PLANT RISK ASSESSMENT REPORT

SECTION 1: PLANT IDENTIFICATION

Report Number:	407/201-35	**Assessment Date:**	4th October 2012
Company:	Wacker Neuson	**Plant Type:**	Electrical / Pneumatic External Vibrators
Models:	**Electrical:** AR36/3/240 - AR36/3/400 - AR51/3/400 - AR52/3/400 - AR54/3/230 - AR54/3/400 AR75/3/400 - AR36/6/250 - AR42/6/250 - AR44/6/250 - AR52/6/250 - AR54/6/250 AR41/6/042 - AR42/6/042 - AR44/6/042 - AR51/6/042 - AR52/6/042 - AR54/6/042 **Pneumatic:** PAR10/2 - PAR27/2 - PAR45/2 - PAR60/2		
Assessment Purpose:	☐ Operational risks associated with the unit as it stands – On site		
	☐ Access Systems		
	☐ Modification/s		
	☒ Other : Group assessment of plant type		
Assessed by:	Josh Harley-Hill – VEHTEC Pty Ltd		

SECTION 2: PLANT SUMMARY

Preamble:

This assessment is designed to encompass the above specified range of Wacker Neuson Pneumatic and Electrical Vibrators. All units are designed for the efficient compaction of concrete through attachment to formwork. The range is designed for specific use as outlined in the unit specific Operators Manual in 'Safety Information' sections, and shall not be used in any other manner. This document is intended to highlight Occupational Health Safety and Welfare related risks that may present during on site set up and operation and has been conducted in accordance with the OHS&W Legislation – 2010.

Is the plant designed for its intended use?	☒ **Yes** ☐ **No**	*Final Sign off by Employer/Owner user - All actions/recommendations complete*
Has the plant been modified from the original design?	☐ **Yes** ☒ **No**	
Is the plant in good working condition?	☒ **Yes** ☐ **No**	Name: _____ Position:_____
Is action required before the plant can be safely used?	☐ **Yes** ☒ **No**	
Has the required action / remedy been undertaken?	☐ **Yes** ☐ **N/A**	Signed: _____ Date:_____

SECTION 3: RISK ANALYSIS LIKELIHOOD AND CONSEQUENCES

Table 1 Measure of Likelihood		
Level	**Description**	**Detail**
A	Almost Certain	The event is expected to occur in most circumstances
B	Likely	The event will probably occur in most circumstances
C	Moderate	The event should occur at some time
D	Unlikely	The event could occur at some time
E	Rare	The event may occur only in exceptional circumstances

Table 2. Measure of Consequences or Impact		
Level	**Description**	**Detail**
1	Insignificant	No injuries, low financial loss
2	Minor	First Aid treatment, on site release immediately contained, medium financial loss
3	Moderate	Medical treatment required, on site release contained with outside assistance, high financial loss
4	Major	Extensive injuries, loss of production capability, off site release with no detrimental effects, major financial loss
5	Catastrophic	Death, toxic release off site with detrimental effect, huge financial loss

Table 3. Risk Analysis Matrix

	Consequences				
Likelihood	Insignificant **1**	Minor **2**	Moderate **3**	Major **4**	Catastrophic **5**
A (Almost certain)	**S**	**S**	**H**	**H**	**H**
B (Likely)	**M**	**S**	**S**	**H**	**H**
C (Moderate)	**L**	**M**	**S**	**H**	**H**
D (Unlikely)	**L**	**L**	**M**	**S**	**H**
E (Rare)	**L**	**L**	**M**	**S**	**S**

*Only hazards with a risk deemed higher than 'low' need to be controlled

Legend:

H= High risk, detailed research and management planning required.

S= Significant risk, senior management attention needed. Continuous review.

M= Moderate risk, management responsibility. Periodic review

L= low risk, manage by routine procedures. Periodic review to ensure risk does not increase.

SECTION 4: HAZARD IDENTIFICATION

Hazard Item N°	Hazard Item Observation Detail	Hazard	L	C	Risk
1	**Plant in its current state has potential to cause injury/illness due to:**				
1.1	Entanglement **(Do not place vibrators, power source and hose/cables where they may become a tripping hazard)**	**Yes**	**D**	**3**	**M**
1.2	Puncturing	No			
1.3a	Cutting **(Pinch points exist when joining vibrator to power source)**	**Yes**	**D**	**2**	**L**
1.3b	**(Pinch points exist during connection of the vibrator to formwork and/or saddle)**	**Yes**	**C**	**2**	**M**
1.4	Stretching **(Incorrect manual handling of the unit - Suitable handling techniques to be practiced)**	**Yes**	**D**	**2**	**L**
1.5	Stabbing	No			
1.6	Trapping **(Units shall only to be utilised on secure formwork)**	**Yes**	**D**	**4**	**S**
1.7	Abrasion **(Operator / bystander may have unit dropped onto limbs)**	**Yes**	**D**	**2**	**L**
1.8	Engulfment **(Units shall only to be utilised on secure formwork)**	**Yes**	**D**	**4**	**S**
1.9a	Crushing **(Pinch points exist when joining vibrator to power source)**	**Yes**	**D**	**2**	**L**
1.9b	**(Pinch points exist during connection of the vibrator to formwork and/or saddle)**	**Yes**	**C**	**2**	**M**
1.9c	**(Units shall only to be utilised on secure formwork)**	**Yes**	**D**	**4**	**S**
1.10	Shearing	No			
1.11	Tearing **(Incorrect manual handling of the unit - Suitable handling techniques to be practiced)**	**Yes**	**D**	**2**	**L**
1.12	Asphyxiation	No			
1.13a	Slips, Trips **(Practice caution as working area may be naturally slippery)**	**Yes**	**D**	**2**	**L**
1.13b	**(Operating the unit on a dangerous and/or inclined slope or insufficiently solid ground)**	**Yes**	**D**	**2**	**L**
1.13c	**(Do not place vibrators, power source and hose/cables where they may become a tripping hazard)**	**Yes**	**D**	**2**	**L**
1.14	Falls **(Do not place vibrators, power source and hose/cables where they may become a tripping hazard)**	**Yes**	**D**	**3**	**M**
1.15	Falling Objects **(Units shall only to be utilised on secure formwork)(Safety strap shall be provided and used at all times)**	**Yes**	**D**	**3**	**M**
1.16	Expelled Parts **(Unit inherently presents a projectile hazard if vibrator not securely fastened)**	**Yes**	**B**	**1**	**M**
2	**Plant in its current or intended state has the potential to create a hazardous condition due to:**				
2.1a	Pressured Content **(Air hoses under pressure coming lose have the tendency of straightening spontaneously. This behaviour can become very dangerous for the operator and bystander)**	**Yes**	**D**	**4**	**S**
2.1b	**(Compressed air poses a rupture risk to operator and bystander limbs. Care shall be taken to release air pressure prior to decoupling any air lines)**	**Yes**	**D**	**4**	**S**
2.2a	Explosion **(Unit is both an impact and electrical tool by nature - Incorrect operation presents a spark ignition source - Never operate unit in or near an explosive environment)**	**Yes**	**E**	**5**	**S**
2.2b	**(Do not use solvents or gasoline to clean unit after operation)**	**Yes**	**E**	**4**	**S**
2.3	Radiation	No			
2.4	Vapour	No			
2.5	Dust	No			
2.6	Moisture **(Practice caution as working area may be naturally slippery)**	**Yes**	**D**	**2**	**L**

2.7	Gases	No			
2.8a	Fire **(Unit is both an impact and electrical tool by nature - Incorrect operation presents a spark ignition source - Never operate unit in or near an explosive environment)**	**Yes**	**D**	**4**	**S**
2.8b	**(Do not use solvents or gasoline to clean unit after operation)**	**Yes**	**E**	**4**	**S**
2.9	Vibration **(Operator exposure controlled as vibrator to be fitted to formwork)**	No			
2.10a	Electricity **(Damaged cables and protective sheath present an electrocution hazard to operator and bystander)**	**Yes**	**D**	**4**	**S**
2.10b	**(Mishandling unit from electrical cable during operation presents an electrocution hazard to the operator)**	**Yes**	**D**	**4**	**S**
2.11	Friction	No			
2.12	Ice Formation	No			
2.13	Laser Beams	No			
2.14	Hot and Cold Parts **(Unit will become significantly hot through operation. Never perform maintenance when unit is hot. Allow suitable time to pass after operation before handling unit)**	**Yes**	**A**	**1**	**S**
2.15	Temperature Extremes **(Operator to be managed by SOP and/or Employer/Owner policy)**	No			
2.16	Noise (Low dB levels) **(Operator required to wear appropriate PPE)**	**No**	**A**	**1**	**S**
		Yes / No / N/A			
3	Manual handling requirements have been assessed as acceptable **(To be lifted using designated lift points as per operators manual. Employer/Owner assessment required)**	Yes			
4	Repetitive, forceful, awkward, sustained movements have been minimised/ eliminated Vibration **(Operator exposure controlled as vibrator to be fitted to formwork)**	No			
5	The current guard (s) and their condition are adequate for this plant **(Designed for application)**	Yes			
6	Is the guarding appropriate for all work requirements **(Designed for application)**	Yes			
7	Operator controls are located for ease of use by operators **(Located at power source)**	N/A			
8	Operator controls are identified and marked appropriately **(Located at power source)**	N/A			
9	Emergency stops are clearly marked **(Located at power source)**	N/A			
10	Emergency stops are located at the most likely place (s) for emergency use **(Located at power source)**	N/A			
11	The power source of the plant has been designed, constructed, installed, protected, maintained as to minimise the risk of harm to employees. **(Unit to be maintained as per Operators Manual)(Check power source risk assessment and Operators Manual)**	N/A			
12	There is provision to lock out the plant, and dissipate energy **(Located at power source)**	N/A			
13	Access platforms/ladders/handrails are provided	N/A			
14	Access to moving parts from the platform can be performed safely	N/A			
15	Access platforms/ladders/handrails provide secure, non slipping access	N/A			
16	Lighting is adequate for plant operation, maintenance and cleaning at any time	No			
17	Noise levels have been assessed as below 85dB(A) **(Operator required to wear appropriate PPE)**	**No**	**A**	**1**	**S**
18	Personal Protective Equipment (PPE) has been provided for safe operation of this plant **(Employer/Owner responsibility)**	N/A			
19	PPE requirements are signposted **(Employer/Owner responsibility dependant on internal Management Policies)**	No			
20	There is provision for safe cleaning of this plant (NB availability of cleaning devices) **(Use only non-flammable cleaning products)**	Yes			
21	Safe access to areas to be cleaned has been provided	N/A			
22	There is provision for easy and safe scrap removal	Yes			
23	The plant has the potential to jam/block	No			

24	A safe system of work has been established to remove jam/blockage	N/A			
25	Safe system of work has been established for any sample retrieval	N/A			
26	There is adequate provision to properly service and routinely grease and oil the plant **(Unit to be maintained by appropriately trained personnel in terms of operators manual)**	Yes			
27	Safe systems of work have been established for hazards associated with any necessary maintenance of the plant **(Employer/Owner responsibility)**	N/A			
28	The rigidity and stability of the plant and supporting structure is adequate. **(Unit to be operated within its capabilities and with regard to recommended operating environs)**	Yes			
29	The environment in which the plant is situated has been assessed for its interrelationship with this plant as acceptable **(Employer/Owner Responsibility)**	N/A			
30	Ventilation and/or other air flow needs are adequate	Yes			
31	Static electricity hazards have been assessed and controlled	Yes			
32	Workplace substances associated with the use of the plant have been assessed	N/A			
33	Authorised entry systems for the plant and surrounds have been established	N/A			
34	The upstream and downstream effects of malfunction or unscheduled stoppage of the plant have been considered **(Employer/Owner Responsibility)**	N/A			

SECTION 5: RISKS AND CONTROLS

<table>
<tr><th colspan="6">Summary of Hazards Identified and solution(s) to adequately manage the respective risk.</th></tr>
<tr><th>Hazard Item No</th><th colspan="3">Level of Risk</th><th colspan="2">Action Required / Comments</th></tr>
<tr><td rowspan="4">1.3a
1.3b
1.4
1.6
1.7
1.8
1.9a
1.9b
1.9c
1.11</td><td rowspan="4">Low</td><td rowspan="4">Moderate</td><td rowspan="4">Significant</td><td rowspan="4">Hazard
General set up and operation of the external vibrators can cause cutting, stretching, trapping, abrasion, engulfment, crushing and tearing hazards.

Comments
Entanglement, cutting and crushing risks are present if correct power source coupling/decoupling procedures are not carried out.
The unit also presents a risk of collapse to vertical formwork which if not correctly and safely secured.

Controls
Operator to be fully aware of all contents in the Operators Manual. Operator is to perform a Jobsite Safety Analysis (JSA) prior to operation. Work Zone Traffic Management (WZTM) procedures need to be implemented prior to operation. Operator to keep bystanders away during operation.

Operator shall be fully aware of and abide by the accompanying power sources Operators Manual with particular emphasis on coupling and decoupling procedures.

Operator is to ensure that the formwork to which the vibrator will attach is of suitable security to prevent collapse.

Care should be taken to prevent muscle stretching and tearing during operation procedure.

Revised Risk Assessment
With the above controls in place the risk is considered controlled.</td><td>Action Required</td><td colspan="3">Operators are to be completely familiar with the Operators Manual prior to use of the unit.</td></tr>
<tr><td>Responsible Person</td><td>Employer/Owner/Operator</td><td>Due Date</td><td></td></tr>
<tr><td>Actioned by:
(Name & Date)</td><td colspan="3"></td></tr>
<tr><td>Verified by:
(Name & Date)</td><td colspan="3"></td></tr>
</table>

1.1 1.13a 1.13b 1.13c 1.14	Low	Moderate	Hazard Entanglement, slipping, tripping and falling. Comments By design the external vibrators and the environment in which they operate present slipping, tripping and falling hazards. In particular flexible cables and hoses associated with the power source present entanglement or tripping risk to operators and bystanders. Controls Operator to be fully aware of all contents in the Operators Manual prior to use of the unit. Operator is to perform a Jobsite Safety Analysis (JSA) prior to operation. Work Zone Traffic Management (WZTM) procedures need to be implemented prior to operation. Operators and bystanders must exercise awareness when working in the vicinity of the vibrator cables/hoses as they pose a risk of tripping and falling. Naturally the environment in which the vibrator operates may be slippery. Caution and appropriate footwear must be exercised to prevent the likelihood of any trips, slips or falls. The unit is only to be used in environments as per operators manual. Revised Risk Assessment With the above controls in place the risk is considered controlled.	Action Required	Nil			
				Responsible Person	Employer/Owner/Operator	Due Date	
				Actioned by: (Name & Date)			
				Verified by: (Name & Date)			

1.15 1.16	**Moderate**	Hazard Expelled Parts and falling objects. Comments If incorrectly operated, the vibratory head acting as an impact tool presents a risk of expelled material from either the vibrator or the working environment. The external vibrator can cause insecure formwork to vibrate loose and collapse. The vibrator itself may also vibrate loose and detach from the formwork. Risks are present if correct power source coupling/decoupling procedures are not carried out. Controls Operator to be fully aware of all contents in the Operators Manual prior to use of the unit. Operator is to perform a Jobsite Safety Analysis (JSA) prior to operation. Work Zone Traffic Management (WZTM) procedures need to be implemented prior to operation. Operators are to be completely familiar with the Operators' manual prior to use of the unit and to set up the unit in co-operation with the Manuals instruction. Operators to ensure that the formwork is suitably secure prior to and during operation of the external vibrator. Operators to ensure that a safety strap is both supplied and used correctly in a taught fashion during operation so as to prevent the vibrator coming loose and falling. Operator shall be fully aware of and abide by the accompanying power sources Operators Manual with particular emphasis on coupling and decoupling procedures. Revised Risk Assessment With the above controls in place the risk is considered controlled.	Action Required	Nil		
			Responsible Person	Employer/Owner / Operator	Due Date	
			Actioned by: (Name & Date)			
			Verified by: (Name & Date)			

2.1a 2.1b 2.16 17	**Significant**	Hazard Pressured content and noise Comments Compressed air is the power source for PAR models. Compressed air poses a risk of rupture to operators' limbs if couplings are disconnected or hoses destruct whilst pressure exists within the system. The noise levels of operating the external vibrators has been assessed as above 85 dB(A). Controls Operator to be fully aware of all contents in the Operators Manual prior to use of the unit. Operator is to perform a Jobsite Safety Analysis (JSA) prior to operation. Work Zone Traffic Management (WZTM) procedures need to be implemented prior to operation. Only serviceable and Operator Manual recommended air hose and couplings shall be used in the operation of the PAR unit. Operator to ensure that the pneumatic coupling has been connected to the power source as per the Operators Manual. Operators to ensure that the pneumatic system has been released of pressure prior to decoupling of the vibrating unit from the power source. Appropriate PPE shall be supplied and used as per the SOP to prevent over exposure to excessive noise levels and air pressure. Revised Risk Assessment With the above controls in place the risk is considered controlled.	Action Required	Nil		
			Responsible Person	Employer/Owner / Operator	Due Date	
			Actioned by: (Name & Date)			
			Verified by: (Name & Date)			

2.2a 2.2b 2.8a 2.8b 2.14	**Significant**	Hazard Explosion, fire and hot parts. Comment General operation of the vibrator unit causes rapid heating of the vibrator body. The vibratory nature of the unit ensures that the vibrator may act as an impact tool if used inappropriately. Sparks may be caused if the unit is allowed to vibrate against objects if not safely and securely fastened. Flammable solvent cleaner residue may ignite during operation. Controls Operator to be fully aware of all contents in the Operators Manual prior to use of the unit. Operator is to perform a Jobsite Safety Analysis (JSA) prior to operation. Work Zone Traffic Management (WZTM) procedures need to be implemented prior to operation. Only solvents and cleaning products specified in the Operators Manual shall be utilised to clean the vibratory head after use and cooling down. Unit only to be operated whilst fastened as per the Operators Manual. Unit not to be operated in an explosive environment. Vibrator shall be allowed to cool post operation to prevent burns to operator/bystander. Vibrating shall be allowed to cool in a location free of flammable materials to prevent inadvertent fire. Appropriate PPE to be worn at all times when required by SOP. Revised Risk Assessment With the above controls in place the risk is considered controlled.	Action Required	Nil		
			Responsible Person	Employer/Owner/Operator	Due Date	
			Actioned by: (Name & Date)			
			Verified by: (Name & Date)			

<table>
<tr><td rowspan="4">2.10a
2.10b</td><td rowspan="4">Significant</td><td rowspan="4">Hazard
Electricity.

Comments
By design the electrically powered external vibrators pose a risk of electrocution due to exposed cables.

Controls
Operator to be fully aware of all contents in the Operators Manual prior to use of the unit. Operator is to perform a Jobsite Safety Analysis (JSA) prior to operation. Work Zone Traffic Management (WZTM) procedures need to be implemented prior to operation.

The unit is only to be used in environments as per Operators Manual.

No operation of unit in wet conditions. Loose cables on ground must be coiled in a safe manner to prevent tripping and away from high traffic areas. Cable to be kept well away from the other job site machinery. Use only those extension leads which are recommended by the Operators Manual.

Power units that are fitted with a protection system which activates if a ground fault is detected, providing protection to operator and bystander of serious electrical shock are recommended.

Revised Risk Assessment
With the above controls in place the risk is considered controlled.</td><td>Action Required</td><td colspan="3">Consideration to the type of power units used.</td></tr>
<tr><td>Responsible Person</td><td>Employer/Owner / Operator</td><td>Due Date</td><td></td></tr>
<tr><td>Actioned by:
(Name & Date)</td><td colspan="3"></td></tr>
<tr><td>Verified by:
(Name & Date)</td><td colspan="3"></td></tr>
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SECTION 6: CONTROL MEASURES AND TRAINING

Control Measures

Pre-Operation	A Standard Operating Procedure (SOP) should be developed for the correct use of the unit and accompanying systems prior to deployment. Complete familiarisation of the Operators Manual of both the External Vibrator and the accompanying power source and all systems shall be considered Mandatory. Familiarisation with the accompanying power source risk assessment shall also be considered Mandatory.
General Operation	The units are intended for operation only while attached to formwork containing wet concrete.
Modifications	Any modification to the factory unit should be strongly considered to ensure that it will not have any detrimental effect to the stability, safety or operation of the unit. Modifications should only be undertaken by suitably qualified or experienced persons.
Operational Risk	This risk assessment does not negate the requirement of the operator/supervisor to conduct an operational risk assessment of this piece of plant for its intended use and its interface with the operators and the suitability of this piece of plant to integrate and complete the required task. This document has been prepared with due care, however cannot be considered complete given the limited knowledge of the intended operational environment.
Work Zone Traffic Management	This risk assessment has been prepared with the knowledge that effective Work Zone Traffic Management (WZTM) systems will be employed in line with AS1742.3, OHS&W Regulations 2010, Road Traffic Act 1971 and internal Standard Operating Procedures.
Continuous Review	This document is not intended to be static, nor is it intended to be considered complete for all situations. This document forms the basis to allow the Employer/Owner of the asset to have an informed position. A system of continuous review should be embraced in line with Management Policies.

Operator Competencies

Formal Qualifications:	N/A
Competency Assessed Skills:	N/A
General Training Instruction:	On the job training by qualified Operator
Experience:	As appropriate and assessed (as above)
Standard Work Procedure (s):	To be developed by the client/user

SECTION 7: PLANT INSPECTIONS, MAINTENANCE AND TESTING

Inspection, Maintenance and Testing Requirements	Frequency
Manufacturers Operator and Service manuals as supplied with the plant	Refer Operator Manual
Servicing and Maintenance	As per Manufacturers guidelines
Daily checks as per operators handbook	Daily before use

**This is not a definitive list and may need to be revised over time*