

Steel Bridge Repairs

Issue date: 12/10/10
Review date: 14/07/13

SWMS number: SMS-06-SW-0982	SWMS Name: Steel Bridge Repairs	SWMS Team: Civil Construction Review Team
Custodian (Position): Services Manager Civil	Assumptions: Site specific risks are addressed and assessed in pre- work briefing	Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group) Civil Services Manager & SEQ Coordinator Asset Management Group Renewals
Approving Authority (Position): Safety and Quality Manager, Commercial / Renewals	Equipment/Plant/Tools: <ul style="list-style-type: none"> Elevated Work Platform, Scissor Lift, Crane, Lifting Equipment, Trolleys Barricades, Construction Equipment, Demarcation Fencing, Signs, Markers, Straps, Ties, Ropes No-Spill Fuel Cans, Spill Response Kit Scaffold, Fall Arrest Device High Speed Power Tools, Oxy/Acetylene Welding – Cutting Gear, Screens, Scrapers, Grinders, Hammers, Magnetic Drill, Generator. Watercart, Fire Extinguishers Air Compressor, Scabbie guns. 	Records/Reporting: <ul style="list-style-type: none"> Worksite Protection Plan Pre-work Brief Site Specific Management Plan Electrical Test Tags Hot Work Permit (During Total Fire Ban) Fire Brigade Services searches Daily Plant Checklist Environmental Protection Plan Electrical Permits MSDS Traffic Control Permits/licences required: <ul style="list-style-type: none"> Elevated Work Platform Certificate Crane Operators Certificate Dogman Certificate Electrical Permit Holder Oxy – Acetylene Welders Certificate
Applicable Standards, Codes of Practice and guidance: <ul style="list-style-type: none"> OH&S Act 2000 OH&S Regulation 2001 SMS and Network Rules Rail Safety Regulation 2003 RailCorp Safety Policy RailCorp Network Rules & Procedures RailCorp Safety Management System. MSDS for all chemicals and hazardous Substances used on site Working in Total Fire Bans, Engineering Standard G3623 RailCorp System Safety Standard No: 14 Hazardous Process AS 4839 portable oxy-fuel gas systems AS2030 Inspection, testing and maintenance of cylinders for storage and transport of compressed gases OH&S Regulation 2001 Point 7.6 Working near Overhead Power Lines AS/NZS 1891.4 – 2000 “Industrial fall arrest systems and devices – Selection, use 		Personal Protective Equipment required: <ul style="list-style-type: none"> Safety Boots High Visibility Vests Hardhats Protective Clothing Safety Glasses And as specified below. <ul style="list-style-type: none"> Fall Arrest Devices Dust masks Disposable Overalls Spats Welding Goggles or Face Shield Barrier Cream Gloves During all Site Works a FIRST AIDER MUST be Present

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and maintenance" <ul style="list-style-type: none">• EC14 – Guide to Electrical Workers' Safety Equipment• AS 2550.5-2002 Cranes, hoists and winches - Safe use - Mobile cranes	Inspection requirements Nil	Service schedule: Nil	Training/Qualification required: <ul style="list-style-type: none">• Construction Industry Induction• RISI (Rail Industry Safety Induction)	
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1	Track access	Trains Running	A	Track Possession	D	Team Leaders Work Group Leaders All Staff Worksite Protection Officer, PPO	SSMP, Pre work Briefing SMS-06-FM-0163 Network Rules and Procedures
		Contact with live o/h wiring or other services	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 All Staff	Electrical equipment SMS-06-GD-0268 Electrical permits SMS-06-EN-0577
		Personnel struck by machinery	B+	Implement exclusion zones. Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion, Use a Spotter. Traffic Control	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Oil/fuel leakage or loss	C-	Plant to be inspected daily. Use correct methods for filling machinery. Maintain spill response kits on-site.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental Protection Plan Plant SMS-06-PR-0225
2	Erect scaffold to access bridge steelwork	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+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225 Electrical Equipment SMS-06-GD-0268
		Fall from height	B+	Provide scaffold, use elevated work platform or wear harness	C+	Team leader work group leader WorkCover ticketed scaffolder sms-11-gd-0243	SSMP, Pre work Briefing SMS-06-FM-0163 Working at Heights SMS-06-GD-0240 PPE- SMS-06-GD-0323 Lifting Equipment SMS-16-FM-0089
		Falling objects	B-	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks – Spotter. Traffic Control	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
3	Position elevated work platforms at worksite	Elevated work platform tipping over	B-	Operator to check that elevated platform is set up level and stable before ascending, even loads on platform	C-	Team Leaders Work Group Leaders All Staff Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Elev. Work Platform's SMS-06-SW-0310

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		Damage to rail infrastructure	B+	Be aware/cover to protect report damage.	C+	Team Leaders Work Group Leaders All Staff Competent person	SSMP, Pre work Briefing SMS-06-FM-0163
		Personnel struck by machinery	B+	Implement exclusion zones. Use reversing beepers. Use ticketed operators. Spotter if needed, Barrier around work area.	C+	Team leaders Work group leaders All staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
4	Remove OHW fittings that foul the repair area	Fall from height	B+	Provide scaffold, use elevated work platform or wear harness	C+	Team leader work group leader WorkCover ticketed operator sms-11-gd-0243	SSMP, Pre work Briefing SMS-06-FM-0163 Working at Heights SMS-06-GD-0240 PPE- SMS-06-GD-0323 Lifting Equipment SMS-16-FM-0089
		Electrocution use of high speed power tools	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools. *. Correct use of PPE	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268
		Cuts, abrasions	C-	Use correct techniques wear approved riggers gloves	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Falling objects	B-	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks. Spotter	C-	Team leader Work group leader All staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Failure of lifting equipment from overloading	B+	Competent operators to assess loads carefully prior to lifting. Correct type and size chosen for task	C+	Team Leaders Work Group Leaders All Staff Workcover ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Lifting Equipment SMS-16-FM-0089 Plant SMS-06-PR-0225
		Manual handling injuries	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
5	Mechanical cleaning of surface	Lead contamination / poisoning	B-	Personnel using equipment that will disturb the leaded paint (i.e. cutting, burning, grinding scraping, etc) or those in proximity to these processes to use suitable PPE.	C-	Team leader Work group leader All staff	SSMP, Pre work Briefing SMS-06-FM-0163 OH&S REGULATIONS 2001 POINT 7.6 Hazardous Substances SMS-06-GD-0199

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		Manual handling injuries	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 PPE- SMS-06-GD-0323
 WARNING		<p><i>The Following Precautions are to be undertaken for when using Hot Works as in Activity 6 & 11 during Total Fire Bans:</i></p> <ul style="list-style-type: none"> • An Hot Works Permit must be Issued before Work tasks are to be Performed • The Welder or other person in control of the Worksite must take reasonable care to inspect the workplace to identify Potential Fire Hazards <ul style="list-style-type: none"> • All Fire Hazards are to be removed Prior to commencing Welding Tasks • Fire Fighting Equipment must be on Hand at the Worksite e.g. Watercart, Knapsacks, Fire Extinguishers <ul style="list-style-type: none"> • (Hot Works in Progress) Warning Signs are to be placed at Appropriate locations <p style="text-align: center;">Hot Work SMS-06-PR-0329</p>					
6	Remove existing bolts and rivets. (using oxy- acetylene)	Fire from oxy-acetylene cutting	C-	Hot work permit if required. Water cart, or fire extinguishers on site wet down work Area. Traffic Control, Spotter	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hot Work SMS-06-PR-0329
		Burns from cutting equipment and hot work	C+	Wear gloves long sleeve shirts, long pants , spats, goggles or face shield as appropriate, First aid kit	D	Team Leaders Work Group Leaders All Staff Ticketed cutter/welder	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS PPE- SMS-06-GD-0323
		Exposure to hazardous substance (oxygen or acetylene)	B-	Handle cylinders with care to protect valves. Turn off valves when not in use equipment to meet as4839, as2030	C-	Team leader work group leader ticketed operator	Manual handling SMS-06-GD-0001 AS4839 AS2030
		Damage to bridge structure	C+	Only suitable gouge or rivet consuming nozzles to be used for cutting old rivet heads that are against steel that is not being removed.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		Lead based paint	B-	Personnel using equipment that will disturb the leaded paint (i.e. cutting, burning, grinding scraping, etc) or those in proximity to these processes to use suitable PPE.	C-	Team leader Work group leader All staff	SSMP, Pre work Briefing SMS-06-FM-0163 OH&S REGULATION 2001 POINT 7.6 Hazardous Substances SMS-06-GD-0199
7	Hammering to remove old rivets.	Noise	B-	Appropriate PPE to be used (Ear Protection)	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

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	8 Remove old steelwork – diaphragm, gusset plate, flange angles, etc	Dust	B-	Appropriate PPE to be used (Dust Mask)	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Flying objects	C-	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks. Spotter	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Manual handling injuries	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-060GD-0001 PPE- SMS-06-GD-0323
		Falling objects	B-	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Hand injuries (laceration, crush)	B+	Use correct technique gloves to be worn as necessary.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Struck by hammer	C-	Keep clear of work area if not involved in process use correct technique	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-060GD-0001
8	Remove old steelwork – diaphragm, gusset plate, flange angles, etc	Noise	B-	Appropriate PPE to be used (Ear Protection)	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Dust	B-	Appropriate PPE to be used (Dust Mask)	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Manual handling injuries	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
		Falling objects	B-	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks use lifting equipment where necessary	C-	Team Leaders Work Group Leaders All Staff ticketed operator dogman	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323 Lifting Equipment SMS-16-FM-0089

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9	Drill new angles to suit	Noise	B-	Appropriate PPE to be used (Ear Protection)	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Electrocution	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268
		Clothing caught in machinery	C-	No loose clothing or hair in the vicinity of drilling, grinding machinery	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Cuts, abrasions	C-	Use correct techniques wear approved riggers gloves	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
10	Install new steel sections	Fall from height	B+	Provide scaffold, use elevated work platform or wear harness	C+	Team leader work group leader WorkCover ticketed operator sms-11-gd-0243	SSMP, Pre work Briefing SMS-06-FM-0163 Working at Heights SMS-06-GD-0240 PPE- SMS-06-GD-0323 Lifting Equipment SMS-16-FM-0089
		Unstable loads	B+	Ensure materials are secured during transit. Don't exceed safe working load of plant.	C+	Team Leaders Work Group Leaders All Staff Workcover ticketed operator sms-11-gd-0243	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Failure of lifting equipment from overloading	B+	Competent operators to assess loads carefully prior to lifting equipment to be properly maintained and marked.	C+	Team Leaders Work Group Leaders All Staff Workcover ticketed operator and dogman sms-11-gd-0243	SSMP, Pre work Briefing SMS-06-FM-0163 Lifting Equipment SMS-16-FM-0089 Plant SMS-06-PR-0225
		Stiffeners falling on workers	C-	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks use control lines or cranes where necessary	D	Team Leaders Work Group Leaders All Staff ticketed operator dogman	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323 Lifting Equipment SMS-16-FM-0089
		Noise from tightening bolts with impact wrench.	C+	Use hearing protection	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

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11	Weld stiffeners into place	Welder flash	C-	Wear appropriate eye protection. Welding Screens	D	Team Leaders Work Group Leaders All Staff Ticketed welder	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Burns hot work	C+	Wear gloves long sleeve shirts, long pants , spats, goggles or face shield as appropriate	D	Team Leaders Work Group Leaders All Staff Ticketed welder	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS PPE- SMS-06-GD-0323
		Fires from welding	C-	Hot work permit if required. Water cart, or fire extinguishers on site wet down work area	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hot Work SMS-06-PR-0329
12	Painting of bridge steelwork	Fumes	B-	Apply as per manufacturers instructions. PPE. MSDS.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS, RailCorp System Safety Standard No: 14 Hazardous Process
		Skin irritation	C-	Protective clothing. Barrier cream. MSDS	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS
13	Demobilise site and remove access ramp	Noise	B-	Appropriate PPE to be used (Ear Protection)	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Dust	B-	Appropriate PPE to be used (Dust Mask) Water cart to wet down area	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Personnel struck by machinery	B+	Implement exclusion zones. Use reversing beepers. Use ticketed operators. Plan work to avoid site congestion. Traffic Control	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Contact with live o/h wiring or other services	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 All Staff	Electrical equipment SMS-06-GD-0268 Electrical permits SMS-06-EN-0577

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		Contact with services	A	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+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225 Electrical Equipment SMS-06-GD-0268

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