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PLANT/EQUIPMENT RISK CONTROL (Hierarchy of Controls)

Risk controls are to be implemented using the "Hierarchy of Controls" below. In most cases, risk is controlled by a combination of several levels. Where a risk cannot be eliminated, then the risk is to be minimised by using level 2 – 4 control measures .

Hierarchy of control		Examples of control measures
Level 1	**Elimination**	Decommissioning/disposal of the plant/equipment
Level 2	**Substitution**	Purchasing alternative plant/equipment which meets the legislative requirements
	Engineering/Isolation (Refer AS 4024 series. *Safety of Machinery*)	**Installing:** • Safeguarding (see below) • An interlocking device • A limiting device (i.e. prevents from exceeding design limits) • A mechanical restraining device (e.g. wedge, strut) • A protective structure • A switching device • An emergency stop (see below)
Level 3	**Administrative**	• Use of Danger/Out of Service tags • Documenting Safe Operating Procedures (SOPs) • Provision of information, instruction, training and supervision • Obtaining licences and permits • Fatigue management (Refer Appendix F)
Level 4	**Personal Protective Equipment**	Providing operators with appropriate safety equipment (e.g. eye and ear protection, safety boots, helmets, gloves, mask, vest as applicable). Also refer to Personal Protective Equipment Information Sheet.

PLANT/EQUIPMENT – ADDITIONAL CONTROL MEASURES FOR GENERAL PLANT

Where any of the control measures or plant/equipment listed on the following tables, apply to your activities/area of work, please refer to the relevant section of the WHS Regulations/legislation for further requirements.
The examples provide an indication of the additional control measures required. The examples are not exhaustive. Controls will also need to take into consideration the specific item of equipment and the environment.

Guarding WHS Regulations 2012 (SA) Section 208	This includes ensuring that: ☐ if access to the area where the plant/equipment is necessary during operation, maintenance or cleaning, the guarding is an interlocked physical barrier; or if it is not possible ☐ the use of a physical barrier that can only be altered or removed by the use of tools; or if it is not possible ☐ the guarding includes a presence-sensing safeguarding system that eliminates any risk arising when a person is in the area; ☐ the guarding is properly maintained.
Guarding and insulation from heat or cold WHS Regulations 2012 (SA) Section 209	This includes ensuring that: ☐ where any pipe or other part of the plant/equipment associated with heat or cold is guarded or insulated.
Operational controls WHS Regulations 2012 (SA) section 210	This includes ensuring that any operator controls are: ☐ identified on the plant/equipment to indicate their nature and function and direction of operation; ☐ located so they can be readily and conveniently operated by each person using the plant/equipment; ☐ located or guarded to prevent unintentional activation; and ☐ able to be locked into the "off" position to enable disconnection from energy sources.

PLANT/EQUIPMENT RISK CONTROL (Hierarchy of Controls)

PLANT/EQUIPMENT – ADDITIONAL CONTROL MEASURES FOR GENERAL PLANT (Continued)

Emergency stops WHS Regulations 2012 (SA) section 211	This includes ensuring that: ☐ the stop control is prominent, clearly and durably marked and immediately accessible to each operator; ☐ any handle, bar or push button associated with the stop control is coloured red; ☐ the stop control cannot be adversely affected by electrical or electronic circuit malfunction; ☐ where the plant/equipment is designed to be operated or attended by more than one person and there is more than one emergency stop, that the the multiple controls are of the "stop and lock-off" type.
Emergency warning devices WHS Regulations 2012 (SA) section 212	This includes ensuring that: ☐ the device is positioned on the plant/equipment to ensure that the device will work to best effect; ☐ where there is a possibility of the plant/equipment colliding with pedestrians or other powered mobile plant/equipment, that there is a warning device to alert the operator and others in the workplace (e.g. automatic audible alarms, motion sensors, lights, flashing lights).
Powered mobile plant WHS Regulations 2012 (SA) section 214 and 215	This includes ensuring that: ☐ the plant cannot overturn (e.g. if operating on an uneven or unstable surface); ☐ things cannot fall onto the operator of the plant; ☐ the operator cannot be ejected from the plant; ☐ the plant does not collide with any person or thing; ☐ plant reach has been taken into consideration ☐ the mechanical failure of pressurised elements of the plant does not release fluids that pose a risk to health and safety ☐ any traffic hazards are identified and traffic management plans implemented to control areas of interaction between people and mobile plant (e.g. exclusion zones, spotters and traffic controllers) in accordance with the requirements of the Managing HSW in the work environment HSW Handbook chapter. ☐ mobile plant movement plans are communicated regularly ☐ alarms for moving plant are operational and appropriate for the site conditions ☐ traffic speeds are clearly identified ☐ loads are adequately secured ☐ plant operators are competent and have the relevant licences (Where the plant is a vehicle, the Vehicle Safety Management information sheet provides further guidance on the safe operation of vehicles at work)
Roll-over protection on tractors WHS Regulations 2012 (SA) section 216	This includes ensuring that: ☐ The tractor is not used unless it is securely fitted with a roll-over protective structure unless the specific requirements of the legislation have been implemented.
Quad bikes	Refer to the SafeWork SA for guidance Note the requirements of Aust Government Quad Bike Safety Standards (October 2019).
Agricultural plant/equipment	Ensure that: ☐ agricultural plant/equipment during harvest is used in accordance with Grain harvesting Code of Practice. ☐ plant/equipment (especially Agricultural equipment and vehicles) that are used in an external environment which has the potential to cause bush/grass fires are managed in accordance with the CFS Codes of Practice.

PLANT/EQUIPMENT RISK CONTROL (Hierarchy of Controls)

PLANT/EQUIPMENT – ADDITIONAL CONTROL MEASURES FOR GENERAL PLANT (Continued)

Industrial lift trucks (see definitions) WHS Regulations 2012 (SA) section 218	This includes ensuring that: ☐ the truck is equipped with lifting attachments that are suitable for the load to be lifted or moved by the truck; and ☐ that the truck is not used to carry a passenger unless the truck is designed to carry a seated passenger and/or the requirements of the legislation have been implemented. (Note – Industrial lift trucks include forklifts)
Plant that lifts or suspends loads WHS Regulations 2012 (SA) section 219	This includes ensuring that: ☐ the plant used has been specifically designed to lift or suspend the load or otherwise meets the requirements of the legislation; ☐ when lifting and suspending a load, the lifting attachments are suitable and within the safe working limits of the plant/equipment; ☐ the loads are not suspended or travel over a person unless the plant/equipment is specifically designed for that purpose.
Exception – Plant not specifically designed to lift or suspend a person WHS Regulations 2012 (SA) section 220	This includes ensuring that: ☐ the person(s) are lifted or suspended in a work box that is securely attached to the plant/equipment; ☐ the person(s) in the work box remain within the work box while they are being lifted or suspended; ☐ if there is a risk of a person falling from a height, a safety harness is provided and worn by the person in order to prevent an injury as a result of the fall; and ☐ there is a way in which the person(s) being lifted or suspended can safely exit from the plant/equipment in the event of a failure in its normal operation.
Plant used in connection with tree lopping WHS Regulations 2012 (SA) section 221	Note WHS Regulation 220 1 (a) and (b) do not apply if: ☐ a risk assessment shows that lifting or suspending a person in a harness with a crane to place the person in a tree to carry out tree lopping does not creat a grater risk to health or safety than using plant specifically designed to lift a person or climbing a tree; and ☐ the tree lopping is carried out by a person who is a competent person in the use of the harness referred to above; and ☐ a crane is used to put the competent person in the tree to lop it; and ☐ the crane has safety mechanisms that would prevent the competent person from inadvertently falling; and ☐ while attached to the crane, the competent person is in visual, audio or radio communication with the crane operator In this regulation **harness** means a work positioning harness that is designed and certified, in accordance with AS/NZS 1891.1:2007 (Industrial fall-arrest systems – Harnesses and ancillary equipment), for the purpose of lifting and suspending a person.
Industrial robots Or other remotely or automatically energised plant/equipment WHS Regulations 2012 (SA) section 222	This includes ensuring that: ☐ no person works in the immediate vicinity of the plant if it could start without warning and cause a hazard, unless suitable control measures are in place (e.g. by isolating the area or by providing interlocked guards, or presence-sensing devices or a permit to work system.)

APPENDIX C (Page 4 of 5)

PLANT/EQUIPMENT RISK CONTROL (Hierarchy of Controls)

PLANT/EQUIPMENT – ADDITIONAL CONTROL MEASURES FOR GENERAL PLANT (Continued)

Lasers WHS Regulations 2012 (SA) section 223	This includes ensuring that: ☐ laser equipment intended for use on plant is designed, constructed and installed so as to prevent accidental irradiation of any person; ☐ laser equipment on plant is protected so that any operator of the plant or any other person is not exposed to direct radiation, radiation produced byconstruction reflection/diffusion/secondary radiation; ☐ any visual equipment used for the observation or adjustment of laser equipment on plant does not create a risk from laser rays; ☐ workers operating the laser equipment are provided with the relevant level of information, instruction and training in the proper operation of the equipment in accordance with the Manufacturers instructions, AS/NZS IEC 60825.14:2011 Part 14: A user's guide and the Risk Assessment. (This will ensure users are aware of any hazards to which they may be exposed during the use of laser equipment and the procedures necessary to ensure protection); ☐ Class 3B and Class 4 lasers (within the meaning of AS 2397:2015 "Safe use of lasers in the building and construction industry" are not used in construction work. Refer to AS/NZS IEC 60825.14:2011 "Safety of laser products Part 14: A user's guide for more specific information, including laser radiation hazards, control measures, maintenance, requirements for a Laser Safety Officer, medical surveillance etc. ☐ there is a locking interlock system in place to physically prevent unauthorised access into a laser area. (Note – manual locking of a laboratory door is not acceptable.) The locking system must be fail-safe, shutting down the laser and allowing access to the room in the event of power failure or when emergency access is required. Refer to AS/NZS IEC 60825.14:2011 "Safety of laser products Part 14: A user's guide for more specific information ☐ adequate warnings are displayed. These warnings should include the laser hazard symbol. The warning signs should be clearly displayed on the outside of all laser controlled areas. Refer to AS/NZS IEC 60825.14:2011 "Safety of laser products Part 14: A user's guide for more specific information
Pressure equipment WHS Regulations 2012 (SA) section 224	This includes ensuring that: ☐ the equipment is inspected on a regular basis by a competent person; and ☐ any gas cylinder that is inspected is marked with a current inspection mark showing the date of the most recent inspection. Refer to AS/NZS 1200 (2015) "Pressure equipment", AS 2971 (2007) "Serially produced pressure vessels" and AS 3788 (2006) "Pressure equipment – in-service inspection" for more specific information. The requirements include autoclaves.
Scaffolds WHS Regulations 2012 (SA) section 225	This includes ensuring that: ☐ the scaffold is not used unless the person receives written confirmation from a competent person that the inspection has been completed; ☐ the scaffold and its supporting structure are inspected by a competent person at least every 30 days; ☐ the scaffold and its supporting structure are repaired, altered if an inspection identifies a risk to health or safety and again inspected by a competent person before use of the scaffold is resumed; ☐ unauthorised access to the scaffold is prevented while the scaffold is incomplete or unattended.

PLANT/EQUIPMENT RISK CONTROL (Hierarchy of Controls)

PLANT/EQUIPMENT – ADDITIONAL CONTROL MEASURES FOR GENERAL PLANT (Continued)

Plant with presence-sensing safeguarding system – records WHS Regulations 2012 (SA) section 226	This includes ensuring that: ☐ a record of safety integrity tests, inspections, maintenance, commissioning, decommissioning, dismantling and alterations of the plant are kept for 5 years; or for the life of the plant; or until control of the plant is relinquished (if the plant is registered or has been altered). ☐ the record is available for inspection under the Act; ☐ the record is available to any person to whom the plant is relinquished.
Control measures for registered plant Major inspection of registered mobile cranes and tower cranes WHS Regulations 2012 (SA) section 235	This includes ensuring that: ☐ major inspections of the crane are carried out by, or under the supervision of a competent person (see definitions): ☐ at the end of the design life recommended by the manufacturer for the crane; or ☐ if there are no manufacturer's recommendations, in accordance with the recommendations of a competent person; or ☐ every 10 years from the date that the cane was first commissioned or first registered, whichever occurred first.
Lifts WHS Regulations 2012 (SA) section 236	This includes ensuring that: ☐ during the maintenance of the lift, secure barriers are provided to prevent access to openings in the lift well by someone other than a person who is performing the work, if there is a risk of a person falling down a lift well; and ☐ secure working platforms or equivalent arrangements are provided for a person who is working in the lift well to prevent a fall from height; and ☐ if there is a risk from objects falling onto that person, a secure barrier is provided to prevent falling objects from striking the person or causing a risk; ☐ there is a safe means of entry to and exit from the base of the lift well; ☐ in the lift, a fixed sign stating the safe working load is displayed in a prominent place (as specified in the design of the lift).