

**Job Safety & Environmental Analysis /  
Safe & Environmental Work Method Statement**

**Vacuum Excavator Operation**

JSEA/SEWMS Number

**Organisation Details**

Company Name:	HSEQ Contact Name:	This JSEA/SEWMS has been reviewed and approved by		Date
ACN/ABN	Position:	Position:	Signature:	
Address:	Phone No:			

**Details:**

Project:	Area:		
Activity:	<b>Vacuum excavation.</b>		
Resources / Trades Involved:	Driver, Plant Operator, Trades Assistant, Traffic Controller		
Equipment Used:	Vacuum unit, water lance		
Maintenance checks:	Daily plant pre start checks. Servicing as per manufacturers requirements		
Materials Used:	Water		
Occupational Health Safety or Environmental Legislation:	<ul style="list-style-type: none"> <li>OH&amp;S Act 2000, OHS Regulations 2001,</li> <li>Electricity (Workers Safety) Regulation 1992</li> <li>Electricity (Workers Safety) Amendment Regulation 1997</li> <li>Protection of the Environment Operations (Waste) Regulation 2005</li> <li>Energy Legislation Amendment (Infrastructure Protection) Act 2009</li> </ul>	Codes or Standards applicable to the works:	<ul style="list-style-type: none"> <li>NSW WorkCover COP Excavation Work, Moving Plant on Construction Sites and Manual Handling</li> <li>NSW WorkCover Work Near Underground Assets Guide 2007</li> <li>Utility Safety Guidelines, ISSC26,</li> </ul>

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**Risk Assessment Criteria**

<b>Consequence categories</b>	
<b>Catastrophic</b>	Potential death, or major structural failure/ property/equipment damage. Off-site environmental discharge/ release not contained significant long-term environmental harm. Major financial loss > \$50,000. Tier 1 prosecution under the NSW Environmental Act or equivalent prosecution under other environmental acts and regulations; significant public health effects or death
<b>Severe</b>	Permanent disability/serious medical treatable injury or medium level structural failure/property/ equipment damage. Off-site environmental discharge/release not/partially contained and significant medium-term environmental harm. High financial loss \$20,000-\$50,000. Tier 2 prosecution under POEO or equivalent prosecution under other environmental acts and regulations
<b>Moderate</b>	Potential temporary disability/moderate medical treatable injury or minor structural failure/ property/equipment damage,. On-site environmental discharge/ release contained, minor remediation required, short-term environmental harm. Moderate financial loss \$2000-\$20,000. Tier 3 (PIN) prosecution under POEO or equivalent prosecution under other environmental acts and regulations
<b>Minor</b>	Incident or situation that has the potential to cause persons to require first aid. Superficial structural/property/equipment damage, On-site environmental discharge/release immediately contained minor level clean up with no residual environmental harm. Small financial loss < \$2000. Temporary, reversible environmental degradation; unlikely to result in any regulatory breach
<b>Insignificant</b>	An interaction with the environment with no potential or detectable harm to the environment

<b>Likelihood categories</b>	
<b>Almost Certain</b>	Could happen at any time (> 90%) A strong probability of multiple occurrences within a 12 month period
<b>Likely</b>	Could happen sometime (50% - 90%) Will probably occur at some time within a 12 month period
<b>Unlikely</b>	Could happen but very rarely (10% - 50%) Might occur at some time in a 12 month period
<b>Very Unlikely</b>	Could happen but probably never will (< 10%) Unlikely to occur within a 12 month period

**Risk Assessment Matrix**

	<b>Very Likely</b>	<b>Likely</b>	<b>Unlikely</b>	<b>Very Unlikely</b>
<b>Catastrophic</b>	1	1	2	3
<b>Severe</b>	1	2	3	4
<b>Moderate</b>	2	3	4	5
<b>Minor</b>	3	4	5	6
<b>Insignificant</b>	4	5	6	6

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<b>Risk Rating</b>	<b>Description / Requirements</b>
1	Work must be suspended and the issue immediately brought to the attention of senior management. Will require detailed pre-planning of action to reduce the risk. Work may not proceed until it has been demonstrated that everything that is practical has been done to reduce risk and a JSEA/SEWMS was documented
2 & 3	Functional manager required to manage the risk to as low as reasonably practicable. Will require operational planning. Work may only proceed where actions to manage the risk have been documented in a JSEA/SEWMS
4 & 5	Where cost effective measures can be applied, longer term additional action required to reduce level of residual risk.
6	Cost effective measures to be considered and taken to reduce level of risk

**Environmental possible impacts and examples**

<b>Impact Types</b>	<b>Examples</b>
<b>Air Pollution</b>	Unauthorised emissions to air, generation of dust, odour or toxic fumes, vehicle emissions
<b>Water Pollution</b>	Unauthorised discharges to water bodies or stormwater system, contamination of groundwater, sedimentation
<b>Noise/Vibration</b>	Increased levels of noise and vibration affecting local communities and/or businesses
<b>Fauna</b>	Impact on ecosystems including endangered/threatened species; destruction of habitat;
<b>Flora</b>	Clearance of vegetation; soil erosion and degradation; weeds
<b>Traffic/Transport of Materials or Waste</b>	Increased traffic flow and traffic congestion in local areas; dirt tracking onto roads, damage to roads due to heavy vehicles
<b>Soil &amp; Groundwater Contamination</b>	Spills/leaks as a result of inadequate storage of chemicals/fuel; Acid Sulphate Soils
<b>Fire/Explosion</b>	Fire /explosion resulting in bushfires, destruction of property and/or loss of life
<b>Heritage</b>	Damage or destruction of heritage listed items
<b>Visual Amenity</b>	Permanent or temporary loss of local amenity
<b>Waste Disposal</b>	Illegal dumping of waste, incorrect waste disposal and use of landfill space
<b>Energy Use</b>	Use of energy (power, fuel) for processes/operations

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Item	Job steps	Potential/Actual Environmental /Safety Hazards	Risk Class	Controls	Risk Class after controls	Classification of persons responsible for work
1	Vacuum Unit transport	<ul style="list-style-type: none"> <li>Truck incorrectly loaded that can result in overturn during transport to and from site</li> <li>Potential for crush injury or equipment damage in moving vacuum unit</li> </ul>	H	<ul style="list-style-type: none"> <li>Ensure that vacuum unit is in the forward position (nearest front of truck) during transport.</li> <li>If unit to be moved to front do not have any person or equipment on truck deck or in contact with containment rail during movement.</li> <li>Ensure container pins in locked position on truck deck.</li> </ul>	M	<ul style="list-style-type: none"> <li>Driver</li> <li>Plant Operator</li> <li>Trades Assistant</li> </ul>
2	Arrive at site, site preparation	<ul style="list-style-type: none"> <li>Personnel not aware of site hazards, procedures, work flow or programme ie excavation locations incorrect or services present</li> </ul>	M	<ul style="list-style-type: none"> <li>Conduct site risk assessment/ induction</li> <li>Consult with work group risk controls and methods for identified risks / hazards</li> <li>Site team aware of JSEA/SWMS requirements</li> <li>Identify and confirm location of site first aid kit,</li> <li>Ensure all staff wearing PPE including high vis clothing, hard hat with chin straps, gloves and steel cap boots</li> <li>Confirm certified design for work being done and services present</li> </ul>	L	<ul style="list-style-type: none"> <li>Driver</li> <li>Plant Operator</li> <li>Trades Assistant</li> </ul>

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2	<p><b>Arrive at site, site preparation continued</b></p>	<ul style="list-style-type: none"> <li>Personnel not aware of site hazards, procedures, work flow or programme ie excavation locations incorrect or services present</li> <li>Outdoor work exposure to hot/cold and UV</li> </ul>	M	<ul style="list-style-type: none"> <li>Check locations to be pot holed or excavated against plans – mark up positions with paint or markers</li> <li>Contact Supervisor where in doubt or plans do not appear to match site</li> <li>Connect Project</li> <li>Wear appropriate clothing for the conditions</li> <li>Take adequate rest/meal breaks</li> <li>Provide cold water/warm drinks as required</li> <li>provide shaded areas or temporary shade where possible</li> <li>provide and ensure use of appropriate sun protective PPE including sun protective work clothing, hats, sun brims for helmets, sunglasses, sunscreen</li> </ul>	L	<ul style="list-style-type: none"> <li>Driver, Plant Operator, Trades Assistant</li> <li>Driver, Plant Operator, Trades Assistant</li> </ul>
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2	Arrive at site, site preparation continued	<ul style="list-style-type: none"> <li>potential for injury to operators, motorists &amp; pedestrians /plant damage through vehicle collision with stationary crane and unloaded equipment</li> </ul>	H	<ul style="list-style-type: none"> <li>Traffic Control requirements to be determined as part of site risk assessment and Traffic Control Plan to developed and implemented established by Authorised Traffic Controllers where deemed necessary</li> <li>Where necessary set up barricades / signage to segregate work area from pedestrians</li> <li>Where possible Truck to be parked legally away from traffic obstruction with hazard warning lights beacons &amp; traffic arrows operating</li> </ul>	M	<ul style="list-style-type: none"> <li>Traffic Controller</li> <li>Driver</li> <li>Plant Operator</li> <li>Trades Assistant</li> </ul>
3	Run out hoses	<ul style="list-style-type: none"> <li>Back and muscle strain through lifting hoses and fittings</li> </ul>	M	<ul style="list-style-type: none"> <li>Hoses not to be carried from deck using stairs where 3 points contact from side ladder cant be maintained</li> </ul>	L	<ul style="list-style-type: none"> <li>Plant Operator,</li> <li>Trades Assistant</li> </ul>
3	Run out hoses continued	<ul style="list-style-type: none"> <li>Potential for slips trips and falls and entanglement in vacuum hoses</li> <li>Vac Hose lengths not secured leading to potential injury through exposure to high vacuum attaching to body parts or other obstructions</li> </ul>	M	<ul style="list-style-type: none"> <li>Water hose &amp; lance run out to length required</li> <li>Check that vac hose length slotted firmly into place at connection points.</li> <li>Vac Hose cam lock in place and secured to hose</li> <li>Do not start up unit until correct hose length laid out &amp; connected for work to be done.</li> </ul>	L	<ul style="list-style-type: none"> <li>Plant Operator,</li> <li>Trades Assistant</li> </ul>

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<ul style="list-style-type: none"> <li>• Plant Operator, Trades Assistant</li> </ul>	L	<ul style="list-style-type: none"> <li>• Hearing protection to be worn</li> <li>• engine revs to be used to be the minimum required for work to be achieved</li> </ul>	M	<ul style="list-style-type: none"> <li>• Noise from vacuum unit engine and potential for hearing damage</li> <li>• Potential for injury and environmental pollution as a result of containment under pressure and fluid / air leaks</li> <li>• Potential for injury through contact with moving parts and hot surfaces</li> </ul>	4	Unit start up
	M	<ul style="list-style-type: none"> <li>• Conduct Pre-start checklist to identify any equipment failure or damage</li> </ul>				
	M	<ul style="list-style-type: none"> <li>• No personnel to be on truck deck in contact with motor at start up or during operation</li> </ul>				

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5	Excavate	<ul style="list-style-type: none"> <li>Excavation near other buried services that may be damaged creating the potential for <ul style="list-style-type: none"> <li>Asphyxiation by gas leaking from gas main</li> <li>Engulfment by high pressure water from damaged water main</li> <li>Electrocution, explosion, burns and infrastructure/equipment damage through contact of equipment, personnel, water blast with LIVE conductor</li> </ul> </li> <li>Injury or equipment damage as a result of exposure to high pressure water and being struck by loose material</li> </ul>	H	<ul style="list-style-type: none"> <li>review Dial before you dig for service locations before commencing to identify presence of other services</li> <li>Before entering preliminary excavation look for signs of the presence of damaged assets including odour, dampness or signs of heat being evolved including smoke</li> <li>Water excavation pressures to be used to consider services present</li> </ul>	M	<ul style="list-style-type: none"> <li>Plant Operator, Trades Assistant</li> </ul>
			<ul style="list-style-type: none"> <li>Excavation with water lance pointed directly at ground in contact with ground surrounded by cone</li> <li>do not point lance at people when activated</li> </ul>	H	<ul style="list-style-type: none"> <li>Before entering preliminary excavation look for signs of the presence of damaged assets including odour, dampness or signs of heat being evolved including smoke</li> <li>Water excavation pressures to be used to consider services present</li> </ul>	M





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5	<p><b>Excavate</b> <i>continued</i></p>	<ul style="list-style-type: none"> <li>• Contact with underground solid objects resulting splashback causing injury or damage to equipment or services</li> <li>• Potential damage to nearby property including buildings and structures or other natural assets such as flora, fauna and habitat</li> <li>• consumption of limited resources</li> </ul>	M	<ul style="list-style-type: none"> <li>• Do not put hand into excavation and touch unknown objects or services</li> <li>• Observe minimum approach distance for working near underground assets as per the NSW WorkCover "Work Near Underground Assets Guide"</li> <li>• When hard cover indicator tape, or tile &amp; bricks uncovered stop excavation and note location / depth</li> <li>• Ensure excavation does not undermine nearby structures or vegetation</li> <li>• Where there is potential for surface runoff use silt socks to catch water and use vacuum to suck up any excess</li> <li>• Ensure excess water is controlled with vacuum – do not allow mud to run off into stormwater, water courses or adjoining properties</li> <li>• Limit water use to minimum required to have earth moved.</li> </ul>	L	<ul style="list-style-type: none"> <li>• Plant Operator,</li> <li>• Trades Assistant</li> </ul>
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