

Train Technician's Train Repairs

Issue date: 08/09/10
Review date: 07/09/13

SWMS number: SMS-06-SW-1398	SWMS Name: Train technician’s train repairs.			SWMS Team: Steve Lennon – Train Technician Nick Haskew - Train Technician Alan Davis– Train Technician Malcolm Watling – Train Technician Phil McColl - Maintenance Operations Manager	
Custodian (Position): Manager Services and Support Rollingstock (RSD)	Assumptions: All work is to be performed by qualified train technicians in consultation with relevant parties within the bounds of CityRail network.				
Approving Authority (Position): GM RSD	Plant/Equipment/Tools: <ul style="list-style-type: none">• Appropriate trade tools• Residual current device (RCD) or earth leakage device (ELD) and test before use• Red flag when train is stationary	Records/Reporting: <ul style="list-style-type: none">• Ellipse - work order scheduling tool	Permits/licences required:	Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group) Steve Lennon – Train Technician Nick Haskew - Train Technician Alan Davis– Train Technician Malcolm Watling – Train Technician Rita Krista (OHS Facilitator) Suresh Singh (RSD Safety Manager) Phil McColl (Maintenance Operations Manager) Reviewed by: Darren Stuart, Safety Project Officer Neil Hunt, Services and Support Manager Suresh Singh Safety Manager RSD	
Applicable Standards, Codes of Practice and guidance: <ul style="list-style-type: none">• OHS Act 2000• OHS Regulations 2001• 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• <u>Train Operators Manual</u>• <u>NWT 300 Planning Work on</u>					
	Inspection requirements <ul style="list-style-type: none">• Visual inspection of powered, hand tools,	Service schedule:	Training/Qualifications required: <ul style="list-style-type: none">• Manual handling training		PPE required: <ul style="list-style-type: none">• High visibility orange vest or clothing

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<p><u>the Rail Corridor</u></p> <ul style="list-style-type: none"> • <u>NWT 308 Control Signal Blocking</u> • <u>NWT 310 No Authority Required</u> • <u>NGE 200 Walking in the Danger Zone</u> 	<p>leads and equipment for damage and operability before use.</p> <ul style="list-style-type: none"> • Power tools and leads 6 monthly inspection 	<p>MIMS or METRE Ref:</p>	<ul style="list-style-type: none"> • Implement Control signal blocking (CSB) & No Authority Required (NAR) Rail Industry safety induction (RISI) • Train technician trade qualification • Network Rollingstock Maintainer (NRM) • Height safety awareness 	<ul style="list-style-type: none"> • Lace up safety footwear • Appropriate protective gloves (as required) • Locks and lock-out, tag-out devices as required • Sun screen • Safety eye wear • Sun hat as required • Hard hat as required • Hearing protection as required • Full length clothing
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SWMS Custodian: Manager Services and Support RSD
SWMS Approver: GM RSD

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1.	<u>General Hazards</u> These Hazards and Controls apply throughout this SWMS	Exposure to electricity	C5,F3 B+	<ul style="list-style-type: none"> Qualified Train Technicians Rail Industry Safety Induction (RISI) Hazard assessment No access to incident when overhead power lines are down Isolated and permit to work issued Lower Pantographs Always undertake a visual inspection to verify pantographs have been lowered Use of Multi Meter device to check electrical current before commencing work Worksite protection plan Qualified Protection Officer Site Induction if required 	C3,F2 C-	Train Technician	SMS-06-SW-0269 Electric Shock Protocol SMS-06-SW-0267 Working in accordance with electrical permit SMS-06-SW-0838 Pantograph Raising and Lowering

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	<u>General Hazards</u> These Hazards and Controls apply throughout this SWMS Continued	Slip, trip, fall on rail, ballast or other uneven walking surfaces and on entry/exit to carriage	C3,F3 C +	<ul style="list-style-type: none"> Entry and exit using the platform, wherever possible Use of ladder (non-conductive), as required Appropriate safety lace up footwear Towels for drying off footwear before entry, as required Lighting Pre-entry inspection, in accordance with reference SWI Portable lighting, as required Appropriate safety Hard hat (construction site) Communication Experienced users working in accordance with relevant SWI Hazard assessment Portable stairs in maintenance centres Site Induction if required Train traction inter locking system 	C2,F3 C -	Train Technician	SMS-06-SW-0487 Entering Trains from Ballast SMS-06-SW-0488 Climbing out of Trains onto Ballast
	<u>General Hazards</u>						

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	These Hazards and Controls apply throughout this SWMS Continued	Struck by or contact with moving trains	C4. F3 B -	<ul style="list-style-type: none"> Rail Industry Safety Induction (RISI) Red flag NWT 308 NWT 310 Hazard assessment Site Induction High Visibility Vest Sounding Horns Medical Standards and Health Assessments Site speed restrictions Protection plan briefing Route knowledge Trained drivers Qualified Protection Officer Points clipping/locking Use of warning detonators Standing Train Protection, Control signal blocking (CSB) or No Authority Required (NAR), Network RollingStock Maintainer (NRM) Site Induction if required 	C4, F1 C-	Train Technician	SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres SMS-06-GD-0323 Personal Protective Equipment

Train Technician's Train Repairs

Issue date: 08/09/10

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	<u>General Hazards</u> These Hazards and Controls apply throughout this SWMS Continued	Bites (insect, snake or spider)	C3,F3 C +	<ul style="list-style-type: none"> Inspecting area before touching Insect repellent Lighting, as required Full length clothing Appropriate safety lace up footwear Appropriate safety protective gloves First Officer assistance available Hazard assessment 	C2, F3 C -	Train Technician	SMS-06-GD-0323 Personal Protective Equipment
	<u>General Hazards</u> These Hazards and Controls apply throughout this SWMS Continued	Exposure to weather extremes	C3,F3 C+	<ul style="list-style-type: none"> Wet weather clothing Hot & Cold Drinks (water) Thermal Clothing Sunscreen, as required Sun hat, as required Appropriate safety sunglasses, as required Work in shaded area Site Induction if required Full length clothing 	C1,F3 D	Train Technician	SMS-06-GD-0323 Personal Protective Equipment

Train Technician's Train Repairs

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	<u>General Hazards</u> These Hazards and Controls apply throughout this SWMS Continued	Needle Stick Injuries	C3,F3 C+	<ul style="list-style-type: none"> Inspecting area before touching Lighting, as required Full length clothing Appropriate safety lace up footwear Appropriate safety gloves Handling sharps SWI Sharps tongs and sharps container Hazard assessment Site Induction if required 	C2,F3 C-	Train Technician	SMS-06-GD-0323 Personal Protective Equipment SMS-06-SW-0405 – Handling Sharps
		Contact with sharp objects	C2,F3 C-	<ul style="list-style-type: none"> Appropriate safety gloves Safety footwear Visual Inspection Lighting Hazard assessment Site Induction if required 	C1,F2 D	Train Technician	SMS-06-GD-0323 Personal Protective Equipment

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		Violence from passengers or public	C3,F3 C+	<ul style="list-style-type: none"> Contact Police/Rail Maintenance Centre (RMC) Conflict resolution training Pre work briefing Communication Site Induction if required Platform help points Transit officers on trains Travelling with crew at night Emergency alarm button in carriages Move to another carriage Don't travel in carriage alone Liaise with driver and guard 	C3, F2 D	Train Technician	SMS-06-GD-0242 Managing Workplace Violence
		Noise	C2, F4 C+	<ul style="list-style-type: none"> Appropriate hearing protection Medical standards & health assessment Hazard assessment Work in accordance with relevant SWIs Site Induction if required 	C2, F2 D	Train Technician	SMS-06-GD-0323 Personal Protective Equipment SMS-06-SW-GD-0273 Noise Management

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		Sprains and strains	C2, F4 C+	<ul style="list-style-type: none"> Carry out team lifts for heavy items. Manual handling training Use manual handling aids such as trolleys Pre-work assessment and briefing Entry and exit using the platform, wherever possible Appropriate safety lace up footwear Portable lighting, as required Portable stairs in maintenance centres Protection plan Site Induction if required Pre-work stretching 	C2, F3 C-	Train Technician	SMS-06-GD-0001 - Manual Handling

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Issue date: 08/09/10
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2.	Notification of incident information	Information delayed or not communicated leading to injury or illness	C2, F3 C-	<ul style="list-style-type: none"> Report incident immediately Communicate with all relevant personnel Place warning signage Barricade and restrict access Supervision 	C2,F2 D	Train Technician	
	<u>Tool & Equipment Hazards</u> These Hazards and Controls apply to the use of tools and equipment	Electric shock from power leads and cutting tools	C3, F 4 B-	<ul style="list-style-type: none"> Testing and Tagging Pre-use inspection and remove damaged leads Residual Current Device (RCD) or Earth Leakage Device (ELD) Use battery drills, when possible and if applicable Electric shock protocol Appropriate safety PPE (Gloves) 	C2, F 2 D	Train Technician	SMS-06-SW-0274 Electrical Equipment – Selection, Inspection and Testing SMS-06-SW-0269 Electric Shock Protocol
		Noise		<ul style="list-style-type: none"> See Tool & Equipment Hazards "Noise" 			SMS-06-GD-0323 Personal Protective Equipment

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		"Kick Back" – Sudden movement of tool and projectiles	C3, F 4 C +	<ul style="list-style-type: none"> Competent operator working in accordance with referenced SWI Hazard assessment Pre-use inspection Keep clear of path of moving tool Check that guard returns correctly where applicable Workable guard and continuous inspection Safety Eyewear (including face shield, as appropriate) Appropriate safety gloves where appropriate Relevant training in the operation of tools and equipment being used Equipment guard 	C2, F 2 D		SMS-06-SW-0474 Angle Grinders SMS-06-GD-0323 Personal Protective Equipment
		Dust		<ul style="list-style-type: none"> See "General Hazards" 			SMS-06-GD-0323 Personal Protective Equipment

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		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 safety gloves Keep clear of cutting tools Hazard assessment Keep hands clear Relevant training in the operation of tools and equipment being used Equipment guard 	C2, F 2 D		SMS-06-SW-0474 Angle Grinders
	Pneumatic Tools	Pneumatic discharge or struck by pneumatic hose	C3,F2 C-	<ul style="list-style-type: none"> Pre-use checks, as per referenced SWI Competent operator working in accordance with referenced SWI Trade qualified Train Technician Isolation and release of air pressure before removing hoses Appropriate safety gloves Appropriate eye protection Appropriate clothing Appropriate safety lace up footwear 	C2,F2 D	Train Technician	SMS-06-SW-0809 Pneumatic Tools

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		Struck by pneumatic hose	C3,F3 C +	<ul style="list-style-type: none"> Pre-use checks, as per referenced SWI Competent operator working in accordance with referenced SWI Isolation and release of air pressure before removing hoses 	C2,F3) C-		SMS-06-SW-0809 Pneumatic Tools SMS-06-SW-0839 Compressed Air – Safe Use
		Noise		<ul style="list-style-type: none"> See “General Hazards” 			SMS-06-GD-0273 Noise Management
		Dust		<ul style="list-style-type: none"> See “Tool & Equipment Hazards” 			SMS-06-GD-0323 Personal Protective Equipment
		Cuts and abrasions from contact with moving tool		<ul style="list-style-type: none"> See “Powered Cutting Tools” 			SMS-06-SW-0809 Pneumatic Tools

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3.	Travel to location, if applicable	Driving vehicle to location while fatigued	C3,F3 C +	<ul style="list-style-type: none"> • Drug & alcohol management • Fatigue management • Driver's licence • Road rules & enforcement • Vehicle registration • Vehicle maintenance • Take break (long trips) • Use external air vents • Partly wind down window 	C3,F2 D	Train Technician	SMS-20-SR-0169 Health Management SMS-06-SW-1109 Driving to remote sites
		Driving vehicle to location at night/in poor weather	C3,F3 C +	<ul style="list-style-type: none"> • Driver's licence • Drug & alcohol management • Fatigue management • Road rules & enforcement • Vehicle registration • Vehicle maintenance • Reduce speed • Slow down at intersections • Working brake, lights, blinkers and head and tail lights 	C2,F2 D		SMS-06-SW-1109 Driving to remote sites

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		If travelling by train violence from member of the public during travel		<ul style="list-style-type: none"> See "General Hazards" 			SMS-06-GD-0242 Managing Workplace Violence
4.	Access Incident Site	Existing hazards or hidden traps,		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	
		Struck by or contact with moving trains		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	
5.	Attend train and report to crew, if applicable	Existing hazards or hidden traps,		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	

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6.	Inspect train to identify hazards and carry out repairs on Train	Existing hazards or hidden traps,		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	
		Fall caused by train movement (inspecting or working whilst travelling)	C2,F3 C -	<ul style="list-style-type: none"> Provision of handrails Lighting, as required Appropriate safety lace up footwear Knowledge of train operations 	C1,F3 D	Train Technician	
		Contact with sharp objects		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	SMS-06-GD-0323 Personal Protective Equipment
		Needle Stick Injuries		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	SMS-06-SW-0405 – Handling Sharps
		Exposure to electricity		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	SMS-06-sw-0269Electric shock protocol

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		Strains and sprains in restricted work space		<ul style="list-style-type: none"> See above, "General Hazards" 			

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		Struck by or contact with moving trains		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	SMS-06-GD-0323 Personal Protective Equipment
		Fall from doorway when entering and exiting the train		<ul style="list-style-type: none"> See above, "General Hazards" 		Train Technician	SMS-06-SW-0487 Entering Trains from Ballast SMS-06-SW-0488 Climbing out of Trains onto Ballast
		Dust		<ul style="list-style-type: none"> See "General Hazards" 		Train Technician	SMS-06-GD-0323 Personal Protective Equipment
		Pinched by moving brakes	C2,F3 C -	<ul style="list-style-type: none"> Bogie (BC) or Park Brake (BC) Cock cut out Guard's Emergency Cock Locked Out Working in accordance with referenced SWI 	C1,F2 D		SMS-06-SW-1133 Guard's Emergency Cock Lock-Out SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres
		Contact with sharp objects		<ul style="list-style-type: none"> See above, "General Hazards" 			SMS-06-GD-0323 Personal Protective Equipment

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		Contact with hot parts	C2, F3 C-	<ul style="list-style-type: none"> Allow cooling period Work in accordance with relevant SWI Appropriate safety gloves when interacting with any hot parts Working in accordance with referenced SWI Hazard assessment Supervision 	C2, F1 D		SMS-06-GD-0323 Personal Protective Equipment
		Pneumatic discharge or struck by pneumatic hose		<ul style="list-style-type: none"> See "Tools and Equipment hazards" 			SMS-06-SW-0809 Pneumatic Tools
		Insect Bites		<ul style="list-style-type: none"> See "General Hazards" 			SMS-06-GD-0323 Personal Protective Equipment

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		Fall from roof of train or at heights	C3,F2 C-	<ul style="list-style-type: none"> • Lighting as required • Fall arrest equipment • Working at heights training • Appropriate safety hard hat • Harness Training • Access via high roads where possible • Guarded edges • Pre -work assessment • Hazard assessment • Appropriate safety lace up footwear • Height safety equipment in use • Use ladders and scaffolding (where practical) 	C2,F2 D		SMS-06-GD-0240 Working at Heights SMS-06-GD-0241 Fall Arrest Systems
		Acid Burns	C3, F 3 C+	<ul style="list-style-type: none"> • Chemical resistant safety gloves • Appropriate safety wear eye protection (Safety goggles) • Working in accordance with referenced SWIs • Qualified Train Technician • Appropriate safety lace up footwear 	C2, F2 D		SMS-06-GD-0323 Personal Protective Equipment

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7.		Mercury dust (Light Tubes)	C2,F3 C -	<ul style="list-style-type: none"> Ventilation Appropriate respirator Appropriate protective gloves Working in accordance with relevant SWIs Appropriate safety eyewear Appropriate safety protective clothing 	C2,F2 D		SMS-06-GD-0323 Personal Protective Equipment SMS-06-SW-1251 Train Lighting Systems (12) - Safe Working
		Cuts and/or falling debris	C2,F3 C +	<ul style="list-style-type: none"> Appropriate safety gloves, as required Appropriate safety eye protection, as required Working in accordance with SWIs Appropriate safety hard hat Appropriate safety lace up footwear Hazard assessment 	C2,F2 D		SMS-06-GD-0323 Personal Protective Equipment

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		Radiation	C2,F2 D	<ul style="list-style-type: none"> Isolate of train radio Appropriate safety gloves Appropriate safety protective clothing Working in accordance with SWI 	C2,F1 D		SMS-06-SW-0891 Train Radio Isolation
		Slip, trip, fall on rail, ballast or other uneven walking surfaces and on entry/exit to carriage		<ul style="list-style-type: none"> See above, "General Hazards" 			SMS-06-SW-0487 Entering Trains from Ballast SMS-06-SW-0488 Climbing out of Trains onto Ballast
8.	Notify completion and state of repair	If repairs are not undertaken correctly or completed, may lead to injury		<ul style="list-style-type: none"> Ensure repairs are complete and meet the required standards 		Train Technician	
9.	Return to location	Driving vehicle to location while fatigued		<ul style="list-style-type: none"> See above, "Travelling to location, if required" Item (3.) 		Train Technician	SMS-20-SR-0169 Health Management
		Driving vehicle to location at night / in poor weather		<ul style="list-style-type: none"> See above, "Travelling to location, if required" Item (3.) 			
		Violence from member of the public during travel		<ul style="list-style-type: none"> See above, "Travelling to location, if required" Item (3.) 			SMS-06-GD-0242 Managing Workplace Violence

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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">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. <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-	