# LIFTING AND MATERIALS HANDLING SOP

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME &quot;&quot;: Henk Myburgh</td>
<td>NAME &quot;&quot;: Namakwa Sands</td>
<td>NAME &quot;&quot;:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE &quot;&quot;: 20.09.12</td>
<td>DATE &quot;&quot;:</td>
<td>DATE &quot;&quot;:</td>
</tr>
</tbody>
</table>
1. SCOPE, PURPOSE AND STATUS OF NON-MANDATORY SOP ................................................................. 3
   1.1 SCOPE ........................................................................................................................................... 3
   1.2 PURPOSE ..................................................................................................................................... 3
   1.3 STATUS OF NON-MANDATORY SOP ......................................................................................... 3
2. TERMS AND DEFINITIONS ............................................................................................................... 3
3. RISK MANAGEMENT .......................................................................................................................... 4
4. ASPECTS OF THE SOP ...................................................................................................................... 6
   4.1 GENERAL SAFETY ......................................................................................................................... 6
   4.2 INDUCTION TRAINING .................................................................................................................. 6
   4.3 TRAINING AWARENESS .............................................................................................................. 6
   4.4 PLANNED TASK OBSERVATIONS ............................................................................................. 6
   4.5 REFERENCE TO SPECIFIC WORK INSTRUCTIONS AND PROCEDURES ......................... 6
   4.6 NON-CONFORMANCE .................................................................................................................. 6
   4.7 PERSONAL PROTECTIVE EQUIPMENT .................................................................................... 7
5. DEFINITIONS ....................................................................................................................................... 7
6. FACTORS OF SAFETY ...................................................................................................................... 7
7. TRAINING AND AUTHORISATIONS ................................................................................................ 7
8. SPECIFIC REQUIREMENTS .............................................................................................................. 8
   8.1 MECHANICAL HANDLING ............................................................................................................. 8
   8.2 MANUAL HANDLING ..................................................................................................................... 17
1. SCOPE, PURPOSE AND STATUS OF NON-MANDATORY SOP

1.1 Scope
This SOP is applicable to all Namaqua Engineering employees as well as sub-contractors. This SOP will focus on the adherence to the requirements of the Mine Health and Safety Act 1996 (Act No. 29 of 1996) and Regulations, in order to ensure the safety of all personnel of Namaqua Engineering, handling materials mechanically or manually.

1.2 Purpose
To establish safe working practices for Materials Handling by the establishment of rules and guidelines including the engineering, administrative controls as well as use and wearing of suitable safety equipment. This SOP also will limit use of mechanical lifting equipment to competent persons.

1.3 Status Of Non-Mandatory SOP

1.3.1 This is not a SOP in terms of Section 9(2) and 9(3) of the Mine Health and Safety Act, however it will hold the same status within the mine as a Mandatory SOP as far as implementation and compliance are concerned.

1.3.2 This SOP may be used in an accident investigation / inquiry to ascertain compliance and also to establish whether the SOP is effective and fit for its purpose.

1.3.3 This SOP supersedes all previous relevant SOP.

1.3.4 All Managerial Instructions or recommended Procedures on the relevant topics must comply with this SOP and must be reviewed to ensure compliance.

2. TERMS AND DEFINITIONS

<table>
<thead>
<tr>
<th>TERM</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 SOP</td>
<td>Safe Operative Procedure</td>
</tr>
<tr>
<td>2.2 DMR</td>
<td>Department of Minerals Resources</td>
</tr>
<tr>
<td>2.3 SABS</td>
<td>South African Bureau of Standards</td>
</tr>
<tr>
<td>2.4 Materials Handling</td>
<td>The movement of materials, tools, equipment and other related objects.</td>
</tr>
<tr>
<td>2.5 Manual Handling</td>
<td>The use of human energy to move or position material without the use of mechanical assistance.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME &quot;&quot;: Henk Myburgh</td>
<td>NAME &quot;&quot;: Namakwa Sands</td>
<td>NAME &quot;&quot;:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE &quot;&quot;: 20.09.12</td>
<td>DATE &quot;&quot;:</td>
<td>DATE &quot;&quot;:</td>
</tr>
</tbody>
</table>
2.6 **Mechanical Handling**
The use of power driven or mechanical means to move or position material.

3. **RISK MANAGEMENT**

3.1 Risk Management is the process of:
(a) identifying hazards;
(b) estimation of the potential risk that the hazards present;
(c) considering the effectiveness of the controls that are in place; and taking action to eliminate or control the risk.

3.2 Section 11 of the Mine Health and Safety Act 29 of 1996 (as amended) requires the employer to identify hazards, to assess the Health and Safety risk to which workers may be exposed while they are at work, to record these findings and implement reasonably practicable measures to control the significant recorded risk.

3.3 Refer to NE Risk Assessment on the Fatal Risk: Materials Handling. To assist the Mine with the Risk Assessment, all possible relevant information has been used.

3.4 Refer to SHE Management Standards.

3.5 Refer to Guidelines for the Implementation of Health and Safety Risk Management within NE.

3.6 Refer to index of all current NE Risk Assessments.

3.7 Guidelines for the implementation of Health & Safety Risk Management at the Tshipi Operations:
- Maintain alignment across Mines;
- Identify and communicate Best Practice;
- Ensure effective progress towards attaining objectives.

The objectives and requirements, which are crucial to ensuring an effective Health and Safety Risk Management System, have been identified and form the basis of the following three Guidelines.
A Mine’s Risk Management (RM) process should embrace the core elements of an effective Health and Safety Management System. Many internationally recognised standards outline the requirements of effective management systems. These are based around the fundamental elements shown in the figure on the right.

The essential objectives of the NE RM process, which are addressed by these guidelines and their relationship to the fundamental elements of any effective Health and Safety Management System, are shown below. These relationships demonstrate how a Mine’s RM process can be integrated within any effective Health and Safety Management System and the same time comply with the requirements of these guidelines.
Management Policy & Strategy
- Prepare an effective Health & Safety Policy.

Organising Staff
- Provide an Organisational Structure to co-ordinate the Risk Management Process.
- Provide training to all levels of staff.

Planning & Implementation
- Produce a Risk Assessment plan that covers all operations at the Mine.
- Identify the need for pre-emptive Risk Assessment.
- Ensure widespread participation and involvement in Risk Assessments.
- Undertake suitable and sufficient assessments of risks.
- Communicate information to those exposed to the hazards.
- Implement the management control actions arising from Risk Assessments.
- Review Risk Assessment to verify effectiveness of implemented controls and the residual risk.
- Monitor and review Risk Assessments.

Measuring Performance
- Measure Health & Safety performance (Audit Protocol HOME)
- Changes in Risk Profile

4. ASPECTS OF THE SOP

4.1 General Safety
Refer to Procedure on “General Safety”.

4.2 Induction Training
Refer to Procedure on “Induction Training”.

4.3 Training Awareness
Refer to “Training, Awareness and Competence”.

4.4 Planned Task Observations
Refer to Procedure on “Planned Task Observations”.

4.5 Reference to Specific Work Instructions and Procedures
Refer to the following Procedures:
- “Lifting Tackle”
- “Mobile Cranes”
- “Overhead Cranes”

Delivering and collecting of any article or dangerous substance to and from the mine

4.6 Non-Conformance
Refer to Procedure on “Non-conformance, Corrective and Preventive Action”

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME &quot;&quot;: Henk Myburgh</td>
<td>NAME &quot;&quot;: Namakwa Sands</td>
<td>NAME &quot;&quot;:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE &quot;&quot;: 20.09.12</td>
<td>DATE &quot;&quot;:</td>
<td>DATE &quot;&quot;:</td>
</tr>
</tbody>
</table>
4.7 **Personal Protective Equipment**
Refer to Work Instruction on “Personal Protective Equipment”.

5. **DEFINITIONS**
“Lifting equipment” means any equipment or machine or arrangement of equipment or machines intended or used for the lifting, lowering, suspension, or moving in suspension of any person or load.

“Lifting tackle” means any attachment, including anchoring points, used to Secure lifting equipment or a load to lifting equipment.

“Competent Person” means a person whom:
- Who is qualified by virtue of his knowledge, training skills and
- Is experienced to organize the work and its performance
- Is familiar with the provisions of the act and regulations, which apply to the work to be performed.
- Has been trained to recognize any potential or actual danger to health or safety in the performance of work: or
- Is in possession of the appropriate certificate of competency where the mine Health and Safety Act No 29 of 1996 and the Regulations require such a certificate.

6. **FACTORS OF SAFETY**

6.1 Any rope or chain forming part of a lifting machine shall have a factor of safety of at least for fibre ropes and at least 6 for steel wire ropes and for chains, calculated on its static load. When the load is shared equally by 2 or more ropes or chains the factor of safety may be calculated on the sum of their breaking loads.

6.2 O/H cranes, elect hoist, hi-ups and mobile cranes will have a lifting limiting device which will automatically cut the power when the load reaches its highest safe working position.

7. **TRAINING AND AUTHORISATIONS**

7.1 All employees who need to use lifting equipment must be trained to use such equipment. All relevant employees will do a Basic Rigging course and attend a refresher course at least every two years.

7.2 All operators of mobile cranes, overhead cranes and truck mounted cranes shall be trained licensed and authorised to use such a machine

<table>
<thead>
<tr>
<th>Truck mounted crane</th>
<th>Overhead Crane</th>
<th>Mobile Crane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained and authorized</td>
<td>Trained and authorized</td>
<td>A mobile crane operator must be in the possession of a Heavy-duty vehicle provincial licensed and must be authorised to use it on mine property. In addition to that, the operator shall be trained and authorised to use the crane’s lifting equipment.</td>
</tr>
</tbody>
</table>
7.3 All operators of mobile and overhead cranes shall attend a refresher course at least every two years.

8. **SPECIFIC REQUIREMENTS**
   For the purpose of this SOP, Materials Handling has been separated into Mechanical Handling and Manual Handling.

8.1 Mechanical Handling

**8.1.1 General Requirements**

- Lifting equipment selection shall be based on a risk assessment and shall be suitable for the task for which it will be used.
- Lifting equipment selection should also consider the various operating environments under which the equipment may be used.
- All lifting equipment used will comply with the necessary legal requirements.
- All lifting equipment must be clearly marked with its safe working load as well as a unique identification number. Where the load capacity is variable, a table of load to conditions must be affixed.
- A register will be kept at appropriate locations, identifying the current status of that lifting equipment and provide a record of inspection and test. This record will indicate to the user that the lifting equipment has been designed and constructed to a generally accepted standard.
- A person will be nominated to maintain each register and their name and the responsibility for such upkeep recorded on the register.
- Registers will be kept up to date.
- Registers must be available on site or in the general area of use of the equipment. Equipment taken out into the field may have their registers held at the general mustering point.
- Testing, including non-destructive testing where relevant, must be carried out by accredited contractors.
- No equipment may be used if proof of inspection and test is not available (as recorded in the register).
- No purpose made or adapted lifting equipment will be used, unless the special adaptation has been approved (after risk assessment) by the respective Responsible Engineer and the approval as well as limitations on use or special instructions are held with the register and communicated to the user.
- Only employees who have been tested, found competent and authorised will be allowed to operate lifting equipment.
  - Artisans who have successfully completed the Ingwe Basic Rigging course may be authorized to lift up to 5t.
  - Lifts of more than 5t must be performed by or under the supervision of a competent Rigger.
- The user of any piece of lifting equipment must re-inspect it prior to each occasion of use and must not use the equipment if any doubt exists relating to the equipment’s functioning or safety.
• A risk assessment must be performed prior to each lifting operation. The detail of the risk assessment must be appropriate to the complexity of the lift as well as the hazards involved.
• Lifting equipment used on the mine by 3rd Parties must be accompanied by the necessary records and be inspected and approved by competent persons prior to use on the mine. The user is required to prove the safety of the equipment they are using. (SOP on Contractor Management).
• All lifting equipment must be stored and transported in a way, which will prevent damage and corrosion to the equipment.
• All lifting equipment on use at the mine will be entered into the GSAP Maintenance Module, which will schedule the routine inspection and testing of the equipment. Any equipment that has fallen outside a scheduled inspection or test cycle must be physically removed or locked out to prevent inadvertent usage.
• All lifting equipment shall be tested on an annual basis and lifting beams above 5 tons shall have annual deflection tests done by an approved accredited company and shall be certified accordingly.
• The GSAP system must cause the whole installation and all working parts to be examined and tested annually by a competent person. Lifting tackle must be inspected every 3 months. The job card will require the updating of the register to record the inspection or test and reflect the equipment’s status.
• Where the possible arc of operation of two or more cranes can collide, specific procedures must be established and one person must be appointed as responsible for the co-ordination of the lifting activities for the duration of the possible interaction of the booms.
• Standard hand signals will be used. The signals to be used will be limited to those that are included in the Ingwe Basic Rigging course.
• Any person may stop a lift or refuse to perform a lift if they believe it is unsafe to perform the lift. The appropriate Supervisor or Safety Representative must be informed as described in the Optimum Health and Safety Agreement.

8.1.2 Overhead Cranes

♣ General
• All employees working with overhead cranes will complete Modules one and two of the Basic Rigging and Overhead Crane Training Courses.
• Hoist hooks will be examined for the following before use:
  ○ Cracks
  ○ Wear exceeding 10% of the original dimensions
  ○ A bend or twist exceeding 10 degrees from the plane of an unbent hook
  ○ An increase in the throat opening (3 Popmark measurement on hook)
  ○ Defective or no safety latch
• Hooks and slings will not be left hanging in traveling ways.
• Hoists will be equipped with an automatic braking or arresting device that will prevent downward movement of the load when releasing the load.
• The crane will be equipped with a siren of at least 96 dB to warn personnel when the crane is in motion.
• The controls will be tested before crane is put into operation.
• Adequate illumination will be provided.

♣ Handling Loads
• The weight of the load may not exceed the SWL as indicated on the crane carrier beam or any component utilised in the rigged assembly. This will take into account the load reduction factors created by the angle of slings.
• Mine rope slings, chains, shackles and other rigging equipment will be checked for condition and the appropriate SWL before the load is rigged.
• Loads will be correctly rigged and all loose parts secured before the load is lifted.
• Lifting tackle will be properly and correctly secured on loads.
• The load will be free to lift without any obstructions.
• The path of travel of the load will be free of obstructions.
• The crane will be positioned vertically above the load before lifting and the hook will be positioned above the centre of gravity of the load.
• Do not side loads, pull loads side-ways or drag loads with the overhead crane.
• Do not wrap hoist ropes round the load. Slings, chains or other rigging equipment will be used.
• Multiple pan hoist lines may not wrap around one another.
• If the hoist rope has been allowed to go slack on the drum. The Operator will ensure that the rope is coiling correctly.
• Clear the area of personnel before a load is lifted.
• Avoid sudden jerking when lifting or lowering to avoid impact loading on the hoist and lifting gear. Hoist gradually until the slack is taken up.
• The suspended load will be controlled at all times through the use of guide ropes or tag lines.
• A safe landing place for the load will be made available before the load is hoisted.
• Loads will be safely landed and will be correctly blocked before being unhooked and unslung.
• Never ride, or allow any other person to ride on a load being lifted
• Never allow a load to be carried over the heads of persons.
• Never work or allow any other person to work under a suspended load unless the load has been adequately supported from the floor and the operation approved by the Supervisor in charge.
• Never leave a load suspended in the air with the hoist unattended
• Never make temporary repairs to slings, chains, etc., by knotting broken slings together or bolting through chain links.

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME &quot;&quot;: Henk Myburgh</td>
<td>NAME &quot;&quot;: Namakwa Sands</td>
<td>NAME &quot;&quot;:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE &quot;&quot;: 20.09.12</td>
<td>DATE &quot;&quot;:</td>
<td>DATE &quot;&quot;:</td>
</tr>
</tbody>
</table>
• Never load a hook on its point.
• When using two or more slings on a load, ensure all slings are made from the same material.

♣ Mobile Cranes
• Only employees who have been tested, found competent and authorised will be allowed to operate the mobile cranes.
• Each operator must do a pre-use inspection before putting the machine into operation.
• Examine crane hook before use. Every hook shall be fitted with a safety latch.
• Ensure that the load cell is in working condition.
• Locate the hook vertically above the load to be handled.
• Test the controls before the crane is put into operation (up, down, left, right, boom up and boom down).
• The ground must be inspected by the operator and evaluated if it is well compacted and capable of taking the weight transferred to the outriggers.
• Additional support may be required during abnormal operations (sleepers or bigger plate).
• No work may commence in the direct vicinity of overhead power lines unless the power has been switched off or the job is done under supervision.
• The crane hoist brake must be tested with the test weight before a bosuns chair may be used.
• The access ladders must be used for the boarding and unboarding of cranes.
• All loads must be properly rigged to prevent parts of the load from falling.
• Suspended loads must be securely slung and correctly balanced before they are set in motion.
• Select and inspect the lifting tackle (wire rope sling, chains, shackles, etc) for damage and for the safe working load.
• Loads must be safely landed and properly blocked before being unslung and unhooked.
• The operator must ensure a safe landing place is available for the load prior to commencing the lift.
• The load must be kept under control at all times. To prevent a load from slipping and endangering personnel, one or more guide ropes or tag lines will be used.
• The operator will make sure the load is free to lift and is not obstructed and will check the path of travel of the load to ensure that it can move freely without obstructions, which could cause injury to personnel or damage to property.
• The operator will check the load to ensure it is balanced, and that the hook is above the centre of gravity of the load.

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME &quot;&quot;: Henk Myburgh</td>
<td>NAME &quot;&quot;: Namakwa Sands</td>
<td>NAME &quot;&quot;:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE &quot;&quot;: 20.09.12</td>
<td>DATE &quot;&quot;:</td>
<td>DATE &quot;&quot;:</td>
</tr>
</tbody>
</table>
- Keep the work place tidy, do not crowd floor with slings and lifting gear when lifting loads.

♦ Operator do’s and don’ts
- Do not slide the load, pull the load sideways or drag the load with mobile crane.
- Never wrap a hoist rope around the load. The load will be attached to the hook by slings, chains or other rigging devices adequate for the load to be lifted.
- Multiple pan hoist lines must not be allowed to twist around each other.
- Check hoist ropes for correct coiling on drums
- Remove or lash down any loose items in or on load, which could fall off or get hooked during the lift.
- Keep your hands away from rope pinch points as the slack is taken up.
- Always wear gloves when handling wire ropes.
- Ensure that all personnel are well clear when loads are being lifted or lowered or when slings are being removed from underneath the load.
- Jerking movements when lifting or lowering cause impact loading on the crane and lifting tackle. Hoist gradually until the slack is taken up.
- Do not ride, or allow any other person to ride on a load being lifted.
- Do not allow a load to be carried over the heads of other personnel
- Do not work or allow any other person to work under a suspended load.
- Do not leave a load suspended with the crane unattended.
- Do not make temporary repairs to slings, chains etc. by knotting broken slings together or bolting through chain links.
- Do not lift loads with one leg of a multi-leg sling without the unused legs being made secure.
- Do not load a hook right on its point.
- Make sure the load is free from holding bolts, etc. before lifting.
- When using two or more slings on a load, ensure all slings are made from the same material and that all sling legs are taking the load.
- Caution must be taken to allow adequate tail swing clearance.
- The safe working load of the crane determined by the manufacturer must not be exceeded. The diagram of boom distance and variable capacity must be used.
- The crane load safety device shall be tested and certified annually by an authorised accredited body.
- Ensure the lifting tackle has been properly and correctly secured on the load and on the lifting machine.

8.1.3 Truck Mounted Cranes
- Only personnel found competent and authorised by the Engineer may drive and operate a truck-mounted crane.
- A pre-use inspection must be done as per the mine standard by each driver before putting the machine into operation.
- The crane and the outriggers must be examined before use e.g. hooks, controls, safety latch, hydraulic cylinders and hydraulic pipes.
- Truck mounted cranes shall only be used with controls that allows the load to move away from the controls when controls are pushed forward/upward.
- Truck mounted cranes shall be fitted with load limiting devices to prevent loads from being lifted more than the rated SWL of the crane.
- The logbook or register must be completed once a month and signed by the responsible Engineer.
- Under no circumstances may the driver open the radiator cap.
- Use of a truck mounted crane as a man lift is prohibited.
- Outriggers must be fully extended in order for the crane to operate at its maximum capacity. If you are unable to fully extend the outriggers, the load capacity must be reduced as though outriggers are not used. Full extension of the outriggers influences the stability base of the truck-mounted crane.
- The operator must ensure firm footing under the outrigger pads to distribute the load amongst the outriggers.
- When setting up for a lift, the truck should be level.
- No work may commence in the direct vicinity of overhead power lines unless the power has been switched off or the work is done under direct supervision of an Electrical Foreman.
- The operator must clear the operational area of bystanders.
- Never stand or do any work under suspended loads.
- The correct lifting tackle and equipment must be used when rigging work is performed.
- Locate the hook vertically above the load to be handled.
- Test the controls before the crane is put into operation (up, down, left, right, boom up and boom down).
- All loads must be properly rigged to prevent parts of the load from falling. Suspended loads must be securely slung and correctly balanced before they are set in motion.
- Select and inspect the lifting tackle (wire rope sling, chains, shackles, etc.) for damage and for the safe working load.
- Loads must be safely landed and properly blocked before being unslung and unhooked.
- The operator will ensure a safe landing place is available for the load.
- The load must be kept under control at all times. To assist in preventing a load from slipping and endangering personnel, one or more guide ropes or tag lines should be used.
- The operator will make sure the load is free to lift and is not obstructed and check the path of travel of the load to ensure that it can move freely without obstructions, which could cause injury to personnel or damage to property.
- The operator will check the load to ensure it is balanced, and that the hook is above the centre of gravity of the load.
• Keep the work place tidy; do not crowd area with slings and lifting gear when lifting loads.
• Do not slide, pull loads sideways or drag loads with a crane.
• Remove or lash down any loose items in or on load, which could fall off, or get hooked during the lift.
• Keep your hands away from pinch points as the slack is taken up.
• Always wear gloves when handling wire ropes.
• Jerking movements when lifting or lowering cause impact loading on the crane and lifting tackle. Hoist gradually until the slack is taken up.

♣ Operator do’s and don’ts
• Do not ride, or allow any other person to ride on a load being lifted or lowered.
• Do not allow a load to be carried over the heads of other personnel.
• Do not leave a load suspended with crane unattended.
• Do not make temporary repairs to slings, chains etc, by knotting broken slings together of bolting through chain links.
• Do not lift loads with one leg of a multi-leg sling without the unused legs being made secure.
• Do not load a hook right on its point unless it is specially designed and rated for use in that manner.
• Make sure the load is free from holdings bolts, etc, before lifting and that all sling legs are taking the load.
• When using two or more slings on a load, ensure all slings are made from the same material.
• Check warning device to ensure outriggers are fully retracted before setting the truck in motion.

8.1.4 Operating forklift
(a) Only personnel found competent and authorised by the Engineer may operate a forklift – refer Regulation 18.1.1 and 18.1.2 of the Mine Health and Safety Act and Regulations.
(b) A pre-use inspection must be done by each driver before putting the machine into operation.
(c) In addition to the standard pre-use checklist, the following items must be checked to ensure the safe operation of the forklift must be checked to ensure the safe operation of the forklift:
• Mast - excessive wear or damage
• Lift chain - damage
• Load backrest - damage
• Fork carriage - damage
• Forks and slides - damage or cracks
• Fork slides - lubricated
• Fork locking pins - in place
• ROPS cab - any visible damage
• Tilt & Lift cylinders - leaks
(d) No persons may be transported on a forklift.
(e) Only a cage approved by the Engineering Manager and fitted with:
- pallet guides
- safety chains
- slings, and
- handrails
may be used to lift persons.
(f) Operate at a speed consistent with conditions. The type of load and road conditions must be taken into consideration to determine a safe operating speed.
(g) Always plan your movement, use the direct, suitable route.
(h) Carry the load between 150 mm to 200 mm above the floor level to ensure proper stability. Only move loads which are secure and safely bound.
(i) Keep the load supported against the heel of the forks with uprights tilted backwards.
(j) If a bulky load obscures view, drive in reverse.
(k) Do not drive when your hands are wet and greasy.
(l) If a load protrudes more than 1 meter on any side of the forklift, a warning triangle or red flag must be secured to the end of the protruding material so that it is visible to road users and pedestrians.
(m) Look out for overhead obstacles when travelling.
(n) When carrying a load, reverse down inclines. The load will rest against the load backrest. Do not drive diagonally across an incline.
(o) Drive with the forks in the lowest position.
(p) Oxygen and acetylene cylinders may only be transported using the specially designed attachment.
(q) Avoid making fast starts, jerky or sudden stops or quick turns, and slow down for wet or slippery surfaces.
(r) Lower the forks to the ground when parking.
(s) Adhere to area specific stacking standards.
(t) Ensure that the forks are inserted fully into the pallet and that the load is taken up fully before moving it.
(u) Look out for pedestrians and do not drive the forklift up to persons standing at benches, against walls or other fixed objects.
(v) Do not run over loose objects on a roadway.
(w) When the operator leaves his machine he must ensure that the controls are in neutral, forks are lowered, power is shut off, brakes are applied, ignition key or starter circuit key is removed and stop blocks are placed behind and in front of any one wheel.
(x) Drivers must avoid the accumulation of fumes and gases caused by idling for long periods in enclosed or semi-enclosed areas. Switch the engine off.
(y) Never fuel a forklift whilst the engine is running. Wipe away spillage and replace filler cap.
(z) Do not use a naked flame when checking fuel level (matches or lighters).
(aa) Look in the direction of travel, do not assume you are familiar with all conditions in the area, someone may step in front of your forklift

8.1.5 Lifting Tackle
- Issuing and Returning
o All lifting tackle shall be inspected before issuing and returning to tool store.

- Competence of Storeman
  o All storeman required to issue and receive lifting equipment shall be in possession of a basic rigging training certificate.
  o No other person other then a competent person as above will issue and receive lifting tackle.

- Shackles
  o Only blue pin shackles that are stamped with the SWL may be used.
  o The original shackle pin may not be replaced with any other pin, bolt or similar object.

- Mine rope slings
  o Only slings provided with a SWL marker may be used
  o Slings will be discarded when:
    - Visible broken wires amounts to 5 % or the total number of wires in a sling, the sling will be withdrawn from use.
    - It has a kink in it.
    - It is corroded and distorted.
    - All slings will have metal tags indicating SWL identification number test certificates and recorded in a logbook
    - Discarded slings will be destroyed by cutting through both eyes of the slings.
    - Use packing between the sling and sharp edges.
    - Do not tie knots to shorten slings.
    - Do not wrap a sling around a hook.
    - A competent person will inspect rope slings every three months. The slings will be colour coded to indicate that they are fit for use. The onus is on the responsible person to determine the colour-coding tagging system in his area.
    - Random testing of new slings shall take place on an annual basis by an approved accredited testing body to confirm certification.

- Chain Slings
  o Chain slings will be inspected for:
    - Twisted or bent links
    - Nicks or gouges
    - Excessive wear at bearing points of links
    - Stretched links
    - Spread in throat opening of links
    - Distorted or damaged master links, coupling links or attachments.
  
  o Chain slings will be damaged when:
    - Dropped from a height
    - Dragged along the ground
    - Dragged from under loads
    - Twisted or knotted
    - Used over sharp angles without protective padding
    - Subjected to shock loads

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME &quot;&quot;: Henk Myburgh</td>
<td>NAME &quot;&quot;: Namakwa Sands</td>
<td>NAME &quot;&quot;:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE &quot;&quot;: 20.09.12</td>
<td>DATE &quot;&quot;:</td>
<td>DATE &quot;&quot;:</td>
</tr>
</tbody>
</table>
- Shortened by inserting hooks, spikes or bolts into the links
  - Chain slings will be used correctly. You may not:
    - Overload slings
    - Use slings in which the links are locked, stretched or cannot move freely.
    - Hammer a chain or hook into position.
    - Use an excessively, pitted, corroded or worn sling.
    - Carry a load on the point of the hook or insert the hook into a chain link.
    - Let a load fall onto a sling.
    - Cross, twist, kink or knot a sling.
- Eyebolts
  - The use of eyebolts will be limited to those fitted by the manufactures.
  - When the hook is too large to fit through the eye of an eye bolt, a shackle will be used.
- Spreader bars
  - Spreader bars will be used for long items and for items that may be damaged when multi-legged slings are used.
  - Spreader bars will be:
- Manufactured to suit a specific application
  - Designed and approved by a professional Engineer and manufactured by a reputable Engineering firm.
  - Authorised for use for the specific application by the Engineering Manager.
- The Engineering firm will issue a test certificate stating the safe working load.
- Chain hoists
  - The SWL of the chain block hoist will be marked on the hoist.
  - Chains must be inspected as detailed in paragraph 3.1.
  - Chain hoists with defective locking devices will not be used and will be withdrawn from service.
  - It must be ensured that adequate clearance is available to operate the chain hoist’s lever

8.2 Manual Handling

8.2.1 Risk Assessments have identified that Injuries in the handling of material may result from:
- Unsafe working habits
- Improper lifting
- Carrying too heavy a load
- Incorrect gripping
- Failure to wear correct personal protective equipment
- Improper training

8.2.2 To minimize control or eliminate manual handling injuries the following matters may be considered:
- Training in safe manual handling methods.
- Breaking down the job and job observations.

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME “”: Henk Myburgh</td>
<td>NAME “”: Namakwa Sands</td>
<td>NAME “”:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE “”: 20.09.12</td>
<td>DATE “”:</td>
<td>DATE “”:</td>
</tr>
</tbody>
</table>

Page 17 of 21
• Carry out risk assessments.
• Inspect material for:
  ○ The physical size and weight, and
  ○ Sharp or jagged edges, rough or slippery surfaces, slivers or burrs.
• Adequate supervision.
• Wearing of the correct personal protective equipment.
• Pre-employment medical examinations and periodic examinations may reveal a hernia, knee or back injuries.
• Consider physical matters such as small worker – heavy load.
• Keep fingers away from pinch points, especially when setting down material.
• When handling timber, pipes or other long objects, keep the hands away from the ends to prevent them from being pinched.
• Wipe off grease, wet, slippery or dirty objects before handling them.
• Keep hands free from oil and grease.
• When possible, use holders, containers, handles or tongs when manually handling material.

8.2.3 Principals of lifting/lowering heavy objects
• First, make a preliminary “heft” to be sure the load is easily within your reach.
• If it is not, secure help.
• Before lifting and carrying a bulky object to another location, inspect the route that will be followed.
• Set your feet solidly and well apart, with the one foot slightly ahead of the other. In some case it is easier to go down almost to the floor on one knee while keeping the other leg bent at a 90-degree angle.
• Crouch as close to the load as possible with the legs bent at about a 90-degree angle at the knee
• Keep the back as straight as possible. It should not be arched.
• Get a firm grip of the object.
• Grip the load so that it will not slip while you are lifting.
• Lift the object, straighten your legs, keeping your back as straight as you can.
• When the object must be raised above shoulder height firstly lift to about waist height, rest one end of it on a ledge or bench, and then if necessary shift the position of the hands to accomplish the lift to the higher level.
• When starting to raise the object to the higher level, bend the knees to give added power to the lift.
• When changing direction, don’t twist the body, but lift the object to carrying position and turn the whole body, including the feet.
• Always ensure the distance to carry the load is in the capacity of holding the object and if necessary where to rest.
• Gloves should always be worn.
• When lowering an object it is essentially the reverse of lifting it.
• To deposit an object in a tight space, it is the safest to slide it into place with the hands in the clear, rather than lift it.
• Always ensure that the place where the object is deposited is strong enough to hold it.
• Also ensure that the place where it is deposited will not tilt, tipped or roll over.
• As the drum is brought to balance on the bottom rim, go of the bottom rim and straighten up with the drum.

If two workers are to overturn a full drum shifting its position from vertical to horizontal, each worker should:
• Ensure there is enough space to prevent hand injuries.
• Stand near the other man, facing the drum. Grip the closest point of the top rim with both hands, palms against the side of the drum. Push until the drum balances on the lower rim.
• Step forward a short distance, grip the bottom rim with one hand, and continue to grip the top rim with the other hand. Ease the drum into a horizontal position so it rests solidly on its side.
• When there is not enough space or the drum is against a wall make sure that enough space is available to perform the operation safely. If not secure assistance.

If one worker is to overturn a drum he should:
• Ensure enough space to perform the operation safely.
• Stand in front of the drum and reach over grasp the far side of the rim with both hands.
• Pull the top of the drum toward him until it is balanced on the edge of the lower rim.
• Transfer both hands to the side of the rim nearest him. Taking care, however, to place his hands far enough apart to avoid their being pinched when the drum comes to rest on the floor.
• Lower the drum, keeping his back straight and bending his legs so that the leg muscles take the strain.
• When one worker is to upend a drum, he should reverse the above process: (Crouch in front of the end of the drum, legs bent, back straight. Grasp the lower edge of the rim facing him, placing one hand on the right and the other to the left of the pinch point, where the rim touches the floor. Lift the end of the drum as in any other lifting operation, with the leg muscles doing the work).

8.2.4 Packaging
Repairs / manufacturer / supplier shall ensure that all repaired / new items (rotables) are packed and protected against damage in transit and storage:
• A competent pallet may/should be used as a base to accommodate a forklift for lifting and moving, and to prevent the item from toppling over.
• All exposed surfaces and flanges are to be protected against corrosion.
• All openings are to be sealed against the ingress of dirt and moisture.
• All items are to be properly covered and tied down to the competent pallet.

Weight Displaying

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>CLIENT</th>
<th>AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME &quot;&quot;: Henk Myburgh</td>
<td>NAME &quot;&quot;: Namakwa Sands</td>
<td>NAME &quot;&quot;:</td>
</tr>
<tr>
<td>SIGN:</td>
<td>SIGN:</td>
<td>SIGN:</td>
</tr>
<tr>
<td>DATE &quot;&quot;: 20.09.12</td>
<td>DATE &quot;&quot;:</td>
<td>DATE &quot;&quot;:</td>
</tr>
</tbody>
</table>
• The repairer / manufacturer / supplier is required to use a reliable weighing system in determining the mass of each item.
• A plate made of any material (other than aluminium) indicating the weight of the material will be attached to the item. If it is not practical to attach a plate to the item, a permanent marker shall be used to indicate the weight of the component. (The lettering should be 20mm or larger.)
• If the item is wrapped / boxed, the weight must also be indicated on the packaging.
• If the item has a “manufacturer’s name plate” the weight must also be marked there on, where possible.
• Components weighing less than 25kg must be marked with green paint in the form of a square of at least 100mm$^2$, which will be an indication that one person can do the lifting.

![Green square](100 mm X 100 mm)

• If the component weighs between 25kg and 50kg, it shall be marked with an orange paint square as above which will be an indication that two people must do the lifting.

![Orange square](100 mm X 100 mm)

• Components weighing between 50kg and 3000kg shall be marked with a red square meaning specialized lifting is required.

![Red square](100 mm X 100 mm)