<table>
<thead>
<tr>
<th>Risk Value</th>
<th>Probability Index</th>
<th>Severity Index</th>
<th>PPE Requirement &amp; Safety Signs</th>
<th>Corrective Action</th>
<th>Responsible Person &amp; Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High Risk</td>
<td>Almost certain to inevitable</td>
<td>Loss of 1 week's production</td>
<td>Mandatory or as per requirement</td>
<td>1. Appointed spotter (flagperson) to be in position wearing reflective vest and whistle to assist Truck driver or Plant operator with movement on site.</td>
<td>Principal Contractor</td>
</tr>
<tr>
<td>High Risk</td>
<td>Probable</td>
<td>Loss of 1 day's production</td>
<td></td>
<td>2. Clear all bystanders away from operations - Barricade area and post warning signage - Only Authorised workers/persons to enter construction area.</td>
<td></td>
</tr>
<tr>
<td>Medium Risk</td>
<td>Improbable</td>
<td>Medical attention 14 Days with complete recovery</td>
<td></td>
<td>3. Appointed competent Banksman (Rigger) to oversee all lifting operations. • Pre-lift checks to be done on lifting material, and recorded on a Checklist. Any deviations must be recorded and reported to Construction Manager.</td>
<td></td>
</tr>
<tr>
<td>Low Risk</td>
<td>Less than even chance</td>
<td>Loss of 1 man shift</td>
<td></td>
<td>4. Power tools to be inspected by a competent person, pre-check inspections to be conducted, power tools to be recorded on inspection register</td>
<td></td>
</tr>
</tbody>
</table>

**Site Establishment Risk Assessment and Safe working Procedure / Method**

- Site establishment
- Improper loading and off loading practices
- Movement of vehicles and Plant
- Improper electric installation
- Use of damaged portable electrical tools and hand tools
- Dust
- Clearing of ground (leveling)
- Social / Community Disruption
- Contractors / Service Providers working on site without being approved by Client or client representative
- Truck Crane Operations

**Total Average Risk Value**

1. **Health & safety (I)**
   - Risks: Risk of dust inhalation, exposure to noise, exposure to loud noise, exposure to radiation, exposure to chemicals, exposure to biological hazards, exposure to heat, exposure to cold, exposure to vibrations, exposure to radiation, exposure to electrical hazards.
   - Severity: 5 - High
   - PPE: Dust mask, safety goggles, hearing protection, protective clothing, protective footwear.
   - Corrective Action: Implement dust control measures, provide hearing protection, ensure proper clothing and footwear, maintain a safe environment.

2. **Environment (E)**
   - Risks: Risk of accidents, risk of fires, risk of explosions, risk of chemical spills, risk of contamination, risk of pollution.
   - Severity: 4 - Medium
   - PPE: Reflective vests, hard hats, safety glasses, gloves, protective clothing.
   - Corrective Action: Implement safety measures, provide training, ensure compliance with regulations.

3. **Productivity (P)**
   - Risks: Risk of delays, risk of errors, risk of equipment failures, risk of material shortages.
   - Severity: 4 - Medium
   - PPE: Safety shoes, protective clothing, hard hats.
   - Corrective Action: Implement quality control measures, provide training, ensure availability of resources.

4. **Cost (C)**
   - Risks: Risk of overruns, risk of cost overruns, risk of budget overruns.
   - Severity: 3 - Low
   - PPE: Safety glasses, gloves, reflective vests.
   - Corrective Action: Implement cost control measures, provide training, ensure adherence to budget.

5. **Frequency (F)**
   - Risks: Risk of accidents, risk of equipment failures, risk of environmental impact.
   - Severity: 5 - High
   - PPE: Safety glasses, hard hats, reflective vests.
   - Corrective Action: Implement safety measures, provide training, ensure adherence to regulations.

**PROBABILITY VALUE X SEVERITY VALUE X FREQUENCY VALUE /125 = TOTAL SCORE (%)**

**Result:**

- **Risk Assessment:**
  - High Risk
  - Medium Risk
  - Low Risk

**Total Average Risk Value:** 45%
<table>
<thead>
<tr>
<th>Lifting Operations - (includes truck crane, mobile crane, Lifting Machinery as per OSH 16(11))</th>
<th>Mandatory or as per requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Loading and Offloading - Manual Handling (Ergonomics)</td>
<td></td>
</tr>
<tr>
<td>1. Improper manual loading and offloading procedure</td>
<td></td>
</tr>
<tr>
<td>2. Nip &amp; Pinch Points</td>
<td></td>
</tr>
<tr>
<td>3. Poor Communication</td>
<td></td>
</tr>
<tr>
<td>4. Slipping &amp; Tripping Hazards</td>
<td></td>
</tr>
<tr>
<td>5. Employee handling materials / equipment that is too heavy to lift</td>
<td></td>
</tr>
<tr>
<td>6. Materials / equipment or tools falling</td>
<td></td>
</tr>
<tr>
<td>7. Inadequate personnel</td>
<td></td>
</tr>
<tr>
<td>8. Improper manual loading and offloading</td>
<td></td>
</tr>
<tr>
<td>Total Average Risk Value</td>
<td>43%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting Operations</th>
<th>Mandatory or as per requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Excavations</td>
<td></td>
</tr>
<tr>
<td>Underground Electrical cables</td>
<td></td>
</tr>
<tr>
<td>Underground water lines</td>
<td></td>
</tr>
<tr>
<td>Manual Excavations</td>
<td></td>
</tr>
<tr>
<td>Materials / equipment or tools falling</td>
<td></td>
</tr>
<tr>
<td>Total Average Risk Value</td>
<td>11%</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<tr>
<td>Total Average Risk Value</td>
<td>45%</td>
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<tr>
<td>Total Average Risk Value</td>
<td>11%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure of underground services</th>
<th>Mandatory or as per requirement</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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<td></td>
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<tr>
<td>Total Average Risk Value</td>
<td>43%</td>
</tr>
</tbody>
</table>
1. Health & safety (I)  4
2. Cost (C)  4
3. Productivity (P)  3
4. Environment (E)  2

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health &amp; safety (I)</td>
<td>4</td>
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<td>5</td>
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<td>5</td>
<td>130</td>
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<tr>
<td>Cost (C)</td>
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<td>4</td>
<td>1</td>
<td>5</td>
<td>125</td>
<td>5</td>
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<tr>
<td>Productivity (P)</td>
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<td>3</td>
<td>1</td>
<td>5</td>
<td>125</td>
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<td>Environment (E)</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>125</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Average Risk Value

**Mandatory or as per requirement**

1. Shorebrace excavations to prevent caving/digging in and provide access ladder. Soil dumped at least 1m away from edge of excavation and no material to be kept closer to the edge of excavation.
2. Traffic control to be managed to prevent collision of mobile plant as well as collision with personnel.
3. Dust suppression methods to be used when required and employees to be provided with dust masks when required.
4. In residential areas noisy activities to be conducted at timings specified by local authorities.
5. Excavations guarded/baricaded/lighted after dark in public areas and when there is no work conducted. All excavations are subject to daily inspections by a competent appointed person. Excavations must be kept open to the minimum, do not leave open for long periods.
6. Scanning devices to be used to identify underground services prior to excavation works, in order to prevent cable damage and possible electrocution.
7. Spill kit to be used for any Chemical spillages on site.
8. Only competent / Appointed operators authorised to operate machinery (must have valid Competency, medical and PDP).
9. Machinery must be inspected before use, (findings to be recorded on a checklist), any deviations must be recorded and reported to a supervisor.
10. Service / maintenance schedule / history must be available for the specific machinery.
11. SWP & Risk Assessment to be communicated to all workers involved.
12. At hand tools must be inspected and recorded on a checklist. NO SELF-MADE tools will be allowed.
13. Workers working in direct sun / heat must take regular water breaks to ensure they stay hydrated.
14. Every excavation must be provided with means of access that must be within 6 metres of any employee within the excavation at any time. Should ladders be utilised for this purpose they should be duly secured.
15. Only workers declared medically fit are allowed to work inside an excavation. Proof of Medical must be valid and available on site.
16. Employees to be transported to and from work in a safe manner, never to be carried at the back of bakkies and trucks.
17. All construction vehicles and mobile plant have to comply with Construction regulations and Driven Machinery Regulations. Other construction vehicles used must have a valid roadworthiness certificate.
18. Mobile plant operating on site to fully comply with CR 23. Maintenance / Service history must be available on site and Used in accordance with the Regulations.
19. Random alcohol and drug tests to be introduced and maintained.
20. Ensure vehicles are isolated when not in operation. Construction vehicles and mobile plant left unattended after hours adjacent to public roads.
21. All drivers must be appointed and must have a valid drivers license and PDP/Competency certificate.
22. Vehicles or plant not to exceed the prescribed weight limit of the plant or vehicle.
23. Construction Vehicle to be Fitted with adequate signalling devices to make movement safe including reversing. Fitted with two head and two tail lights that are in good working condition whilst operating under poor visibility conditions.
24. No loose tools, material etcetera is allowed in the driver and/or operators compartment/cabin or in the compartment in which any other persons are transported.
25. The construction site must be organised to facilitate the movement of construction vehicles and mobile plant in such a manner that pedestrians and other vehicles are not endangered. Traffic routes to be suitable, sufficient in number and adequately demarcated.

**Principal Contractor**
1. Incompetent employees conducting hot works
2. Improper storage of welding material
3. Hot works conducted in view of employees
4. Unsafe / damaged equipment used
5. Spills
6. Fire
7. Hot work near flammable materials
8. Unsecured / unsafe storage of cylinders
9. Substandard PPE used
10. Overhead Hotwork operations
11. Hot works in wet conditions
12. Incorrect discs used when grinding
13. No Guards in Place when cutting
14. Incorrect fittings used when connecting pipes to cylinders
15. Gauges not working on cylinders
16. No fire fighting equipment or fire fighter available
17. Hot work area not barricaded

Mandatory or as per requirement

1. Only competent workers with the required skills and knowledge will be appointed to operate such machinery like grinders, welding machines, cutting torch etc.
2. Gas cylinders when used to be safely stored and to be secured, when not in use, in a cool place, upright position and locked store room.
3. All hot works to be conducted in an enclosed place away from public and employees conducting other activities. Welding screens to be placed at welding areas and solid barricading used to close off areas
4. All equipment used for Hot works must be inspected before use, all findings to be recorded on a checklist and any deviation must be recorded and reported to a supervisor, all guards must be in place and correct blade/discs or drill bits to be used
5. If conducting hot works near flammable materials or the bush, spark containment must be used, for example fire blankets, welding screens and wetting the areas with water.
6. Fire extinguishers must be placed near where hot works are conducted, and a trained competent appointed fire fighter to be available onsite.
7. SABS approved PPE to be issued and used on site. Task specific PPE is required for Hot works activities, for example welding helmet, face shield when cutting, safety glasses, dust maska, welding apron etc.
8. No Overhead Hotwork will be allowed, if Hot work is required at height it should be done from a approved scaffold or MEWP. Then the area below should be barricaded to prevent workers from entering that area.
9. Hot work will not be allowed in wet conditions, electrical cables must be made safe and free from water.
10. All cylinders used onsite must be fitted with the correct fittings and clamps when connecting the hoses. All gauges must be in good working condition.
11. All new vessels must be checked for leaks, leaking vessels should NOT be used. Equipment must be identified/numbered and entered into a register.

14. Health & safety (I) 2. Cost (C) 3. Productivity (P) 4. Environment (E)

Mandatory or as per requirement

1. Client to ensure that contractor is well aware of current scope defined as well as the requirements stipulated in the tender specifications.
2. Contractor to ensure compliance on set specifications from client.

1. Offloading and Loading of scaffold material.
2. Improper scaffold erectors
3. Incompetent scaffold erectors
4. Incompetent scaffold Inspector
5. Substandard scaffold, not as per SANS 10085
6. Uneven surfaces / Unstable surfaces
7. Inclement weather conditions
8. Unsafe access
9. Unsafe stacking and storage of scaffold materials
10. Stacking and storage of materials on top of scaffold platform
11. Overhead Powerlines
12. Unsafe / damaged safety harnesses used

Mandatory or as per requirement

1. No damaged or unsafe scaffold materials allowed to be used for erecting of scaffold.
2. Workers to assist each other when lifting and handling of scaffold materials, gloves must be worn to prevent pinch point on hand and fingers.
3. Only appointed / competent scaffold erector to erect and dismantle scaffold.
4. Proof of competency must be valid and available on site.
5. Only appointed / competent scaffold inspector to inspect and approve scaffold.
6. Proof of competency must be valid and available on site.
7. Scaffolding must be erected by competent person as per SANS 10085 standard. Scaffold must then be inspected by a competent inspector and record all findings on a checklist, deviations must be recorded and reported to scaffold supervisor.
8. Ground must be inspected stability before scaffold can be erected. If ground is stable scaffold can be erected, base jacks must be used to level the scaffold.
9. All scaffold work must be stopped when its raining due to the slippery surface, scaffold work can only continue if scaffold is dry and scaffold supervisor / inspector has inspected scaffold and approved it.
10. Stacking of materials on scaffold will only be allowed with the approval of the scaffold supervisor, after inspecting the height and weight of stacked materials. All materials must be removed daily on end of shift.
11. All scaffold materials must be stacked neatly in a safe manner.
12. NO scaffold work will be allowed near overhead powerlines.
13. SWP & Risk Assessment for scaffold work must be communicated to relevant and all involved with scaffold work.
14. All safety harnesses must be inspected before use, all findings must be recorded on a checklist, any deviations must be recorded and reported to supervisor. COC for harness must be available in safety file.
15. Workers must be trained on the usage of safety harnesses and working at height. (Proof of competency must be available)
16. All workers working on scaffold must be medically fit (proof of valid medical must be available in the form of annexe 3. Medical must include fit for work at height.)
### Stacking and storage of material & Housekeeping

1. Unstable stacking of goods / materials / Unsafe Stacking Procedures
2. Stacking & Storage area not identified and demarcated
3. Pinch Points
4. Environmental contamination from spillages
5. Snakes
6. No clear walkways at stacking and storage areas
7. Unauthorised entry
8. Poor waste removal
9. Unstable Aggregate or Sand

<table>
<thead>
<tr>
<th>Health &amp; Safety (I)</th>
<th>Cost (C)</th>
<th>Productivity (P)</th>
<th>Environment (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Average Risk Value

- **Mandatory or as per requirement**
- **Principal Contractor**

### Offloading construction Materials

1. Tip truck reversing over personnel.
2. Vehicle to vehicle collisions
3. Man machine interaction.
4. Exposure to dust
5. Incompetent Operator
6. Unauthorised to offload
7. Incorrect plant used for offloading

<table>
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<td>4</td>
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<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
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<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Average Risk Value

- **Mandatory or as per requirement**
- **Principal Contractor**

### Working near overhead powerlines

1. Sagging KV line
2. Roof inclining near the KV LINE
3. Scaffolding erected close to the KV Line
4. Untrained employees working near the KV line
5. Construction Vehicles or plant operations near overhead powerlines

<table>
<thead>
<tr>
<th>Health &amp; Safety (I)</th>
<th>Cost (C)</th>
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<th>Environment (E)</th>
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<tbody>
<tr>
<td>5</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
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<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Average Risk Value

- **Mandatory or as per requirement**
- **Principal Contractor**

**Risk Levels**

- **Total Average Risk Value**
  - **80%**
  - **60%**
  - **55%**
  - **40%**
  - **30%**
  - **20%**
  - **10%**

- **Principal Contractor**
- **Signage Posted at Designated Storage area - Unauthorised entry prohibited**
- **No Construction vehicles to be operated within 10m of overhead powerlines**
- **No scaffold to be erected close to the overhead powerline**
- **No construction vehicles to be operated within 10m of overhead powerlines, unless declared safe by Competent Authority**
- **Safe working Procedure and Risk Assessment must be communicated to those employees exposed to working near overhead powerlines**
- **Trained and Competent Spotters / Flagperson must be present at ALL times when plant is operational near overhead powerlines.**
### Use of portable electrical tools and hand tools (including use of Portable lights)

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Health &amp; Safety (I)</th>
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<tbody>
<tr>
<td>1. Flammable material storage area must have warning signs (No Smoking, Flammable materials)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2. Welding and other flammable gases to be stored segregated as to the type of equipment installed and fire prevention methods practiced for example proper fire-resistant container, cage or room that is kept locked with consistent access control measures in place and sufficient fire fighting equipment installed and fire prevention methods practiced for example proper housekeeping</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3. Flammable materials / containers must be clearly marked/labelled</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

### Use and Storage of flammables

<table>
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<tr>
<th>Risk Factor</th>
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### Illumination during night works

<table>
<thead>
<tr>
<th>Risk Factor</th>
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<th>Cost (C)</th>
<th>Productivity (P)</th>
<th>Environment (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Proper illumination to be available during night works</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2. Any Work requires to be conducted at night sufficient lighting should be supplied</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3. All activities to be conducted at night must be approved by Construction Manager with guidance from competent Safety Professional</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

### Personal injury due to poor illumination at night

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Health &amp; Safety (I)</th>
<th>Cost (C)</th>
<th>Productivity (P)</th>
<th>Environment (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The principal contractor to ensure that:</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2. No person is required or permitted to work in a place where there is the danger of fire or an explosion due to flammable vapors being present unless adequate precautions is taken</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3. Flammables stored on a construction site are stored in a well-ventilated, reasonably fire-resistant container, cage or room that is kept locked with consistent access control measures in place and sufficient fire fighting equipment installed and fire prevention methods practiced for example proper housekeeping</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4. Welding and other flammable gases to be stored segregated as to the type of gas and empty and full cylinders</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5. All flammable materials / containers must be clearly marked/labelled</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
### Hazardous Chemical Substances

1. Improper storage of chemicals, transportation and handling.
2. Unsafe use and/or storage of flammables could result in fires.
3. Spilled chemical substances may also impact negatively on the health of employees and negative implications for the environment.
4. Health hazards when ingesting, inhaling or skin contact with HCS.
5. Spilled chemical substances may also impact negatively on the health of employees and negative implications for the environment.
6. Inadequate designs and poor design.
7. Temporary structure collapse due to poor design.
8. Unsafe access to elevated areas.
9. Poor stacking and storage of formwork materials.
11. Pinch points.
12. Work at Fall Positions.

### Principal Contractor

**Mandatory or as per requirement**

1. Implement and ensure a proper communication system between various parties involved.
2. Site meetings to be conducted on set intervals including integration between various parties.

---

### Temporary Structure (Temporary Works)

1. Improper designs
2. Incompetent formwork erectors and inspectors.
3. Temporary structure collapse due to poor design.
4. Unsafe access to elevated areas.
5. Poor stacking and storage of formwork materials.
7. Pinch points.
8. Work at Fall Positions.

### Principal Contractor

**Mandatory or as per requirement**

1. A contractor to appoint a temporary works designer in writing, to design, inspect and approve the erected temporary works.
2. Temporary works to be carried out under the supervision of a competent person appointed in writing.
3. To be erected by competent persons.
4. Temporary structure to be inspected by a competent person immediately before, during and after the placement of concrete. After inclement weather or any other imposed load and at least on a daily basis until the temporary works has been removed and results recorded in a register.
5. All temporary works to be carried out as per construction regulations.
6. Temporary works structures to be so designed, erected, supported, braced and maintained that they will be able to support any vertical or lateral loads that may be applied.
7. No load to be imposed onto a structure that the structure is not designed to carry.
8. Temporary works to be erected in accordance with the structural design draughts for such temporary work and if there is any uncertainty, the designer must be consulted before proceeding with the erection/use of the temporary work.
9. The foundation or base upon which the temporary work is erected to be able to bear the weight and keep the structure stable.
10. Employees erecting temporary work to be trained in the safe work procedures for the erection, moving and dismantling of the temporary work.
11. Safe access and emergency escape to be provided for employees.
12. Only employees trained to work at height with a valid medical fitness to work allowed to erect temporary works.

### Total Average Risk Value

<table>
<thead>
<tr>
<th></th>
<th>Health &amp; Safety (I)</th>
<th>Cost (C)</th>
<th>Productivity (P)</th>
<th>Environment (E)</th>
<th>Total Average Risk Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5 125 5 5 50 75 40%</td>
</tr>
<tr>
<td>17</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5 125 5 5 50 75 40%</td>
</tr>
<tr>
<td>18</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1 1 5 125 5 5 50 75 60%</td>
</tr>
</tbody>
</table>

### Risk Assessment

- The risk assessments required in terms of Construction Regulation 9 include employee exposure to hazardous chemical substances and that the necessary measures be taken to protect persons from being detrimentally affected by hazardous chemical substances present or used in the workplace. This Risk Assessment must be communicated to all employees exposed to HCS.
- Suppliers provide the necessary information in the form of material safety data sheets regarding hazardous chemical substances required to ensure the safe use, handling and storage of these substances. This MSDS must be available on site and communicated to employees exposed to the HCS.
- An up-to-date list is kept on site of hazardous chemical substances stored and used together with the material safety data sheet of the said hazardous chemical substances.
- Hazardous chemical substances containers be clearly marked as to the contents and main hazardous category e.g. “Flammable” or “Corrosive.”
- No person eats or drinks in a hazardous chemical substances workplace.
- Hazardous chemical substances waste is disposed of safely in terms of Hazardous waste disposal requirements at a registered facility.
- HCS to be properly stored in a cool locked storage room or storage area.
- Employees handling hazardous chemical substance to be trained. Possible preventive measures to be put in place in order to prevent harm to employees. PPE to be used when necessary.

### Responsibility

- The principal contractor to ensure that:
- Employees receive the necessary information and training to be able to use, handle and store hazardous chemical substances safely.
- The risk assessments required in terms of Construction Regulation 9 include employee exposure to hazardous chemical substances and that the necessary measures be taken to protect persons from being detrimentally affected by hazardous chemical substances present or used in the workplace. This Risk Assessment must be communicated to all employees exposed to HCS.
- Suppliers provide the necessary information in the form of material safety data sheets regarding hazardous chemical substances required to ensure the safe use, handling and storage of these substances. This MSDS must be available on site and communicated to employees exposed to the HCS.
- An up-to-date list is kept on site of hazardous chemical substances stored and used together with the material safety data sheet of the said hazardous chemical substances.
- Hazardous chemical substances containers be clearly marked as to the contents and main hazardous category e.g. “Flammable” or “Corrosive.”
- No person eats or drinks in a hazardous chemical substances workplace.
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- HCS to be properly stored in a cool locked storage room or storage area.
- Employees handling hazardous chemical substance to be trained. Possible preventive measures to be put in place in order to prevent harm to employees. PPE to be used when necessary.
<table>
<thead>
<tr>
<th>Working on Heights (Work in fall risk positions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inadequate fall protection</td>
</tr>
<tr>
<td>2. Employees not medically fit to work at height</td>
</tr>
<tr>
<td>3. Workers not trained to work at height</td>
</tr>
<tr>
<td>4. Failing objects</td>
</tr>
<tr>
<td>5. Workers falling</td>
</tr>
<tr>
<td>6. Inadequate / unsafe or damaged fall prevention equipment used</td>
</tr>
<tr>
<td>7. Inclement Weather</td>
</tr>
</tbody>
</table>

1. Health & safety (I) | 5 |
2. Cost (C) | 2 |
3. Productivity (P) | 4 |
4. Environment (E) | 2 |

<table>
<thead>
<tr>
<th>Total Average Risk Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mandatory or as per requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>75%</td>
</tr>
</tbody>
</table>

**Principal Contractor**

---

<table>
<thead>
<tr>
<th>Exposure to poisonous / Venomous or other dangerous animals, reptiles or insects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Venomous snakes, insects / spiders in bushes, stacking areas and other confined spaces</td>
</tr>
<tr>
<td>2. Poisonous insects</td>
</tr>
<tr>
<td>3. Insects, reptiles and other animal species, stings that causes allergic reactions</td>
</tr>
</tbody>
</table>

1. Health & safety (I) | 4 |
2. Cost (C) | 4 |
3. Productivity (P) | 2 |
4. Environment (E) | 2 |

<table>
<thead>
<tr>
<th>Total Average Risk Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mandatory or as per requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>60%</td>
</tr>
</tbody>
</table>

**Principal Contractor**
1. Health & safety (I) | 4 | 4 | 1 | 5 | 100 | 5 | 5 | 100 | 80% |
2. Cost (C) | 4 | 4 | 1 | 5 | 100 | 5 | 5 | 100 | 80% |
3. Productivity (P) | 3 | 3 | 1 | 5 | 100 | 5 | 5 | 75 | 60% |
4. Environment (E) | 2 | 2 | 1 | 5 | 100 | 5 | 5 | 50 | 40% |

1. The principal contractor to implement an early warning system to identify inclement weather and to prevent such weather from posing negative implications on the safety of employees and other persons visiting the site.
2. The early warning system to, as a minimum, provide for the following:
   - Construction work done during electrical storms
     a) The principal contractor to ensure that all employees are removed from heights and all employees are as safe as possible, in inclement weather conditions.
     b) No work to be allowed on the construction site during electric storms where employees cannot be protected from it. Protection involves:
        - eating area fitted with a lightning mast
        - workshops
        - inside buildings
     c) No work to be allowed in electrical storms on top of open structural steel, even when earthed.
     d) No work to be allowed on height where the lightning is within a 10 kilometre radius.
     e) After inclement weather on-site risk assessments to be reviewed to include wet conditions.
   - Crane operations during inclement weather
     a) Crane operations to stop during lightning within a 10 kilometre radius and wind above 28 km/h, crane driver will not be allowed to leave the crane with the booms extended.
     b) Lifting operation to stop during rain, rigging and hand lifts.
     c) Booms on all cranes to be retracted.
     d) All rigging operations to stop and employees will be removed from site.
   - Construction work done during rain
     a) During rainy conditions all work on steel structures to stop.
     b) No electrical tools to be used during rainy weather in open areas.
   - Scaffolding activities during inclement weather conditions
     a) During inclement weather only limited scaffolding activities to be permitted i.e. erecting and dismantling activities.
     b) When absolutely necessary to allow scaffolding activities to continue during abnormal equipment and process conditions so not to impair personnel safety or pose an environmental risk. In such cases, scaffolding activities may continue with the provision that the relevant team ensures that a comprehensive risk assessment is done, whilst considering both work and weather conditions.
     c) All scaffold users to:
        - Ensure that scaffolding is inspected immediately after inclement weather conditions.
        - Ensure that the risks associated with working at heights during inclement weather are identified and reasonably mitigated.
        - Be cautious of slip/trip hazards when performing activities during inclement weather.

Working in Inclement Weather
1. Exposed to thunder storms / lightning
2. Strong winds
3. Rain
4. Sand / dust storms
5. Extreme hot conditions

Total Average Risk Value
65%
### Working in Confined Spaces

<table>
<thead>
<tr>
<th>1. Poor ventilation</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Gasses present</td>
<td>4</td>
</tr>
<tr>
<td>3. Employees unfit to work in confined spaces</td>
<td>2</td>
</tr>
<tr>
<td>4. Tourists untrained to work in confined spaces</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Total Average Risk Value

- **Mandatory or as per requirement**

### Public Health & Safety and Pedestrians Access to Site

<table>
<thead>
<tr>
<th>1. Unsafe pedestrian access</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Injuries to bystanding public or pedestrians</td>
<td>4</td>
</tr>
<tr>
<td>3. Public personal belongings or property damages</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Total Average Risk Value

- **Mandatory or as per requirement**

### Steel Work (Steel fixing / Steel reinforcing)

| 1. Manual handling and lifting of steel at ground level and to elevated level | 3 |
| 2. Transportation of steel on trailers | 3 |
| 3. Sharp & pointed objects | 2 |
| 4. Cutting of steel - sparking and fire | 2 |
| 5. Use of unsafe or damaged pliers | 1 |

#### Total Average Risk Value

- **Mandatory or as per requirement**

### Mandate or Requirement

- **1. Health & Safety (I)**
- **2. Cost (C)**
- **3. Productivity (P)**
- **4. Environment (E)**

---

**1. Principal Contractor** to ensure confined space works comply to the following:

- **Ventilation**
  - The confined space is to be opened to the air for at least 15 minutes before entering the manhole. All open manholes to be barricaded and manhole covers to be removed.
  - A gas monitor to be lowered to the bottom of the confined space to ensure the presence of any toxic/flammable gas. If any gas is detected, the space is to be forced ventilated by means of a blower for at least 15 minutes after the air has been replaced.
  - After the undertaking of the necessary work, the person in charge of the activities to confirm that all the employees are accounted for.

- **Entering a confined space**
  - When entering a confined space, the person entering the space to carry out a safety harness and fully operational gas detector. A lifeline should be attached to the safety harness and a person on the surface should be in continuous contact with the person in the confined space. At least one person on the surface to be trained in basic first-aid (level 1) with proof of such training as well as a fully equipped first-aid box available on site.
  - No person shall remain within a confined space for a period of more than one hour at a time. A minimum of 5 minute rest periods on the surface to be taken after this period before re-entering.
  - Should the alarm sound on the gas monitor, all employees to exit the confined space and the immediate area should also be evacuated immediately. The area to be properly ventilated and re-tested before re-entering the confined space. Professional support should be called if necessary.
  - Employees to be provided with flameproof lighting when entering a confined space with the possibility of flammable gases. No naked lights, smoking or unprotected electrical apparatus which may cause sparks, shall be permitted in any confined space or in its vicinity.

- **Training**
  - All employees that have to enter a confined space to be formally trained and competent before being required to enter such areas (new employees to complete this training and be declared competent before allowed to work in a confined space).
  - Refresher courses to be attended by employees at least once every 2 years or immediately if new methodologies or equipment are adopted or acquired.
  - Continuous onsite training (Safety moments / toolbox talks) and support by supervisory staff to be undertaken and enforced where required.
  - Competent person to conduct continuous gas monitoring of confined spaces.

- **Specific Risk Assessment / Safe Working Procedure and Method Statement**
  - Work activities in Confined space to be communicated to relevant employees. (Proof of communication to be available in safety file)

---

**Principal Contractor**

**1. Health & Safety (I)**

- **2. Cost (C)**
- **3. Productivity (P)**
- **4. Environment (E)**

---

**Principal Contractor**

**1. Principal Contractor**

- **2. Workers to be supplied with the required PPE for steel fixing and cutting of steel rebar.**
  - SWP for manual handling / ergonomics to be communicated to workers.
  - Cutting of Steel rebar to be conducted in a designated safe work area.
  - All tools and equipment to be used must be inspected and registered on a checklist, deviations must be recorded and reported to appointed supervisor.

---

**Principal Contractor**
**Emergency Preparedness**

1. Inadequate emergency planning could result in the inability to effectively respond to emergencies.
2. Inadequate first-aid arrangements could impact negatively on the ability to respond to first-aid injuries or to stabilise injured employees or other persons that may require advanced health care.
3. Inadequate fire prevention and protection measures may impact negatively on the ability to fight fires.

**Fire Prevention and Protection**

1. Sufficient and suitable storage of flammables is provided;
2. Employees are trained in the use of the fire fighting equipment and know how to attempt to extinguish a fire; these employees must be appointed and proof of competency to be available on site.
3. A sufficient number of employees are appointed and trained to act as an emergency team to deal with fires and other emergencies;
4. Employees are informed regarding emergency evacuation procedures and escape routes this must be included in the induction of all workers and visitors.
5. Emergency escape routes are kept clear at all times and clearly marked;
6. Roll call is held after evacuation to account for all employees and to ensure that no-one including visitors and disabled persons have been left behind;
7. A clearly audible siren or alarm is fitted and regularly tested. If this is not practicable to the site, other method of warning employees must be used, for example wistles.

**First-Aid**

1. The principal contractor to appoint a competent person to act as emergency controller and/or coordinator.
2. The principal contractor to conduct an emergency (identification) exercise and establish what emergencies (such as health, safety, environmental, third party or community related accidents etc) could possibly develop. Contractor must then develop detailed contingency plans and emergency procedures, taking into account any emergency plan that the project/site may have in place.
3. The principal contractor and the other contractors must hold regular practice drills of contingency plans and emergency procedures to test them and familiarise employees with them. Emergency evacuation points must be available and signage displayed.
4. The contingency plan of the principal contractor to include arrangements for the speedily and timeously transportation of injured and/or ill person(s) to a medical facility or getting emergency medical support to person(s) who may require it.
5. The principal contractor to have firm arrangements with his contractors in place regarding the responsibility of these contractor’s first-aid arrangements as well as treatment of injured and/or ill employees.

**Abatement**

1. Site security and public protection
   - Public gaining access to the construction site.
   - Theft
   - Vandalism

2. Mandate of the principal contractor to ensure that:
   - Control to be maintained and no unauthorised entry to be permitted to the project.
   - When there are no activities on site and no personnel conducting works, The Project has to be left in a safe manner that the public can’t gain access to.
   - Security should be available due to valuable materials and equipment that might be stored on site.

3. The principal contractor to ensure that:
   - Control to be maintained and no unauthorised entry to be permitted to the project.
   - When there are no activities on site and no personnel conducting works, The Project has to be left in a safe manner that the public can’t gain access to.
   - Security should be available due to valuable materials and equipment that might be stored on site.

4. Ablution facilities
   - Inadequate provision of welfare facilities may have negative implications on the health of employees and other persons as well as the environment.

5. Mandate of the principal contractor to ensure that:
   - Principal Contractor to provide toilets for each sex as required in terms of the National Building Regulations and Construction Regulation 30.
   - Toilets might be stored on site.
   - b) Chemical toilets are allowed only if they are cleaned on a regular basis by the National Building Regulations and Construction Regulation 30.
   - a) Principal Contractor to provide toilets for each sex as required in terms of the National Building Regulations and Construction Regulation 30.
   - Toilets have to be provided at a ratio of at least 1 toilet per 30 employees.
   - Registered contracted company.
   - Toilets have to be provided at a ratio of at least 1 toilet per 30 employees.

6. Mandatory as per requirement

<table>
<thead>
<tr>
<th>Health &amp; safety (I)</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost (C)</td>
<td>3</td>
</tr>
<tr>
<td>Productivity (P)</td>
<td>3</td>
</tr>
<tr>
<td>Environment (E)</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Average Risk Value: 40%
<table>
<thead>
<tr>
<th></th>
<th>1. Health &amp; safety (I)</th>
<th>2. Cost (C)</th>
<th>3. Productivity (P)</th>
<th>4. Environment (E)</th>
<th>Total Average Risk Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety guarding / Dealing with existing Structures</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Installation of fence</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Concrete Works</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1. Health &amp; safety (I)</th>
<th>2. Cost (C)</th>
<th>3. Productivity (P)</th>
<th>4. Environment (E)</th>
<th>Total Average Risk Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Mixing and Pouring (Manually and Mixer) and use of Concrete Pump</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1. Health &amp; safety (I)</th>
<th>2. Cost (C)</th>
<th>3. Productivity (P)</th>
<th>4. Environment (E)</th>
<th>Total Average Risk Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Contractor</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Mandatory or as per requirement**

1. Ensure identification off all existing services and structures before commencing with site establishment.
2. All hand tools to be inspected by a competent person.
3. When concrete is being poured, concrete spillages to be prevented and plastic sheet to be placed on the ground when spillages cannot be prevented.
4. Concrete washout area to be created where concrete run off will be discharged.
5. Dust mask must be provided to employees handling cement as a last resource when dust cannot be controlled. If exposed to cement dust for long periods a breathing apparatus must be used. Workers exposed to Dry Cement or Wet Cement must be supplied with the minimum required PPE (Overalls, Gumboots, Safety Boots, PVC Gloves, Safety Glasses, Earplugs) if exposed to wet cement rain costs can be used.
6. Concrete readymix truck, Concrete Pump Truck and Concrete Mixers must keep a safe distance from excavation edges, when pouring into excavation flagmen have to be more vigilant and a regular toolbox talks must be held.
7. Task specific risk assessment and safe working procedures for all activities must be developed and communicated.
8. Housekeeping must be done on each day. Responsible for the housekeeping of waste.
9. All plant or equipment used for concrete works must be inspected before use and findings recorded on a checklist, deviations must be reported to Construction manager / Supervisor.
### Temporary electrical equipment installations

<table>
<thead>
<tr>
<th>Trade</th>
<th>Risk Assessment and Method statement for Handling of Asbestos to be communicated to the relevant exposed employees.</th>
</tr>
</thead>
</table>
| Asbestos handling and removal (if applicable) | 1. Incompetent person conducting removal  
2. Improper Asbestos removal |
| Construction Trades   | 1. Exposed to Work at height (From Ladders, Scaffold and MEWP)  
2. Use, control and storage of HCS (Paint, Thinner, Silicon, Tile adhesive, Cement, Bonding agents)  
3. Use/Operation of Small plant / equipment (Concrete, Brick cutter, Concrete Mixer, Tile cutter, Sanders, SANSew / jigsaw)  
4. Dust  
5. Vibration  
6. Noise  
7. Use of unsafe hand tools and portable electrical tools  
8. Tools, equipment or materials falling from heights |
| Painting              | 1. Dust  
2. Vibration  
3. Noise |
| Tiling                | 1. Dust  
2. Vibration  
3. Noise |
| Paving                | 1. Dust  
2. Vibration  
3. Noise |
| Brickwork             | 1. Dust  
2. Vibration  
3. Noise |
| Plastering            | 1. Dust  
2. Vibration  
3. Noise |
| Ceiling / roof works  | 1. Dust  
2. Vibration  
3. Noise |

### Risk Assessment and Method statement

- **Health & safety (I)**
  - 1. Any electrical work undertaken as part of the project, including the installation of temporary electricity for construction use shall be in accordance with Construction Regulation 24 and the Electrical Installation Regulations.
  - 2. The principal contractor to ensure that:
    - Existing services are to be located and clearly marked before construction commences and during the progress thereof;
    - Electrical installations and -machinery are sufficiently robust to withstand normal working conditions on site;
    - Temporary electrical installations must be inspected at least once per week by a competent person and a record of the inspections kept on the occupational health and safety file;
    - Electrician with a Wemetery's Licence must install, commission and inspect all electrical installations. Employee to be authorised, competent and appointed. COC must be available for electrical connections done.
    - All DB's are to be locked. Key register to be established and proof of use to be evident.
    - Look out procedure to be communicated to all employees exposed.
    - Task Specific Risk assessments to be communicated.

- **Cost (C)**
  - 1. All tools, machinery or equipment used in the different trades must be safe to use and be inspected on a daily or weekly basis. All findings must be recorded on a checklist and reported to Construction Manager / Supervisor.
  - 2. Workers operating Small plant or Machinery must be appointed and must have the required skills and knowledge on operating certain plant or machinery. Those operators must be medically fit.
  - 3. Workers exposed to work at height, must have a valid medical fitness and works at height training.
  - 4. Scaffold, Ladders and MEWP must be inspected before use. Scaffold erector, Scaffold Inspector, Ladder Inspector and MEWP operator must be appointed with valid competencies.
  - 5. Workers must be supplied with the CORRECT minimum required PPE for each specific task.
  - 6. Workers exposed to long periods of vibrations and Noise may require regular breaks or workers to be changed regularly.
  - 7. All trades specific Risk Assessments and Safe working procedures must be communicated to the relevant exposed workers. Proof of communication must be kept.
  - 8. Supervisor / Construction Manager to ensure NO overhead activities from different trades or simultaneous operations from different contractor overhead.

- **Productivity (P)**
  - 1. Risk Assessment and Method statement for Handling of Asbestos to be communicated to the relevant exposed employees.
  - 2. Only registered Contractor will be allowed to removed and dispose Asbestos as a registered (designated) facility. Proof of disposal must be kept on record.
  - 3. If Asbestos is noticed on site Department of Labour must be informed.
  - 4. Only workers with the required task specific PPE will be allowed to handle and remove Asbestos.
  - 5. Other simultaneously operations in the direct vicinity of Asbestos must be halted / stopped until asbestos has been removed.

- **Environment (E)**
  - 1. Principal Contractor & Registered Competent Asbestos removal contractor

### Total Average Risk Value

<table>
<thead>
<tr>
<th>Health &amp; safety</th>
<th>Cost</th>
<th>Productivity</th>
<th>Environment</th>
</tr>
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<td>30%</td>
<td>35%</td>
<td>60%</td>
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</tbody>
</table>

### Mandatory or as per requirement

- DB’s Must be numbered. Warning signage posted at DB / No Unauthorised entry
- DB’s to be locked. Key register to be established and proof of key use to be evident.
- Look out procedure to be communicated to all employees exposed.
- Task Specific Risk assessments to be communicated.