

# Erect Retaining Walls Treated Pine

Issue date: 09/04/08

Review date: 14/02/11

<b>SWMS number:</b> SMS-06-SW-0986	<b>SWMS Name:</b> Erect Retaining Walls Treated Pine			<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>Approving Authority (Position):</b> Safety and Quality Manager, Commercial / Renewals	<b>Equipment/Plant/Tools:</b> <ul style="list-style-type: none"><li>Crane and Lifting Equipment, Excavators, Bobcat, Hydraulic Equipment, Dumper</li><li>Barricades, Demarcation Fencing, Signs, Marking Paint, Plywood, Safety Tape, Steel Plates, Concrete</li><li>Straps, Ties, Construction Equipment, Shoring</li><li>Soil Testing Equipment, No Spill Fuel Cans, Spill Response Kit</li><li>Hay Bales, Sediment Cloth</li><li>Trolleys, Watercart, Hi-Rail Excavator, Roller Compaction Plate, Tamping Rammer</li><li>Chainsaws, Hand Tools, Power Tools, Pelican Pick, Pine Posts &amp; Log Rails</li><li>Red/Green Flag, Detonators</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>Electrical Permit</li><li>Electrical Test Tags</li><li>Daily Plant Checklist</li><li>Hazardous Substance Register</li><li>Environmental Protection Plan</li><li>Services Search</li><li>MSDS</li><li>RailCorp: Limits of Exposure Document 09</li></ul>	<b>Permits/licences required:</b> <ul style="list-style-type: none"><li>Electrical Permit Holder</li><li>Chainsaw Certificate of Competency</li><li>Plant Operator Certificate</li><li>Dogman Certificate</li></ul>	<b>Content reviewed by Technical expert (SME) and RailCorp safety professional (position including Div/Group)</b> GM Civil Services and SEQ Coordinator Asset Management, Commercial Renewals.
<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>Rail Safety Regulation 2003</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 near Overhead Power Lines</li><li>National Code of Practice for Manual Handling [NOHSC:2005]</li><li>WorkCover NSW Plant Guide</li><li>EC14 – Guide to Electrical Workers’ Safety Equipment</li><li>WorkCover Code of Practice Excavation 2000</li><li>AS 2726.1-2004 Chainsaws - Safety requirements - Chainsaws for general use</li></ul>				<b>Inspection requirements</b> Nil
<b>Personal Protective Equipment 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, Full Face Shields</li></ul> And as specified below. <ul style="list-style-type: none"><li>Fall Arrest Devices</li><li>Type 1 Respirators</li><li>Ear Plugs, Ear Muffs</li><li>Gloves</li><li>During all Site Works a FIRST AIDER MUST be Present</li></ul>				

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		<b>MIMS or METRE Ref:</b> Nil	or RISI (Rail Industry Safety Induction)	
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1	Delivery of materials	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-gd-0225 Lifting equipment sms-16-fm-0089
		Struck by load	B+	Keep clear of suspended loads, ticketed operators. Exercise due care	C+	All staff,	
		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	
		Plant roll-over	B+	Ensure that outriggers or stabilisers in position prior to lifting	C-	Ticketed operator	
		Noise from plant	C+	Implement exclusion zones use appropriate plant with noise control measures use ear protection	D	Team leader work group leader all staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
		Unstable loads	B+	Ensure materials are secured during transit. Don't exceed safe working load of plant.	C-	Workcover ticketed operator sms-11-gd-0243	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
2	Stockpiling materials	Contact with live o/h wires (high voltage )	A	Maintain clearances at all times. Use plant spotter if required. Isolate power if required.	C+	All staff, qel23, qel29	Electrical equipment sms-06-gd-0268 Electrical permits sms-06-en-0577
		Exposure to contaminated material	B-	Test spoils for contaminants. Disposal in accordance with relevant OH&S guidelines.	C-	Competent person	Environmental protection plan Hazardous substances sms-06-gd-0199
3	Mark out location of retaining wall	Manual handling injuries	B-	Correct manual handling techniques. Rotate staff on repetitive tasks. Use gloves if required	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Manual handling sms-060gd-0001

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4	Excavation of embankment	Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Use plant spotter if required. 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-gd-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+	All staff	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225 Electrical equipment sms-06-gd-0268
		Contact with live o/h wires	A	Maintain clearances at all times. Use plant spotter if required. Isolate power if required.	C-	All staff, qel23, qel29	Electrical equipment sms-06-gd-0268 Electrical permits sms-06-en-0577
		Plant roll-over/collapse	B+	SWL of machinery not to be exceeded	C-	Ticketed operator	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
		Hearing damage from plant	C+	Use hydraulic equipment. have silencers fitted to machinery. use PPE use ear protection in close proximity to machine	D	All staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
		Struck by plant excavating hole	B+	Implement exclusion zone. Wear safety helmet. Use plant spotter if required,	C+	All staff	
		Fall in excavation	B+	Excavation to be barricaded to prevent workers falling in. Cover if possible	C+	All staff	SSMP, pre work briefing sms-06-fm-0163
		Excavation collapse	B+	Use shoring, benching, keep plant and employees clear of edges. Fill trench as soon as possible.	C+	All staff	Excavation & earthworks sms-06-gd-0378
		Slips and trips	C-	Keep off embankments and soft ground. Remove trip hazards	D	All staff	SSMP, pre work briefing sms-06-fm-0163
5	Positioning of drilling	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-gd-0225

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	machinery	Plant roll-over	B+	Plant fitted with roll-over-protection. Implement exclusion zone below plant working on slopes	C-	Ticketed operator	
		Contact with live o/h wires	A	Maintain clearances at all times. Use plant spotter if required. Isolate power if required.	C+	All staff, qel23, qel29	Electrical equipment sms-06-gd-0268 Electrical permits sms-06-en-0577
		Damage to rail infrastructure		Vigilance/cover to protect. Report any damage.		All staff	SSMP, pre work briefing sms-06-fm-0163
		Oil/fuel spillage leading to slips and falls or contact	C-	Plant to be inspected daily. Use correct methods for filling machinery. Spill response kits on-site.	D	Ticketed operator all staff	SSMP, pre work briefing sms-06-fm-0163 Environmental protection plan
6	Auger holes	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+	All staff	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225 Electrical equipment sms-06-gd-0268
		Contact with live o/h wires	A	Maintain clearances at all times. Use plant spotter if required. Isolate power if required.	C+	All staff, qel23, qel29	Electrical equipment sms-06-gd-0268 Electrical permits sms-06-en-0577
		Plant roll-over/collapse	B+	SWL of machinery not to be exceeded	C+	Ticketed operator	Plant SMS-06-GD-0225
		Hearing damage from plant	C+	Use hydraulic equipment .have silencers fitted to machinery. use PPE use ear protection in close proximity to machine	D	All staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
		Struck by plant	B+	Briefing. Hard hats must be worn. Keep clear if machines operating, signage	C+	All staff	
		Fall in hole	B+	Implement exclusion zone. Excavation to be barricaded to prevent workers falling in. Cover if possible	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Excavation & earthworks sms-06-gd-0378

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7	Hand excavation of embankment and holes	Contact with services	B+	Mark services with paint. Care to be exercised. Service searches to be on site and signed off.	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225 Electrical equipment sms-06-gd-0268
		Fall in hole	B+	Be aware. Excavation to be barricaded to prevent workers falling in. Cover if possible	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Excavation & earthworks sms-06-gd-0378
8	Transfer Materials	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-gd-0225
		Manual handling injuries	B-	Correct manual handling techniques. Rotate staff on repetitive tasks. Use gloves if required	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Manual handling sms-06-gd-0001
		Unstable loads	B+	Ensure materials are secured during transit. Don't exceed safe working load of plant.	C-	Licence, competent	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
		Runaway trolley	B+	Trolley to be fitted with braking system/drawbar to dumper.	C+	Licence, competent	Pre work briefing sms-06-fm-0163 Site plan in SSMP
9	Cut posts to length	Laceration from chainsaw	B+	Trained operators only, be aware, keep clear, correct PPE to be worn by operator at all times	C-	Supervisor, qualified staff	SSMP, pre work briefing sms-06-fm-0163 Chainsaw training
		Electric shock from drill	B+	All tools tested and tagged. Do not use electric tools in wet conditions	D	Supervisor	SSMP, pre work briefing sms-06-fm-0163 Electrical equipment sms-06-gd-0268
		Noise from equipment	C+	Use hearing protection	D	All staff	SSMP, pre work briefing sms-06-fm-0163
		Cuts, scratches and abrasions	C-	Gloves to be worn as necessary.	D	All staff	PPE- sms-06-gd-0323
10	Place, level and brace posts	Hit by suspended load	B+	Hard hats to be worn at all times implement exclusion zone for workers not involved in tasks	C+	Team leader work group leader all staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323

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		Cuts, scratches and abrasions	C-	Gloves to be worn as necessary.	D	All staff	
		Struck by moving plant	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion. Use plant spotters where required.	C+	All staff team leader work group leader	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
		Manual handling injuries	B-	Use ect. manual handling techniques. Rotate staff on repetitive tasks. Use gloves if required	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Manual handling sms-060gd-0001
		Crushed fingers	B-	Keep hands clear of joining steel when positioning	C-	Competent person	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
11	Concrete in posts	Skin irritations	C-	Wear gloves long sleeve shirts	D	All staff	Pre work briefing sms-06-fm-0163 Msds
		Concrete in eyes	B-	Wear glasses/goggle. Have saline eyewash available.	C-	All staff	SSMP pre work briefing sms-06-fm-0163 Msds, PPE- sms-06-gd-0323
		Manual handling injuries	B-	Correct manual handling techniques. Rotate staff on repetitive tasks. Use gloves if required	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Manual handling sms-060gd-0001
		Dust	B-	Keep clear of work. Wear type 1 respirators.	D	All staff	SSMP, pre work briefing sms-06-fm-0163 Hazardous substances sms-06-gd-0199
12	Place and fix log rails	Laceration from chainsaw	B+	Trained operators only, be aware, keep clear, correct PPE to be worn by operator at all times	C-	Supervisor, qualified staff	SSMP, pre work briefing sms-06-fm-0163 Chainsaw training



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		Electric shock from drill	B+	All tools tested and tagged Do not use electric tools in wet conditions	D	Supervisor	SSMP, pre work briefing sms-06-fm-0163 Electrical equipment sms-06-gd-0268
		Back injury / muscle strain	B-	Correct lifting procedures. Use mechanical means to transfer heavy or bulky items.	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Manual handling sms-060gd-0001
		Hand injuries (laceration, crush)	B-	Gloves to be worn as necessary.	C-	All staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
		Noise from equipment	C+	Use hearing protection	D	All staff	
13	Install drainage behind wall	Excavation collapse	B+	Shoring, benching, keep plant and employees clear of edges.	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Excavation & earthworks sms-06-gd-0378
		Struck by moving plant	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion. Use plant spotters where required.	C+	All staff team leader work group leader	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
		Flying objects	C=	Eye protection to be worn at all times.	D	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+	All staff	SSMP, pre work briefing sms-06-fm-0163 Manual handling sms-060gd-0001
14	Backfill and compact	Dust	B-	Keep clear of work. Wear type 1 respirators. Water down material.	D	All staff	SSMP, pre work briefing sms-06-fm-0163 Hazardous substances sms-06-gd-0199
		Struck by load	B+	All workers clear of trench when backfilling.	C+	All staff	SSMP, pre work briefing sms-06-fm-0163



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		Struck by moving plant	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion use plant spotters where required	C+	All staff team leader work group leader	Plant sms-06-gd-0225
		Noise from plant	C+	Implement exclusion zones use appropriate plant with noise control measures. Use ear protection	D	Team leader work group leader all staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
		Plant roll-over	B+	Plant fitted with roll-over-protection.	C+	Ticketed operator	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
		Back injury	B-	Correct manual handling procedures. "back-safe" training. Rotate usage.	C-	All staff	SSMP, pre work briefing sms-06-fm-0163 Manual handling sms-060gd-0001
		Object in eye	C+	Protective eye-wear must be worn	D	All staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
15	Install dish drain/ cess drainage	Struck by moving plant	B-	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion. Use plant spotter where required.	C-	All staff team leader work group leader	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
		Contact with concrete	B-	Protective clothing. Gloves	C-	Competent person	SSMP, pre work briefing sms-06-fm-0163 , MSDS
16	Reinstatement of ballast profile	Contact with services	B+	Mark position of cables with high visibility marking paint. Be aware.	C+	All staff	SSMP, pre work briefing sms-06-fm-0163 Excavation & earthworks sms-06-gd-0378
		Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion. Use plant spotter where required.	C+	All staff team leader work group leader	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225

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		Struck by flying object	C+	Protective eye-wear must be worn	D	All staff	SSMP, pre work briefing sms-06-fm-0163 PPE- sms-06-gd-0323
	Removal / exit of plant and machinery from working area	Personnel struck by machinery	B+	Implement exclusion zones. Use ticketed operators. Plan work to avoid site congestion. Use plant spotter where required.	C+	All staff team leader work group leader	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-0225
		Plant and machinery struck by train	A	Implement exclusion zone. Use barriers or temporary fence to indicate danger zone if appropriate.	C+	Plant operator to hold appropriate workcover ticket. Wha02, wpo04	
		Contact with live o/h wiring or other services	A	Maintain regulated clearances on wires at all times. Isolate power where required.	C+	All staff, Permit holder qel29	Electrical equipment sms-06-gd-0268
		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+	Permit holder qel29 Team leader Work group leader	SSMP, pre work briefing sms-06-fm-0163 Plant sms-06-gd-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**

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	
				F1	F2	F3	F4	F5	F6	<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> <p>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).</p> <p>2. Identify the likelihood of this level of consequence occurring. (This is done after considering the effectiveness of the current controls in place)</p> <p>3. Score the risk using the combination of likelihood and consequence ranking.</p> <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>
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		
1 Fatality (2-10 Major Injuries)	C4	Critical	C-	C+	B-	B+	A	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-		