

Heavy Earthmoving and Civil Plant

Business Name:		ABN:
Business Address:		
Contact Person:	Phone:	Email:

THIS RISK ASSESSMENT IS APPROVED BY THE PCBU ON THIS PROJECT

Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.

Full Name:		
Signature:	Title:	Date:

CLIENT OR PRINCIPAL CONTRACTOR DETAILS

Client:	SCOPE OF WORKS
Project Name:	
Project Address:	
Project Manager:	
Contact Phone:	
Date Risk Assessment supplied to Project Manager:	



RISK MATRIX									
LIKELIHOOD	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC	SCORE	ACTION	HIERARCHY OF CONTROLS	
ALMOST CERTAIN	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4 ACUTE			<b>Elimination</b> Remove the hazard.	
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED	<b>Substitution</b> Replace the hazard.	
POSSIBLE	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	4 ACUTE	3H HIGH	Review before work starts.	Isolation Isolate People from the hazard	
UNLIKELY	1 LOW	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	2M MODERATE	Ensure control measures in place.	<b>Engineering</b> Isolate the hazard	
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 HIGH	1L LOW	Monitor and keep records.	Administrative Change	
								PPE	

  

Risk Rating & Required Action:	
<b>4A</b>	Stop work. The risk is intolerable. Eliminate the hazard or redesign the activity before proceeding. A Safe Work Method Statement (SWMS) or higher-level authorisation is required.
<b>3H</b>	Review and approve additional controls before task starts. Senior supervisor sign-off needed.
<b>2M</b>	Ensure all nominated controls are in place and effective. Proceed with caution; monitor conditions.
<b>1L</b>	Proceed, following standard operating procedures. Monitor and keep records.

  

Consequence Scale:			
Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
<b>Catastrophic</b>	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
<b>Major</b>	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
<b>Moderate</b>	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
<b>Minor</b>	First-aid only, no lost time	negligible delay	Isolated non-conformance
<b>Insignificant</b>	No injury	no schedule impact	Deviation caught and corrected on site

  

**Notes on Hierarchy of Controls:**  
Remember to apply controls in the preferred order shown by the coloured pyramid:

1. **Eliminate**
2. **Substitute**
3. **Isolate**
4. **Engineering**
5. **Administrative**
6. **PPE**

Always document **why** a lower-order control is accepted if elimination or substitution is not reasonably practicable.

*aligned with Safe Work Australia's Managing the risk of fatigue at work (2023) and ISO 45001:2018 clauses 6–8.*

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
1. Governance, WHS Leadership and Legal Compliance	<ul style="list-style-type: none"> <li>Lack of clear WHS governance framework for heavy earthmoving and civil plant operations</li> <li>Failure to understand and apply WHS Act 2011 and WHS Regulations to plant-intensive activities</li> <li>Board and senior management not visibly demonstrating due diligence obligations</li> <li>Inadequate consultation with workers and HSRs on plant-related risks</li> <li>Poor integration of WHS management system with production and project management systems</li> <li>Inadequate resourcing for safe operation of heavy plant, crushers, draglines, GPS machinery and processing plants</li> <li>Lack of clear accountabilities for plant safety across principal contractor, subcontractors and labour-hire personnel</li> </ul>	4A	<ul style="list-style-type: none"> <li>Establish and maintain a certified WHS management system (e.g. ISO 45001) covering all heavy earthmoving and civil plant operations, aligned with WHS Act 2011 and WHS Regulations</li> <li>Define and document WHS roles, responsibilities and accountabilities for officers, managers, supervisors, operators and maintenance personnel engaged in backfilling, compaction, material handling and plant operation</li> <li>Implement officer due diligence program including regular WHS legal briefings, plant safety performance reports and site verification visits</li> <li>Embed mandatory WHS planning in all tenders, contracts and project start-ups for operations such as dragline work, scrapers, dozers, graders, crushers, grinders, material handlers and processing plants</li> <li>Establish formal WHS consultation and HSR structures that specifically address plant and equipment risks (e.g. plant safety committees, toolbox forums for operators)</li> <li>Develop and maintain a WHS legal register and compliance audit schedule for plant, traffic management, noise, dust, vibration and hazardous chemicals</li> <li>Integrate WHS KPIs into plant safety (e.g. pre-start completion, defect close-out, near-miss reporting) into management performance reviews and contractor evaluations</li> <li>Require principal contractor and subcontractors to demonstrate equivalent WHS governance systems before mobilisation, including for remote and steep land projects</li> <li>Conduct annual independent WHS system reviews focusing on plant-intensive activities such as crushing, material processing and steep land manipulation</li> </ul>	3H
2. Plant Procurement, Design and Engineering Controls	<ul style="list-style-type: none"> <li>Purchase or hire of unsuitable or unsafe earthmoving and civil plant for site conditions</li> <li>Inadequate guarding and interlocks on crushers, grinders, material handlers and processing plants</li> <li>Plant lacking required safety features for steep gradients and unstable ground conditions</li> <li>Failure to consider ergonomics, visibility and operator protection at design and procurement stage</li> <li>Insufficient evaluation of control systems on GPS guided machinery and automated plant</li> <li>Non-compliance of imported plant with Australian Standards and WHS Regulations</li> </ul>	4A	<ul style="list-style-type: none"> <li>Implement a formal plant procurement standard specifying compliance with WHS Act 2011, WHS Regulations, relevant Australian Standards (e.g. AS 4024 series, AS 5327 for mobile plant) and mine/quarry codes where applicable</li> <li>Apply engineering risk assessments and safe design reviews before purchasing or hiring new plant including crushers, draglines, graders, scrapers, compactors, material handlers and processing equipment</li> <li>Specify minimum safety features for all heavy plant: ROPS/FOPS, seatbelt interlocks, reversing cameras, proximity alarms, roll-away prevention, fail-safe braking and emergency stops</li> <li>Ensure fixed and mobile crushing, grinding and processing plant have compliant guarding, interlocks, emergency stop systems, lockable isolators and access platforms designed to standards</li> <li>Mandate stability and slope capability assessments for plant used in manipulating steep land, backfilling and compaction on batters, and for use of motorised buggies on uneven ground</li> <li>Standardise controls, layouts and safety systems across the fleet to minimise operator error when changing between machines</li> <li>Require OEM documentation, conformity statements and commissioning checks for GPS guidance, remote control and semi-autonomous systems prior to use</li> </ul>	2M

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	<ul style="list-style-type: none"> <li>Lack of uniformity in fleet leading to inconsistent safety features and controls</li> </ul>		<ul style="list-style-type: none"> <li>Embed lifecycle cost and safety-in-design principles into procurement so that higher-order engineering controls are preferred over administrative measures or PPE</li> <li>Maintain a central plant register capturing safety features, design limitations and engineering controls for all major earthmoving, crushing and processing plant</li> </ul>	
3. Plant Selection, Mobilisation and Site Suitability Assessment	<ul style="list-style-type: none"> <li>Use of plant that is oversized or undersized for task leading to instability or overloading</li> <li>Inadequate assessment of ground conditions, steep gradients and underground services before moving heavy plant</li> <li>Poor planning for mobilisation and demobilisation of draglines, large excavators, crushers and processing plant</li> <li>Incompatible plant combinations during loading, unloading and material transfer (e.g. loaders to grinders, material handlers to crushers)</li> <li>Failure to adapt plant selection to changing site and weather conditions</li> <li>No systematic review of plant suitability for backfilling, compaction and site clean-up phases</li> </ul>	4A	<ul style="list-style-type: none"> <li>Establish a formal plant selection and mobilisation procedure requiring engineering and WHS review for each project or major scope change</li> <li>Require geotechnical and ground stability assessments to determine appropriate plant for steep land manipulation, battering and compaction activities</li> <li>Develop standard mobilisation plans for large plant (draglines, crushers, processing plants) including route assessments, crane buddies, exclusion zones and temporary works design</li> <li>Implement cross-functional planning reviews (project, engineering, WHS, maintenance) to validate plant suitability for earthworks, site clean-up and material handling tasks</li> <li>Include criteria in project planning to adjust plant types and configurations for adverse weather, soft ground, fog or limited visibility conditions</li> <li>Use risk-based criteria and checklists prior to approving use of motorised buggies, small utility vehicles and compact plant near pedestrians and in congested areas</li> <li>Require written authorisation by a competent engineer or supervisor before using heavy plant on gradients beyond standard operating limits</li> <li>Maintain a site-specific plant matrix mapping tasks (e.g. backfilling, ripping, grading, compaction, crusher feeding) to approved plant types and configurations</li> </ul>	2M
4. Operator Competency, Licensing and Training Systems	<ul style="list-style-type: none"> <li>Untrained or inadequately assessed operators using complex plant such as GPS guided machinery, draglines and crushers</li> <li>Out-of-date or unverified licences and VOC for operators of high-risk and heavy plant</li> <li>Inconsistent training across contractors and labour-hire staff</li> <li>Insufficient training on site-specific hazards, steep terrain, underground services and traffic interactions</li> <li>Lack of competency in emergency procedures for plant incidents (e.g. rollovers, entrapment in crushers, plant fires)</li> </ul>	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> <li>No structured training pathway for new-to-industry workers progressing onto large plant</li> </ul>		[REDACTED]	
5. Supervision, Work Planning and Permit-to-Work Systems	<ul style="list-style-type: none"> <li>Inadequate frontline supervision of heavy earthmoving and civil plant activities</li> <li>Poor coordination of simultaneous operations such as loading/unloading grinders, crusher feeding, ripping and grading</li> <li>Work proceeding without formal planning for non-routine or high-risk tasks (e.g. steep batter rework, plant recovery, working near live processing plant)</li> <li>Failure to manage short-term change variations and breakdowns safely</li> <li>Lack of effective permit-to-work for maintenance, isolation or confined space entry around processing plant and crushers</li> </ul>	4A	[REDACTED]	2M
6. Traffic Management, Segregation and Site Layout	<ul style="list-style-type: none"> <li>Uncontrolled interaction between heavy plant, motorised buggies, trucks and pedestrians</li> <li>Poorly designed haul roads, intersections and work zones for scrapers, dozers, graders and compactors</li> <li>Inadequate controls for reversing, blind spots and restricted visibility near crushers, stockpiles and processing plants</li> <li>Congestion and conflicting movements at loading/unloading points, weighbridges and waste tips</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Uncontrolled access of light vehicles into high-risk earthworks and plant operating zones</li> <li>No safe systems for mobile plant operating on steep, narrow or benched areas</li> </ul>		[REDACTED]	
7. Maintenance, Inspection and Pre-Start Systems	<ul style="list-style-type: none"> <li>Inadequate preventative maintenance of heavy earthmoving plant, crushers and processing equipment</li> <li>Deferred repairs creating systemic safety defects (e.g. braking, steering, ROPS integrity, guards missing)</li> <li>Lack of structured pre-start inspection processes for mobile plant and motorised buggies</li> <li>Poor defect reporting and close-out leading to repeat failures and near misses</li> <li>Uncontrolled breakdown repairs conducted in unsafe areas or locations</li> <li>Inadequate calibration and maintenance of GPS, sensors, limits and control systems</li> </ul>	4A	[REDACTED]	2M
8. Isolation, Lock-Out/Tag-Out and Energy Control	<ul style="list-style-type: none"> <li>Uncontrolled release of energy during maintenance or clearing blockages in crushers, grinders and processing plant</li> <li>Failure to adequately isolate power, hydraulics or stored energy on earthmoving plant during repairs</li> <li>Bypassing of interlocks and guards on crushers, conveyors and material handling equipment</li> <li>Lack of clear isolation procedures for multi-contractor works on shared plant</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Inadequate verification of zero energy before entry into hoppers, chutes or near moving plant</li> <li>Poor control of keys, tags and lock-out devices</li> </ul>		[REDACTED]	
9. Geotechnical, Ground Conditions and Steep Land Management	<ul style="list-style-type: none"> <li>Plant rollover or collapse due to unstable ground, soft spots or undermined areas</li> <li>Failure of batters, stockpiles or excavations during backfilling, ripping and compaction</li> <li>Inadequate control of plant operations on steep slopes, benches and access tracks</li> <li>Unidentified voids, services or underground structures affected by heavy plant loads</li> <li>Poor drainage and water management leading to bogging, slips and loss of control</li> <li>Inadequate barriers and bunding at edges of drops, pits and elevated work areas</li> </ul>	4A	[REDACTED]	2M
10. Crushing, Grinding and Processing Plant System Safety	<ul style="list-style-type: none"> <li>Entanglement, crushing or amputation from moving parts of crushers, grinders, conveyors and screens</li> <li>Inadequate guarding, emergency stops and access controls around processing plant</li> <li>Uncontrolled blockages and manual clearing of chutes, hoppers and crusher inlets</li> <li>Dust, noise and vibration exposures above safe levels for operators and maintainers</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Overloading of crushers and grinders from inappropriate loading practices or incompatible feed material</li> <li>Poor integration of mobile plant with fixed plant at loading/unloading and stockpile areas</li> </ul>		[REDACTED]	
11. Fatigue, Change Management and Shift Work Controls	<ul style="list-style-type: none"> <li>Operator fatigue leading to plant collisions, rollovers or contact with infrastructure</li> <li>Long shifts, night work and extended rosters for operators of heavy plant and processing plant</li> <li>Poor management of change impacting plant safety (e.g. new GPS systems, reconfigured haul roads, altered processing flows)</li> <li>Insufficient consideration of cognitive load when introducing automated systems and in-cab technology</li> <li>Inadequate change communication to contractors and labour personnel</li> </ul>	3H	[REDACTED]	2M
12. Contractor Management and Interface Coordination	<ul style="list-style-type: none"> <li>Multiple contractors operating plant without common WHS standards or procedures</li> <li>Poor coordination between principal contractor, subcontractors and plant hire providers</li> <li>Inadequate verification of contractor competency, maintenance and insurances</li> <li>Gaps in supervision and communication at shift handovers and between work fronts</li> </ul>	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Conflicting priorities between production and safety for contract plant operators</li> </ul>		[REDACTED]	
13. Emergency Preparedness, Incident Response and Recovery	<ul style="list-style-type: none"> <li>Delayed or ineffective response to plant rollovers, crush injuries, fires or entrapment in crushers and processing plant</li> <li>Lack of specialised rescue capability for incidents on steep terrain or within processing facilities</li> <li>Poor communication during emergencies involving multiple contractors and work fronts</li> <li>Inadequate planning for plant-related environmental incidents such as fuel or hydraulic oil spills</li> <li>Insufficient post-incident recovery planning leading to unsafe plant recovery or recommissioning</li> </ul>	3H	[REDACTED]	2M
14. Health Exposures, Psychosocial Risks and Worker Wellbeing	<ul style="list-style-type: none"> <li>Chronic exposure to dust, silica, diesel particulates and noise from heavy plant, crushers and processing equipment</li> <li>Whole-body vibration and repetitive strain from prolonged plant operation</li> <li>Psychosocial risks including high workload, remote or isolated work and conflict between supervisors and plant crews</li> <li>Stress and cognitive overload from managing multiple in-cab systems and GPS guided controls</li> <li>Insufficient systems to manage fitness for work, including alcohol and other drugs</li> </ul>	3H	[REDACTED]	2M

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			[REDACTED]	
			[REDACTED]	

SAMPLE

**EMERGENCY RESPONSE – CALL 000 FOR EMERGENCIES**

Ensure to have an Emergency Management Plan in place as well as adequate numbers of trained first aid staff with easy access to fully stocked first aid kits, rescue equipment, material safety data sheets, adequate access to emergency communication equipment and fire-fighting equipment suitable for all classes of fire and ignition sources.

**LEGISLATIVE REFERENCES**

RELEVANT LEGISLATION AND CODES OF PRACTICE. DELETE THE LEGISLATIVE REFERENCES FOR ANY STATE THAT ARE NOT APPLICABLE

**Queensland & Australian Capital Territory**

Work Health and Safety Act 2011  
 Work Health and Safety Regulations 2011  
 Legislation QLD: <https://www.worksafe.qld.gov.au/laws-and-compliance/work-health-and-safety-laws>  
 Codes of Practice QLD: <https://www.worksafe.qld.gov.au/laws-and-compliance/codes-of-practice>  
 Legislation ACT: <https://www.worksafe.act.gov.au/laws-and-compliance/acts-and-regulations>  
 Codes of Practice ACT: <https://www.worksafe.act.gov.au/laws-and-compliance/codes-of-practice>

**Victoria**

Occupational Health and Safety Act 2004  
 Occupational Health and Safety Regulations 2017  
 Legislation VIC: <https://www.worksafe.vic.gov.au/occupational-health-and-safety-act-and-regulations>  
 Codes of Practice VIC: <https://www.worksafe.vic.gov.au/compliance-codes-and-codes-practice>

**New South Wales**

Work Health and Safety Act 2011  
 Work Health and Safety Regulations 2025  
 Legislation NSW: <https://www.safework.nsw.gov.au/legal-obligations/legislation>  
 Codes of Practice NSW: <https://www.safework.nsw.gov.au/resource-library/list-codes-of-practice>

**Western Australia**

Work Health and Safety Act 2020  
 Work Health and Safety Regulations 2022  
 Legislation Western Australia: <https://www.commerce.wa.gov.au/worksafe/legislation>  
 Codes of Practice WA: <https://www.commerce.wa.gov.au/worksafe/codes-practice>

**Northern Territory**

Work Health and Safety (National Uniform Legislation) Act 2011  
 Work Health and Safety (National Uniform Legislation) Regulation 2011  
 Legislation NT: <https://worksafe.nt.gov.au/laws-and-compliance/workplace-safety-laws>  
 Codes of Practice NT: <https://worksafe.nt.gov.au/laws-and-compliance/codes-of-practice>

**Safe Work Australia Links**

Law and Regulation (All States): <https://www.safeworkaustralia.gov.au/law-and-regulation>  
 Model Codes of Practice: <https://www.safeworkaustralia.gov.au/resources-publications/model-codes-of-practice>

**South Australia**

Work Health and Safety Act 2012 (SA)  
 Work Health and Safety Regulations 2012 (SA)  
 Legislation for SA: <https://www.safework.sa.gov.au/resources/legislation>  
 Codes of Practice for SA: <https://www.safework.sa.gov.au/workplaces/codes-of-practice#COPs>

**Model Codes of Practice**

- Managing noise and preventing hearing loss at work
- Confined spaces
- Labelling of workplace hazardous chemicals
- Managing risks of hazardous chemicals in the workplace
- Welding processes
- First aid in the workplace
- Managing the risk of falls at workplaces
- Hazardous manual tasks
- Managing the risk of falls in housing construction
- Managing electrical risks in the workplace
- Demolition work
- Excavation work
- Work health and safety consultation, cooperation and coordination
- Managing the work environment and facilities
- How to manage work health and safety risks
- Managing risks of plant in the workplace
- Construction work

**Tasmania**

Work Health and Safety Act 2012  
 Work Health and Safety (Transitional and Consequential Provisions) Act 2012  
 Work Health and Safety Regulations 2012  
 Work Health and Safety (Transitional) Regulations 2012  
 Legislation for TAS: <https://worksafe.tas.gov.au/topics/laws-and-compliance/acts-and-regulations>  
 Codes of Practice for TAS: <https://worksafe.tas.gov.au/topics/laws-and-compliance/codes-of-practice>

Details of permits, licenses or access required by regulatory bodies (add or delete as required):

- Permits from local council
- Authorisation to commence work
- Any required documents.