HAZARD AND RISK ASSESSMENT OF PLANT SUPPLEMENT

Prepared for Liebherr Australia

Liebherr LTM 1250-6.1

SERIAL#: 070983

THE CONTENTS OF THIS FOLIO RELATE TO THE ABOVE MENTIONED CRANE ONLY AND IS NOT TRANSERRABLE TO ANY OTHER ITEM OF PLANT.

PREAMBLE

Liebherr understands and accepts the obligation to protect the health and safety of persons from hazards arising from plant and systems of work associated with plant. Liebherr has adopted the National Standard for Plant [NOHSC: 1010(1994)] and those provisions contained within that apply to the design, manufacture and supply of plant, and the use of plant in the workplace.

The information provided in this document is a summary of information sourced from the manuals provided by Liebherr (the designer/manufacturer), the experience of technical personnel from Liebherr and industry consultants. Whilst potential hazards (including the sources of potential hazards) and risk control precautions should be observed during operational and maintenance activities, all persons must fully read, understand and comply with the operation and maintenance manuals prior to use of plant.

USERS MUST REFER TO THE MANUFACTURERS OPERATING INSTUCTIONS. FAILURE TO FOLLOW INSTRUCTIONS & WARNINGS AS CONTAINED IN THE MANUFACTURERS OPERATING INSTUCTIONS COULD RESULT IN DAMAGE TO THE MACHINE, INJURY OR DEATH.

1. Purpose of plant

This Liebherr Crane has been designed for the following uses:

- Vertical lifting and lowering of free and non-adhered loads, whose weights and centre of gravity are known.

Non Intended Use:

- Working outside crane configurations, permissible projection radii and slewing ranges according to the Load Chart.
- Crane configurations and safety conditions as outlined within Operating Instructions must be observed.
- Operators shall not operate plant under the influence of alcohol or illicit substances, or whilst taking any medication with known side effects.

Non adherence is considered as misuse.

2. Registration, Transport and Storage

Plant Item:	
Plant ID:	
Manufacturer	LIEBHERR
Model	LTM 1250-6.1
Year of Manufacture	2013
Attachments	
Serial No.	070983
Supplier	
Design Registration	CR 6-140941/10
Engine	
Make/Model (kg)	LIEBHERR / D-9508 A7 & D-934L A6
Displacement (litres)	
Power kw/(hp)	450 kW/612 hp & 180 kW/
Fuel	Diesel
Dimensions / Weights	
Height Cab (mm)	4300
Length (mm)	24949
Width (mm)	3000
Operating Weight (kg)	
SWL / Rated Capacity	250 tonnes
Turning Circle	
Boom Length	72 m
No. Boom Sections	6-section telescopic boom
Capabilities	
Electrical Power Supply	24 Volt D.C
Operating Electrical Supply	

3. Installation and Commissioning

Refer to Operators Instruction Manual

4. Plant Operation

Refer to Operators Instruction Manual

All users and operators of this mobile crane shall be required to hold a relevant certificate of competency prior to operation of the crane unless they are undergoing supervised and/or accredited training or are subject to transitional arrangements of the National Occupational Health and Safety Certification Standard for users and operators of industrial equipment [NOHSC:1006(2001)].Certificates must be issued by a certifying authority recognised throughout Australia subject to the conditions of this national standard

5. Inspection, Testing and Maintenance

Refer to Operators Instruction Manual

6. Plant Risk Assessment

Before work is carried out at each site, it is recommended that additional assessment of risks be carried out by the user of the plant. This assessment should consider each different work environmental conditions that may affect the risk when using the plant or equipment. Risk assessments must consider:

Operation outside of normal conditions

- Cleaning
- Non Standard Use
- Break down and repair
- Maintenance
- Emergency Situations

The following risk ranking criteria has been used to assess the level of risk

D	**Danger**	Serious situation which will lead to death or serious injury
W	**Warning**	Dangerous situation, which can lead to death or serious injury
C	**Caution**	Dangerous situation, which can lead to slight or medium grade injuries
A	**Attention**	A Dangerous situation, which can lead to property damage

Users must refer to Manufacturers Operating Instructions Parts 1 and 2 as provided when undertaking crane operations.

Hazard	*Risk*	*Risk Controls in Place*	*Operating Instruction Reference*	*Notes**
Plant not fit for purpose	*Damage to plant/personnel*	*Plant has been designed and measures incorporated to minimise risks to health and safety associated with the use of the plant*		*Users may seek further guidance from the following.* *National Standard for Plant [NOHSC: 1010 (1994)].*
Persons using plant unaware of hazards associated with plant	*Injury to personnel*	*Signs/decals noting hazard and or required control are placed in locations on crane where hazardous condition exists.* *Signs must be kept complete and legible. Damaged signs to be replaced immediately.*	*Section 2 Safety*	
Persons using plant without sufficient instruction, training, and information	*Injury to personnel/Damage to plant equipment and bystanders*	*All operators must hold an appropriate endorsed certificate of competency prior to operating this mobile plant. Operator must read, understand and comply with the Manufacturers Operating Instructions Parts 1 and 2 as provided* *Operator must familiarise themselves with Liccon computer system, load weights and required configurations of crane components*	*Section 2 Safety* *Section 4 Operation of crane superstructure*	*Users may seek further guidance from the following.* *National Occupational Health and Safety Certification Standard for users and operators of industrial equipment [NOHSC:1006(2001)]*

Failure to plan for crane operation relative to job/task	*Damage to plant/Collapse of plant*	*Crane operator to obtain necessary information relating to task and required auxiliary equipment required for task before commencement of activities*	*Section 2 Safety*	
Access and egress from operators cabin	*Fall from height*	*All persons accessing operators cabin should use cab retractable /extendable step for the purpose of access and egress*	*Section 2 Safety*	
Pre- operational safety check not performed prior to start up operations	*Plant malfunction*	*Prestart check to be performed prior to commencing crane operations. Prestart to be performed by competent person.* *Operator must be familiar with requirements for starting up the crane.*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 7 Service and Maintenance*	*NOTE 1 Users may seek further guidance from the following.* *AS 1418.5 Cranes, hoists and winches – Mobile Cranes* *AS2550.1 Cranes, hoists and winches – Safe use- General Requirements* *Supplementary material should be consulted where referenced within*
Burns from contact with hot fluids/parts during pre-start and or unscheduled maintenance activities	*Burns*	*Engine must be cold whilst undertaking pre-start checklist* *Operator must be familiar with requirements for starting up the crane.* *Persons should be familiar with relevant Material Safety Data Sheet (MSDS) for*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 7 Service and Maintenance*	*Users may seek further guidance from the following.* *National Code of Practice for the Control of Workplace Hazardous Substances*

		working with Hazardous Substances for the appropriate Personal Protective Equipment to be worn and disposal requirements		*[NOHSC:2007(1994)]*
Acid splash or fumes from batteries during prestart and or maintenance activities	*Burns/Inhalation*	*Batteries are enclosed under cover.* *Persons should be familiar with relevant Material Safety Data Sheet (MSDS) for working with Hazardous Substances for the appropriate Personal Protective Equipment to be worn and disposal requirements*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 7 Service and Maintenance*	*Users may seek further guidance from the following.* *National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC:2007(1994)]*
Machine is started in an unventilated area.	*Illness to personnel*	*Instruct the operator to start the machine in a well-ventilated area.*	*Section 2 Safety* *Section 4 Operation of crane superstructure*	*Users may seek further guidance from the following.* *Safe working in a confined space AS 2865 – 1995*
Crane carrier is not driven in a safe manner	*Damage to plant* *Striking/Crushing Injury*	*Certified and competent plant operator to travel crane*	*Section 2 Safety*	*Users may seek further guidance for compliance with relevant Statutory Legislation, Regulations and Guidance Materials relating to Heavy Vehicles and Mobile Cranes on Public Roads*
Suspension/axle locking system not set for travel mode	*Damage to plant*	*Certified and competent plant operator to travel crane*	*Section 2 Safety*	*Refer note 1*

Exceeding axle load limit resulting in reduced braking performance	*Damage to plant* *Striking/Crushing Injury*	*Do not exceed specified axle load*	*Section 2 Safety*	*Users may seek further guidance for compliance with relevant Statutory Legislation, Regulations and Guidance Materials relating to Heavy Vehicles and Mobile Cranes on Public Roads*
Field of vision blocked by hook block	*Traffic accident*	*Hook block to be secured so as to not impair field of vision. Hook block may only be transported at front of plant if permitted by current driving conditions and if appropriately lashed*	*Section 2 Safety*	
Crane travelled in area where space is limited/ travelling up or down ramps	*Crushing/Striking Injury*	*Dogman to act as spotter for operator*	*Section 2 Safety*	*Refer note 1*
Damage to crane, other plant or personnel whilst turning or being driven in reverse	*Crushing Injury/Impact injury*	*Crane is fitted with acoustic and visual warning devices* *Driver should use all warning devices when in travel mode. Reversing of vehicles should be minimized. Where reversing is required, spotter is to remain in visual contact with the operator at all times* *Reversing shall be undertaken at slow driving (manoeuvring speed)*	*Section 2 Safety*	*Refer note 1*

Attachments from crane and auxiliary components may be loosened during transport and from prior use of crane	*Striking/Impact injury*	*Locks, spring pins and retaining pins must be attached in such a way that they cannot loosen by themselves during travel.* *Integrity of component should be checked prior to and post travel.*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 7 Service and Maintenance*	*Refer note 1*
Crane positioned on ground with insufficient load bearing capacity	*Crushing injury / unexpected movement of crane resulting in topple of crane*	*Support or drive crane only on ground with required load-bearing capacity* *Before commencing work, obtain as much information about the ground conditions at the work site as possible. This may include information from previous work at the site, results of test bores, natural features and surface drainage*	*Section 2 Safety*	*Refer note 1* *Users may seek further guidance from the following.* *CICA*
Crane positioned in close proximity to slopes/excavations	*Crushing injury / unexpected movement of crane*	*Crane to be positioned in accordance with permissible ground pressures and safety distances* *Note - Pressure must be evenly distributed over the base surface using strong materials for support bad bases*	*Section 2 Safety*	*Refer note 1*
Exposure to surfaces i.e. hot components (Exhaust systems) whilst manoeuvring around plant	*Burns*	*Allow components to cool off before touching them. Proceed with caution when near heated crane components*	*Section 2 Safety*	*Refer note 1*
Persons stepping on or placing equipment on crane surfaces not	*Damage to crane*	*All persons to observe Crane decals as placed on crane. (Damaged signs to be replaced immediately). Use walkways where*	*Section 2 Safety*	*Refer note 1*

designed for load bearing		*designated*		
Failure to set up operators seat to suit user dynamics prior to commencing works	*Ergonomic Injury/ Failure to operate crane in safe manner*	*Adjustable operator seat fitted. Seat to be adjusted to suit operator. Controls must be able to be hand held within easy reach of operator* *The alignment of the door opening, the seat edge and the steering column allows for ease of movement in and out of the seat.*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 7 Service and Maintenance*	*Refer note 1* *Users may seek further guidance from the following.* *National Code of Practice for the Prevention of Musculoskeletal Disorders from Performing Manual Tasks at Work (2007)*
Loss of traction on worn steps and walkways	*Slips/trips falls*	*Always move on crane depending on circumstances* *Maintain three point of contact/use of handrails when manoeuvring on crane*	*Section 2 Safety*	*Refer note 1*
Insufficient horizontal alignment (crane positioned on incline)	*Crushing injury / unexpected movement of crane*	*Crane shall be horizontally aligned before starting crane operation* *Crane must not be adjusted whilst holding any load*	*Section 4 Operation of crane superstructure*	*Refer note 1*
Instability /lack of load support from sliding beams/outriggers	*Crushing injury / unexpected movement of crane*	*Crane to be supported in accordance with load charts. Sliding beams and support cylinders must be matched and fully secured by pins prior to crane operating with load*	*Section 4 Operation of crane superstructure* *Section 5 Equipment* *Section 6 Additional Equipment*	*Refer note 1*

Persons standing in crush zone (counterweight land point)	*Crushing injury/Impact*	*Persons landing counterweight shall remain clear of drop and placement zone* *Ensure slewing platform does not collide with raised counterweight frames when turned*	*Section 4 Operation of crane superstructure* *Section 5 Equipment*	*Refer note 1*
Incorrect placement sequence of counterweight/ additional counterweights added to plant	*Crushing injury / unexpected movement of crane*	*Counterweights shall be installed in accordance with the load chart.* *Ensure locking pins are secured*	*Section 4 Operation of crane superstructure* *Section 5 Equipment*	*Refer note 1*
Crane located where overhead wires and/or conductors are in slewing range	*Electric Shock*	*Operator to maintain distances and all other requirements as per relevant Statutory Legislation and Regulations relating to Overhead powerlines* *Load limiter to be utilised when fitted*	*Section 2 Safety*	*Users may seek further guidance for compliance with relevant Statutory Legislation, Regulations and Guidance Materials relating to Electricity and safe approach distances*
Crane located where aircraft may strike extended boom	*Impact Damage*	*Air place warning provided. Light should be assembled on boom head and turned on*	*Section 2 Safety*	*Users may seek further guidance for compliance with relative Aviation Authority for safe distances and permits if required*
Work carried out on crane superstructure or boom during assembly/disassembly or maintenance	*Fall from height*	*Suitable aids must be used during assembly/disassembly, inspection and maintenance work* *If components are fitted with railing, ensure railings are position and secured as prescribed*	*Section 2 Safety*	*Refer note 1* *Users may seek further guidance from AS 1891.4 Industrial fall-arrest systems and devices – Selection, use and*

				maintenance for the selection of an appropriate fall-arrest system.
Reeving/unreeving hook block	*Fall from height (slip/trip/fall)/* *Cable lash*	*Competent person to use suitable aids when connecting rope socket to hoist rope (i.e. fly fitted.* *Ensure the hook block is safely positioned so as to ensure the hook block does not tip over during unreeving. Do not over spool hoist cable.* *Note: reeving process must be in accordance with Operating instructions*	*Section 4 Operation of crane superstructure*	*Refer note 1* *Users may seek further guidance from AS 1891.4 Industrial fall-arrest systems and devices – Selection, use and maintenance for the selection of an appropriate fall-arrest system*
Failure to start up and operate crane in a safe manner	*Damage to crane /Crane overturn, injury to personnel*	*Crane operator to ensure safety devices (Warning detection systems) are functional and operational* *Crane shall be aligned horizontally with sufficient load bearing capacity on level surface. A sight level indicator has been provided* *Hook block or load hook shall be correctly reeved. Hook block to be attached vertically over centre of gravity of load to be lifted. Ensure hoist limit switch weight installed*	*Section 4 Operation of crane superstructure*	*Refer note 1*

Incorrect installation of section components	*Crane Collapse/Falling Load*	*Combinations of sections and rods must be as per operations manual or assembly drawings.* *Operator must consider site layout and conditions when configuring requirements for installation*	*Section 4 Operation of crane superstructure* *Section 5 Equipment*	*Refer note 1*
Installing components (Jib sections)	*Fall from heights*	*Personnel must be secured with appropriate aids to prevent fall from heights. All assembly work must be carried out with aids such as lift platforms. If work is unable to be carried out using suitable aids, persons must be attached to fastening points.* *Operator must consider site layout and conditions when configuring requirements for installation*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 5 Equipment*	*Refer note 1*
Falling crane sections	*Falling objects / crushing injury*	*Installation of components (jib) must be completed in accordance with Manufacturers Instruction manual. All sections must be appropriately pinned and (and unpinned) where appropriate. Guy rods must be removed or hung as required* *Non adherence will result in sections folding over or rolling on ground.* *Operator must consider site layout and conditions when configuring requirements for installation*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 5 Equipment*	*Refer note 1*

Erection (or taking down) boom	*Overload/Toppling crane/Crushing injury*	*Refer crane operating instructions. Boom must only be erected or taken down in accordance with Manufacturers Instruction manual and charts provided within.* *No person shall stand under section components or within entire danger zone during the erection and take down procedure. Liccon overhead protection must be set.*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 5 Equipment*	*Refer note 1*
Cable break during installation of hoist cables	*Crushing injury*	*Competent person must ensure that no slack cable forms. The cable must run on the inside of the frame formed by the guying.*	*Section 2 Safety* *Section 4 Operation of crane superstructure* *Section 5 Equipment*	*Refer note 1*
Persons may be injured during initial and ongoing slewing operation	*Crushing injury*	*Short warning signal to be provided before starting a slewing movement* *Visual check for people or objects in danger area prior to operation and ensure controlled by means of soft or hard controls (barricades/work instruction)* *NOTE: maximum slewing speeds must be set according to load charts, dependent on boom length.*	*Section 4 Operation of the crane superstructure*	*Refer note 1*

Incorrect selection of lifting gear for task	*Falling Object/Crushing Injury*	*Crane operator to obtain necessary information relating to task and required auxiliary equipment required for task before commencement of activities*	*Section 2 Safety*	*Refer note 1*
Arms and legs may be crushed or severed between rope pulley and rope or if rope pulley rotates	*Crushing Injury*	*Ropes or rope pulleys must not be touched during operation.* *Safe distances must be maintained at all times*	*Section 5 Equipment*	*Refer note 1*
Lifting gear may fail through breakage of wire or rope deformation or wear and tear of chains/synthetic webbing slings	*Falling objects*	*Ropes must be checked before assembly and at regular intervals by a competent operator* *Rope pulleys must be checked before placing the rope hoist* *Worn or damaged rope pulleys must be replaced*	*Section 5 Equipment* *Section 8 Inspections of cranes*	*Refer note 1*
Falling objects resulting from defective rope winches (manual)	*Crushing injury*	*Check manual rope winches and rope for external and functional damage. Ensure at least two cope coils remain on drum. Personnel and objects must remain free of movement range of components supported by winch*		*Refer note 1*
Persons could be injured if the load meter becomes inaccurate due to a worn rope.	*Falling object*	*Competent person to inspect the hoist rope and when they are worn in excess of 7% of the original diameter , corrective and preventive action to be taken immediately*	*Section 5 Equipment*	*Refer note 1*

Persons in load/placement zone	*Crushing injury*	*Operator to visually confirm no persons are in danger zone* *Operator to exercise extreme caution when lifting load* *When auxiliary winch in use, winch not to be used for lifting loads*	*Section 4 Operation of superstructure*	*Refer note 1*
Uncontrolled or swaying load	*Crushing /striking injury*	*All crane movements to be executed slowly and delicately.* *Guide ropes to be used to manage load and prevent swaying*	*Section 4 Operation of superstructure*	*Refer note 1*
Overloading hoisting gear or hoisting cable whilst using two hooks	*Falling object*	*Overload protection to be set to the smaller of the two hooks* *Boom must not be lowered when both hooks are loaded*	*Section 4 Operation of superstructure*	*Refer note 1*
Exceeding shut off limits function	*Crushing injury/Crane collapse*	*Crane operation with activated function "Exceedance of shut off limits of LICCON overhead protection is prohibited*	*Section 4 Operation of superstructure*	*Refer note 1*
Load may exceed the rated load at a specific working radius.	*Crushing Injury / Crane Overturn*	*A load meter is installed with an alarm system attached. Operators must not exceed relative working radius.*	*Section 4 Operation of superstructure*	*Refer note 1*
Persons stepping into the path of the moving machine	*Crushing /striking injury*	*Audible Warning Devices installed*	*Section 2 Safety*	*Refer note 1*

		Visible warning device installed *Rotating flashing lights must be operational at all times. Air horn to be blasted on first use of machine*		
Crane hoist rope is overloaded	*Falling Object*	*Rated load indicator and limiter provided*	*Section 4 Operation of superstructure*	*Refer note 1*
Wire rope running through the pulley may dislodge sheave guard	*Falling Objects*	*Rope retainers have been installed on all sheaves*	*Section 5 Equipment*	*Refer note 1*
Hook block may collide with boom head	*Crushing injury/falling load*	*Crane fitted with hoist limit switch* *Function of switch to be checked before every crane application. Anti 2 block to be fitted*	*Section 4 Operation of crane superstructure* *Section 8 Inspection of cranes*	*Refer note 1*
Load/rigging gear falling due to hoist rope failure	*Crushing injury /falling object*	*Rated pull force of hoist gear must not be exceeded*	*Section 5 Equipment*	*Refer note 1*
Rope failure due to wear and tear	*Crushing injury / falling object*	*All ropes to be visually inspected on a daily basis*	*Section 5 Equipment* *Section 8 Inspection of cranes*	*Refer note 1*
Separation of wedge type rope fittings	*Crushing injury / falling object*	*Wire clips to be fitted on all ropes above wedge type fittings*	*Section 5 Equipment* *Section 8 Inspection of cranes*	*Refer note 1*

Dogman/Rigger unable to be clearly seen by operator during operation/slewing of crane	*Crushing/Striking Injury*	*Hi visibility garments to be worn whilst working around crane* *Flashing light must be operational to alert bystanders of crane in operations* *Access to working area (inclusive of slewing range) to be restricted to Dogger/Rigger only by means of soft or hard controls (barricades/work instruction)*	*Section 2.Safety*	*Refer note 1*
Lightning strike	*Electric shock*	*Work to be ceased. Load to be placed down and boom retracted where possible*	*Section 2 Safety*	*Refer note 1*
Loads falling on operators cabin	*Falling objects*	*Operators' cabin enclosed. Safety Glass provided on roof*	*Section 4 Operation of crane superstructure*	*Refer note 1*
Cuts/burns to hands whilst carrying out rigging activities	*Hand Injuries*	*Hand protection – Rigging gloves to be worn when handling ropes and winches*	*Section 4 Operation of crane superstructure*	*Refer note 1*
Use of damaged/unsecured ladder for rigging activities	*Fall from height*	*Ladders to be installed as per Operators Manual. Visual inspection of ladders required before use/transport. Damaged ladders to be replaced immediately. Safety decals to be adhered to*	*Section 2 Safety*	*Refer note 1*
Uncontrolled movement of loads	*Crushing/striking injury*	*Load to be kept in sight. Suitable means of communication to be determined between*	*Section 4 Operation of crane superstructure*	*Refer note 1*

		operator and crew prior to lifting of load. *No person shall stand under load.* *Sun visor fitted to crane to minimise glare/ vision impairment from sunlight*		
Overload of crane	*Crushing injury / Crane Overturn*	*Overload protection sensors fitted.* *Operator to determine approximate weight, before determining lift using load chart. overload protection must be adjusted to the current configuration of the crane (Weight of the load, including hook and attachment must be considered)* *If sensors fail, manually determine weight to ensure safe operation of crane if crane in motion.*	*Section 4 Operation of crane superstructure*	*Refer note 1*
Overload during dual lift by multiple cranes	*Crane overload/crushing injury*	*Individual cranes shall be loaded in accordance with the permissible load capacities. Angular pull is prohibited*	*Section 4 Operation of crane superstructure*	*Refer note 1*
Uncontrolled movement of loads due to wind factor	*Crushing/Striking injury*	*Wind Velocity Meter fitted. Wind chart provided Stop work when the velocity of the wind exceeds 10m/sec. Crane shall only be operated in accordance with maximum permissible wind speeds according to wind chart. Boom to be retracted where weather conditions are unclear*	*Section 4 Operation of crane superstructure*	*Refer note 1*

Uncontrolled movement of boom during erection/dismantling activities	*Crushing/Striking injury*	*Wind Velocity Meter fitted. Wind chart provided* *Erection/dismantling of boom shall not take place where wind speed exceed maximum permissible according to wind chart*	*Section 4 Operation of crane superstructure*	*Refer note 1*
Machine exceeds working radius	*Crushing/Striking injury*	*All works to be carried out within the range of the load chart as supplied, regardless of length of boom installed*	*Section 4 Operation of crane superstructure*	*Refer note 1*
Fall from height during use of emergency exit	*Fall from height*	*Entry aid (ladder) should be obtained prior to operator exiting cabin. Machine should be stationery before cabin is departed*	*Section 2 Safety*	*Refer note 1*
Unexpected movement (closure) of open cab door whilst door in inclined position	*Crushing Injury*	*Hands to remain clear of crush zone. Operator to use caution when opening/closing cabin door*	*Section 2 Safety*	*Refer note 1*
Unexpected movement of crane parked in stationery position during unscheduled maintenance activities	*Crushing Injury*	*Crane shall not be parked on any incline greater than 18 degrees. Parking brake must be applied* *Chocks should be used where vehicle is defectives or where parked on an incline.*	*Section 7 Service and Maintenance*	*Refer note 1*
Maintenance or service activities being undertaken whilst engine running	*Contact with moving parts/hydraulic systems*	*Crane to be isolated from all unauthorised access.* *Isolation system in place must ensure*	*Section 7 Service and Maintenance*	*Refer note 1*

		equipment is identified as being out of service and presenting no risk of danger (i.e. use of danger tag) *Only qualified personnel to undertake mechanical services on plant*		
Falling objects (tools of trade) during maintenance activities	*Falling object*	*No persons shall stand under boom or jib whilst mechanical repairs are carried out and sections mechanically secure from falling*	*Section 2 Safety* *Section 7 Service and Maintenance*	*Refer note 1*
Boom/jib section falling during maintenance activities where unsecured or faulty	*Falling object* *Crushing injury*	*No persons shall stand under boom or jib whilst mechanical repairs are carried out and sections mechanically secure from falling*	*Section 2 Safety* *Section 7 Service and Maintenance*	*Refer note 1*
Change in operating conditions following interruption to crane operations	*Damage to crane/plant or personnel*	*Operating mode settings to be checked and reset if necessary following any interruption to crane operations.*	*Section 2 Safety*	*Refer note 1*
Unauthorised access and operation of unsupervised mobile crane	*Damage to crane/plant or personnel*	*Crane to be under full control of operator at all times whilst crane rigged. Where full control unable to be provided, load to be removed from hook and crane made into safe condition.*	*Section 2 Safety*	*Refer note 1*
Maintenance work involving welding	*Electrical shock*	*Screw clamp of welding unit to be attached on the welding piece to avoid current flow via hoist rope, crane superstructure or crane*	*Section 7 Service and Maintenance*	*Refer note 1*

		chassis. *External supply cables must be in good working order.*		
Tire blow out	*Damage to plant*	*Condition of tyres to be checked during pr-start operations*	*Section 7 Service and Maintenance*	*Refer note 1*
Failure to replace safety ropes used during a previous fall	*Fall from height*	*Safety ropes to be replaced immediately following use.*	*Section 2 Safety* *Section 7 Service and Maintenance*	*Refer note 1*
Failure to inspect/replace anchor points	*Fall from height*	*Anchor points to be inspected as per man manual.*	*Section 2 Safety* *Section 7 Service and Maintenance*	*Refer note 1*
Crane collapsed due to the failure of its slew ring bolts.	*Damage to plant/personnel*	*Annual inspection required. Random bolts are to be examined by a NATA Non Destructive Testing Certificate of Examination to be issued*	*Section 7 Service and Maintenance*	*Refer note 1*
Instrument readings in the cabin are not correct.	*Damage to plant/personnel*	*All load and indicator devices must have frequent inspections testing and calibration by a competent person at frequent intervals not exceeding twelve months apart. Records must be kept in the crane. Instruct the operator to immediately request confirmation of accuracy should any doubt arise.*	*Section 7 Service and Maintenance*	*Refer note 1*

Persons operating in an unlit or poorly lit area	*Crushing/striking injury*	*Lighting provided on boom, platform and sliding beams (outriggers)*	*Section 2 Safety* *Section 5 Equipment*	*Refer note 1*
Operator breathing exhaust fumes during normal operation.	*Atmospheric contaminants*	*A totally enclosed cabin is provided for the operator. Exhaust is directed away from the cabin.*	*Section 2 Safety*	*Users may seek further information regarding waste emissions*
Clothing, gloves, jewellery or hair are drawn in/entangled in Sheaves/ropes	*Entanglement*	*Rope Guides fitted.* *Engine Bay enclosed.* *Signage/decal displayed on danger areas on plant*	*Section 2 Safety* *Section 4 Operation of the crane superstructure*	*Refer note 1*
Working upon or being close to moving mechanical parts while wearing loose fitting clothing.	*Entanglement*	*Open drives are adequately guarded within the machinery house.* *The machinery house has lockable doors. Machinery house doors must be closed and locked before starting engine*	*Section 7 Service and Maintenance*	*Refer note 1*
Fire event on board crane	*Burns/Smoke Inhalation*	*A fire extinguisher has been provided.* *Fire extinguisher to be maintained in operable and serviceable condition*	*Section 2 Safety* *Section 7 Service and Maintenance*	*Refer note 1*
Uneven or slippery work access surfaces on the plant due to fuel leak	*Slips/Trips/Falls*	*The operator shall make daily inspections and have any fuel leaks repaired before continuing operation.*	*Section 2 Safety* *Section 7 Service and Maintenance*	*Refer note 1*

Injury to personnel being carried at height	*Fall from height*	*Personal shall only be carried in workboxes designed to lift and carry personnel* *All work boxes to be designed, constructed and maintained by qualified personnel.* *Each Man Box shall be fitted with a specified rigging bridge that is designed for that box and shall not be used for any other purpose*		*Refer note 1* *Users may seek further guidance material from AS 1418.17-1996 Cranes (including hoists and winches) - Design and construction of workboxes*

References*

NSW	*SA*	*QLD*	*WA*	*Vic*	*National Standards/Australian Standards*
Occupational Health and Safety Act 2000 and Regulation 2001	*Occupational Health Safety & Welfare Act 1986*	*Electrical Safety Act 2002*	*Environmental Protection Act 1996*	*Environment Protection Act 1970*	*National Standard for manual tasks 2007*
Civil Liability Act 2002 and Regulation 2009	*Occupational Health and Welfare Regulations 2010*	*Environmental Protection Regulation 2008*	*Occupation Health and Safety Act 1984 and Regulations 1996*	*Occupational Health and Safety Act 2004*	*National Standard for Licensing persons performing High Risk Work 2006*
Environmental planning and Assessment Act 1979 *(and amendment Act 2008)*	*Electricity Act 1996*	*Environmental Protection (Air) Policy 2008*	*Road Traffic (Licensing) regulations 1975*	*Environment Protection (Vehicle Emissions) Regulations 2003*	*National Occupational health and Safety Certification Standard for users and operators of industrial equipment 2001*
Protection of the Environment Act 1997	*Electricity (General) Regulations 1997*	*Transport Operations (Road Use Management – Driver licensing) Regulation 2007*	*Road Traffic (Vehicle Standards) 2002*	Equipment (Public Safety) Regulations 2007	*AS 2550 (2011 set) Cranes hoists and winches*
National Road Transport Commission Act 1991	*Environmental Protection Regulations 2009*	*Transport Operations (Road Use Management – Fatigue Management) Regulation 2008*	*Road Traffic (Vehicle Standards) Rules 2002*	Road Safety (Drivers) Regulations 2009	*AS 1418 (2009 set) Cranes (including hoists and winches)*
Road Transport (Driver Licensing) Act 1998 and Regulation		*Transport Operations (Road Use Management – Mass,*		Road Safety (Vehicle) Regulations 2009	*AS 2321 2006 Short link chains for lifting purposes*

2008		*Dimensions and Loading) Regulation 2005*			
Road Transport (General) Act 2005 and Regulation 2005 Road Transport (Mass, Loading and Access Regulation 2005)	*Roads and Traffic Act 1961*	*Transport Operations (Road Use Management – Vehicle Registration) Regulation 2010*		*Occupational Health and Safety Act 2004 and Regulations 2007*	*AS 3775 2004 Chains slings - care and use*
Road Transport (Safety and Traffic Management Act 1999) and Regulation 1999		*Transport Operations (Road Use Management – Vehicle Standards and Safety) Regulation 2010*		*Road Safety (Vehicles) Regulations 2009*	*AS/NZS 1554 (2010 set) Structural steel welding*
Road Transport (Vehicle Registration) Act 1997 and Regulation 2007		*Transport Operations (Road Use Management Accreditation and other provision) Regulation 2005*			*AS 1891 2007 Industrial fall-arrest systems and devices*
Workplace Injury Management and Workers Compensation Act 1998		*Workplace Health and Safety Act 1995 and Regulation 2008*			*AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)*
					ISO 12482 Cranes – Condition monitoring

*Information current at time of printing. This information is intended to provide general information. It is not intended to represent a comprehensive statement of requirements to individuals. All users must consider the duty of care principle for the prevention of workplace accidents, injuries and illnesses for their relative State or Territory and regulatory compliance.