

# Install Drainage Pipes

Issue date: 15/10/10

Review date: 14/07/13

<b>SWMS number:</b> SMS-06-SW-0985	<b>SWMS Name:</b> Install Drainage Pipes			<b>SWMS Team:</b> Civil Construction Review Team
<b>Custodian (Position):</b> Services Manager Civil	<b>Assumptions:</b> Site specific risks are addressed and assessed in pre- work briefing			
<b>Approver (Position):</b> Civil Electrical Works Manager Infrastructure Renewals	<b>Plant/Equipment/Tools:</b> <ul style="list-style-type: none"><li>• Specific Plant, Crane, Excavator, Backhoe, Water cart, Dumper, bogie Tipper, Trolley, Compaction Plate</li><li>• No-Spill Fuel Cans, Spill Response Kit</li><li>• Barricades, Signs, Markers, Plywood, Safety Tape, Shoring, Steel Plates</li><li>• Generator, Power Tools, Demo Saw, Ladder, Shovel, Rake</li><li>• Bedding Material, Terraforma, Blue Metal, Ballast, Tamper Ballast</li></ul>	<b>Records/Reporting:</b> <ul style="list-style-type: none"><li>• Worksite Protection Plan</li><li>• Pre-work Brief</li><li>• Site Specific Management Plan</li><li>• Electrical Test Tags</li><li>• Site layout documented</li><li>• Services searches</li><li>• Daily Plant Checklist</li><li>• Electrical Permits</li></ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"><li>• Electrical Permit Holder</li><li>• Plant Operators Certificate</li><li>• P.O 3-4</li></ul>	<b>Content reviewed by Technical expert (SME) and RailCorp safety professional</b> (position including Div/Group) Services Manager Civil and Safety facilitator, Safety Support Services Division.
<b>Applicable Standards, Codes of Practice and guidance:</b> <ul style="list-style-type: none"><li>• OH&amp;S Act 2000</li><li>• OH&amp;S Regulation 2001</li><li>• Rail Safety Regulation. 2003</li><li>• RailCorp Network Rules &amp; Procedures</li><li>• RailCorp Safety Management System.</li><li>• MSDS for all chemicals and hazardous Substances used on site</li><li>• Working near Overhead Power Lines</li><li>• EC14 – Guide to Electrical Workers' Safety Equipment</li><li>• WorkCover NSW Plant Guide</li><li>• WorkCover Code of Practice Excavation 2000</li><li>• National Code of Practice for Manual Handling [NOHSC:2005]</li></ul>				<b>PPE required:</b> <ul style="list-style-type: none"><li>• Safety Boots</li><li>• High Visibility Vests</li><li>• Hardhats</li><li>• Protective Clothing</li><li>• Safety Glasses</li></ul> And as specified below. <ul style="list-style-type: none"><li>• Gloves</li><li>• During all Site Works a FIRST AIDER MUST be Present</li></ul>
	<b>Inspection requirements</b> Nil	<b>Service schedule:</b> Nil	<b>Training/Qualification required:</b> <ul style="list-style-type: none"><li>• Construction Industry Induction</li><li>• RISI (Rail Industry Safety Induction)</li></ul>	

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1	Track access	Damage to Infrastructure	B-	Nominate Access Point, Traffic Management Plan, Have Somebody Walk With Machine	C-	Team Leaders Work Group Leaders All Staff Machine Operators,	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		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	Electrical equipment SMS-06-GD-0268 Electrical permits SMS-06-EN-0577
		Personnel struck by machinery	B+	Define work areas, reversing beepers. 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
		Oil/fuel spillage leading to slips and falls	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	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental Management Plan
2	Excavation of trenches	Loading Of Dumpy Truck / Load Falling off	B-	Don't Over load, Keep Clear of Moving Dumpy	C-	Team Leaders Work Group Leaders All Staff Dumpy Driver	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by plant	B+	Implement exclusion zones .hard hats must be worn.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225 PPE- SMS-06-GD-0323
		Contact with services	B+	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 Electrical Equipment SMS-06-GD-0268
		Oil/fuel spillage leading to slips and falls	C-	Plant to be inspected daily. Use correct methods for filling machinery. Spill response kits on-site. Nominate Refuelling Area.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental Protection Plan

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		Excavation collapse	B+	Use shoring or benching as required, keep plant and employees clear of edge. Barricade or fill when not directly being accessed.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
3	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	D	Team Leaders Work Group Leaders All Staff	Electrical equipment SMS-06-GD-0268 Electrical permits SMS-06-EN-0577
4	Material transfer	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
		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
5	Place bedding material	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
		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

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		Fall in excavation	B+	Excavation to be barricaded. Access via ladders	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
6	Place terra firma	Fall in excavation	B+	Excavation to be barricaded. Access via ladders	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Cuts	C-	Wear gloves when cutting fabric. Cut away from body.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual handling SMS-06-GD-0001 PPE- SMS-06-GD-0323
7	Placing pipes	Fall in excavation	B+	Excavation to be barricaded. Access via ladders	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
		Struck by pipe	B+	Vigilance during drainage works	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
8	Placing of blue metal	Dust	B-	Keep clear. Water down material.	D	All Staff Team Leader Work Group Leader	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Fall in excavation	B+	Excavation to be barricaded. Access via ladders	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Struck by load	B+	All workers clear of trench when backfilling.	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. Rotate usage.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
9	Compaction	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
		Vibration induced injury	B-	Use correct vibration damped equipment. Rotate usage.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 RailCorp: limits of exposure document 09
10	Tamp 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
		Vibration induced injury	B-	Use correct vibration damped equipment. Rotate usage	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 RailCorp: limits of exposure document 09
11	Reinstate ballast profile	Contact with services	B+	Locate services prior to starting work. 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
		Personnel struck by machinery	B+	Implement exclusion zones, use ticketed operators. Use plant spotter if 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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**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**

Team member name (Please print)	Team Member signature	Instructor/ Briefer name	Date	Team member name (Please print)	Team Member signature	Instructor/ Briefer name	Date



RailCorp Level 2 Risk Matrix - Regional & Local (Workplace)		Likelihood/Frequency						
		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
Consequence			F1	F2	F3	F4	F5	F6
			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-

**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 or risks and/or where the controls may be different. It may be useful to score the risk more than once.