PLANT RISK ASSESSMENT REPORT

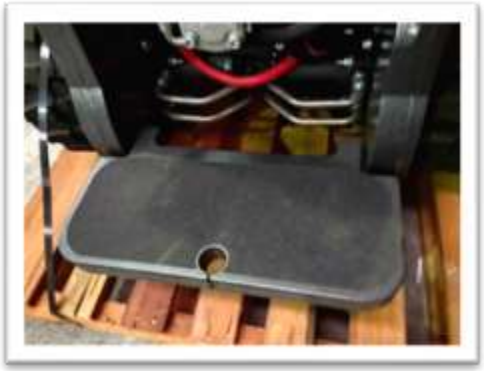
SECTION 1: PLANT IDENTIFICATION

Report Number:	407/9309	**Assessment Date:**	8th December 2020
Company:	Wacker Neuson	**Plant Type:**	Mini loader
Make:	Wacker Neuson	**Manufacturer:**	Dingo
Variants:	SM275-19T, SM275-19W, SM325-24T, SM325-24W, SM325-27T, SM325-27W, SM440-31T and SM440-31W		
Assessment Purpose:	☒ Operational risks associated with the unit as it stands – On site		
	☐ Operational risks associated with the unit as it stands – Desk top analysis		
	☐ Access Systems		
	☐ Modification/s		
	☒ Other : Assessment of range		
Assessed by:	Darren Husson – VEHTEC Pty Ltd		

SECTION 2: PLANT SUMMARY

Preamble: As assessed, the Wacker Neuson range of 'Mini Loaders' are built in Australia by Dingo and are supplied with either tracks or wheels. Available Working Load Limit's (WLL) range from 275kg to 440kg with each size variant capable of using a range of attachments, including 4-in-1 and GP buckets, auger, cement mixer, trencher etc. The plant is designed for the operator to stand on the rear of the machine during in operation. Machine controls are top mounted and allow for ease of use by the operator whilst providing a clear view of the immediate work zone. The plant is well decaled with safety and instructional information. This risk assessment covers the configuration at the time of inspection. 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 Work Health and Safety Act (SA).

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:_____



Photos are for comparison purposes only and may not be representative of all models in the range

SECTION 3: RISK ANALYSIS LIKELIHOOD AND CONSEQUENCES

Table 1. Measure of Likelihood (L)		
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 (C)		
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 (Risk)					
	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 **(Bystander moving into the operating range of machine or attachments)**	**Yes**	**D**	**5**	**H**
1.2	Puncturing **(Bystander moving into the operating range of machine or attachments)**	**Yes**	**D**	**5**	**H**
1.3a	Cutting **(Bystander moving into the operating range of machine or attachments. Operating platform allows the operator to have good forward and rear visibility)**	**Yes**	**D**	**3**	**M**
1.3b	**(Unit tipping or rolling over in steep/uneven terrain – designed to be operated on a relatively level surface. Avoid travelling across slopes. Low centre of gravity)**	**Yes**	**D**	**4**	**S**
1.4a	Stretching **(Operator incorrect entry/egress from operator platform – low platform height, Operator to remove mud and debris from boots before accessing operating platform)**	**Yes**	**D**	**2**	**L**
1.4b	**(Operator locating attachments for connecting to base loader)**	**Yes**	**D**	**3**	**M**
1.5	Stabbing (**Bystander moving into the operating range of machine or attachments. Operating platform allows the operator to have good forward and rear visibility)**	**Yes**	**D**	**5**	**H**
1.6a	Trapping **(Bystander moving into the operating range of machine or attachments. Operating platform allows the operator to have good forward and rear visibility)**	**Yes**	**D**	**3**	**M**
1.6b	**(Unit tipping or rolling over in steep/uneven terrain – or slipping on wet surface)**	**Yes**	**D**	**5**	**H**
1.6c	**(Wheel nuts coming loose after tyre repair, incorrect tyre pressures or tracks rolling off drive sprockets)**	**Yes**	**D**	**4**	**S**
1.7a	Abrasion **(Bystander moving into the operating range of machine or attachments)**	**Yes**	**D**	**3**	**M**
1.7b	**(Bystander caught in product being moved or tipped)**	**Yes**	**D**	**2**	**L**
1.8	Engulfment **(Bystander caught in product being tipped or attachment zone)**	**Yes**	**D**	**3**	**M**
1.9a	Crushing **(Bystander moving into the operating range of machine or attachments. Operating platform allows the operator to have good forward and rear visibility)**	**Yes**	**D**	**3**	**M**
1.9b	**(Unit tipping or rolling over in steep/uneven terrain – designed to be operated on a relatively level surface. Avoid travelling across slopes. Low centre of gravity)**	**Yes**	**D**	**5**	**H**
1.9c	**(Wheel nuts coming loose after tyre repair, incorrect tyre pressures or tracks rolling off drive sprockets)**	**Yes**	**D**	**4**	**S**
1.9d	**(Uncontrolled movement if bucket overloaded or hydraulic/mechanical failure, unit not fitted with hose burst protection)**	**Yes**	**D**	**4**	**S**
1.10	Shearing **(Bystander moving into the operating range of machine or attachments. Operating platform allows the operator to have good forward and rear visibility)**	**Yes**	**D**	**4**	**S**
1.11	Tearing **(Operator locating attachments for connecting to base loader)**	**Yes**	**D**	**3**	**M**
1.12	Asphyxiation **(Not to be used indoors without adequate ventilation)**	**Yes**	**E**	**2**	**L**
1.13	Slips, Trips **(Good access to operators platform – Care to be exercised when stepping on/off of operators platform)**	**Yes**	**D**	**3**	**M**
1.14	Falls **(Operator incorrect entry/egress from operating platform. Low platform height)**	**Yes**	**D**	**2**	**L**
1.15	Falling Objects **(Product falling out of bucket impacting bystanders. Low lift and unit has operator visibility)**	**Yes**	**D**	**2**	**L**

1.16	Expelled Parts **(Bystander through the use of attachments)**	**Yes**	**D**	**3**	**M**
2	**Plant in its current or intended state has the potential to create a hazardous condition due to:**				
2.1	Pressured Content **(All hydraulic couplings to only be connected / disconnected with engine off and pressure released. Burst hydraulics line – limited exposure to lines when on operators platform– never attempt to locate sources of hydraulic fluid leaks with machine running)**	**Yes**	**C**	**3**	**S**
2.2	Explosion **(No smoking around machine in particular the battery and fuel system, ensure unit is switched off during re-fuelling)**	**Yes**	**D**	**2**	**L**
2.3	Radiation	No			
2.4	Vapour **(Operators is only to refuel in a well ventilated area – Diesel and unleaded fuel)**	**Yes**	**E**	**3**	**M**
2.5	Dust **(Open operators platform – Appropriate PPE required to minimise hazard in terms of Employers / Owners SWP)**	**Yes**	**D**	**3**	**M**
2.6	Moisture **(Open operators platform – Appropriate PPE required to minimise hazard in terms of Employers / Owners SWP)**	**Yes**	**D**	**3**	**M**
2.7a	Gases **(Exhaust directed forward to the LHS away from the operator. Unit not to be operated in confined spaces)**	**Yes**	**D**	**2**	**L**
2.7b	**(When refueling the petrol engine variant)**	**Yes**	**D**	**3**	**M**
2.8	Fire	No			
2.9	Vibration **(Dingo platform is not fitted with suspension – Slow speed use reduces fatigue risk)**	**Yes**	**D**	**2**	**L**
2.10	Electricity	**No**			
2.11	Friction **(All attachments are to be operated as pre Manufacturers Operation guide. Use of attachments to be controlled by Employer/Owner SWP)**	**Yes**	**D**	**2**	**L**
2.12	Ice Formation	No			
2.13	Laser Beams	No			
2.14a	Hot and Cold Parts **(Engine when checking, do not attempt to open hot radiator or hydraulic tank, perform engine fluid level checks when cold. Care is to be taken to ensure that the machine is cold before undertaking any mechanical or hydraulic maintenance)**	**Yes**	**E**	**2**	**L**
2.14b	**(Inadvertent impact with exhaust outlet to the LHS)**	**Yes**	**D**	**3**	**M**
2.15	Temperature Extremes **(User to be controlled by Employer / Owner SWP)**	No			
2.16	Noise **(Operator to wear appropriate hearing PPE as per Employer/Owner SWP)**	**Yes**	**D**	**2**	**L**
		Yes / No / N/A			
3	Manual handling requirements have been assessed as acceptable **(Employer/Owner assessment required for attachments)**	N/A			
4	Repetitive, forceful, awkward, sustained movements have been minimised/eliminated	Yes			
5	The current guard (s) and their condition are adequate for this plant **(Unit designed for application)**	Yes			
6	Is the guarding appropriate for all work requirements **(Unit designed for application)**	Yes			
7	Operator controls are located for ease of use by operators	Yes			
8	Operator controls are identified and marked appropriately	Yes			
9	Emergency stops are clearly marked **(Ignition key. Plant movement will cease when controls are released)**	Yes			
10	Emergency stops are located at the most likely place (s) for emergency use	Yes			

11	The power source of the plant has been designed, constructed, installed, protected, maintained as to minimise the risk of harm to employees **(Unit maintained as per Section 6)**	Yes			
12	There is provision to lock out the plant, and dissipate energy **(Battery isolator fitted)**	Yes			
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 **(Environmental lighting may provide sufficient lighting for non-daylight operation)**	**No**	**E**	**1**	**L**
17	Noise levels have been assessed as below 85dB(A) **(Operator to wear appropriate hearing PPE as per Employer/Owner SWP)**	**No**	**D**	**2**	**L**
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)**	N/A			
20	There is provision for safe cleaning of this plant	Yes			
21	Safe access to areas to be cleaned has been provided	Yes			
22	There is provision for easy and safe scrap removal	Yes			
23	The plant has the potential to jam/block **(Mechanical/hydraulic failure when loader arms elevated. Jammed drive chain)**	**Yes**	**D**	**4**	**S**
24	A safe system of work has been established to remove jam/blockage **(Only trained personnel should attempt to repair mechanical jam or elevated arms if they become jammed. Employer/Owner responsibility)**	Yes			
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	Yes			
27	Safe systems of work have been established for hazards associated with any necessary maintenance of the plant **(Service agent responsibility)**	Yes			
28	The rigidity and stability of the plant and supporting structure is adequate **(Providing unit is operated within gradeability limits and rated operating capacities of attachments are respected – Operators are to be aware of the rated machine WLL)**	Yes			
29	The environment in which the plant is situated has been assessed for its interrelationship with this plant as acceptable **(WZTM controls in place to keep bystanders at safe distances)**	Yes			
30	Ventilation and/or other air flow needs are adequate **(Unit not to be operated in confined spaces due to carbon monoxide build-up without adequate ventilation – Employer/Owner assessment required)**	Yes			
31	Static electricity hazards have been assessed and controlled	N/A			
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	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">1.1
1.2
1.3a
1.6a
1.7a
1.8
1.9a
1.9d
1.10
1.16
2.4
2.7b
2.14b
23</td><td rowspan="4">Moderate</td><td rowspan="4">Significant</td><td rowspan="4">High</td><td rowspan="4">Hazard
Bystander inadvertent involvement with machine, load being shifted or through the use of any attachments fitted.
Controls
Operators to analyse the area for operation prior to undertaking any pre-operational checks and commencing job. Operation of the plant is to occur only within a designated Work Zone Traffic Management area, with bystanders kept away from the machine when in operation.

Operator to attach and use any attachments only as outlined with the Operators manual. Operators must be trained and be experienced with the machine controls and use of the attachments prior to use of the machine. Refer to the Operators manuals for detailed safety and operational instruction prior to operation. All machine refueling must only occur within a well ventilated WZTM area.

Bystanders are to keep clear of working machine and attachments. Minimum bystander clearances are to be maintained. Operator is not to lift or move the bucket or any attachment above any person.

The operator shall be vigilant when in proximity to the exhaust outlet exposed to the RHS of the base machine, as inadvertent impact may cause injury. The operator is to only access the controls whilst safely and securely located on the rear operator platform. When in use, the operator is to ensure the unit is deployed on relatively level ground and the operation is undertaken as per the manufacturers' guidelines, with the machine and attachment WLL to be respected at all times.

In the advent of a hydraulic or mechanical failure with the loader arms raised, the operator is to not attempt to lower unless suitably trained. Only trained personnel should attempt to repair a hydraulic or mechanical failure.
Revised Risk Assessment
With the above controls in place the risk is considered to be controlled.</td><td>Action Required</td><td colspan="3">Employ controls. Consider inclusion within a Safe Work Procedure (SWP).</td></tr>
<tr><td>Responsible Person</td><td>Employer/Owner/Operator</td><td>Due Date</td><td>As required</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>

1.3b 1.6b 1.9b	Significant	High	Hazard Unit rollover in steep or uneven terrain, or through over loading of the base machine and misuse of any attachment. Comments Each variant may have differing Working Load Limits (WLL) and each digging or carrying attachment should also have a separate WLL affixed. Controls Operators to analyse the area for operation prior to commencing job. Operation of the loader is to occur only within a designated Work Zone Traffic Management area and on relatively level ground. Under no circumstances should the operator exceed the unit's Rated Operating Capacity (ROC) or Working Load Limit (WLL) as affixed to the base plant or individual attachment. Operators are to be aware that that different ground conditions can affect the ROC. Follow the basic rule of travelling straight up and down a slope, keep the bucket/attachment as low as possible, avoid turning on slopes. Revised Risk Assessment With the above controls in place the risk is considered to be controlled.	Action Required	Employ controls. Consider inclusion within a Safe Work Procedure (SWP).		
				Responsible Person	Employer/Owner/Operator	Due Date	As Required
				Actioned by: (Name & Date)			
				Verified by: (Name & Date)			
2.1 2.5 2.6	Moderate	Significant	Hazard Operator exposure to pressurised content or environmental risk. Comments This type of loader has no suspension and operators are exposed to the environment. Controls Operators are to wear appropriate PPE and have frequent rest breaks as per Employer/Owner SWP. All hydraulic couplings are to have pressure released before attempting to connect or disconnect lines. Machine use is to be controlled by Employer/Owner SWP and operating policies. Revised Risk Assessment With the above controls in place the risk is considered to be controlled.	Action Required	Employ controls. Consider inclusion within a Safe Work Procedure (SWP).		
				Responsible Person	Employer/Owner/Operator	Due Date	As Required
				Actioned by: (Name & Date)			
				Verified by: (Name & Date)			

1.6c 1.9c 1.16	Moderate	Significant	Hazard Falling and expelled objects can present a hazard to operators, bystanders and other road users. Comments The base loader can either be supplied with tracks or wheels. No storage facility exists on the machine. Controls Operator to ensure that the mini loader and attachments are safely and correctly attached to the machine as per Manufacturers instruction. Prior to use, the operator shall ensure that all attachments are safely and securely affixed as detailed within the Operators manual. Tracks and wheel nuts are to be visually checked prior to operation and physically checked after replacement of tracks or when a wheel has been removed for maintenance as per the manufacturer's recommendations. Revised Risk Assessment With the above controls in place the risk is considered controlled.	Action Required	Employ controls. Consider inclusion within a Safe Work Procedure (SWP).		
				Responsible Person	Employer/Owner/Operator	Due Date	As Required
				Actioned by: (Name & Date)			
				Verified by: (Name & Date)			
1.4b 1.11 1.13	Moderate		Hazard Stretching, tearing and slipping when setting up and using the plant. Comments The loader can be fitted with a variety of attachments that may be heavy. Controls Operators are to wear PPE when setting up the plant for use and shall exercise care when locating attachments for machine connection, with all attachment use to be conducted strictly as per Employer/Owner SWP. Before accessing operator platform, the operator shall ensure that boots are clear of debris and mud. Machine use is to be controlled by Employer/Owner SWP and operating policies. Revised Risk Assessment With the above controls in place the risk is considered to be controlled.	Action Required	Employ controls. Consider inclusion within a Safe Work Procedure (SWP).		
				Responsible Person	Employer/Owner/Operator	Due Date	As Required
				Actioned by: (Name & Date)			
				Verified by: (Name & Date)			

SECTION 6: CONTROL MEASURES AND TRAINING

Control Measures

Pre-Operation	Prior to any operations the operator/supervisor is responsible for conducting a Safe Work Method Statement (SWMS) or Job Site Assessment (JSA). This is to include but not limited to, the suitability of this piece of plant to integrate and complete the required task. Complete familiarisation of the Operators Manual and all systems shall be considered Mandatory.
General Operation	The unit is intended for relatively flat ground deployment only. Appropriate PPE to be worn by the operator.
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, WH&S Act (SA), WH&S Regulations (SA), Road Traffic Act 1961 and internal Safe Work Procedures.
Attachments	The unit has the capacity to be fitted with a variety of attachments. Consultation with the manufacturer regarding suitability shall be considered mandatory. Only OEM, or OEM recommended attachments should be used with the plant. Each attachment may require an additional Risk Assessment to be carried out and/or a revision of this document. Complete familiarity with the attachment/s Operation Manual/s shall be considered mandatory prior to operation. Different attachments may impact on current Work Zone Traffic Management paradigms.
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:	
Competency Assessed Skills:	Safe Work SA approved industry training course (E.g. Construction Industry Training Centre or equivalent).
General Training Instruction:	On the job training by qualified Operator
Experience:	As appropriate and assessed (as above)
Safe Work Procedure (s):	To be developed by the Employer/Owner

SECTION 7: PLANT INSPECTIONS, MAINTENANCE AND TESTING

Inspection, Maintenance and Testing Requirements	Frequency
Manufacturers Operator and Service manuals as supplied with the unit	Refer Operator Manual
Servicing and Maintenance	As per Manufacturers guidelines
Wheel nut tension	Visual Inspection – Daily
	Physical Inspection - Monthly

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