

SWMS number: SMS-06-SW-0780	SWMS Name: PR Inspection			SWMS Team: Greg Hess, Richard Wardropper, Anton Loggen, Kevin Wallace, Michael Chapman, Michael Bridger-Darling, Milan Nikolov, Craig Prideaux, David Aquilina, Hemant Jayswal
Custodian (Position): Manager Services and Support RSD	Assumptions: All work is to be performed at an RSD Electrical Maintenance Centre in a safe work environment with adequate lighting, safe access and adequate ventilation. This SWMS does not cover lift shop work			Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group) Initial assessment by: Peter Gaul (RSD Contract Safety Team Leader) Julian Bedford (Safety & Environment AMG) Bill Martin (SSA) Reviewed By: Suresh Singh (Safety Manager) Darren Stuart (Safety Project Officer) Stephen Graham (Service Manager HMC) Glenn Speechly (Electrician FMC) Michael Richmond (Fitter FMC) Terry O'Toole (Safety Facilitator FMC)
Approving Authority (Position): GM Safety Support and Services	Plant/Equipment/Tools: <ul style="list-style-type: none"> Red Flag Appropriate trade tools Mobile steps Residual Current Device (RCD) or Earth Leakage Device (ELD) Wheel Chocks Lock and lockout device 	Records/Reporting: <ul style="list-style-type: none"> On board Train Log Books on Intercity Trains Technical Maintenance Plan (TMP) Reports (as required) METRE 	Permits/licences required:	
Applicable Standards, Codes of Practice and guidance: <ul style="list-style-type: none"> OHS Act 2000 OHS Regulations 2001, and Chapter 4,5 Rail Safety Act 2008 ASCC – National Standard for Manual Tasks 2007 National Code of Practice for the Prevention of musculoskeletal disorders caused from performing manual tasks AS 3760 In-service inspection and testing of electrical equipment AS 61010.1 Safety of 	Inspection requirements <ul style="list-style-type: none"> Power leads tested 6 monthly Residual Current Device 	Service schedule:	Training/Qualifications required: <ul style="list-style-type: none"> Site specific induction Manual Handling training 	PPE required: <ul style="list-style-type: none"> High visibility orange vest or clothing Lace up Safety Footwear Safety eyewear

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

electrical equipment for measurement control and laboratory use	(RCD) or Earth Leakage Device (ELD) test before use <ul style="list-style-type: none">• Visual inspection of leads for damage before use• Visual inspection of power and pneumatic tools for damage and operability	MIMS or METRE Ref:	<ul style="list-style-type: none">• Rail Industry Safety Induction RISI• Electrical Safety Awareness• Network RollingStock Maintainer (NRM)• as required• Site Road Isolation training as required• Site Power Testing training as required• Competent person for testing electrical equipment	<ul style="list-style-type: none">• Bump hat when working under train• Gloves as appropriate• Hearing protection for power tool use• Appropriate respirator/dust mask• Face Shield (as appropriate)• Long sleeve shirt or overalls• Guards emergency Cock-lock s/c 1966001• Locking Jaw s/c 1966019• Guards emergency Cock-lock-out Device s/c 165995
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PR Inspection

Issue date: 04/06/10

Review date: 09/04/13

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	<u>General Hazards</u> These Hazards and Controls apply throughout this SWMS	Struck by or contact with moving trains or unexpected train movement	C4, F3 = B-	<ul style="list-style-type: none"> • Rail Industry Safety Induction (RISI) • Shunters • Red flag • Traffic management plan • Pre –work brief • Supervision • Site Induction • High Visibility Vest • Trained Drivers • Sounding Horns • Medical Standards and Health Assessments • Site Speed Restrictions • Traffic Management Plan • Constant Communication • Use lockout tag out devices 	C4, F1 = C-	Supervisor and authorised employee	SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage	C3, F3 = C+	<ul style="list-style-type: none"> • Designated Walkways • Use of referenced Entering / Climbing out of Trains SWI's • Lace up Safety Footwear 	C3, F2 = C-	Supervisor and authorised employee	SMS-06-SW-0487 Entering Trains from Ballast SMS-06-SW-0488 Climbing out of Trains onto Ballast
		Needle Stick Injuries	C3, F3 = C+	<ul style="list-style-type: none"> • Protective Gloves • Handling Sharps SWI 	C2, F4 = D	Supervisor and authorised employee	SMS-06-SW-0405 – Handling Sharps

PR Inspection

Issue date: 04/06/10

Review date: 09/04/13

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	<u>General Hazards Continued</u>	Contact with sharp edges	C3, F3 = C+	<ul style="list-style-type: none"> • Protective Gloves • Lace up Safety Footwear • Appropriate clothing 	C2, F2 = D	Supervisor and authorised employee	SMS-06-SW-0405 – Handling Sharps
		Sprains and strains	C2, F4 = C+	<ul style="list-style-type: none"> • Use a firm grip, keep back straight, bend knees and avoid twisting, bending or overreaching • Use manual handling aids such as trolleys • Use team lift • Work in accordance with Manual Handling Training • Pre-work assessment and briefing 	C2, F3 = C-	Supervisor and authorised employee	SMS-06-GD-0001 Guide to Manual Handling
		Fall from doorway / mobile stairs	C2, F4 = C+	<ul style="list-style-type: none"> • Use appropriate mobile stairs and platform to access carriage • Competent Operator working in accordance with referenced SWI • Level and even ground for platform • Non Slip shoes • Use hand rails • Use fall arrest equipment 	C2, F3 = C-	Supervisor and authorised employee	SMS-06-SW-0487 Entering Trains from Ballast SMS-06-SW-0488 Climbing out of Trains onto Ballast

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

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		Electric shock	C3, F4 = B-	<ul style="list-style-type: none"> • Training in Electrical Safety Awareness • Train isolation • Warning Signs • Lowered pantograph • Isolated road • Appropriate gloves and PPE • Pre-work brief • Supervision • Residual Current Device (RCD) • Warning Signs • Competent Operator working in accordance with relevant SWI/s • Electrical isolation and testing practices/procedures • Isolate and tag out circuit breakers as necessary 	C3, F2 = C-	Supervisor and authorised employee	
		Cuts and abrasions from contact with moving tool	C2, F 3 = C -	<ul style="list-style-type: none"> • Competent Operator working in accordance with relevant tool SWI • Appropriate gloves • Keep clear of cutting tools • Supervision • Pre-work brief • Keep hands clear 	C2, F 2 = D		
	<u>Tools & Equipment Hazards</u> These Hazards and Controls apply to the use of tools and equipment	Electric shock from power leads	C3, F4 = B-	<ul style="list-style-type: none"> • Testing and Tagging • Pre-use inspection • Residual Current Device (RCD) • Testing Earth Leakage Device (ELD) 	C2, F2 = C-	Supervisor and authorised employee	SMS-06-SW-0274 Electrical Equipment – Selection, Inspection and Testing

PR Inspection

Issue date: 04/06/10

Review date: 09/04/13

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1. Electric Tools	Noise	C2, F4 = C+	<ul style="list-style-type: none"> Hearing protection Pre-work brief Supervision Work in accordance with relevant tool SWIs Refer to tool and equipment hazards 	C2, F2 = D	Supervisor and authorised employee	SMS-06-GD-0273 Noise Management
	Dust	C2, F3 = C-	<ul style="list-style-type: none"> Appropriate eyewear and PPE Appropriate Respirator/filter Training in use of PPE Supervision Pre-work brief 	C2, F2 = D	Supervisor and authorised employee	
	“Kick Back” – Sudden movement of tool	C3, F4 = C+	<ul style="list-style-type: none"> Competent Operator working in accordance with referenced SWI Pre-work assessment and briefing Pre-use inspection Keep clear of path of moving tool Check that guard returns correctly Workable guard and continuous inspection Supervision 	C2, F2 = D	Supervisor and authorised employee	SMS-06-SW-0474 Angle Grinders SMS-06-SW-0475 Bench Grinders SMS-06-SW-0479 Power Drills SMS-06-SW-0483 Power Saws SMS-06-SW-0478 Pedestal Drills

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

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		Projectiles	C3, F3 = C+	<ul style="list-style-type: none"> Safety Eyewear (including face shield, as appropriate) Pre-use checks, as per relevant SWI (see "Kick Back" Sudden movement of tool above) Pre-work brief Competent Operator working in accordance with relevant SWI (see "Kick Back" Sudden movement of tool above) Supervision 	C2, F2 = D	Supervisor and authorised employee	
		Sparks or Hot metal generated by tool use, including welding	C2, F3 = C-	<ul style="list-style-type: none"> Competent Operator working in accordance with relevant SWI (see "kick back") Long sleeved shirts or overalls Additional controls as dictated by outcome of Hot Work risk assessment Appropriate protective Gloves Appropriate eye protection Use correct cutting wheels (soft wheels for hard metal, hard wheels for soft metal) Remove flammable materials within the vicinity of the work being undertaken Pre-work brief Supervision Extinguishers readily available 	C2, F1 = D	Supervisor and authorised employee	SMS-06-PR-0329 Hot Work
		Cuts and abrasions from contact with moving tool		<ul style="list-style-type: none"> See "General Hazards"- Cuts and abrasions from contact with moving tool 		Supervisor and authorised employee	SMS-06-SW-0809 Pneumatic Tools

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

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2. Pneumatic Tools	Pneumatic discharge	Pneumatic discharge	C2, F3 = C-	<ul style="list-style-type: none"> Pre-use checks, as per relevant SWI Competent Operator working in accordance with referenced SWI 	C2, F1 = D	Supervisor and authorised employee	SMS-06-SW-0809 Pneumatic Tools
							SMS-06-SW-0839 Compressed Air - Safe Use
	Struck by pneumatic hose	Struck by pneumatic hose	C3, F3 = C+	<ul style="list-style-type: none"> Pre-use checks, as per referenced SWI Appropriate clothing/gloves Eye protection Competent Operator working in accordance with referenced SWI Isolation and release of air pressure before removing hoses 	C2, F2 = D	Supervisor and authorised employee	SMS-06-SW-0809 Pneumatic Tools
							SMS-06-SW-0839 Compressed Air - Safe Use
	Noise			<ul style="list-style-type: none"> See "Tools and Equipment Hazards" 		Supervisor and authorised employee	SMS-06-GD-0273 Noise Management
	Dust			<ul style="list-style-type: none"> See "Tools and Equipment Hazards" 		Supervisor and authorised employee	

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1	Secure Red Flag on the Driver's window blind of the lead car	Slip, trip, fall on rail, ballast or other uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> See "General Hazards" 		Supervisor and authorised employee	SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres
2	Lower Pantograph	Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> See "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-0838 Pantograph Raising and Lowering
		Fall from doorway / mobile stairs		<ul style="list-style-type: none"> See above "General Hazards" 			SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms
3	Isolate the road	Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> See "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-0837 Isolating 1500v DC OH using a Supplementary Lock
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> See "General Hazards" 			SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key
		Arcing from Road Isolation Switch during its movement	C2, F3 = C-	<ul style="list-style-type: none"> Design of Electrical Infrastructure AR or BR training Training in Electrical Safety awareness Competent operator working in accordance with referenced SWI Residual current device RCD 	C2 ,F2 = D	Supervisor and authorised employee	

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

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		Electric shock during operation of the Road Isolation Switch	C3, F3 = C+	<ul style="list-style-type: none"> • Design of Electrical Infrastructure • Electrical Safety awareness • Standing on Earthing Plate • AR or BR training • Appropriate PPE for electrical tasks • Competent operator working in accordance with relevant SWI 	C2, F2 = D		SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key
4	Inspect Body components in accordance with TMP	Sprains and strains from awkward postures		<ul style="list-style-type: none"> • See above "General Hazards" • Sprains and Strains 		Supervisor and authorised employee	SMS-06-GD-0001 Guide to Manual Handling
		Needle Stick Injuries		<ul style="list-style-type: none"> • See above "General Hazards" 			
5	Repair/Replace Body components in accordance with referenced SWI tools, materials and equipment. Refer to:	Contact with sharp edges		<ul style="list-style-type: none"> • See above "General Hazards" 			
		Various hazards associated with use of tools and equipment		<ul style="list-style-type: none"> • See above "Tools & Equipment Hazards" 			
		Needle Stick Injuries		<ul style="list-style-type: none"> • See above "General Hazards" 			

PR Inspection

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		Biological Hazards of interacting with bodily fluids (particularly in relation to the toilets)	C3, F3 = C+	<ul style="list-style-type: none"> • Wear Protective Gloves/PPE • Appropriate respirator • Wear Safety Goggles • Lighting • Personal Hygiene Practices • Additional portable lighting, as required • Drivers' Incident reporting • Inspections before work commences • Contract forensic cleaning, as required • Work in accordance with SWI • Pre-work brief • Supervision 	C2, F2 = D	Supervisor and authorised employee	SMS-06-SW-1257 Train Water System (15) Safe Working SMS-06-SW-1284 – Train Body System (01): Safe Working

PR Inspection

Issue date: 04/06/10

Review date: 09/04/13

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		Electric shock from power sources within carriage	C3, F4 = B-	<ul style="list-style-type: none"> • Training in Electrical Safety Awareness • Pre-work brief • Supervision • Warning Signs • Competent Operator working in accordance with Isolation SWIs • Electrical Isolation and testing practices/procedures • Residual Current Device (RCD) • Isolate and tag out circuit breakers 	C2, F2 = D		
		Various hazards associated with the use of paints and associated chemicals, such as: <ul style="list-style-type: none"> • Poisoning • Chemical burns to the eyes & skin • Chronic illnesses 	C3, F3 = C+	<ul style="list-style-type: none"> • Appropriate respirator/filter • Additional PPE as required by site risk assessments • Health surveillance • Supervision • Hygiene Practices • Safety glasses with side shields or safety goggles • Long sleeved shirt • Chemical Resistant Gloves and Boots • Use disposable Overalls and booties when removing lead based paint • Pre-work assessment and briefing 	C2, F2 = D	Supervisor and authorised employee	SMS-06-SW-1158 Working with Paints and Associated Chemicals

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

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6	Inspect Inter-car connectors in accordance with TMP	Restricted Working Space	C3, F3 = C+	<ul style="list-style-type: none"> • Use referenced SWI's • Bump Hat • Lighting • Ventilation • Appropriate posture • Authorised Entry • Communication • Pre-work assessment and briefing • Supervision 	C2, F2 = D	Supervisor and authorised employee	SMS-06-GD-0001 Guide to Manual Handling
		Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> • See "General Hazards" 			SMS-06-SW-1249 Intercar Connectors System (03) Safe Working
		Electric shock from power sources within carriage	C3, F4 = B-	<ul style="list-style-type: none"> • See above, "Electric shock from power sources within carriage" 	C2, F2 = D		SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key
7	Repair/Replace Inter-car connectors	Restricted Working Space		<ul style="list-style-type: none"> • See step 6: Restricted working space above 		Supervisor and authorised employee	
		Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> • See "General Hazards" 			
		Various hazards associated with use of tools and equipment		<ul style="list-style-type: none"> • See above "Tools & Equipment Hazards" 			

PR Inspection

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8	Inspect Door systems in accordance with TMP.	Fall from doorway/mobile stairs		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms
		Contact with sharp edges		<ul style="list-style-type: none"> See above "General Hazards" 			SMS-06-SW-1165 Train Door Systems (04) Safe Working
9	Repair/Replace Door system components using referenced SWI's, Tools, Materials and equipment.	Fall from doorway, mobile stairs		<ul style="list-style-type: none"> See above "General Hazards" 			SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms
		Contact with sharp edges		<ul style="list-style-type: none"> See above "General Hazards" 			
		Various hazards associated with use of tools and equipment		<ul style="list-style-type: none"> See above "Tools & Equipment Hazards" 			
		Electric shock from power sources within carriage		<ul style="list-style-type: none"> See step 5: Electric shock from power sources within carriage 			

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

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10	Inspect Braking systems in accordance with TMP	Dust		<ul style="list-style-type: none"> • See above "Tools and Equipment Hazards" 		Supervisor and authorised employee	
		Sprains and strains		<ul style="list-style-type: none"> • See above "General Hazards" 			
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> • See above "General Hazards" 			
11	Repair/Replace Braking system components using referenced SWI's, tools materials and equipment.	Dust		<ul style="list-style-type: none"> • See above "Tools and Equipment Hazards" 		SMS-06-SW-1164 Train Brake System (05) Safe Working	
		Sprains and strains		<ul style="list-style-type: none"> • See above "General Hazards" 			
		Pinched by moving brakes	C2, F3 = C-	<ul style="list-style-type: none"> • Secure a Red Flag from the Driver's window blind, of the lead car • Bogie (BC) or Park Brake (PB) Cock cut out • Guard's Emergency Cock Locked Out 	C2, F2 = D		
		Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> • See "General Hazards" 			
		Contact with sharp edges		<ul style="list-style-type: none"> • See above "General Hazards" 			

PR Inspection

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		Contact with hot parts	C2, F3 = C-	<ul style="list-style-type: none"> • Allow cooling period • Wear gloves when interacting with any hot parts • Pre-work brief • Supervision • Work in accordance with relevant SWI 	C2, F1 = D		
12	Inspect Pneumatics (other than braking) in accordance with TMP	Sprains and strains		<ul style="list-style-type: none"> • See above "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-1260 Pneumatics (other than Braking) System (06) - Safe Working
		Electric shock		<ul style="list-style-type: none"> • See above, "General Hazards" Continued 			
13	Repair/Replace Pneumatics (other than braking) using Plant, Equipment, Tools & Materials and referenced SWIs	Various hazards associated with use of tools and equipment		<ul style="list-style-type: none"> • See above "Tools & Equipment Hazards" 			
		Sprains and strains		<ul style="list-style-type: none"> • See above "General Hazards" 			
		Dust		<ul style="list-style-type: none"> • See above "Tools and Equipment Hazards" 			
		Contaminated mist (spray)	C2, F3 = C-	<ul style="list-style-type: none"> • Appropriate eyewear and PPE • Appropriate Respirator/filter • Training in use of PPE • Supervision • Pre-work brief 	C2, F2 = D		

PR Inspection

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		Pneumatic discharge	C2, F3 = C-	<ul style="list-style-type: none"> Pre-use checks, as per referenced SWI Eye Protection Appropriate PPE Competent Operator working in accordance with referenced SWI 	C2, F2 = D	Supervisor and authorised employee	SMS-06-SW-1260 Pneumatics (other than Braking) System (06) - Safe Working SMS-06-SW-0839 Compressed Air - Safe Use
		Electric shock (1500v)	C3, F4 = B -	<ul style="list-style-type: none"> Training in Electrical Safety Awareness Warning Signs Competent Operator working in accordance with Isolation SWI's Lowered pantograph Isolated road Test isolation has been achieved Pre-work assessment and brief 	C2, F2 = D		SMS-06-SW-0838 Pantograph Raising and Lowering
		Struck by pneumatic hose	C3, F3 = C+	<ul style="list-style-type: none"> Pre-use checks, as per referenced SWI Appropriate clothing/gloves Eye protection Competent Operator working in accordance with referenced SWI Isolation and release of air pressure before removing hoses 	C2, F2 = D		SMS-06-SW-0839 Compressed Air - Safe Use
14	Inspect Auxiliary Equipment in	Sprains and strains		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and	

PR Inspection

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	accordance with TMP	Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> See above "General Hazards" 		authorised employee	
15	Repair/Replace Auxiliary Equipment using Plant, Equipment, Tools & Materials and referenced SWIs	Various hazards associated with use of tools and equipment		<ul style="list-style-type: none"> See above "Tools & Equipment Hazards" 			SMS-06-SW-1250 Auxiliary Equipment Systems (07) Safe Working
		Contact with sharp edges		<ul style="list-style-type: none"> See above "General Hazards" 			
		Electric Shock		<ul style="list-style-type: none"> See above, "General Hazards" 			
16	Inspect Indicators, Control & Monitoring Systems with TMP	Sprains and strains		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-1269 Train Indicator, Control & Monitoring systems (13): Safe Working
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> See above "General Hazards" 			

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17	Repair/Replace Indicators, Control & Monitoring System components using Plant, Equipment, Tools & Materials	Various hazards associated with use of tools and equipment		<ul style="list-style-type: none"> See above "Tools & Equipment Hazards" 			
		Contact with sharp edges		<ul style="list-style-type: none"> See above "General Hazards" 			
		Electric Shock		<ul style="list-style-type: none"> See above, "General Hazards" 			
18	Inspect Climate Control systems in accordance with TMP.	Sprains and strains		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	
19	Repair Climate Control System components using referenced SWI's, Tools, Materials and Equipment.	Contact with sharp edges		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	
		Sprains and strains		<ul style="list-style-type: none"> See above "General Hazards" 			

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20	Replacements to be carried out in the lift shop	Burns from refrigerants	C2, F3 = C-	<ul style="list-style-type: none"> • Release pressure from system • Protective gloves • Safety Goggles • Competent Operator working in accordance with relevant SWI • Long Sleeved Shirts • MSDS • Cool system before starting work • Pre-work brief • Supervision 	C2, F2 = D		SMS-06-SW-1244 Train Climate Control (HVAC) System (08) Safe Working SMS-06-SW-0779 Lift Shop Repairs

PR Inspection

Issue date: 04/06/10

Review date: 09/04/13

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)
		Insect Bites	C2, F3 = C-	<ul style="list-style-type: none"> • Protective Gloves • Regular pest control • Insect Repellent • Appropriate Clothing 	C2, F2 = D		SMS-06-SW-1244 Train Climate Control (HVAC) System (08) Safe Working
		Fall from roof or at Heights	C3, F4 = B-	<ul style="list-style-type: none"> • Use High Roads to perform task • Use fall arrest equipment • Access via high roads • Guarded edges • Pre -work assessment • Pre - work briefing • Use of train as additional fall protection, in accordance with referenced SWI • Lace up safety footwear • Height safety equipment in use • Use ladders and scaffolding (where practical) 	C2, F2 = D		SMS-06-SW-1160 Working on High Roads
		Electric Shock		<ul style="list-style-type: none"> • See above, "General Hazards" 			SMS-06-SW-0838 Pantograph Raising and Lowering SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Risk ranking after controls	Responsibility	Job step to be completed in accordance with (name associated documentation)	
21	Inspect Auxiliary Power Supply systems in accordance with TMP	Sprains and strains		• See above "General Hazards"		Supervisor and authorised employee	SMS-06-SW-1250 Train Auxiliary Power Supply (10) - Safe Working
		Acid Burns	C3, F3 = C+	• Competent Operator working in accordance with relevant SWI • Safety goggles • Chemical resistant gloves • Safety Footwear • MSDS • Hygiene Practices • Pre-work brief	C2, F2 = D		
		Electric Shock		• See above, "General Hazards" •			
		Contact with sharp edges		• See above "General Hazards"			
22	Repair/replace Auxiliary Power Supply components using referenced SWIs, Plant, Equipment, Tools & Materials	Various hazards associated with use of tools and equipment		• See above "Tools & Equipment Hazards"			SMS-06-SW-1250 Train Auxiliary Power Supply (10) - Safe Working
		Sprains and strains		• See above "General Hazards"			
		Electric Shock		• See above, "General Hazards" •			
		Contact with sharp edges		• See above "General Hazards"			
		Acid Burns	C3, F3 = C+	• Competent Operator working in accordance with relevant SWI • Safety goggles • Chemical resistant gloves • Safety Footwear • MSDS • Hygiene Practices • Pre-work brief	C2, F2 = D		

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

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)
23	Inspect Main Power supply systems in accordance with TMP	Sprains and strains		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	
24	Repair/Replace Main Power Supply system components using referenced SWIs, tools, materials and equipment.	Contact with sharp edges		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-1286 Train Main Power Supply System (11) Safe Working
		Electric Shock		<ul style="list-style-type: none"> See above, "General Hazards" 			SMS-06-SW-0838 Pantograph Raising and Lowering
25	Inspect Lighting systems in accordance with TMP	Sprains and strains		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	
		Electric Shock		<ul style="list-style-type: none"> See above, "General Hazards" 			SMS-06-SW-1251 Train Lighting Systems (12) - Safe Working
26	Repair/Replace Lighting components, using referenced SWIs, Plant, Equipment, Tools & Materials	Electric Shock		<ul style="list-style-type: none"> See above, "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-1251 Train Lighting Systems (12) - Safe Working
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> See above "General Hazards" 			
		Fall from doorway and mobile stairs		<ul style="list-style-type: none"> See above "General Hazards" 			SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Risk ranking after controls	Responsibility	Job step to be completed In accordance with (name associated documentation)	
		Mercury vapour / phosphorous particles	C2, F3 = C-	<ul style="list-style-type: none"> • Ventilation • Competent Operator working in accordance with referenced SWI • Appropriate respirator/filter • Rubber gloves • Safety Eyewear • Appropriate Clothing • Work Rotation • Health Surveillance • MSDS • Pre-work brief 	C2, F2 = D	Supervisor and authorised employee	
		Cuts and/or falling debris	C3, F3 = C+	<ul style="list-style-type: none"> • Protective Gloves • Protective gloves • Hard hat or bump hat • Eye protection • Lace up safety boots • Keep clear of moving load • Place warning signs 	C2, F2 = D		
27	Inspect Indicators, Control & Monitoring Systems with TMP	Sprains and strains		<ul style="list-style-type: none"> • See above "General Hazards" 		Supervisor and authorised employee	
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> • See above "General Hazards" 			
28	Repair/Replace Indicators, Control & Monitoring Systems using referenced SWIs Plant, Equipment, Tools & Materials	Various hazards associated with use of tools and equipment		<ul style="list-style-type: none"> • See above "Tools & Equipment Hazards" 			
		Contact with sharp edges		<ul style="list-style-type: none"> • See above "General Hazards" 			
		Sprains and strains		<ul style="list-style-type: none"> • See above "General Hazards" 			

PR Inspection

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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)
		Electric Shock		<ul style="list-style-type: none"> See above, "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-1269 Train Indicator, Control & Monitoring systems (13): Safe Working
		Fall from doorway and mobile stairs		<ul style="list-style-type: none"> See above "General Hazards" 			SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms

PR Inspection

Issue date: 04/06/10
Review date: 09/04/13

Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Risk ranking after controls	Responsibility	Job step to be completed in accordance with (name associated documentation)	
29	Inspect Communication Systems in accordance with TMP	Contact with sharp edges		• See above "General Hazards"		Supervisor and authorised employee	SMS-06-SW-0891 Train Radio Isolation
		Sprains and strains		• See above "General Hazards"			
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		• See above "General Hazards"			
		Radiation	C2, F4 = C+	<ul style="list-style-type: none"> • Isolate and work in accordance with the requirements of Train Radio Radiation SWI • Work Rotation • Monitoring • Pre-work brief 	C2, F2 = D		

PR Inspection

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Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Risk ranking after controls	Responsibility	Job step to be completed In accordance with (name associated documentation)	
30	Repair/Replace Communications system components using referenced SWIs, Plant, Equipment, Tools & Materials	Contact with sharp edges		• See above "General Hazards"		Supervisor and authorised employee	SMS-06-SW-1281 Train Communication System (14): Safe Working
		Sprains and strains		• See above "General Hazards"			
		Radiation	C2, F4 = C+	<ul style="list-style-type: none"> • Isolate and work in accordance with the requirements of Train Radio Radiation SWI • Work Rotation • Monitoring • Pre-work brief 	C2, F2 = D		SMS-06-SW-0891 Train Radio Isolation
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		• See above "General Hazards"			
		Various hazards associated with use of tools and equipment		• See above "Tools & Equipment Hazards"			
		Electric Shock		• See above, "General Hazards"			

PR Inspection

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Number	Step	Hazard or human error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk ranking before controls	Risk ranking after controls	Responsibility	Job step to be completed in accordance with (name associated documentation)	
31	Clean-up and return replaced parts and equipment to store and dispose of rubbish to appropriate waste bins	Sprains and strains		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	
		Hygiene Practices and dust	C2, F3 = C-	<ul style="list-style-type: none"> Appropriate Respirator Protective gloves and safety eyewear Hygiene Practices Pre-work brief Supervision 	C2, F2 = D		
32	Cut Road Back in	Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key SMS-06-SW-0837 Isolating 1500v DC OH using a Supplementary Lock
		Arcing from Road Isolation Switch during its movement	C2, F3 = C-	<ul style="list-style-type: none"> Design of Electrical Infrastructure Training in Electrical Safety Awareness AR or BR training Appropriate PPE for electrical tasks 	C2, F2 = D		

PR Inspection

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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)
		Electric shock during operation of the Road Isolation Switch	C3, F3 = C+	<ul style="list-style-type: none"> Design of Electrical Infrastructure Training in Electrical Safety Awareness Standing on Earthing Plate AR or BR training Appropriate PPE for electrical tasks 	C2, F2 = D		
33	Raise Pantograph	Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	SMS-06-SW-0838 Pantograph Raising and Lowering
		Fall from doorway / mobile stairs		<ul style="list-style-type: none"> See above "General Hazards" 			
34	Remove Red Flag	Struck by or contact with moving trains or unexpected train movement		<ul style="list-style-type: none"> See above "General Hazards" 		Supervisor and authorised employee	SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres
		Slip, trip, fall on rail, or uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> See above "General Hazards" 			

PR Inspection

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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

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	
		2-10 Fatalities	C5 Catastrophic	C+	B-	B+	A	A	
		1 Fatality (2-10 Major Injuries)	C4 Critical	C-	C+	B-	B+	A	
		1 Major Injury	C3 Major	D	C-	C+	B-	B+	
		1 or more Minor Injuries	C2 Minor	D	D	C-	C+	B-	
		First aid treatment, or illness/injury not requiring treatment	C1 Negligible	D	D	D	C-	C+	
									