrical distribution, gas monitoring and communication infrastructure should be provided as this information will be critical in any emergency and will be useful in day to day planning. Include another sub section that states: 7.13 Underground electrical distribution plan. An underground electrical distribution plan should be kept at the mine; it should show the location of cables and switchgear and indicate the operating voltage. The plan should also show the location of communication devices and associated cables and gas monitoring devices and associated cables.”
Health Monitoring	
Section/page number	**Comment**
	No comment
Mine Closure	
Section/page number	**Comment**
New Section, page 11 of 26	The majority of mines are supplied with electricity from a Network Service Provider, arrangements need to be made to have the Network service Provider disconnect the supply of electricity and where possible remove any overhead powerlines associated with the mine. A new section 2.14 should state: “**2.14 Electricity supply** The Network Service Provider should be requested to disconnect the supply of electricity and any overhead powerlines should be removed.”
Ground Control in Open Pit Mines	
Section/page number	**Comment**
	No comment
Ground Control for Underground Mines	
Section/page number	**Comment**
	No comment
Underground Winding Systems	
Section/page number	**Comment**
General	The Code of Practice fails to address drift winding systems that are widely used in coal mines.
Section/page number	**Comment**

General	The Code of Practice focus's on manually operated winding systems, automatic winding systems are widely used in the coal mining industry, and these are not adequately covered by this code of practice.
Section/page number	**Comment**
General	The Code of Practice should consider NSW Trade and Investment; Mine Safety Operations draft publications EES008-1, EES008-2, EES008-3, EES008-4 and EES008-5 available at the Department's website.
Section/page number	**Comment**
General	The Code of Practice does not clearly address life cycle and the combination of risk controls that are used on a mine winder. The code of practice should include the following: "The design of the winder must be systematic and encompass the life cycle of the powered winding system from concept to disposal. It is also important to clearly define the safety requirements for the powered winding system in a safety requirements specification and to specify the systematic review of all risk controls at critical points of the life cycle. It is recommended that a layer of protection analysis (LOPA) be conducted and that the winder control system, 'non-electrical' risk controls and the safety circuits, in combination, provide the required amount of risk reduction. This means the winder motor drive control system provides some level of risk reduction, but if this system fails then the safety circuits provides a further level of risk reduction. There may also be some 'non-electrical' layers of protection that also reduce the risk. In total the risk must be demonstrably reduced to the tolerable and ALARP level."
Section/page number	**Comment**
General	The Code of Practice does not clearly enunciate safety outcomes required. This code of practice should state essential safety outcomes as expressed below: The conveyance shall operate between pre-defined travel limits. When the conveyance operates outside the pre-defined limits, it shall be automatically brought safely to rest. The conveyance shall operate between pre-defined speed limits. When the conveyance operates outside the pre-defined speed limits, it shall be automatically brought safely to rest. The conveyance shall operate within pre-defined acceleration and deceleration limits. When the conveyance operates outside the pre-defined acceleration and deceleration limits, it shall be automatically brought safely to rest. The conveyance shall not move while people are entering or leaving the conveyance. The conveyance shall only be capable of access or egress at predefined locations. (When the conveyance is located at each predefined location, only then can access gates or doors on both the conveyance, shaft collar and shaft entries be opened). The conveyance shall have facilities that provide for signaling, operating or communicating to the winder control system or operator. The conveyance shall not require any part of the body to protrude from the conveyance to signal, operate or communicate to the winder control system or operator. The conveyance shall be capable of initiating it being automatically brought safely to rest in an emergency. In the event of any safety related device, feature, component, circuit or the like failing in such a manner that it becomes incapable of operating on demand, the conveyance shall be automatically brought safely to rest.

Section/page number	Comment
Section 1.6, page 16 of 58	It is internationally accepted Safety circuits for plant such as winders should have a reliability commensurate with the risk being controlled (that is appropriate safety integrity. This sub-section should state: "Safety circuits shall have appropriate safety integrity. It is recommended that safety circuits should not be dependent upon single line component functions essential to safety. All mechanically-actuated position switches are actuated in the positive mode. All hardware is suitable for the environment in which it is to operate, in particular with respect to resistance to corrosive liquids, ingress of dust and the ability to withstand impact damage. Provide additional measures to prevent/detect failure where magnetic and proximity type safety switches are used. Employ redundancy and diversity to avoid common cause failure.
Section/page number	**Comment**
Section 1.6, page 16 of 58	Many mine winders are controlled by software; this is not adequately covered in this Code of Practice. A new paragraph is required to address software, It should state: "**Software** Ensure suitable measures are taken to prevent inadvertent or deliberate alteration if a safety related control system is capable of being re-programmed. Ensure Safety related software is self-monitoring."
Section/page number	**Comment**
Section 2, New subsection 2.8, page 26 of 58	It is important that safety circuits are commissioned as functioning correctly. A new subsection is required that states: "**2.8 Commissioning of safety circuits** All safety circuits shall be tested to ensure the winder is brought safely to rest on application of a safety circuit."
Section/page number	**Comment**
Section 2, New subsection 3.7, page 32 of 58	The auditing of mine winders is important and needs to be specified as below: **"**The safety audit shall be designed to assess the safety condition of the Powered Winding System and will address/review all safety aspects of operation, servicing, and maintenance of the winder and should include, but not be restricted to, the following: • Review modifications • Review design calculations, drawings, and specifications. • Review the structure, logic and code of any programmable electronic system (PES). • Verify that all safety devices are in place and functioning. List each device on a sheet, test for performance and enter test results on the sheet. • Witness static and dynamic testing of all safety devices and ensure that persons authorised to conduct these tests are fully conversant with the purpose and method of these devices and of safely carrying out this testing. • Verify that records are kept correctly for the following: o Brake Testing

	○ Static Safety Device Testing ○ Dynamic Safety Device Testing ○ Primary Safety Circuit Testing ○ Maintenance Program Results ○ Safety File To complete the audit, the auditor shall conclude the report with attachments that will clearly indicate the safety condition of the Powered Winding System. The auditor will give a copy of the report to the operator and relevant electrical, mechanical and mining engineers.
Section/page number	**Comment**
Section 2, New subsection 3.8, page 32 of 58	It is important that safety circuits are regularly tested after successful commissioning. A new subsection is required that states: "**3.8 Testing of safety circuits** All safety circuits shall be operated for functionality on at least monthly basis All Over Speed devices shall be dynamically tested six monthly All Over Travel devices shall be dynamically tested monthly All test results shall be logged and a record kept.
Section/page number	**Comment**
New Section	Mine winders are complex and have a long service life expectancy, to adequately manage the risks associated with mine winders appropriate information needs to be readily available to the mine operator. A new section should be included that states: "**Mine winder information** The information relating to powered winding systems will be extensive. It will incorporate all the information generated from the concept phase to the disposal phase and will be used for on-going life cycle management. The information needs to be managed so that the design and ongoing management of the powered winding system has a continual traceable history. To facilitate the management of this information a 'Winder Library' should be established. It should contain at least the following: A clear description of the powered winding system including: • A functional description of the winder • An overview of the safety approach taken • A clear description of the safety functions and the safety requirements specification • An electrical general arrangement drawing (system configuration), detailing major components (controller, switchgear, prime mover etc.) from the power source to the prime mover. • A summary of the winder control approach • Over speed envelope and retardation profile • For programmable systems – a particular reference within the winder library that contains the program structure, • A general arrangement drawing showing the location of safety devices

	Information provided by the winder manufacturer. Testing or inspections to be carried out. Testing and inspection results. Installation, commissioning, operation, maintenance, inspection, cleaning, transport, storage and, if it is capable of being dismantled, dismantling Systems of work necessary for the safe use Knowledge, training or skill necessary for persons undertaking inspection and testing Emergency procedures Where programmable systems are used it is essential that a ‘Winder Software File’ is established. This particular file will contain ALL software changes that are made.