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reducing geotechnical uncertainty  
**Insitu Geotech Services Pty Ltd**




## JOB SAFETY ENVIRONMENT ANALYSIS (JSEA # 01)

ACTIVITY:

Working With In Situ Testing Rigs

SITE/PROJECT:

XXXXXXXXXXXXXXXXXXXX

<b>Personnel Involved in JSEA preparation:</b>	General Manager	Project Coordinator/ Rig Operator	Rig Offsider	<b>Training &amp; Assessment</b>  In situ testing is a “niche” business with very specialised rigs in Australia. IGS undertakes training, much of this on-the-job. Operators are trained, assessed & certified to RIIMPO208E-Operate Support Equipment. IGS undertakes detailed VOC’s that are independently assessed. VOC’s emailed on request.
<b>Qualifications/Training:</b>	Michael O’Rourke	In-house trained by IGS Independently Assessed 10yrs experience with IGS	In-house trained by IGS Independently Assessed HR Licence	
<b>Signature:</b>				
<b>Acknowledgement:</b>	<i>By signing above I acknowledge that I was consulted in preparing this JSEA and that I understand my responsibilities and agree to abide by them.</i>			

<b>Equipment &amp; Materials:</b>				
Testing Rig	Support Vehicle	Other Tools & Equipment:	PPE & Safety Gear & Environmental Gear	Hazardous Materials
“Esme” All-Terrain Rig on balloon tyres.	Site authorised: 4 x 4 support vehicle.  "IGS5-Argo" - 8 Wheeler amphibious vehicle on tracks (ideal for traversing on the sand to & from the rigs).	Hammer, Chain clamps, stillsons, screw driver set, shifter & file. 12V laptop and CPT acquisition system.	hard hat, gloves (minimum cut 3 rating), laced-up safety boots, long sleeve shirt, long pants, high visibility vest (or shirt), safety glasses, sunscreen, spill kit, clean-up rags, funnels for fuel, sleepers for jack legs.	*Silicone Oil (this is non-hazardous but is still referenced for info). *Diesel fuel. *Unleaded Fuel. *Hydraulic oil (SDS attached)

Control measures will be reviewed by Engineers & other XXXXXXXXXXXXXXXX personnel during task observations and work inspections. IGS Project Coordinator/Rig operator will ensure compliance with the control measures within this JSEA through daily inspection.

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**Insitu Geotech Services Pty Ltd** **IGS**

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**ACTIVITY:**

**Working With In Situ Testing Rigs**

**SITE/PROJECT:**

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## Relevant Codes of Practise

- Hazardous manual tasks 2016
- How to manage work health and safety risks 2011
- Managing noise and preventing hearing loss at work 2011
- Preparation of safety data sheets for hazardous chemicals 2011
- Work health and safety consultation, coordination and cooperation 2011
- First aid in the workplace 2018
- Managing risks of hazardous chemicals 2013
- Managing risks of plant in the workplace 2018
- Managing the work environment and facilities 2011

## Description of Work:

Add if required

Testing is to be undertaken using the IGS Purpose-Built jack-up rig "ESME" on the XX.

## Cardinal Rules!

- Prior to attending site all persons involved in the activity must first complete site-specific Inductions - XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX.
- Prior to commencing daily activities all persons involved must complete IGS rig pre-starts.
- Any incidence of injury/near injury is to be recorded/reported and handled as per IGS company WHSP.
- Smoking is prohibited on the IGS rig "ESME".

## This document must be used in Conjunction with:

- ESME - Risk Assessment
- Operator Manual
- Maintenance Procedure Schedule

## Potential High Risk Activities

- It is possible that work might be carried out in an area with live services present
- It is possible that work might be carried out in a traffic corridor that is in use by traffic other than pedestrians
- It is possible that work might be carried out in an area at a workplace in which there is movement of mobile plant

## Relevant Legislation

- WHS Act 2011 and the WHS Reg 2011
- OHS 2011

## Relevant Legislation

- Allowable rig loading areas as determined by site geotech.

## Permits

- Authority to Work
- Permit to Excavate or Penetrate
- 

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### RISK ASSESSMENT GUIDE

SEVERITY			LIKELIHOOD		
<b>5</b>	Catastrophic	Fatality by accident or workplace acquired illness. Irreversible harm to environment.	<b>A</b>	Almost Certain	The event is a common occurrence on all projects.
<b>4</b>	Major	Severe permanent harm to personnel. Significant widespread environmental damage.	<b>B</b>	Likely	The event will probably occur at least once on most projects.
<b>3</b>	Serious	Permanent harm to personnel. Considerable environmental damage.	<b>C</b>	Possible	The event might occur during some projects.
<b>2</b>	Minor	Temporary harm to personnel. Minimal environmental damage, reportable.	<b>D</b>	Unlikely	The event could occur on similar work activities, globally.
<b>1</b>	Insignificant	No injuries/illness. Minor injury requiring first aid. Negligible environmental damage.	<b>E</b>	Rare	The event could occur but only in exceptional circumstances.

Consequence \ Likelihood	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
<b>A Almost Certain</b>	moderate	high	extreme	extreme	extreme
<b>B Likely</b>	moderate	moderate	high	extreme	extreme
<b>C Possible</b>	low	moderate	moderate	high	extreme
<b>D Unlikely</b>	low	low	moderate	moderate	high
<b>E Rare</b>	low	low	low	moderate	moderate

Control Action Rating	Qualitative Risk Action Description
extreme	Do not start work. Identify and implement controls to reduce risk
high	Do not start work. Identify and implement controls to reduce risk
moderate	Project Operator to assess that identified controls adequately reduce risk.
low	All field operatives to adhere to identified and listed controls



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### S - RISK ASSESSMENT - SAFETY

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
S-1	<b>Floating Rig to Site, Unloading &amp; Loading:</b>  This involves floating the rig to site on the back of our float truck "The Volvo" or "Acco" which has a tray and ramps specifically designed for Loading and off Loading the rig	(i) traffic accidents in transit. (ii) mishaps off-loading the rig down ramps. Primary potential mishap is slipping sideways off the ramps. (iii) people/plant interaction.	4	D	M	Only experienced and appropriately licensed drivers may drive "The Volvo" or "Acco" while transporting the rig. The load must be secured in accordance with National Transport Regulations. A spotter to be used while traversing the rig off or onto the tray of the truck. The spotter is to stay out of the line of fire when the rig is traversing and must maintain constant two-way communication with the rig operator.  The spotter must have two-way radio and be positioned <b>behind a vehicle barrier</b> . Spotter must not enter the Plant Operating Zone unless positive two-way communication has been established, plant controls have been disengaged, the plant operator's hands have been visibly removed from controls and motion of the plant has ceased.  Only a trained operator who is verified to be competent by IGS is permitted to load or off-load the rig. The above tasks can only be undertaken on firm and level ground. Load or Unload after peak traffic period, set up an exclusion zone around the rig. 3m minimum width - 5m if space permits or if provided use site specific lay down area. <b>Ensure a site specific JHA is completed for unloading and loading activities.</b>	Administrate and Engineer	3	E	L	Driver and Project Operator

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### S - RISK ASSESSMENT - SAFETY

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
S-2	<b>Pre-Start Check-Over</b>  This involves following a checklist that is part of Daily Prestart Sheet.	(i) Items missed. (ii) Injury from checking equipment (slips, trips, back injury) (iii) improper wearing of PPE. (iv) failure to sign in or induct to site.	2	C	M	Use checklist on Daily Prestart Sheet. Make sure checks are made by experienced people using correct lifting techniques. Make sure PPE is properly worn (helmets not required in cabin). Complete site induction, sign in and onto Permits.	Administrative	1	D	L	Project Operator & Trained Assistants
S-3	<b>Working Outdoors</b>	(i) heat stroke (ii) sunburn (iii) hypothermia (iii) snakebite	4	C	H	Keep hydrated. Apply sunscreen and/or wear hard hat with shade brim if outside for any extended period. Wear warm clothing when cold. First Aid Kit with snakebite splint/bandages in vehicle	Administrative and PPE	4	E	L	All personnel
S-4	<b>Identify Test Location</b>  Test locations are nominated by client's supervisor, not by IGS.	(i) undertaking test in wrong location, (ii) hitting underground services. (iii) hitting overhead services	3	C	M	Test at locations advised by client's supervisor. Sight locations in a pre-test walk-over. Ask if in doubt (don't test until sure). Existing services are to be marked out/potholed by client or the service owner prior to testing. Look up and live. Where possible keep rig more than 6m away from any overhead services. Read, understand & sign onto <b>XXXXXXXXXXXXXXXXXXXX Permit to Excavate or Penetrate</b> , which will involve non-destructive potholing of any underground services within the work area	Administrative & Engineering	3	E	L	Clients Representative, Project Operator & Trained Assistants
S-5	<b>Traversing</b>	(i) Rig roll-over. (ii) Collision (iii) Unauthorised access	3	D	M	Check terrain before traversing. Only a trained operator who is verified to be competent is permitted to traverse the rig. Adhere to all project induction and access requirements. All IGS personnel to attend site induction. Ensure that other plant are not within the work area before traversing.	Administrative	3	E	L	Clients Representative, Project Operator & Trained Assistants

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### E - RISK ASSESSMENT - SAFETY

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
S-6	<b>Set Up to Test</b>  This involves Lifting the rig up on Jacks and levelling it. Often timber sleepers are placed under each jack. Process is reversed after testing.	(i) Back injuries, splinters, cuts or bruises handling sleepers under jacks. (ii) Hands or feet caught under jacks. (iii) Rig falling on personnel	3	C	M	Use appropriate lifting techniques and wear gloves when handling sleepers. Use slow rate of jack speed. Communicate closely. No personnel are to go underneath the rig during jacking operation. Ensure ground conditions are suitable before commencing jacking operation.	Administrate and Engineer	3	E	L	All Personnel
S-7	<b>Testing &amp; Pulling Out</b>  This involves pushing a probe/sampler into the ground at slow steady pace using the hydraulic pusher in the centre of the rig. The pusher moves at only 20mm per second during pushing. 7kg rods 1m long are added progressively. The process is reversed pulling out.	(i) Cuts, bruises, crushed fingers. (ii) Entanglement.	3	C	M	Use slow rate of travel when head is pushing down and hands are sometimes on pusher. Hands not to be located on top of the pusher when head is travelling up. Flashing light warns crew of pusher head movement during the upward direction. Suitable guarding and warning signs installed. Inspect rods every time added or removed and file smooth any sharp edges that develop. Wear disposable gloves and eye protection during pulling out of CPT rods. Wash down rods with clean water during extraction. Confirm with client rep. correct location with disposal of all rags and gloves after use. Use gloves (minimum cut 3 rating) when handling CPT rods.	Engineer, Administrate, Substitute and PPE	1	D	L	Project Operator & Trained Assistants

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### S - RISK ASSESSMENT - SAFETY

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
S-8	Heavy Trafficable Sites	(i) Accidents involving a site worker, passerby, piece of plant or vehicle interacting with the rig unknown to the operator.	3	D	M	Only IGS personnel to be within the plant operating zone. where required set up a barrier and signage system between the rig and the person(s) to ensure no one is within the plant operating zone. Personnel can only enter the Plant Operating Zone after establishing positive two-way communication, plant controls have been disengaged, the rig operator's hands have been visibly removed from controls and motion of the plant has ceased. Where other vehicles/plant are working within the same vicinity of the testing rig, ensure that exclusion zones are established and two-way communication is maintained.	Elimination	2	D	L	Operator & Trained assistant
S-9	End of Day Pack-Up Rig is locked, sleepers stored on board, computers packed up, etc.	(i) Back injury, cuts, bruises. Vandalism	3	C	M	Equipment to be allowed to cool down. Use appropriate lifting techniques. Wear gloves when handling sleepers. Park equipment in secure area before leaving site. On completion of project, load rig in designated loading area. Leave site clean and tidy.	Administrative	3	E	L	Project Operator & Trained Assistants

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### E - RISK ASSESSMENT - ENVIRONMENT

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
E-1	<b>Pre-Start Check-Over</b> This involves following a checklist that is part of Daily Prestart Sheet.	(i) oil or fuel leakage from leaking pipes or (ii) oil or fuel leakage when topping up	2	C	M	Daily Prestart includes checks for system leakage. Make sure checks are made by experienced people. Take care when topping up to avoid spillage. Use rags or spill kit if any spillage occurs. Dink water regularly. Halt work if personnel raise safety concerns over the conditions.	Eliminate & Engineer	3	E	L	All field personnel
E-2	<b>Traversing</b>	(i) crushing important plant species. (ii) general messiness. (iii) excessive tyre tracking, (iv) making excessive noise, (v) excessive dust	2	C	M	Respond to environmental briefing by client. Check terrain before traversing. Avoid soft areas where possible. Avoid unnecessary (or non-agreed) site damage. Only experienced personnel should drive rig. Rig is engineered to minimise noise – avoid revving or gear-changes. Client to implement environmental controls in relation to dust controls.	Eliminate or Substitute or engineer	3	E	L	Project Operator , Trained Assistants & client.
E-3	<b>Set Up To Test</b> This involves lifting the rig up on jacks and levelling it. Often timber sleepers are placed under each jack. Process is reversed after test.	(i) jack legs making deep holes in ground. (ii) crushing important plant species. (iii) making excessive noise (iv) glycerol spills cause environmental harm.	2	C	M	Respond to environmental briefing by client. Check terrain before jack-up. Avoid soft areas where possible. Use sleeper stacks to minimise jacks sinking. Use slow rate of jack speed. Communicate closely. Rig is engineered to minimise noise – avoid revving or gear-changes. Silicone Oil volumes are tiny - less than 20cc per test. maximum handled volume is 100cc at any time. All to be kept in rig cabin which is ‘contained’ re spillage.	Eliminate or Substitute and Engineer	2	D	L	Project Operator & Trained Assistants

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### E - RISK ASSESSMENT - ENVIRONMENT

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
E-4	<b>Testing &amp; Pulling Out</b>  This involves pushing a probe into the ground at slow steady pace using the hydraulic pusher in the centre of the rig. pusher moves at only 20mm/sec.	(i) unsightly or dangerous test hole left behind (ii) making excessive noise (iii) Contaminated land	2	C	M	Use max 55mm diam. push-in casing size except for special cases. Rig is engineered to minimise noise – avoid revving or gear-changes.  Wear gloves and eye protection during pulling out of CPT rods. Wash down rods with clean water during extraction.  Confirm with client rep. correct location with disposal of all rags and or gloves after use.	Eliminate or Substitute and Engineer	2	E	L	Clients Representative, Project Operator & Trained Assistants
E-5	<b>End of Day Pack-Up</b>  Rig is locked, sleepers stored on board, computers packed up, etc.	(i) oil or fuel leakage from damaged pipes (ii) oil or fuel leakage while topping up.	2	C	M	Take care when topping up to avoid spillage. Use rags or spill kit if any spillage occurs. Notify client and environmental site personnel as soon as possible. Contain the spill first!	Eliminate & Spill Kit	3	E	L	All personnel

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### ADDITIONAL - LIVE ASSESSMENT

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	

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# SDS

- DIESEL FUEL
- SILICONE OIL
- HYDRAULIC OIL

# ATTACHED

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