

# Installation of cables in ceiling spaces

Issue date: 01/04/09  
Review date: 31/03/12

<b>SWMS number:</b> SMS-06-SW-0875	<b>SWMS Name:</b> Installation of cables in ceiling spaces.			<b>SWMS Team:</b> <ul style="list-style-type: none"> <li>Renato Dovecer - Safety Coordinator</li> <li>Joel Sewell – Mobile Radio Systems Maintenance Engineer</li> <li>Charlie Chediac- Radio Technical Specialist</li> <li>Andrew Outerbridge - Manager Radio &amp; Systems Operations Centre</li> </ul>
<b>Custodian (Position):</b> Safety Coordinator	<b>Assumptions:</b> <ol style="list-style-type: none"> <li>Applicable to all Communications &amp; Control Systems division staff.</li> <li>Work conducted in ceiling spaces not identified as a confined space.</li> <li>Applicable to the following types of cables:           <ul style="list-style-type: none"> <li>Communications cables</li> <li>Co-axial</li> <li>Low voltage</li> </ul> </li> </ol>			<b>Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group)</b> <ul style="list-style-type: none"> <li>Mobile Radio Systems Maintenance Engineer – C&amp;CS, Asset Management</li> <li>Safety Coordinator – C&amp;CS, Asset Management</li> </ul>
<b>Approving Authority (Position):</b> Manager Radio Systems Operations	<b>Plant/Equipment/Tools:</b> <ul style="list-style-type: none"> <li>Personal Multi-Gas Monitor</li> <li>Drill</li> <li>Hand tools</li> <li>Ladder</li> </ul>	<b>Records/Reporting:</b> <ul style="list-style-type: none"> <li>Cable Installations Risk Assessment</li> </ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"> <li>Registered cabler under the ACMA Cabling Provider Rules</li> </ul>	<b>PPE required:</b> <ul style="list-style-type: none"> <li>Safety Boots</li> <li>High Visibility Vest</li> <li>Safety Glasses</li> <li>Protective Gloves (Cut Resistant or Leather)</li> <li>Hearing Protection (Ear muffs or Earplugs)</li> <li>Face Mask (P1 Industrial Low Tox)</li> <li>Protective Clothing (overalls)</li> </ul>
<b>Applicable Standards, Codes of Practice and guidance:</b> <ul style="list-style-type: none"> <li>OHS Act 2000</li> <li>OHS Regulation 2001</li> <li>AS/NZS 2865: 2001 Safe working in a confined space</li> <li>AS/ACIF S009 Installation Requirements for Customer Cabling (Wiring Rules)</li> <li>AS 3084 Telecommunications installations – Telecommunications pathway and spaces for commercial buildings</li> <li>Manual Handling Resource WorkCover NSW 2004</li> <li>WorkCover Code of Practice - Electrical practices for construction work</li> <li>AS/NZS 3000 Electrical Installations (known as the Australian/New Zealand wiring rules)</li> <li>AS/NZS 1892.5: 2000 Portable ladders - Selection, safe use and care</li> </ul>	<b>Inspection requirements</b> <ul style="list-style-type: none"> <li>Personal Multi-Gas Monitor – Calibrated every 6 months</li> <li>Electrical inspecting &amp; tagging – monthly</li> <li>Ladder – Inspected every 6 months.</li> <li>Maintain inspection and test records in accordance with SMS-16-SR-0057 Inspection and Testing and SMS-05-SR-0027 Records Management.</li> </ul>	<b>Service schedule:</b> N/A	<b>Training/Qualifications required:</b> <ul style="list-style-type: none"> <li>Rail Industry Safety Induction (RISI)</li> <li>OHS Construction Induction Training Card</li> </ul>	
		<b>MIMS or METRE Ref:</b> N/A		

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Approver: Manager Radio Systems Operations

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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)
1	Check location	Exposure to Hazardous Materials (eg. Asbestos, lead dust, etc)	B+	Check Hazardous Materials Register If hazardous materials are present do not proceed with work and notify your Line Manager.	C-	Line Manager	SMS-06-GD-0228 Hazardous Materials SMS-06-GD-0223 Hazardous Rail Corridor Locations
		Contact with hidden services/cables (eg. electrical cables, gas pipes, water pipes & water sprinkler systems)	B+	Contact local electrician/plumber to gain understanding of service locations. Conduct cable/service search and mark out path. Use appropriate detectors to establish the presence of all services and mark out location. Use insulated tools. If not sure do not start job.	C-	Line Manager	SMS-06-GD-0268 Working Around Electrical Equipment SMS-06-SW-0269 Electrical Shock Protocol
		Exposure to gases (if fire sensors are disturbed).	C+	De-activate fire alarm system. If in critical infrastructure or stations, this must be done in consultation with site controller. A permit is required in underground stations.	D	Line Manager	SMS-06-FM-0899 Hot Work Permit and Fire Systems Request Form
		Potential confined spaces	B-	Check Confined Spaces Register. Where no register exists or when in doubt, assess space using the "Confined Space Identification and Risk Assessment Checklist". Conduct an atmospheric test. Use gas monitoring device in accordance with the manufacturers instructions. If assessed as confined space follow the Confined Space Safe Work Instruction (SMS-06-SW-1335), otherwise do not proceed with work and notify your line manager.	C-	Line Manager	SMS-06-GD-0035 Confined Spaces SMS-06-FM-0038 Confined Spaces Identification and Assessment Checklist SMS-06-SW-1105 Use of Gas Monitors SMS-06-SW-1335 Working in building cavities – confined spaces

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2	Entering ceiling manhole	Fall from heights	B-	<p>Use only industrial rated ladders</p> <p>Do not exceed 120kg SWL of ladder.</p> <p>Inspect ladder before use for damage.</p> <p>Make sure it is long enough to allow access to the ceiling manhole without the need for overreaching.</p> <p>Position ladder to ensure stability – step ladders to be fully opened with locks in place.</p> <p>The ladders base and top should be firmly secured by fixing or tying, or firmly held by another person.</p> <p>When climbing ladder maintain 3 points of contact.</p> <p>Tools to be carried using either a bag that allows both hands to be free, or passed up from ground after climbing.</p> <p>Once up in roof space, place weight only on the buildings framework (support beams, ceiling joists).</p> <p>Keep proper footing and balance at all times.</p> <p>Where practicable, have the manhole covered to prevent falls.</p>	C-	Line Manager	SMS-06-GD-0240 Working At Heights SMS-06-SW-0264 Portable Ladders, Step Ladders and Step Platforms
		Inadequate lighting	C+	<p>Check if lighting is inadequate before commencing.</p> <p>If lighting is deemed insufficient (i.e. there is no natural and no electric light provided) then use battery powered torches.</p> <p>If task requires use of two hands then head torches are to be used.</p>	D	Line Manager	

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2	Entering ceiling manhole (cont.)	Exposure to Dust	C-	PPE: Safety Glasses and P1 dust mask (if there is risk of disturbance of quantities of dust).	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Manual Handling	B-	Avoid reaching or stretching to excess, as by a straining effort. Keep proper footing and balance at all times.	C-	Line Manager	SMS-06-GD-0001 Guide to Manual Handling
		Head injury	B-	Maintain awareness of roof framework (rafters) and look out for possible bumps and scrapes.	C-	Line Manager	
		Bites and stings (eg. rodents, spiders, insects)	B-	Inspection of site prior to commencement of work. Use insecticide in accordance with hazardous substances risk assessment and MSDS as required. PPE: Safety Boots, Protective Gloves (Cut Resistant or Leather).	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
3	Run cable	Trips and falls	B-	Maintain awareness of uneven floor, pipes or other items on floor. Keep proper footing and balance at all times. Place weight only on the buildings framework (support beams, ceiling joists). PPE: Safety Boots	C-	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Muscular strain	C+	Avoid reaching or stretching to excess, as by a straining effort. Use a relay system – passing cable from one person to the next.	D	Line Manager	SMS-06-GD-0001 Guide to Manual Handling
		Muscular strain from contorted work	B-	Take a break when your muscles start to feel fatigued. Warm up and stretch before commencing and periodically during the job.	C-	Line Manager	

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3	Run cable (cont.)	Contact with electricity	A	<p>Conduct preliminary inspection of surrounding area to identify any exposed live electrical components.</p> <p>The first option is to isolate at the power source using a lock out device and test dead.</p> <p>Observe safe work clearances when working in the proximity of electrical cables and outlets.</p> <p>For low voltage installations:</p> <ul style="list-style-type: none"> <li>• Keep at least 0.5m away from any live low voltage equipment.</li> <li>• If handling long non-conductive objects keep 1.5m away.</li> <li>• If handling long conductive objects keep 4m away.</li> </ul> <p>If distances cannot be maintained – Do Not Proceed – contact your Line Manager to organise rescheduling work when isolation is possible.</p>	C+	Line Manager	SMS-06-GD-0268 Working Around Electrical Equipment  SMS-06-SW-0269 Electrical Shock Protocol
		Cuts and abrasions	C+	<p>Be aware of sharp edges.</p> <p>PPE: Protective Gloves (Cut Resistant or Leather), Protective Clothing (Overalls).</p>	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment

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4	Drill access hole	Injury from power tools (Drill)	C+	<p>Individual competent with use of tool</p> <p>Ensure drill is in good condition and bit is fastened tightly.</p> <p>Use tool only for purpose it was designed for.</p> <p>Secure handling.</p> <p>Keep hands out of the path of drill bits.</p> <p>Avoid awkward hand positions where a sudden slip could cause your hand to move into the drill bit.</p> <p>Don't overreach.</p> <p>Keep proper footing and balance at all times.</p> <p>PPE: Safety Glasses</p>	D	Line Manager	SMS-06-GD-0225 Plant SMS-06-SW-0479 Power Drills SMS-06-GD-0323 Personal Protection Equipment
		Exposure to noise	C+	PPE : Hearing Protection (Ear muffs or Earplugs)	D	Line Manager	SMS-06-GD-0273 Noise Management SMS-06-GD-0323 Personal Protection Equipment
		Exposure to Dust	C-	PPE: Safety Glasses, Face Mask (P1 Industrial Low Tox)	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
		Muscular strain	C+	Avoid reaching or stretching to excess, as by a straining effort.	D	Line Manager	SMS-06-GD-0001 Guide to Manual Handling

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4	Drill access hole (cont.)	Contact with electricity	A	Electrical leads & equipment tested and tagged monthly Use RCD. Visually inspect all leads for wear and tear before commencing. Use insulated tools. Drill only where services have been positively identified and marked. Observe safe work clearances when working in the proximity of electrical cables and outlets. See above (Job Step 3) for more.	C+	Line Manager	SMS-06-GD-0268 Working Around Electrical Equipment SMS-06-SW-0269 Electrical Shock Protocol SMS-06-SW-0479 Power Drills
5	Run cable into room	Muscular strain	C+	Avoid reaching or stretching to excess, as by a straining effort. Use a relay system – passing cable from one person to the next.	D	Line Manager	SMS-06-GD-0001 Guide to Manual Handling
		Cuts and abrasions	C+	Be aware of sharp edges. PPE: Protective Gloves (Cut Resistant or Leather)	D	Line Manager	SMS-06-GD-0323 Personal Protection Equipment
6	Cut any excess cable	Hand injuries	C+	Use sharp Stanley knife or equivalent appropriate tool.	D	Line Manager	

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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**

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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			
		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+			