

# Bridge Renewal-Concrete

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

<b>SWMS number:</b> SMS-06-SW-0979	<b>SWMS Name:</b> Bridge Renewal-Concrete	<b>SWMS Team:</b> Civil Construction Review Team	
<b>Custodian (Position):</b> Services Manager Civil	<b>Assumptions:</b> Site specific risks are addressed and assessed in pre- work briefing	<b>Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group)</b> Services Manager Civil and Safety facilitator, Safety Support Services Division.	
<b>Approver (Position):</b> Civil Electrical Works Manager Infrastructure Renewals	<b>Plant/Equipment/Tools:</b> <ul style="list-style-type: none"> <li>• Earth Moving Equipment, Bobcat, Crane, Scissor Lift, Boom Lift, Elevated Work Platform, Lifting Equipment, Scaffolding</li> <li>• Fire Extinguisher, Water Cart</li> <li>• Mechanical Equipment, Construction Equipment, Straps, Ties, Trolleys, Pigs Foot, Sledge Hammer, Clip Pullers</li> <li>• Barricades, Demarcation Fencing, Signs, Markers, Plywood, Safety Tape, Shoring, Benching</li> <li>• No-Spill Fuel Cans, Spill Response Kit</li> <li>• Oxy – Acetylene Equipment, Grinders, Scrapers, Power Tools, Magnetic Drill, Generator</li> <li>• Silt Fencing, Hay Bales, Bungs, Sediment Cloth, Sediment Traps</li> </ul>	<b>Records/Reporting:</b> <ul style="list-style-type: none"> <li>• Worksite Protection Plan</li> <li>• Pre-work Brief</li> <li>• Site Specific Management Plan</li> <li>• Daily Plant Checklist</li> <li>• Electrical Test Tags</li> <li>• Hazardous Substance Register</li> <li>• MSDS</li> <li>• Hot Work Permit (During Total Fire Ban)</li> <li>• Fire Brigade</li> <li>• Environmental Protection Plan</li> <li>• Demolition Plan ( If Required )</li> <li>• Services searches</li> <li>• Traffic Control Plan</li> <li>• Electrical Permits</li> </ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"> <li>• Traffic Controller Certificate</li> <li>• Electrical Permit Holder</li> <li>• Oxy-Acetylene Welder / Cutters Certificate</li> <li>• Earth Moving / Bobcat / Crane / Scissor Lift / Boom Lift / Elevated Work Platform Certificates</li> <li>• Dogman's Certificate</li> </ul>
<b>Applicable Standards, Codes of Practice and guidance:</b> <ul style="list-style-type: none"> <li>• OH&amp;S Act 2000</li> <li>• OH&amp;S Regulation 2001</li> <li>• SMS and Network Rules</li> <li>• Rail Safety Regulation 2003</li> <li>• RailCorp Safety Policy</li> <li>• RailCorp Network Rules &amp; Procedures</li> <li>• RailCorp Safety Management System.</li> <li>• MSDS for all chemicals and hazardous Substances used on site</li> <li>• Working in Total Fire Bans Engineering Standard G3623</li> <li>• Working near Overhead Power Lines</li> </ul>	<b>PPE 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> <p>And as specified below.</p> <ul style="list-style-type: none"> <li>• Fall Arrest Devices</li> <li>• Type 2 Respirator, P2 Dust Mask</li> <li>• Ear Plugs / Ear Muffs</li> <li>• Disposable Overalls</li> <li>• Gloves</li> <li>• Welding Spats / Goggles – Face Shields</li> <li>• Barrier Cream</li> <li>• During all Site Works a FIRST AIDER MUST be Present</li> </ul>	<b>Inspection requirements</b> Nil	<b>Service schedule:</b> Nil
		<b>Training/Qualification required:</b> <ul style="list-style-type: none"> <li>• Construction Industry Induction</li> <li>• RISI (Rail Industry Safety Induction)</li> </ul>	

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1	Delivery of materials / Bridge Components	Storage and use of hazardous materials	B-	Separation & identification of flammable materials .avoid spills .use PPE. Identification labels, ventilated storage. Stack securely, create larger storage areas. Share activities, reduce material weight. Use mechanical means to transfer, correct lifting procedures	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199
		Struck by machine	B+	Define work areas, ticketed operators. Exercise due care	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		Struck by load	B+	Keep clear of suspended loads, ticketed operators. Exercise due care	C+	Team Leaders Work Group Leaders All Staff	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+	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
		Plant roll-over	B+	Ensure that outriggers or stabilisers in position prior to lifting. Ensure lift is within rated crane capacity	C-	Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
2	Track access	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+	All staff, Permit holder qel29	Electrical equipment SMS-06-GD-0268 Electrical permits SMS-06-EN-0577
		Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion	C+	All staff team leader work group leader	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Hearing damage from plant/noise pollution	C+	Use appropriate size and type of equipment for job. Use approved ear muffs if required	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Noise Management SMS-06-GD-0273 PPE- SMS-06-GD-0323
		Inhaling dust and fumes	B-	Implement exclusion zones. Wear type 2 respirators. Water down worksite at appropriate intervals.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199

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		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 Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 ENVIRONMENTAL PROTECTION PLAN Plant SMS-06-PR-0225
3	Road closure / lane closure and/or traffic diversion	Struck by road vehicles	B+	Provide traffic control	C+	Team leaders work group leaders RTA ticketed traffic controllers	Traffic management plan workplace Work-on/near roads SMS-06-GD-0372
4	Electrical Staff to Remove and/or relocate OHW and fittings	Fall from height	B+	Provide scaffold, use elevated work platform or wear harness as appropriate	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
		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, Brief By Electrical Staff	C-	Team Leaders Work Group Leaders 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 equipment to be 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-06GD-0001
5	Material transfer	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

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		Dust	B-	Implement exclusion zone wear dust mask	D	Team leader work group leader all staff	SSMP, Pre work Briefing SMS-06-FM-0163 Hazardous Substances SMS-06-GD-0199
		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
		Personnel struck by machinery	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C+	Team leaders work group leaders all staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
WARNING		<p><u>The Following Precautions are to be undertaken for when using Hot Works as in Activity 6&amp;10 during Total Fire Bans:</u></p> <ul style="list-style-type: none"> <li>• An Hot Works Permit must be Issued before Work tasks are to be Performed</li> <li>• 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"> <li>• All Fire Hazards are to be removed Prior to commencing Welding Tasks</li> </ul> </li> <li>• Fire Fighting Equipment must be on Hand at the Worksite e.g. Water cart, Knapsacks, Fire Extinguishers           <ul style="list-style-type: none"> <li>• (Hot Works in Progress) Warning Signs are to be placed at Appropriate locations</li> </ul> </li> </ul> <p>Hot Work SMS-06-PR-0329</p>					
6	Remove rail	Fire from oxy-acetylene cutting	B-	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
		Burns from cutting equipment and 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 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	D	Team leader work group leader ticketed operator	Manual handling SMS-060GD-0001 AS4839 AS2030
		Personnel struck by machinery	B+	Implement exclusion zones, use ticketed operators. Use plant spotters where required	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Struck by rail fastener	C-	Be aware. Follow correct procedure for removing rail fasteners. PPE	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163

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		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06GD-0001
7	Position elevated work platforms at worksite	Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical equipment sms-06-gd-0268 electrical permits SMS-06-EN-0577
		Elevated work platform tipping over	B+	Operator to check that elevated platform is set up level and stable before ascending	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
		Damage to rail infrastructure	B+	Be aware/cover to protect and report damage.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators.	C+	Team leaders Work group leaders all staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
8	Erect scaffolding	Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		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
		Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical equipment SMS-06-GD-0268 electrical permits SMS-06-EN-0577
		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

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		Fall from height	B+	Provide EWP, wear harness. Qualified personnel to erect scaffolding.	C+	Team Leaders Work Group Leaders All Staff, 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
9	Crane set up	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 ticketed operators. Plan work to avoid site congestion.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
10	Cut bearing plate bolts	Fall from height	B+	Provide scaffold, 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
		Fire from oxy-acetylene cutting	B-	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
		Burns from cutting equipment and 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 cutter/ welder	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.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Lead based paint	B-	Personnel using equipment that will disturb the leaded paint (ie 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 Hazardous Substances SMS-06-GD-0199

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11	Remove bridge structure	Over weight crane lifts	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
		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 Demolition Planning SMS-06-GD-0324 Demolition Work Plan SMS-06-FM-0326
		Struck by crane or load	B+	Demolition plan (if required) implement exclusion zones for workers not involved in work. Control load with tag lines. Position cutter with clear escape route away from anticipated load movement. Wear head protection	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 PPE- SMS-06-GD-0323 Demolition Planning SMS-06-GD-0324 Demolition Work Plan SMS-06-FM-0326
		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
12	Remove bearing plates and pads	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 injuries	B-	Correct manual handling techniques. Rotate staff on repetitive tasks. Use gloves if required.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001

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		Flying objects	C-	Implement exclusion zone wear eye 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. Equipment to be fitted with effective safe guards *SWI training *. 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
		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 Plant SMS-06-PR-0225
		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
		Damage to rail infrastructure	B+	Mark services as appropriate. Be aware. Report any damage	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		Manual handling injuries	B-	Correct manual handling techniques. Rotate staff on repetitive tasks. Use gloves if required	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
		Hearing damage from plant/noise pollution	C+	Use appropriate size and type of equipment for job. Use approved ear muffs if required	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Noise Management SMS-06-GD-0273 PPE- SMS-06-GD-0323
13	Excavate behind abutments	Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225
		Contact with services	B+	Locate services prior to starting work .mark services with paint, use qualified plant operators, hand digging in close proximity to services under supervision by appropriate services representative. Care to be exercised. Service searches to be on site and signed off.	C+	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
		Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical equipment SMS-06-GD-0268 electrical permits SMS-06-EN-0577

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	Plant roll-over/collapse	B+	SWL of machinery not to be exceeded. Ensure base under machinery can support its weight.	C-	Team Leaders Work Group Leaders All Staff Ticketed operator	SSMP, Pre work Briefing SMS-06-FM-0163 Plant SMS-06-PR-0225	
	Hearing damage from plant	C+	Use hydraulic equipment. Select suitable low noise equipment. Use PPE use ear protection in close proximity to machine.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323	
	Head injuries	C-	Briefing. Hard hats must be worn. Keep clear if machines operating, signage.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323	
	Excavation collapse	B+	Use shoring, benching, keep plant and employees clear of edges.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Excavation & Earthworks SMS-06-GD-0378	
	Personal injuries	C-	Briefing additional PPE as necessary	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163	
	Contact with live o/h wires (high voltage )	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	
	Dirt tracking onto external roads	C-	Bobcats with sweepers to clean road. Brooms	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental protection plan	
	Runoff from stock piles	C-	Sediment traps placed around perimeter	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental protection plan	
	Residual dirt on external roads flowing into stormwater	C-	Place hay bale around inlet	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Environmental protection plan	

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15	Levelling prior to placing headstocks	Fall from heights	B+	Wear safety harness, erect scaffolding, work from EWP as required.	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
		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
16	Place pre-cast concrete headstocks	Fall from heights	B+	Wear safety harness, erect scaffolding, work from EWP as required.	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
		Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61Team Leaders Work Group Leaders All Staff	Electrical equipment SMS-06-GD-0268 electrical permits SMS-06-EN-0577
		Damage to rail infrastructure	B+	Be aware/cover to protect and report damage.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		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. Locate cranes on suitable surface.	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

# Bridge Renewal-Concrete

Issue date: 12/10/10  
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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)
		Pre-cast falling on workers / public	B-	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks. Keep public at safe distance through barriers and traffic control.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
17	Core holes	Fall from heights	B+	Wear safety harness, erect scaffolding, work from EWP as required.	C+	Team leader work group leader Workcover ticketed scaffold 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
		Muscle strain	B-	Correct manual handling procedures. "back-safe" training.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06GD-0001
		Eye injuries	C-	All staff to wear safety glasses	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Electrocution. Use of power tools	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools. Equipment to be fitted with effective safe guards *. Training *. Correct use of PPE. Do not use in wet conditions.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Electrical Equipment SMS-06-GD-0268
		Hearing damage general	C+	Use PPE (earmuffs)	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		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+	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
18	Install bearings	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

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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)
		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	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
		Bearing plates falling on workers	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
19	Form and grout bearing pad and bolts	Electrocution	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools. Equipment to be fitted with effective safe guards *SWI training *. 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
		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 Plant SMS-06-PR-0225
		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
		Skin irritations	C-	Wear gloves long sleeve shirts.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS
		Grout in eyes	C-	Wear glasses/goggles. First aid .	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS PPE- SMS-06-GD-0323
		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06GD-0001
		Dust	B-	Take care when opening and mixing. Use type 1 dust mask.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS Hazardous Substances SMS-06-GD-0199

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20	Place pre-cast girders	Fall from heights	B+	Wear safety harness, scaffolding, EWP	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
		Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical equipment sms-06-gd-0268 electrical permits sms-06-en-0577
		Damage to rail infrastructure	B+	Be aware/cover to protect report damage.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163
		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
		Pre-cast falling on workers / public	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
21	Insert stress bars	Contact with live o/h wires	A	Maintain regulated clearances on wires at all times. Isolate power when in side Safe approach distance (SAD).	C+	Qualified Permit Holder QEL29/MEI61 Team Leaders Work Group Leaders All Staff	Electrical equipment SMS-06-GD-0268 electrical permits SMS-06-EN-0577
		Jammed fingers	B+	Be aware. Keep hands clear when positioning	C+	Team Leaders Work Group Leaders All Staff Competent person	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323

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		Object in eye	C-	Protective eye-wear must be worn	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 techniques. Rotate staff on repetitive tasks. Use gloves if required	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-06-GD-0001
22	Pressure grout stress bars (by others)	Skin irritations	C-	Wear gloves long sleeve shirts	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS
		Grout in eyes	C-	Wear glasses/goggles. First aid	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 PPE- SMS-06-GD-0323
		Muscle strain	B-	Correct manual handling procedures. "back-safe" training. Plant to move heavy and/or bulky items. As per Risk assessment.	C+	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 Manual Handling SMS-060GD-0001
		Dust	B-	Take care when opening and mixing. Type 1 dust mask.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS Hazardous Substances SMS-06-GD-0199
23	Seal joints	Skin irritations	C-	Protective clothing. Follow MSDS.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS
		Concrete in eyes	C-	Protective eye-wear must be worn. Follow MSDS.	D	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS PPE- SMS-06-GD-0323
		Fumes from sealing products	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 Hazardous Substances SMS-06-GD-0199

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		Use Of Hazardous Materials e.g.: Pipe Glue, Sealants, Concrete etc.	B-	Refer to MSDS and/or manufacturers instructions before using. Avoid spills. Use PPE. Identification and separation of flammable materials. Use in ventilated areas.	C-	Team Leaders Work Group Leaders All Staff	SSMP, Pre work Briefing SMS-06-FM-0163 MSDS Hazardous Substances SMS-06-GD-0199
24	Strip formwork / clean up work area	Electric shock	B+	All electrical equipment to be tagged /tested, earth leakage units to be used with all tools. Equipment to be fitted with effective safe guards *SWI training *. 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, scratches and abrasions	C-	Gloves to be worn as necessary.	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

## **Bridge Renewal-Concrete**

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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							<b>Definition for Use - Regional &amp; Local level (Workplace)</b>  Used for workplace hazards and safety risks that do not consider the whole of the network. Indicatively this matrix is appropriate for use where the hazards under consideration are up to 10% of the total network exposure. This includes regional and local workplace risk assessments.  As an example, the Level 2 scale would be used when examining the risk of slips, trips and falls on specific RailCorp platforms within a region or at a particular station, or the risk of fire within a depot.  There are 3 options for descriptors which can be used to determine the frequency category. One set of descriptors is provided for frequency, one for historical likelihood, and one for predictive likelihood in the workplace. Choose the most appropriate.  To score the risk, follow the steps:  1. Identify the magnitude of the credible consequence if the risk were to occur. If applicable, risks should be considered in terms of the safety (this matrix), commercial and environmental impact (using other matrices).  2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place)  3. Score the risk using the combination of likelihood and consequence ranking.  Note: Where there are a range of credible consequences which may lead to a different level of risks and/or where the controls may be different. It may be useful to score the risk more than once.	
		Event Frequency	Less than once every 1000 years	Once every 100 to 1,000 years	Once every 10 to 100 years	Once every 1 to 10 years	More than once per year up to and including 10 times per year	More than 10 times per year		
		Historical (Likelihood)	Unheard of in the rail industry	Has occurred once or twice in the rail industry	Has occurred many times in the rail industry, but not in NSW	Has occurred once or twice in NSW	Has occurred frequently in NSW	Has occurred frequently at specific locations		
		Workplace Predictive (Likelihood)	Not expected to occur	May occur only in exceptional circumstances	Could occur at some time but not likely	You would expect it to occur at least once in the next 10 years performing similar activities	You would expect it to occur at least once this year performing similar activities	You would expect it to occur at least once this month performing similar activities		
			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+	A
		1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	B+
		First aid treatment, or illness/injury not requiring treatment	C1	Negligible	D	D	D	C-	C+	B-
										