

SWMS number: SMS-06-SW-0976	SWMS Name: Earthworks	SWMS Team: Civil Construction Review Team	
Custodian (Position): Services Manager Civil	Assumptions: Site specific risks are addressed and assessed in pre- work briefing	Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group) Services Manager Civil and Safety facilitator, Safety Support Services Division.	
Approver (Position): Civil Electrical Works Manager Infrastructure Renewals	Plant/Equipment/Tools: <ul style="list-style-type: none"> Crane, Excavator, Backhoe, Bogie, Dumper, Bobcat, Roller, Water cart, Grader Trolley Compaction Plate, Tamping Rammer Generator, Power Tools, Hydraulic Equipment Signs, Markers, Plywood, Safety Tape, Barricades, Steel Plates, Shoring, Benching, Separation Fencing Silt Fencing, Hay Bales, Bungs No-Spill Fuel Cans, Spill Response Kit Soil Testing Equipment 	Records/Reporting: <ul style="list-style-type: none"> Worksite Protection Plan Pre-work Brief Electrical Test Tags Site Specific Management Plan Environmental Protection Plan Services searches Daily Plant Checklist Electrical Permits Hazardous Substance Register Road Traffic Management plan Permits/licences required: <ul style="list-style-type: none"> Electrical Permit Holder Crane / Excavator / Backhoe / Bogie / Dumper / Bobcat Operators Certificates P.O 3-4 Certified Traffic controller 	
Applicable Standards, Codes of Practice and guidance: <ul style="list-style-type: none"> OH&S Act 2000 OH&S Regulation 2001 RAIL Safety Regulation 2003 RailCorp Network Rules & Procedures RailCorp Safety Management System. MSDS for all chemicals and hazardous Substances used on site RailCorp Safety Standard 09 Limits of Exposure Local Council Requirements for Testing Spoils for Contaminants Working near Overhead Power Lines WorkCover NSW Plant Guide EC14 – Guide to Electrical Workers' Safety Equipment WorkCover Code of Practice Excavation 2000 National Code of Practice for Manual Handling [NOHSC:2005] 	Inspection requirements Nil	Service schedule: Nil	PPE required: <ul style="list-style-type: none"> Safety Boots High Visibility Vests Hardhats Protective Clothing Safety Glasses And as specified below. <ul style="list-style-type: none"> Gloves During all Site Works a FIRST AIDER MUST be Present Training/Qualification required: <ul style="list-style-type: none"> Construction Industry Induction RISI (Rail Industry Safety Induction)

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Control (to be implemented to eliminate or reduce the risk to the lowest practicable level)	Risk ranking after controls	Responsibility	Job step to be completed in accordance with (name associated documentation)
1	Excavation	Struck by moving plant	B+	Make sure minimum personnel are around plant and remain in clear view of operators	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Contact with services	A	Locate services prior to starting work mark services with paint, use qualified plant operators, hand digging in close proximity to services under supervision by appropriate services representative. Care to be exercised. Service searches to be on site and signed off.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical equipment SMS-06-GD-0268 Electrical permits SMS-06-EN-0577
		Damage to rail infrastructure	B+	Be aware/cover to protect. Report Damage.	C+	Team Leaders Work Group Leaders All Staff Competent Person	SSMP, Pre work Briefing SMS-06-FM-0163
		Plant roll-over	B+	Plant fitted with roll-over-protection.	C+	Team Leaders Work Group Leaders All Staff Ticketed Operator	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Head injuries	B+	Briefing. Hard hats must be worn. Keep clear if machines operating, signage	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Fall in excavation	B+	Be aware. Excavation to be barricaded to prevent workers falling in. Cover if possible	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Excavation collapse	B+	Shoring, benching, keep plant and employees clear of edges.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Personal injuries	B+	Briefing additional PPE as necessary	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163

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2	Installation Of Ground Support	Fall in excavation	B+	Be aware. Excavation to be barricaded to prevent workers falling in. Access via ladder	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Excavation collapse	B+	Keep plant and employees clear of edges when placing trench/ground support	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Contact with services	A	Locate services prior to starting work. Service searches to be on site and signed off mark and/or isolate services as appropriate maintain regulated clearances on electrical services	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Electrocution (power tools)	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268
3	Material Transfer	Unstable loads	B+	Ensure materials are secured during transit. Don't exceed safe working load of plant.	C-	Team Leaders Work Group Leaders All Staff Licence, Competent	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by Moving Plant	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C-	Team Leaders Work Group Leaders All Staff Worksite Protection Officer	SSMP, Pre work Briefing SMS-06-FM-0163 Network Rules and Procedures
		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Machinery to move heavy and/or bulky items.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Slips from oil/fuel spillage	B-	Plant to be inspected daily. Use correct methods for filling machinery. Spill response kits on-site.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental Protection Plan

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4	Excavation	Struck by moving plant	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Contact with live o/h wires (high voltage)	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical Equipment SMS-06-GD-0268 Electrical Permits SMS-06-EN-0577
		Exposure to contaminated material	B-	Test spoils for contaminants. Disposal in accordance with relevant OH&S guidelines.	C-	Team Leaders Work Group Leaders All Staff Competent Person	Environmental protection plan, OH&S, local council requirements
5	Backfilling	Struck by moving plant	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Excavation collapse	B+	Shoring, benching, keep plant and employees clear of edges.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Plant roll-over	B+	Plant fitted with roll-over-protection.	C-	Team Leaders Work Group Leaders All Staff Ticketed Operator	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
6	Compaction	Vibration	B-	Use appropriate size for task. Rotate usage.	C-	Team Leaders Work Group Leaders All Staff Competent Person	SSMP, Pre work Briefing SMS-06-FM-0163 RailCorp Safety Standard 09 Limits Of Exposure
		Hearing damage from plant	C+	Use hydraulic equipment. Have silencers fitted to machinery. use PPE use ear protection in close proximity to machine	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Pad Foot Roller	B-	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225

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		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
7	Stock piling	Personnel Struck By Vehicles Or Machinery	B+	Implement Exclusion Zones All Plant Must Have Functional Lights And Alarms As Per Plant Inspection Report. Use Ticketed Operators. Plan Work To Avoid Congestion Use Truck Pilots If Appropriate	C+	Team Leaders Work Group Leaders All Staff Ticketed Operator Sms-11-Gd-0243	SSMP, Pre Work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225 Truck Pilots SMS-11-GD-0243
		Dust	B-	Keep clear. Water down material.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

NOTE: Each work group or team member must sign off on the SWMS to acknowledge they have been briefed about or instructed in the SWMS

RailCorp Level 2 Risk Matrix - Regional & Local (Workplace)			Likelihood/Frequency							Definition for Use - Regional & Local level (Workplace) Used for workplace hazards and safety risks that do not consider the whole of the network. Indicatively this matrix is appropriate for use where the hazards under consideration are up to 10% of the total network exposure. This includes regional and local workplace risk assessments. As an example, the Level 2 scale would be used when examining the risk of slips, trips and falls on specific RailCorp platforms within a region or at a particular station, or the risk of fire within a depot. There are 3 options for descriptors which can be used to determine the frequency category. One set of descriptors is provided for frequency, one for historical likelihood, and one for predictive likelihood in the workplace. Choose the most appropriate. To score the risk, follow the steps: 1. Identify the magnitude of the credible consequence if the risk were to occur. If applicable, risks should be considered in terms of the safety (this matrix), commercial and environmental impact (using other matrices). 2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place) 3. Score the risk using the combination of likelihood and consequence ranking. Note: Where there are a range of credible consequences which may lead to a different level of risk and/or where the controls may be different. It may be useful to score the risk more than once.
			Event Frequency	Less than once every 1000 years	Once every 100 to 1,000 years	Once every 10 to 100 years	Once every 1 to 10 years	More than once per year up to and including 10 times per year	More than 10 times per year	
			Historical (Likelihood)	Unheard of in the rail industry	Has occurred once or twice in the rail industry	Has occurred many times in the rail industry, but not in NSW	Has occurred once or twice in NSW	Has occurred frequently in NSW	Has occurred frequently at specific locations	
		Workplace Predictive (Likelihood)	Not expected to occur	May occur only in exceptional circumstances	Could occur at some time but not likely	You would expect it to occur at least once in the next 10 years performing similar activities	You would expect it to occur at least once this year performing similar activities	You would expect it to occur at least once this month performing similar activities		
			F1	F2	F3	F4	F5	F6		
Consequence			Incredible	Improbable	Remote	Occasional	Probable	Frequent		
>10 Fatalities	C6	Disastrous	B-	B+	A	A	A	A		
2-10 Fatalities	C5	Catastrophic	C+	B-	B+	A	A	A		
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	A		
1 Major Injury	C3	Major	D	C-	C+	B-	B+	A		
1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	B+		
First aid treatment, or illness/injury not requiring treatment	C1	Negligible	D	D	D	C-	C+	B-		