

Installing Tunnel Mounted Antenna

Issue date 14/10/10

Review date: 06/09/13

SWMS number: SMS-06-SW-0653	SWMS Name: Installing Tunnel Mounted Antenna			SWMS Team: <ul style="list-style-type: none"> • Steven Grant – Wireless & Systems Operations Manager • Fred Devadoss – Safety Facilitator • Graham Payne – Technical Specialist • Bryan Germain – Technical Specialist • Mark Cruchley – Maintenance Engineer
Custodian (Position): Wireless & Systems Operations Manager	Assumptions: N/A			Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group) <ul style="list-style-type: none"> • Safety Facilitator, Safety Support Services Division • Technical Specialist, Communications & Control Systems Division
Approving Authority (Position): Asset Management & Maintenance Manager	Plant/Equipment/Tools: <ul style="list-style-type: none"> • HiRail with Elevating Work Platform (EWP) • Hand tools • Drill • Test equipment (Battery Operated SWR Meter, dummy load) 	Records/Reporting: <ul style="list-style-type: none"> • Tunnel Mounted Antenna Installation Risk Assessment 	Permits/licences required: <ul style="list-style-type: none"> • Electrical Permit 	PPE required: <ul style="list-style-type: none"> • Safety Boots • High Visibility Vest • Safety Glasses • Protective Gloves (Cut Resistant or Leather) • Harnesses & Lanyards • Hard Hat
Applicable Standards, Codes of Practice and guidance: <ul style="list-style-type: none"> • OHS Regulation 2001 • AS 1418 Cranes (including hoists and winches) all parts • WorkCover NSW Plant Guide • National Code of Practice for Manual Handling [NOHSC: 2005 (1990)] • Manual Handling Resource WorkCover NSW 2004 • WorkCover NSW Code of Practice "Safety Line Systems" 1995 • AS/NZS 1891 "Industrial fall arrest systems and devices" • ESAA Guide to Electrical Safety Systems • Network Rules and Network Procedures 	Inspection requirements <ul style="list-style-type: none"> • Harnesses & Lanyards – Inspected every 6 months • EWP - 3 monthly minimum. • Electrical inspecting & tagging – monthly • Conduct maintenance as per the Manufacturer's Specifications. • Maintain inspection and test records in accordance with SMS-16-SR-0057 Inspection and Testing and SMS-05-SR-0027 Records Management. 	Service schedule: <ul style="list-style-type: none"> • Train Radio Tunnel Roof Antenna Installation / Maintenance 	Training/Qualifications required: <ul style="list-style-type: none"> • Rail Industry Safety Induction (RISI) • OHS Construction Induction Training Card • Elevated Work Platform Operator (Certified) • Heights Safety Course 	

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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	Apply appropriate worksite protection						
2	Access worksite	Struck by train	A	Adhere to worksite protection. PPE: High Visibility Vest	C-	Protection Officer Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Slips, trips and falls	B-	Awareness of terrain. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Plant (HiRail)	C+	Follow Operators instructions Operator to have relevant qualifications. Apply appropriate WSPP	D	Team Member	SMS-06-PR-0225 Plant SMS-06-SW-0310 Elevating Work Platforms
		Poor lighting	C-	Use appropriate lighting (Flood lights). Awareness of terrain.	D	Team Member	
3	Drill holes	1500V OHW Exposure to Electrical Shock	A	Take Power Out Permit for 1500V feed in area if working within 3m of traction voltages. EWP must not be used within 3 metres of live electrical apparatus. Power Out Permit to be held by appropriately qualified person (PO4) prior to elevation of EWP Permit to be handed back only after all work completed, platform lowered and staff out of bucket	C-	Team Leader	SMS-06-EN-0577 Electrical Permits SMS-06-EN-0598 Electrical Permits to Work SMS-06-SW-0272 Working in Accordance with Electrical Permit

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3	Drill holes (cont.)	Fall from heights	B+	Cable/Antenna accessed via Elevated Work Platform. All persons are certified for working at heights. Use Fall Arrest System (Harness, Lanyards). Use of appropriate anchorage point (not handrail or midrails) Second person required	C-	Team Member	SMS-06-GD-0240 Working At Heights SMS-06-GD-0241 Fall Arrest Systems SMS-06-SW-0310 Elevating Work Platforms SMS-06-SW-0260 Fall Arrest Systems (Harnesses, Lanyards and Attachment Hardware)
		Hit by falling objects	B+	Secure all tools and equipment. PPE: Hard Hat	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Injury from power tools (Drill)	B-	Individual competent with use of tool Ensure drill is in good condition Use tool only for purpose it was designed for. Secure handling. Keep hands out of the path of drill bits. Avoid awkward hand positions where a sudden slip could cause your hand to move into the drill bit. Don't overreach. Keep proper footing and balance at all times. Wear proper apparel; loose clothing or jewellery can become caught in moving parts. PPE: Safety Glasses	C-	Team Member	SMS-06-PR-0225 Plant SMS-06-SW-0479 Power Drills
		Restricted room for movement	C+	Reduce exposure by introducing frequent breaks and rotate jobs. Use assistance if required	D	Team Member	

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3	Drill holes (cont.)	Muscular handling	B-	Use correct manual handling techniques when lifting and holding drill. Perform all movements smoothly, in a controlled, balanced, comfortable position. Avoid reaching and stretching	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
4	Install antenna mount	Hand injury	B-	Secure handling Use correct tools for the task.	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Muscular strain	B-	Perform all movements smoothly, in a controlled, balanced, comfortable position. Avoid reaching and stretching	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
		Cuts and abrasions	C+	Be aware of sharp edges. Cover sharp edges with tape. PPE: Protective Gloves (Cut Resistant or Leather)	D	Team Member	SMS-06-GD-0323 Personal Protection Equipment
5	Install antenna to mount and connect co-axial cable.	Hand injury	B-	Secure handling Use correct tools for the task.	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Muscular strain	B-	Perform all movements smoothly, in a controlled, balanced, comfortable position. Avoid reaching and stretching	C-	Team Member	SMS-06-GD-0001 Guide to Manual Handling
		Cuts and abrasions	C+	Be aware of sharp edges. Smooth sharp edges prior to installation. Cut ties straight rather than on angle. Use cable tie cutting tool. PPE: Protective Gloves (Cut Resistant or Leather)	D	Team Member	SMS-06-GD-0323 Personal Protection Equipment
		Exposure to RF Radiation	C+	Ensure all transmitters are turned off.	D	Team Member	
6	Vacate worksite and remove worksite protection	Struck by train	A	Adhere to worksite protection. PPE: High Visibility Vest	C-	Protection Officer Team Member	SMS-06-GD-0323 Personal Protection Equipment

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6	Vacate worksite and remove worksite protection (cont.)	Slips, trips and falls	B-	Awareness of terrain. PPE: Safety Boots	C-	Team Member	SMS-06-GD-0323 Personal Protection Equipment

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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		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.	
	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	To score the risk, follow the steps:	
2-10 Fatalities	C5	Catastrophic	C+	B-	B+	A	A	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).	
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place)	
1 Major Injury	C3	Major	D	C-	C+	B-	B+	3. Score the risk using the combination of likelihood and consequence ranking.	
1 or more Minor Injuries	C2	Minor	D	D	C-	C+	B-	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.	
First aid treatment, or illness/injury not requiring treatment	C1	Negligible	D	D	D	C-	C+		