

# Drainage Investigation

Issue date: 15/10/10  
Review date: 14/04/13

<b>SWMS number:</b> SMS-06-SW-1028	<b>SWMS Name:</b> Drainage Investigation			<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>Approving Authority (Position):</b> Safety and Quality Manager, Commercial / Renewals	<b>Plant/Equipment/Tools:</b> <ul style="list-style-type: none"><li>Crane, Excavator, Backhoe, Bogie, Bobcat, Dumper, Trolley, Hi-rail Side Tipper</li><li>Barricades, Signs, Markers, Marking Paint, Plywood, Safety Tape</li><li>No-Spill Fuel Cans, Spill Response Kit</li><li>Pelican Pick, Shovel, Stanley Knife, Laser level, Grinder, Demon Saw, Chain Saw</li><li>Star Pickets, Rammer</li><li>Watercart</li><li>Super Sucker, Power Tools, Generator</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>Environmental Protection Plan</li><li>Electrical Permits</li><li>Daily Plant Checklist</li><li>Contractor SWMS</li><li>Site Diary</li></ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"><li>Confined Spaces Certificate</li><li>Electrical Permit Holder</li><li>P.O 3-4</li><li>Plant Operating Certificate</li><li>Crane and Plant Electrical Safety</li></ul>	<b>Content reviewed by Technical expert (SME) and RailCorp safety professional</b> (position including Div/Group) Civil Services Manager & SEQ Coordinator Asset Management Group Renewals
<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>SMS and Network Rules</li><li>Rail Safety Regulation 2003</li><li>RailCorp Safety Policy</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></ul>				<b>Inspection requirements</b> Nil

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1	Track access	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 Leader Work Group Leader All Staff	Electrical equipment SMS-06-GD-0268 Electrical permits SMS-06-EN-0577
		Personnel struck by machinery	B+	Define work areas, use ticketed operators use traffic control/plant spotters if required.	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Slip or trip on oil/fuel spillage	C-	Plant to be inspected daily. Use correct methods for filling machinery. Spill response kits on-site.	D	Team Leader Work Group Leader All Staff Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental Protection Plan
2	Locating drainage	Noise from plant	C+	Implement exclusion zones use appropriate plant with noise control measures use ear protection	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Contact with services	B+	Carry out services search before work, locate and mark services prior to starting work. Use qualified plant operators, hand dig close to services, Pot hole to locate services if required	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378
		Struck by machine	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C+	Team Leader Work Group Leader 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 Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
3	Locating drainage	Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Fall into excavation	B+	Keep clear of unprotected edges. Use barricades or cover when not in use.	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378

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4	Material transfer	Struck by load	B+	Make sure minimum personnel are around plant and remain in clear view of operators	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by machine	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Unstable loads	B+	Ensure materials are secured during transit. Don't exceed safe working load of plant.	C-	Team Leader Work Group Leader 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. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Dust/air pollution	B-	Water down material/ roadways. Wear dust masks where necessary.	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199
		Slip or trip from oil/fuel spillage	C-	Plant to be inspected daily. Use correct methods for filling machinery. Have spill response kits on-site.	D	Team Leader Work Group Leader All Staff Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental Protection Plan
5	Install environmental protection	Noise	C+	Use hearing protection	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Cuts, Scratches And Abrasions	C-	Gloves to be worn as necessary.	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Contact with services	B+	Carry out services search before work, locate and mark services prior to starting work. Use qualified plant operators, hand dig close to services, Pot hole to locate services if required	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378

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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 Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
6	Remove inspecting cover from lobster pot and/or pit.	Struck by machine	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by load	B+	Make sure minimum personnel are around plant and remain in clear view of operators	C+	Team Leader Work Group Leader 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 Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Cuts and scratches	C-	Gloves to be worn as necessary.	D	Team Leader Work Group Leader All Staff	Manual handling SMS-06-GD-0001 PPE- SMS-06-GD-0323
		Fall in pit	B+	Keep clear of unprotected edges. Use barricades if required. Cover or fill when not in use.	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
7	Hand clean hydro blast and/or use super sucker to clear drain.	Struck by machine	B+	Make sure minimum personnel are around plant and remain in clear view of operators	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Flying particles	C-	Protective eye-wear must be worn	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Hearing damage from plant	C+	Use hydraulic equipment. Have silencers fitted to machinery. Use ear protection where required	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001

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		Electrocution using plant	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. Correct use of PPE	C-	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268
		Skin irritation	C-	Protective clothing.	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS
8	Repair and/or replace defective components	Fall into Pit / Trench	B-	Fence off Area, Cover if Possible	C-	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Struck by load	B+	Make sure minimum personnel are around plant and remain in clear view of operators	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
9	Backfill	Noise	C+	Use hearing protection	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Struck by machine	B+	Make sure minimum personnel are around plant and remain in clear view of operators	C+	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Dust	B-	Keep clear of work. Wear type 1 respirators. Water down material.	D	Team Leader Work Group Leader All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199

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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							<b>Definition for Use - Regional &amp; Local level (Workplace)</b>  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.
			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-		