

SWMS number: SMS-06-SW-0984	SWMS Name: Install ULX	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, Lifting Equipment, Excavator, Backhoe, Bogie, Dumper, Bobcat, Tamper Ballast, HiRail Excavator • Power Tools, Hand Tools, Rigging Tools, Podger, Mattock, Handsaw, Rope, Pigs Foot, Sledge Hammer, Cup Pullers, Sleeper Tongs, Pelican Pick, Compaction Plate Construction Equipment, Concrete, Sealing Products, Trolleys • Barricades, Demarcation Fencing, Signs, Markers, Plywood, Safety Tape, Steel Plates, Shoring, Straps, Ties • No-Spill Fuel Cans, Spill Response Kit, Watercart 	Records/Reporting: <ul style="list-style-type: none"> • Worksite Protection Plan • Pre-work Brief • Site Specific Management Plan • Electrical Test Tags • Services Search • Environmental Protection Plan • Daily Plant Checklist • MSDS 	Permits/licences required: <ul style="list-style-type: none"> • Electrical Permit Holder • Plant Operator Certificates • P.O 4 • Track Certifier
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 • Working near Overhead Power Lines • EC14 – Guide to Electrical Workers' Safety Equipment • National Code of Practice for Manual Handling [NOHSC:2005] • WorkCover NSW Plant Guide • WorkCover Code of Practice Excavation 2000 	Inspection requirements Nil	Service schedule: Nil	PPE required: <ul style="list-style-type: none"> • Safety Boots • High Visibility Vests • Hardhats • Protective Clothing • Safety Glasses <p>And as specified below.</p> <ul style="list-style-type: none"> • Ear Plugs, Ear Muffs • Type 1 Respirators • Barrier Cream • Gloves • During all Site Works a FIRST AIDER MUST be Present

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	Install environmental protection	Underground services	A	Service search maps on site. Mark out locations. Hand dig to locate if not certain of exact location of any services	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225 Electrical Equipment SMS-06-GD-0268
		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
2	Delivery of materials	Personnel struck by machinery	B+	Implement exclusion zones, use ticketed operators.	C+	Team leaders Work group leaders All staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by load	B+	Keep clear of suspended loads, ticketed operators. Exercise due care	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Failure of lifting equipment from overloading	B+	Competent operators to assess loads carefully prior to lifting equipment to be properly maintained and marked	C+	Team Leaders Work Group Leaders All Staff Workcover Ticketed Operator/Dogman SMS-11-GD-0243	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Plant roll-over	B+	Ensure that outriggers or stabilisers in position prior to lifting	C-	Team Leaders Work Group Leaders All Staff Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Noise from plant	C+	Implement exclusion zones use appropriate plant with noise control measures use ear protection	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		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 Workcover Ticketed Operator/Dogman SMS-11-GD-0243	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225

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3	Track access	Struck by Train	A	Possession	D	Team Leaders Work Group Leaders All Staff Worksite Protection Officer, PPO	SSMP, Pre work Briefing SMS-06-FM-0163 Network Rules and Procedures
		Contact with live o/h wiring or other services	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
		Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Oil/fuel leakage or loss	C-	Plant to be inspected daily. Use correct methods for filling machinery. Maintain spill response kits on-site.	D	Team Leaders Work Group Leaders All Staff Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 ENVIRONMENTAL PROTECTION PLAN Plant SMS-06-PR-0225
4	Mark out for excavation	Manual handling injuries	B-	Correct manual handling. Rotate use of equipment on repetitive tasks.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
5	Unclip rail	Struck by rail fastener	B+	Be aware. Follow correct procedure for removing rail fasteners. PPE	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		Muscle strain	B-	Correct manual handling. Rotate use of equipment on repetitive tasks.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
6	Remove sleepers and ballast	Dust	B-	Keep clear of work. Wear type 2 respirators. Water down material.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199
		Personnel struck by machinery	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

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		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 Plant SMS-06-PR-0225 Electrical Equipment SMS-06-GD-0268
		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
		Damage to rail infrastructure	B+	Be aware/cover to protect report damage.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
7	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	SSMP, Pre work Briefing SMS-06-FM-0163
		Plant roll-over		Plant fitted with roll-over-protection. SWL of machinery not to be exceeded		Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Hearing damage from plant	C+	Use hydraulic equipment .have silencers fitted to machinery. 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
		Head injuries	C+	Briefing. Hard hats must be worn. Keep clear if machines operating, signage	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

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8		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
		Dust/air pollution	B-	Keep clear of work. Wear type 1 respirators. Water down material.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199
		Oil/fuel leakage or loss	C-	Plant to be inspected daily. Spill response kits on-site.	D	Team Leaders Work Group Leaders All Staff Plant operator	SSMP, Pre work Briefing SMS-06-FM-0163 ENVIRONMENTAL PROTECTION PLAN Plant SMS-06-PR-0225
		Object in eye	C-	Protective eye-wear must be worn	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE - SMS-06-GD-0323
8	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
		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
		Electrocution (power tools)	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools. Equipment to be fitted with effective safe guards * training *. Correct use of PPE	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268

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9	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
		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
		Dust/air pollution	B-	Keep clear. Water down material/ roadways.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199
		Oil/fuel spillage	C-	Plant to be inspected daily. Use correct methods for filling machinery. Spill response kits on-site.	D	Team Leaders Work Group Leaders All Staff Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 ENVIRONMENTAL PROTECTION PLAN
		Dirt tracking onto external roads	C+	Bobcats with sweepers to clean road	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 ENVIRONMENTAL PROTECTION PLAN
10	Spread road base and compact in bottom of trench	Struck by load	B+	Make sure minimum personnel are around plant and remain in clear view of operators, Have one Person Instructing Plant.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Dust	B-	Keep clear. Water down material.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199
		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
11	Install pipes	Fall in excavation	B+	Be aware. Excavation to be barricaded	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		Struck by pipe	B+	Vigilance during drainage works	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163

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12	Install head walls	Struck by load	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
		Crushed fingers	B+	Keep hands clear when positioning	C-	Team Leaders Work Group Leaders All Staff Competent person	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Damage to rail infrastructure	C+	Be aware/cover to protect report damage	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
13	Patch joins between pipes and pits/head walls	Skin irritations	C-	Protective clothing. Barrier cream. MSDS	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS
		Concrete in eyes	C-	Protective eye-wear must be worn	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS
		Fumes from sealing products	B-	Apply as per manufacturers instructions. PPE. MSDS.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS Hazardous Substances SMS-06-GD-0199
14	Backfill over pipes with selected fill materials and compact	Dust	B-	Keep clear. Water down material	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS Hazardous Substances SMS-06-GD-0199
		Struck by machine or load	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
		Crush pipe	B+	Don't over compact. Compact at designated intervals	C-	Team Leaders Work Group Leaders All Staff	Design, manufacturers recommendation
15	Replace ballast	Damage to rail infrastructure	B+	Be aware/cover to protect report damage	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		High ballast shoulder	B+	Keep shoulder ballast below head of rail	C-	Team Leaders Work Group Leaders All Staff Competent person	SSMP, Pre work Briefing SMS-06-FM-0163

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16	Replace sleepers and tamper ballast	Struck by machine	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
		Struck by flying object	C-	Protective eye-wear must be worn	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Damage to rail infrastructure	B+	Mark position of services with high visibility paint.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
17	Reinstate ballast profile	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
		Struck by machine	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

Install ULX

Issue date: 15/10/10
Review date: 14/07/13

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							<u>Definition for Use - Regional & Local level (Workplace)</u>	
			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	A		
2-10 Fatalities	C5	Catastrophic	C+	B-	B+	A	A	A	A		
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	A	A		
1 Major Injury	C3	Major	D	C-	C+	B-	B+	B+	A		
1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	B-	B+		
First aid treatment, or illness/injury not requiring treatment	C1	Negligible	D	D	D	C-	C+	C+	B-		