

# Testing and commissioning

Issue date: 08/04/08

Review date: 21/02/11

<b>SWMS number:</b> SMS-06-SW-0997	<b>SWMS Name:</b> Testing And Commissioning			<b>SWMS Team:</b> Electrical Distribution Review Team
<b>Custodian (Position):</b> Electrical Services Manager, Commercial Renewal	<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>Equipment/Plant/Tools:</b> <ul style="list-style-type: none"><li>• Appropriate Plant as required.</li><li>• Services Search Detectors</li><li>• Barriers, Witches hats and fencing</li><li>• Hand Tools</li><li>• Test equipment, Jumper leads</li></ul>	<b>Records/Reporting:</b> <ul style="list-style-type: none"><li>• Worksite Protection Plan</li><li>• Pre-work Brief</li><li>• Electrical Test Tags</li><li>• Environmental Plan.</li><li>• Safety Manuals</li><li>• Traffic Plan</li><li>• Electrical Safety Instructions</li><li>• Test Sheets. As built</li><li>• Daily Plant Inspection</li></ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"><li>• Traffic Controller Certificate</li><li>• Electrical Permit Holder</li></ul>	<b>Content reviewed by Technical expert (SME) and RailCorp safety professional</b> (position including Div/Group) Electrical Services Manager & SEQ Coordinator Asset Management Group Commercial 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>• 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>• Electrical Safety Instructions</li><li>• SAA Wiring Rules</li><li>• EC14 – Guide to Electrical Workers’ Safety Equipment</li><li>• WorkCover NSW Plant Guide</li><li>• National Code of Practice for Manual Handling [NOHSC:2005]</li><li>• AS/NZS 1891.4 – 2000 “Industrial fall arrest systems and devices – Selection, use and maintenance”</li></ul>		<b>Inspection requirements</b> Nil	<b>Service schedule:</b> Nil	
	<b>MIMS or METRE Ref:</b> Nil			
<b>Personal Protective Equipment 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>• Fall Arrest Devices</li><li>• Gloves</li><li>• During all Site Works a FIRST AIDER MUST be Present</li></ul>				

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1	Supervisor undertakes site pre-work briefing and gives local induction.	Staff not Listening to Pre-Work Brief	B -	Identify all hazards, Staff to ensure they are properly Briefed as to risks involving Worksite.	D	Team Leader / Work Group Leader / All Staff	Pre-Work Briefing SMS-06-FM-0163
2	Supervisor verifies competence of personnel doing the task and currency of permits for work.	Expired Competency Cards & Permits, Unqualified type of Personnel for the Task.	B -	Visual Inspection of Personnel Competency Cards & Currency of Permits	D	Team Leader / Work Group Leader	Safety Training & Competence SMS-11-SR-0128
3	Review SWMS and confirm it is current.	Use of a SWMS that is out of date	C -	Ensure SWMS is current and up to date.	D	Team Leader / Work Group Leader	SWMS & SWI's SMS-06-PR-0023
4	Verify that plant and equipment for the task is fit-for-purpose.	Plant & Equipment kept in poor working condition	C +	Conduct a Daily Plant Checklist	D	All Staff	Plant SMS-06-GD-0225
5	Evaluate the environment	Uneven ground	C-	Level up ground. Clear pathways	D	Team Leader / Work Group Leader / All Staff	Environmental Plan. Uneven Surfaces SMS-06-FM-0163
		Undergrowth	C-	Clear only excess undergrowth as required	D		PPE- SMS-06-GD-0323 Working Outdoors SMS-06-PR-0104 Irritation from Dust SMS-06-SW-0535
		Water obstacle/ drain	C-	Redivert water, pump away or install drain	D		
		Dust	C-	Water down area, keep vehicular traffic down	D		
		Ultra violet injuries	B-	PPE Sunscreen, hat sunglasses	D		
		Venomous bite & stings	C-	Remove undergrowth. Take care opening, lifting items.	D		
		Needles	C-	Inspect work area. Remove undergrowth. Take care opening, lifting items.	D		Needle Sticks SMS-06-FM-0163
		Trains	B+	Relevant Work Site Protection and Protection officer for site	D	Protection Officer.	Network rules and Procedures, Safety Management SMS-01-PO-0126

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		Roadways	C-	Relevant Work Site Protection and Protection officer for site	D	Traffic Controller	Traffic Plan, Work-on/near Roads SMS-06-GD-0372
6	Locate services	Damage to services	B+	Services searches, diagrams on site	D	Team Leader / Work Group Leader	Services Search Checklist SMS-06-FM-0384
				Approved water exposure of services			
				Hand dig to expose services			
7	Clear the work area / site	Electric Shock Unauthorised work	C+	Site layout documented	D	Authorised Person, Team Leader / Work Group Leader	Electrical Equipment SMS-06-GD-0268 Electrical Permits SMS-06-EN-0577
			A	Permits and authorised work	D		
8	Site set up	Manual Handling	C+	Correct technique / site specific PPE	D	All Staff	Manual Handling SMS-06-GD-0001
		Plant moving	C+	Site specific PPE	D	Team Leader / Work Group Leader / All Staff	PPE- SMS-06-GD-0323 Plant & Equipment Safety SMS-11-GD-0243 Pre work Briefing SMS-06-FM-0163 Work near Mob. Plant SMS-06-GD-0225
				Lookouts			
				Pre Work Brief			
		Adjacent equipment	C-	Permits and authorised work	D		Electrical Equipment SMS-06-GD-0268
				Lookouts			

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		Dangerous goods	C+	Quarantine area	D		Hazardous Substances SMS-06-GD-0199
		Temporary power	C-	See Low Voltage SWMS	D	Team Leader / Work Group Leader	Electrical Equipment SMS-06-GD-0268
9	Low voltage testing.  θContinuity.  θInsulation Resistance.  θDuctor.  θPhase Rotation.  θFault loop impedance	Contact with electricity	C+	Personnel clear during tests	D	Authorised Person, Team Leader / Work Group Leader	Electrical Equipment SMS-06-GD-0268 ESI,S,
				Certified instruments used			
				Communication of test relayed to work group			
				Authorised work			
				Barriers & Pre work brief			
				Low voltage rescue kit on site			
		Work aloft, fall from height	B+	Pre work brief and PPE	D	Team Leader / Work Group Leader / All Staff	Working at Heights SMS-06-GD-0240 PPE- SMS-06-GD-0323
				Hard hats and items secured			
10	High Voltage testing. / 1500 volt testing. θHi pot.  θContinuity.  θMegger.  θDuctor.  θPhase checks.	Contact with electricity	C+	Personnel clear during tests	D	Authorised Person, Team Leader / Work Group Leader	Electrical Equipment SMS-06-GD-0268
			Electric shock due to capacitance.	B+	Discharge cable to earth		
		Certified instruments used					
		Communication of test relayed to work group					
		Work aloft, fall from height	B+	Authorised work	D	Team Leader / Work Group Leader / All Staff	Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
				Barriers & Pre work brief			
				Pre work brief and PPE			
		Hard hats and items secured					

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12	Earth testing	Contact with electricity	C+	Personnel clear during tests	D	Authorised Person, Team Leader / Work Group Leader / All Staff	ESI,S, Electrical Equipment SMS-06-GD-0268
	ØResistivity test			Certified instruments used			
	ØContinuity test			Communication of test relayed to work group			
				Authorised work			
<input type="checkbox"/>	Additional Site specific hazards						

## Legend

PWB – Pre Work Brief  
 ESI's – Electrical Safety Instructions  
 MSDS – Material Safety Data Sheet  
 PPE – Personal Protective Equipment  
 RDELE – Renewals Distribution Electrical  
 SWMS – Safe Work Method Statement  
 IR – Insulation Resistance

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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							Definition for Use - Regional & Local level (Workplace)
			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	A	<p>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.</p> <p>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.</p> <p>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.</p> <p>To score the risk, follow the steps:</p> <ol style="list-style-type: none"><li>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).</li><li>2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place)</li><li>3. Score the risk using the combination of likelihood and consequence ranking.</li></ol> <p>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.</p>
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+	A	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+	B-	B-	